MCEGold®

Product Support Manual

PdMA CORPORATION

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HOW TO USE THIS MANUAL

Thank you for purchasing the PdMA MCEGold. This manual has been written to help you understand MCEGold features and how using it will enhance your motor reliability and predictive maintenance programs. Please read it thoroughly to familiarize yourself with the various MCEGold features and then keep it nearby as a reference.

OVERVIEW

Chapter One: Introduction and Chapter Two: Hardware are informational chapters. Chapter Three: MCEGold explains in detail the MCEGold software. Chapter Four discusses the Network Edition. The remaining chapters are each divided into two sections. The first section contains the step-by-step procedures to operate the tester. The second section contains information to assist you in interpreting the test data. Chapter Five covers MCE testing, Chapter Six covers EMAX Current Analysis and Chapter Seven EMAX Power Analysis.

Appendix A contains suggested resources for additional information

This manual was prepared using MCEGold P-Series. Due to software updates and hardware changes, material contained in the PdMA MCEGold Product Support Manual may not be up to date. Always check the Technotes and Appendix sections for the latest updates. Also, some material contained in this manual may not apply to the version of tester that you have. You may locate the version and series of your tester by selecting Help, About from the MCEGold menu.

TUTORIALS

There are short audio/video tutorials included in the software. These are Home Window, Site Condition, Site Navigator, WatchList, and Message Center. Depending on your software version you may have additional tutorials.

To view the tutorials, select Help on the menu bar, then Tutorial, and the tutorial you wish to view. It will begin playing automatically

CONVENTIONS USED

It is assumed that you have a working knowledge of your computer and its operation, including how to use a mouse, standard menus, and commands. Also, how to open, save, and close files and manipulate multiple windows.

Buttons. Buttons in MCEGold, Current, and Power Analysis programs are written in bold. For example, Click **OK** means to click on the OK button.

Computer Keys. Computer Keys are enclosed in pointed brackets and typed in bold. For example, <**Enter**>.

Cancel, Close, and Exit. These buttons are basic Windows commands and are used to exit a window, return to the previous location, or quit a step without saving the changes made. This manual assumes the user knows how to use the Cancel, Close (the “x” in the

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upper right corner), and Exit buttons. In the interest of clarity, the instructions will not be given in the procedures, except to designate the end of a procedure.

Data or Text Box Entry Field. A Data Entry Field is used to enter information into the MCEGold database. Data which should be entered by the user is denoted by italics. For example, Type *a:\setup.exe* in the Open box.

Display Only Fields. A Display Only field displays the data and you cannot enter data or make changes.

Drop-Down Menus. Drop-down menu items are displayed by clicking the down arrow located to the right of the text box.

Headings. Each chapter is broken down into sections, with the headings shown below as they appear in the text. Recognizing the level will help you maneuver through the chapter.

HEADING 1

Heading 2

Heading 3

Heading 4

Run In Heading.

NOTE Note will appear here.

HINT Hint will appear here.

Hot Keys. A hot key is a keyboard shortcut used to access a menu command or a button. A hot key is designated by an underlined letter in a word. For example, File indicates press <Alt+F>. Sometimes the hot key is shown on a menu as in the File menu, Exit (Crtl+X) for Exit.

Key Combinations. Key combinations are linked by a + sign. Press and hold down the first key and then the second key or press the two keys at the same time. For example, <Shift+Tab>, <Alt+X>, or <CTRL+X>.

Menu Items. Menu items are written with the first letter capitalized. For example, File.

PdMA Motor Tester. Throughout this manual, the term MCE refers to the deenergized (static) motor testing capability of the tester or a stand alone deenergized (static) motor tester. EMAX refers to the energized (dynamic) motor testing capability of the tester or a stand alone energized (dynamic) motor tester. MCEMAX refers to a tester with both deenergized (static) and energized (dynamic) motor testing capabilities.

MCEGold. MCEGold is the name of the software that powers the MCEMAX tester.

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Text Box Entries. Data to be entered by the user is denoted by italics. For example, Type *a:\setup.exe* in the Open box.

Window Names. Specific window names in MCEGold, Current, and Power Analysis programs are capitalized.

Version. MCEGold version 2.0 was used to prepare this manual. It is referenced in the manual as MCEGold.

SYMBOLS

Cautions are dictated by the symbol shown below. It advises users that failure to take or avoid a specific action could result in loss of data or damage to the equipment.



Warnings are indicated by the symbol shown below. It is used when there is possible personal danger or irreversible destruction of equipment.



Symbol	Publication	Description
	IEC 417, No. 5031	Direct current
	IEC 417, No. 5032	Alternating current
	IEC 417, No. 5172	Equipment protected throughout by double insulation or reinforced insulation (equivalent to Class II of IEC 536)
	ISO 3864, No. B.3.6	Caution, risk of electrical shock
	ISO 3864, No. B.3.1	Caution (refer to accompanying documents)

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COMMON TERMS USED

Button – a square or rectangular area on the screen that initiates an action when clicked.

Choose – opens a menu or initiates a command. For example, Choose New from the File menu.

Click – move the mouse pointer over an object or icon and press and release the left mouse button. For example, Click **OK**. Assume left mouse click unless directed otherwise. For example, Right click **Start** means to press and release the right mouse button on the **Start** Button.

Close – click on the "x" in the upper right corner of the window.

Copy – places a duplicate of the highlighted selection on the clipboard to allow pasting on another location. For example, Copy the first figure in Appendix A. Copy Asset is also a menu item found in Asset Manager, Asset. This Copy opens a copy dialog box.

Cursor or Pointer – indicator on the screen that shows where the mouse action occurs. For example, Place the cursor on the motor.

Cut – removes the highlighted selection from the current location and places it on the clipboard.

Dialog Box – contains a message and one or more options for the user to choose from or space to enter information.

Dimmed – refers to a button or command that is unavailable or inactive. The button appears on the screen dimmed or grayed out.

Display – opens a window. For example, Display the Default Properties window.

Double-click – click the mouse button twice in rapid succession. For example, Double-click on the Site Navigator icon.

Drag – place the pointer on an object, press the left mouse button and hold it down, then slide the object to the desired location and release the mouse button. For example, Drag the icon to the upper-left corner of the screen. This is also referred to as drag and drop.

Drop-down List – a box containing multiple options. Click the arrow to display the list, then click an item in the list to select it.

Field – area in a dialog box where information is typed.

Hover – holding the cursor over an area on the window for a short time, which causes a pop-up box to display information about that area. Many areas of MCEGold have hovering capabilities.

Icon–a pictorial description of an action, usually found on the tool bar.

Menu – list of commands or instructions displayed on the screen.

Menu Bar – runs across the top of a window under the MCEGold Title Bar. Selecting a menu item opens a drop-down menu from which other items may be selected.

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Move – maneuver the pointer on the workspace by sliding the mouse with no buttons pressed. For example, Move the pointer to the down arrow and click.

Open – to start an application or to access a document, file, or folder. This is usually done by clicking on an icon or file name. For example, Open MCEGold.

Option Button – circular buttons associated with items in a list. These indicate mutually exclusive choices. Click on an option button to select it and the center darkens. Click on a different button to change your choice.

Paste – places the contents of the clipboard at the insertion point. For example, Paste the the text into the Notes area. You must copy an item before it can be pasted.

Point – to move the pointer to a specific location on the screen by moving the mouse with no buttons pressed. For example, Point to the trash can icon and click to select it.

Screen – refers to the graphic portion of a monitor.

Select – highlight an item so the software can identify it as the one on which to perform the operation. Do this by pointing to the item and clicking the left mouse button once.

Scroll – move the contents up/down or right/left on the computer screen by clicking the scroll arrow or dragging the scroll box., which is located to the right or across the bottom of the window. Scroll bars only appear when there is too much information to fit on the window.

Title Bar – the band at the top of the window containing an identifying phrase. The Title Bar may have the name of the application, the main purpose of the window, or the name of the currently active file or motor.

Tool Bar – the Tool Bar lies just below the menu bar and contains the icons, which provide quick access to the most commonly used MCE, EMAX, or MCEMAX features.

Window – is an open program display contained within the screen. You may have several open windows on the screen at the same time.

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CHAPTER 1: INTRODUCTION

DESCRIPTION OF PRODUCT

MCEMAX powered by MCEGold® integrates testing, diagnostics, inventory control, scheduling, and cost containment for your company's motors/assets.

MOTOR TESTING PHILOSOPHY

Throughout the manual the term MCE refers to deenergized motor testing capability. EMAX refers to energized motor testing capability. MCEMAX refers to both deenergized and energized motor testing capabilities in one tester.

MCE

With electrical faults responsible for nearly 50% of all motor failures, taking a proactive approach to these problems becomes a necessity. Motor Circuit Evaluation (MCE) is a predictive maintenance technology that provides comprehensive, portable, motor testing. MCE allows you to test deenergized electric motors, large or small, AC or DC, and determine the condition of the motor and its associated power circuit in a short period of time. The data is immediately stored for trending, comparison, and report generating. The MCE tester, also known as MCE (motor circuit evaluator), allows you to perform condition-based maintenance rather than time-based maintenance. This prevents costly motor failures and unnecessary maintenance.

MCE testing can be performed for quality assurance, trending, and diagnostic troubleshooting.

- Quality Assurance (QA) testing of motors, when they are new or refurbished, ensures that only the highest quality motors are placed in service.
- Trending motor health over time allows for repair or replacement of motors, prior to failure. This can prevent unexpected down time and minimize costs associated with unexpected shut downs.
- Diagnostic troubleshooting is accomplished by using the MCE to troubleshoot the suspect circuit and narrow the problem down to a specific component or section of the motor circuit.

MCE testing is non-destructive and measures inherent characteristics of a deenergized motor circuit. The Standard Test takes approximately 1 1/2 (DC motor) to 3 1/2 (AC motor) minutes and measures these characteristics for AC and DC motors:

- Resistance-to-ground (RTG)
  Temperature corrected RTG tests the ground wall insulation of the motor and circuit cables, indicating the condition of the insulation.

- Capacitance-to-ground (CTG)
  CTG is an additional indicator of the insulation condition, identifying contamination buildup on the insulation.

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- Phase-to-phase Resistance
  Phase-to-phase resistance tests the circuit and the stator coils for resistance, calculates resistive imbalance, and indicates when these imbalances are unsatisfactory. Resistive imbalances can be used to identify hot spots, high resistance connections, or coil shorting in the stator.

- Phase-to-phase Inductance
  Phase-to-phase inductance tests the circuit, stator coil, iron, and rotor components for inductive imbalances and indicates when these imbalances are unsatisfactory. Inductive imbalances can be used to identify winding faults and rotor defects.

- Step Voltage
  The Step Voltage test records the peak in-rush and decay of current as each increase (step) in DC voltage is applied across the circuit's ground wall insulation. The test allows the user to observe how the insulation system responds to over-voltage stress. Insulation condition can be identified by evaluating the resultant graph of leakage current.

- Polarization Index (PI)
  A ten minute insulation test is performed. The Dielectric Absorption (DA) ratio is calculated and a profile of RTG vs. time is plotted. The profile developed can be used to identify the condition of the motor's insulation system.

Additionally, MCE performs a Rotor Influence Check (RIC) on AC motors, Step Voltage and Polarization Index (PI) insulation tests on AC and DC motors, and a commutator bar-to-bar test on DC motors.

- Rotor Influence Check (RIC)
  The RIC is performed to isolate motor problems to either the rotor or stator. As the rotor is turned by hand, a plot of its influence on the stator coils is developed using inductance measurements. If the influence on the stator coils is uniform, then an anomaly is isolated to the rotor. If the influence on the stator coils is non-uniform, then an anomaly is isolated to the stator.

- Commutator bar-to-bar
  Commutator bar-to-bar testing is performed on the Armature section of DC motors. This aids in troubleshooting a faulty commutator or armature winding.

EMAX

Often times it is not possible to shut down a motor to perform MCE testing. EMAX allows testing of AC and DC motors while they are operating (online). Energized motor testing allows you to determine when the motor needs to be shut down for further testing and/or maintenance. The types of energized motor testing possible with EMAX are Current Analysis, Power Analysis, and In-Rush/Start-Up. Also, for the Armature section of a DC motor is Drive Input testing. Like MCE, EMAX testing is non-destructive.

The AC motor tests are Rotor Evaluation (formerly known as Low/High Resolution), Eccentricity, In-Rush/Start-Up, Power, and Demod testing.

The DC motor Armature section tests are DC Power, DC Current Analysis, DC In-Rush/Start-Up, and Drive Input.

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The DC motor Field section tests are DC Power and DC In-Rush/Start-Up.

The Current Analysis portion of EMAX takes current measurements of the three phases of an AC motor circuit. It performs the following tests on AC motors operating at a *recommended* steady state load of greater than 70% of full load.

- Rotor Evaluation
  Rotor Evaluation testing is performed to identify damage to rotor bars before causing secondary damage to the stator coils or bearings.
- Eccentricity
  Eccentricity testing is performed to determine motor eccentricity before damage to rotor, stator, and motor bearings occurs.
- In-Rush/Start-Up
  In-Rush/Start-Up testing is performed to monitor in-rush current and startup signatures, providing early signs of motor degradation and process analysis.

The Power Analysis portion of EMAX takes voltage and current measurements of the three phases of an AC motor circuit and provides the following information:

- Voltage, current, and power signals, with respect to time, are used to indicate the relationship between voltage and current to verify proper phase sequence and determine incoming power quality
- Voltage, current, and power FFT graphs are used to detect abnormal amplitudes of various known fault-frequencies
- Voltage, current, and power harmonics are used to determine power quality of the incoming signal
- A results page, with a variety of parameters, is used to document and trend the readings taken during each test.

The Demod test for AC motors filters out the 60 Hz carrier frequency and reveals the hidden signals, representing load variations. These load variations can then be analyzed.

The Drive Input test for the Armature section of DC motors is a test performed on the input of the drive to analyze the health of both the drive and the motor.

ELECTRICAL SAFETY PRECAUTIONS

Warning

USE CAUTION: WHEN WORKING WITH VOLTAGE LEVELS ABOVE 25V AC OR 60V DC. FAILURE TO FOLLOW SAFETY PRECAUTIONS CAN CAUSE SEVERE OR FATAL PERSONAL INJURY AND/OR DESTROY THIS UNIT.

- Avoid working alone
- Wear safety equipment
- Inspect the unit and test probes for damaged insulation
- DO NOT use damaged equipment.



To prevent personal injury or equipment damage, follow all of your facility's applicable electrical safety precautions at all times.

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Table 1-1 International Electrical Symbols

Symbol	Publication	Description
	IEC 417, No. 5031	Direct current
	IEC 417, No. 5032	Alternating current
	IEC 417, No. 5172	Equipment protected throughout by double insulation or reinforced insulation (equivalent to Class II of IEC 536)
	ISO 3864, No. B.3.6	Caution, risk of electrical shock
	ISO 3864, No. B.3.1	Caution (refer to notation accompanying the symbol)

MCE

MCE testing is performed on deenergized motors. However, it is often done ***in the vicinity of*** energized equipment. ***Follow all electrical safety precautions and procedures required by your facility for working near energized equipment.***

The tester can be sensitive to electrostatic discharge. Exposure to electrostatic discharge during an ongoing test may cause the software to be momentarily interrupted.



Line voltage applied to the MCE tester may cause personal injury and **will** destroy the tester. This could come directly from power being applied to the circuit under test or be induced from a nearby source of power. Prior to connecting the MCE, deenergize, then verify that all sources of power to the circuit are deenergized. Use your facility's procedure for deenergizing and tagging out equipment.

Deenergized equipment means all of the following:

- Disconnected from all possible energy sources
- All stored energy in the circuit is released
- Program implemented to ensure all possible energy sources remain disconnected, such as the Danger Tag shown in Figure 1-1.



- Open and tag the circuit breaker supplying power to the starter cabinet.Voltage could still be present on the contactor if separate control power is available for remote starting. If equipment can be controlled remotely, ensure all local and remote control switches are tagged off using a tag, such as the Danger Tag shown in Figure 1-1.

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Figure 1-1

To avoid personal injury, protect the MCE tester, and ensure accurate data collection use a multimeter prior to connecting the MCE to verify that the circuit is deenergized. Depending on the circuit voltage, using a hot stick may be required before using a multimeter. Perform the following steps to verify the circuit is deenergized:

1. Read the operating instructions and safety precautions accompanying your multimeter.

2. Verify proper operation of the multimeter (before use) by testing it on a known voltage source.

3. Verify induced phase-to-ground voltage is $\leq$ 15 VAC.

4. Verify induced phase-to-phase voltage is $\leq$ 0.5 VAC.

5. Verify low level stored voltage phase-to-ground is $\leq$ 15 VDC.

6. Verify proper operation of the multimeter (after use) by testing it again on a known voltage source.

After verifying the circuit is deenergized, test the circuitry with an ohmmeter to verify that the motor is connected and is not rotating by placing the multimeter on the resistance scale and measuring the resistance phase-to-phase. If the mulitmeter locks on to a resistance value and does not fluctuate, then the motor is not rotating.

EMAX

Current and power testing is performed on energized motor circuits. ***Follow all electrical safety precautions and procedures your facility has for working on energized equipment.***

- Always connect the ground lead first.
- Ensure that the motor being tested is less than 600 volts prior to connecting test leads. Machines or equipment rated at greater than 600 volts should be tested on the secondary side of CTs (current transformers) and PTs (potential transformers).

When using EMAX, for online testing (Power and/or Current Analysis), high intensity RF fields may affect the performance of the unit.

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The tester can be sensitive to electrostatic discharge. Exposure to electrostatic discharge during an ongoing test may cause the software to momentarily interrupted.

TECHNICAL SUPPORT

Technical Support is available by phone Monday through Friday, 8 A.M. to 5 P.M., E.S.T. To facilitate customer support, please do the following prior to calling PdMA.

Have your company name and the tester serial number available.

Depending on what problem you are having, have your laptop attached to the tester with MCEGold running or have MCEGold running on your desktop PC. Tell the Technical Support Representative if you installed other software on the laptop or PC after MCEGold was installed.

For assistance in analyzing data, send the data as an email attachment, highlight the motor, select Export File on the tool bar, and follow the on screen directions. This will create a .pdp file. E-mail the .pdp file as an attachment to techsupport@pdma.com.

For MCE data, include:

Nameplate data for motor
RIC graph (AC motor)
Standard Test (AC or DC motor)
Polarization Index graph (AC or DC motor)

For EMAX data, include:

Nameplate data for motor
Results page (Power Analysis)
Spectrum graph (Current Analysis)

You may contact PdMA Technical Support by any of the following methods.

- Telephone: (813) 621-6463 ext. 251
- Fax: (813) 620-0206
- E-mail: techsupport@pdma.com
- Web site: www.pdma.com

RETURNING THE TESTER TO PDMA

You will need to return the tester to PdMA for annual calibration, upgrades, warranty work, or repair. When returning the tester to PdMA, return **all components** with the tester (laptop computer, batteries, test leads, etc.). Ship all components in the shipping case.

Your warranty could be voided if you ship the tester improperly. To prevent damage to the tester follow the procedure below.

To return your tester to PdMA, perform the following steps:

1. Call PdMA Technical Support at (813) 621-6463 ext. 251 for instructions and to obtain a WO (RMA) before returning the tester to PdMA.

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2. Back up your data before returning the tester. PdMA is not responsible for missing or loss of your database. Refer to the section on copying and backing up the database in Chapter Three.

3. Park the shuttle.

   To park the shuttle, when exiting MCEGold answer **Yes** to the Exit message asking if you want to park the shuttle. This starts the internal procedure to switch the shuttle to the MCE position (parking the shuttle). When the process is complete, the Shuttle Parked window opens. Go to step 4.

4. Remove the tester battery from its slot and click **OK**. MCEGold will shut down. DO NOT ship the tester with the camcorder battery in the battery slot. Damage to the battery monitor board could result.

5. Return the tester and all its components in the **Lexan shipping case**. Include the following:

   - Completed Tester Report Sheet
   - Laptop computer with the tester, include both in the ABS plastic case
   - Test leads
   - Computer support equipment including power adaptor, batteries, disk drive, etc.
   - Camcorder batteries and battery charger

6. Tester must be properly packaged to prevent damage while in transit to PdMA's facility. Damage during shipment is the responsibility of the customer.

7. Ship the tester prepaid to PdMA at:

   PdMA Corporation
   Attn: Technical Support
   5907-A Hampton Oaks Parkway
   Tampa, FL 33610

Testers found not to be defective may be assessed a service charge.

If the tester is in need of repair and is either out of warranty or the repair is not covered by the warranty, you will be notified of the estimated cost prior to repair. A purchase order or credit card is required prior to repair.

Normal repair is performed within seven to ten working days after receipt of the tester. Rush charges are considered on an individual basis. Customer authorization for cost of rush repair must be received in advance.

WARRANTY

Warranties are not transferable. The warranty claim will only be honored when it is submitted by the original corporation taking title to the tester. Terms and conditions are subject to change without notice.

Hardware. PdMA Corporation warrants that its equipment shall be substantially free from defects in material, workmanship, and fabrication under normal use. This warranty shall be for a period of one (1) year after the date of delivery of the hardware to the customer. PdMA's entire liability and customer's exclusive remedy under this warranty

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will be (at PdMA's option) to attempt to correct or help the customer solve problems encountered in using the hardware as intended or help the customer to work around errors. PdMA will apply efforts which it feels are suitable to the problem(s) being encountered, including (but not limited to) replacement of the hardware with functionally equivalent hardware. PdMA does not warrant that the operation of the hardware (or any revisions, upgrades, or special changes PdMA chooses to make to support customer use) will be uninterrupted or error free. Battery life will be prorated.

Software. PdMA warrants that, for a period of one (1) year from the date of delivery of the software to the customer that the software will, under normal use, perform without significant errors that make it unusable. PdMA's entire liability and the customer's exclusive remedy under this warranty will be (at PdMA's option) to attempt to correct or help customer solve problems encountered in using the software as intended or help customer work around errors. PdMA will apply efforts which it feels are suitable to the problem(s) being encountered, including (but not limited to) replacement of the software with functionally equivalent software. PdMA does not warranty that the operation of the software (or any revisions, upgrades, or special changes PdMA chooses to make to support customer use) will be uninterrupted or error free.

Computer. The laptop computer is registered with the computer manufacturer. Computer warranties vary between manufacturers. If you have problems with the laptop computer, you may contact PdMA Technical Support for guidance. If the problem is with the computer itself, or if you have continued problems, contact the computer manufacturer directly.

Dell: (800) 388-1290

Replacement Parts. Any replacement parts are warranted for the remainder of the original warranty or ninety days (90), whichever is longer.

Data Analysis. There is no intended or implied warranty or guarantee. Data Analysis is an interpretive recommendation based upon information and experience that should be corroborated with other technologies and further testing.

Extended Warranty. Extended warranties must be purchased within the original warranty period. Coverage is the same as the original warranty with the exception of the following items which are not covered: current probes, notebook computer, computer upgrades, computer accessories, batteries, AIS, AIS accessories, and any optional equipment.

Maintenance Contracts. Maintenance contracts, with varying levels of coverage, can be purchased for warranty coverage after the original or extended warranty has expired. The following items are not covered: current probes, notebook computer, computer upgrades, computer accessories, batteries, AIS, AIS accessories, and any optional equipment.

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CHAPTER 2: HARDWARE

A tester has three major hardware components: Shipping Case, Tester, and Accessory Bag.

Tables at the end of this chapter list specifications for the shipping case, tester case, and MCE and EMAX version of the tester.

SHIPPING CASE

The shipping case shown in Figure 2-1, designed for storage and shipping of the tester and accessory bag, is made of Lexan and has aluminum runners. It has steel feet, handles, and latches. The hinged cover has two latches to ensure positive closure. One of the latches has a hasp to allow locking the case.

There are two side handles on the shipping case for ease of carrying. The shipping case is approximately 22.5" long by 18.5" wide by 18" high. It weighs approximately 35 pounds empty and 75 pounds with the tester and all accessories enclosed.

The interior of the shipping case has two compartments carved out of closed cell foam; one for the tester and one for the accessory bag.

When returning the tester to PdMA for upgrades, annual calibration, or repair, it is imperative that you ship the tester in the shipping case. Severe damage to the tester may occur during shipping if it is not protected in the shipping case. Prior to sending the tester to PdMA, follow the instructions at the end of Chapter One, in the section titled “Returning the Tester to PdMA.”

Specifications for the shipping case are found in Table 2-3, on page 2-16.



Figure 2-1: Shipping Case

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TESTER

Case

The tester is enclosed in a waterproof, injection molded, black ABS plastic case. See Figure 2-2. The plastic hinge and stainless steel latch pins will not dent or corrode. The large ergonomically designed handle is cushioned. The case can withstand temperatures from -15° to 149° F (-25° to 65° C).

For security purposes, the case is lockable, by placing a lock (not provided) in the area provided beside the latch.

The case is 18.5x14.5x6 inches (46.99x36.83x15.24 cm). It weighs approximately 19 pounds (8.62 kg) empty and 26 pounds (11.79 kg) with the laptop computer installed. Specifications for the tester case are found in Table 2-4, on page 2-17.



Figure 2-2: Tester Case

The top cover of the case does not remove. Inside the top cover are two clips designed to hold the USB cable. To avoid damage to the cable, it must be removed from the laptop computer and placed in the clips provided before removing the laptop computer.

The laptop computer rests on the tester deck as shown in Figure 2-3. The deck contains a battery compartment, battery indicator, laptop computer hold down and connections for the computer, current probe cable, voltage probe, and MCE.

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Figure 2-3: Tester Case with Laptop Computer

Figures 2-4 and 2-5, show an MCEMAX™ tester. The various tester components are numbered and described following the figures. MCE Specifications are found on page 2-14 and MCE Electrical Specifications are found in Table 2-1 on page 2-15. EMAX Specifications are found on page 2-15 and EMAX Electrical Specifications are found in Table 2-2 on page 2-16.

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Figure 2-4: Tester Case Components



Figure 2-5: Tester Case Components

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Components

1. Serial Number Tag – A Serial Number Tag is assigned to every unit. PdMA Corporation uses this number to identify the unit for repairs, updates, etc.

2. Identification Label – This label provides information such as model number, equipment-input rating, warning/safety advice, and PdMA's contact information.

3. Connection Identification Label – This label identifies the location of each test lead connection used with the system and includes the Battery Level Indicator.

4. Liner/deck – The liner/deck covers the printed circuit boards in the lower portion of the case and provides a platform for the connections, labels, switches, and clamp used to securely affix the laptop in the tester.

5. Computer – A laptop computer is used to run the software interface and communicates via a USB cable with the printed circuit boards located inside the unit.

6. Battery Compartment – The battery compartment is the designated location for the battery that supplies DC power to the unit.

7. Battery Compartment Latch - Use the latch to open the battery compartment by sliding the latch until the battery compartment lid pops up, then manually lift the lid to eject the battery.

8. USB Cable - The USB cable enables communication between the laptop computer software and the internal printed circuit boards of the system located below the liner. The cable connects to the laptop and plugs in to the top of the liner to the left of the Lock (# 19) and behind the laptop (unseen in picture). It must be disconnected and attached to the holding clips in the lid prior to the removal of the laptop computer.

9. Holding Clip - The holding clip holds the USB cable flat against the liner in the correct position to avoid damage.

10. Battery Level Indicator – This indicates the remaining life of the battery. How quickly the battery life is used depends on the beginning charge level and the type and number of tests being performed. During start-up the battery level is checked and the appropriate lights are lit. The battery life is indicated by two green, two yellow, two red, and two flashing red lights. When fully charged the two lights will be green, as the battery discharges the lights turn to: Green-yellow, yellow-yellow, yellow-red, red-red, and then blinking red. It is recommended that when the indicator reaches the red area, finalize any on-going test, close the software, turn off the tester, and recharge or replace the battery with a fully charged battery.

11. Current Probe Cable Connector – This connector is used for capturing AC or DC current signals during an online test. The area at the base of the connector displays dim yellow light. During the time current readings are being collected the light is bright. It returns to dim when the readings are finished.

    Note: When the tester is turned on for EMAX testing the MCE logo along with associated warning triangles, connector rings, and dots are turned off and the EMAX logo along with the associated warning triangles, and the voltage and current dots are lit.

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12. Voltage Probe Connector – This connector is used for capturing AC or DC voltage signals during an online test. The area at the base of the connector displays a dim blue light. During the time voltage reading are being collected the light is bright. It returns to dim when the readings are finished.

    Note: When the tester is turned on for EMAX testing the MCE logo along with associated warning triangles, connector rings and dots are turned off and the EMAX logo along with the associated warning triangles, and the voltage and current dots are lit.

13. MCE Test Lead Connector – This connector is used for offline motor circuit analysis. The area at the base of the connector displays orange and red light rings in various configurations during operation indicating what is happening with the tester. During standard testing the orange light is steady and bright. During PI, Step Voltage, and RTG the red ring light comes on dim and brightens and flashes while the high voltage supply is on. During discharge the orange ring is dim and the red ring flashes.

    Note: When the tester is turned on for MCE testing the MCE logo is lit along with associated warning triangles, connector rings and dots. The EMAX logo along with the associated warning triangles, and the voltage and current dots are turned off.



NOTE: *DO NOT input AC or DC voltage through the MCE connector. Follow the correct procedure to ensure that there is no voltage present in the circuit to be analyzed.*

14. Case – The case is made of a high impact grade ABS plastic, designed to protect against jarring, vibration, and crushing.

15. Silicone Seal – A silicone O-ring is installed on the lid and seals out water, salt air, and some gases, when the unit is closed.

16. Closing Latch – There are two latches which are used to hold the lid in a closed position when carrying or storing the unit.

17. Locking Port – For security purposes, a lock (not provided) can be placed through the hole in the locking port during travel or storage of the unit.

18. Handle – The tester case carrying handle.

19. Hold Down Lock – The Hold Down Lock is used to secure the clamp holding the laptop once the laptop is in place.

20. Eject Switch – The Eject Switch is used to release the laptop from the laptop computer hold down.

Tester Battery

The supplied battery pack is an Inspired Energy Rechargeable Smart Lithium Ion Battery, 14.4 Volt, 6.6 Amp-Hour. Do not use the battery below -4° F (-20° C) or above 140° F (60° C). A thermal protective safety device in the battery protects it from over temperature if the internal battery temperature reaches 199.4° F (93° C).

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The battery is shipped in a partially charged state that will provide a minimum of six months of shelf life when stored at 77° F (25°C). If the storage temperature exceeds 77° F (25°C) over the 6-month period then the shelf life will be reduced and provisions should be made to recharge the battery periodically. Battery life will be reduced by repeated operation or storage at extreme temperatures.

The battery must be fully charged before use. Refer to the instruction manual that came with the supplied charger for charging instructions.

When charging the battery for the first time or after a prolonged storage time, it is normal for the charger to indicate that charging has been completed after 10 to 15 minutes. Remove the battery from the charger and repeat the charging procedure. It is not necessary to fully discharge the battery between charges, nor is it necessary to periodically recondition the battery. The battery charge may be topped off at anytime without adverse affects to the battery.

A fully charged battery lasts approximately four hours under constant testing. Batteries may last a full eight hours or longer, depending on the types of tests performed. The amount of time remaining on the battery depends on the status of the charge at the beginning of testing, the type of testing that is being performed, and the age and condition of the battery.

The battery charge level is indicated by an LED display, located on the Connection Identification Label below the battery compartment. As the battery discharges, the LED indication changes from green (fully charged) to red (fully discharged).

PdMA recommends that you shut down the tester before the battery is completely discharged, recharge the battery, and resume testing. Alternatively you may shut down the tester before the battery is completely discharged, replace it with a spare, fully charged battery and resume testing.



When the battery needs to be charged, remove it from the tester and place it in the supplied charging unit. DO NOT REMOVE THE BATTERY FROM THE TESTER WHILE A TEST IS IN PROGRESS. A green flashing light on the charger indicates the battery is charging and a red solid light indicates there is an error. The battery is fully charged when the green solid light on the charger displays.

If the battery is not significantly discharged and you will not be using it for the next two to three days, it is recommended that you store the battery as is and recharge it before use. If you will be storing it for longer than two weeks, it is recommended the battery be fully charged before storage and after that every six months while it is in storage. Do not store the battery in the tester battery compartment or the charger.

Install/Remove

To install the battery open the Battery Compartment by sliding the Battery Compartment Latch sidewise to the right until the Battery Compartment lid pops up. Lift the lid up using your hand until there is room to insert the battery.

To remove the battery, open the Battery Compartment by sliding the Battery Compartment Latch sidewise to the right until the Battery Compartment lid pops up. Lift the lid up using your hand, the battery will partially eject, grasp the battery with your hand and remove it.

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Laptop Computer

WARNING: This laptop computer has been specially configured to operate your new MCEGold tester. Any changes made to the laptop settings including BIOS, config.sys, Autoexec.bat, Power Management, etc., may render the tester inoperable.

Installing software which uses the USB port could also adversely affect the operation of the tester.

Please contact our Technical Support at (813)621-6463 ext. 251 or techsupport@pdma.com if you have any questions.

General

The exact model of laptop computer your tester has depends on when your tester was built. Refer to the computer manufacturer's literature, supplied with the tester, for specific information on operation and maintenance of the laptop computer, installation of software, charging and maintenance of the battery, etc.

The MCEGold software is pre-installed on the laptop and a backup software disc is supplied.

To install and operate/run MCEGold, you must have the following minimum requirements (subject to change):

Computer	Dell Latitude E6430 Laptop*
Processor	2+ GHz Intel i5 or equivalent
Resolution	1600 x 900
Operating System	Microsoft Windows 7 SP1 32 or 64 bit**
Memory	2.0+ G RAM
Ports/Drive	M Series tester (1) USB Port
Drives	24x CD-RW + DVD Drive
Hard Disk	20G Available

* Using any other computer manufacturer in conjunction with the PdMA software may result in erratic computer behavior; including but not limited to:
- Power Management Issues
- Lock-up
- Communication Port Malfunction
- Drive Incompatibility
- Display Errors
- SQL Database Incompatibility
- Network Synchronization Issues

**For International Customers: Windows 7 Ultimate 32 or 64 bit

Laptop Battery

The primary computer battery is a six cell for higher amp/hour capacity. Supplied laptop batteries may change after this Product Support Manual is written, therefore you should check the manufacturer's literature for battery information and how to change the battery.

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The battery automatically charges when the computer is plugged into an AC power source. DO NOT change batteries while the computer is on. To preserve battery life, when not using the tester for an extended period of time, exit MCEGold and shutdown the computer using the Windows shutdown feature.

Computer Ports

The USB port on the back of the laptop is used to connect the laptop to a printer or a desktop PC.

The USB port on the side of the laptop computer is used to connect the computer to the tester. When the laptop lid is closed there is a label indicating the USB port. See page 2-4, Figure 2-5, number 21 for the location.

Tester Care and Handling

Refer to the computer manufacturer's literature, supplied with the tester, for specific information on operation, specifications, and maintenance of the laptop computer.

Tester Batteries – charge immediately after use only if you will be using the tester in the next two to three days; do not completely discharge; do not drop; do not incinerate; do not short positive and negative terminals together; do not use in any other equipment; store out of direct sunlight and away from extreme heat. See page 2-6 for more information.

Tester Battery Charger – handle with care; follow instructions in the manual that came with the charger.

Case – Preventive maintenance consists of cleaning the unit with a mild detergent and water, and visual inspection of the unit, test leads, and attachments.

When cleaning the unit and/or deck, avoid spraying or pouring detergent or water directly on the unit and/or test leads. It is recommended that you spray a reasonable amount of mild detergent on a soft cloth and wipe the unit with the cloth. Then remove any detergent residue with a clean soft damp cloth.

There are no user serviceable parts inside the unit. However, when inspecting the unit, test leads, or attachments, search for broken parts, cracked wire insulation, and/or exposed wires. DO NOT use damaged equipment. If defects are found, contact PdMA immediately to arrange for repairs or replacement of the defective part. See Chapter One, Returning the Tester to PdMA, for information regarding contacting PdMA.

Tester Environmental Conditions

- Designed for indoor use
- Operating temperatures: 32° F to 95° F (0° C to 35° C)
- Storage temperatures: -40° F to 149° F (-40° C to 65° C)
- Operating humidity: 10% - 90% non-condensing
- Storage humidity: 5% - 95% non-condensing

Storage

- Store the laptop computer in the ABS plastic case
- Store the tester in the shipping case

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Shipping

When returning the tester to PdMA for annual calibration, upgrades, or repair, follow the procedure at the end of Chapter One, Returning the Tester to PdMA.

Accessory Bag

Accessories

The tester accessory bag, shown in Figure 2-6, is designed to carry the supporting accessories needed for motor testing that is not part of the tester itself. The gray nylon bag has black trim and handles with a detachable shoulder strap.

On the outside of the bag are pockets for paperwork storage. On the front there is one large pocket with a flap secured with Velcro. The flap is embossed with the PdMA Corporation logo. On the front of the pocket is a clear plastic pouch which can be used for identification. The back has a pocket without the flap.

The interior of the bag is divided into two sections secured with zippers. The front section contains two large pockets with Velcro flaps, one on the front and the other against the dividing wall between the front and back sections. The back section contains four pockets, of equal size, with Velcro flaps. Two of the pockets are against the dividing wall and two pockets are against the back side.



Figure 2-6: Accessory Bag

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The exact accessories you have depends on your tester model. This is determined by when your tester is built and which options you purchased. A newer, fully loaded tester includes the following accessories. Your tester may not have all of these accessories.

- MCE test leads
- DC commutator bar-to-bar test leads
- EMAX test leads
- Laptop computer AC to DC converter and power cord
- One tester battery and battery charger
- Spare laptop battery

MCE Test Leads

The MCE test lead cable connects to the MCE connector on the right side of the tester deck. The cable has four leads, which connect to the three phases of an AC motor (black, blue, red) and circuit ground (green). When testing DC motors, only the black, blue, and green leads are used. MCE test leads are shown in Figure 2-7.

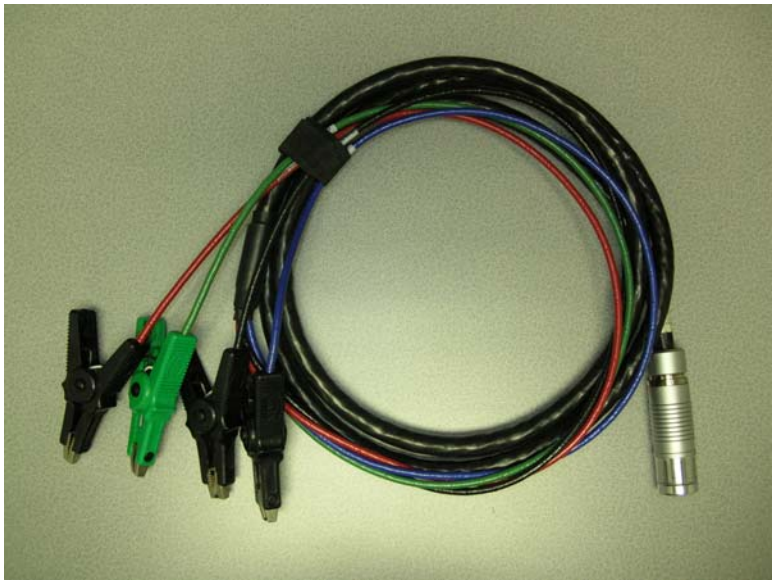


Figure 2-7: MCE Test Leads

DC Commutator Bar-to-Bar Test Leads

The DC commutator bar-to-bar test lead cables connect to the MCE connector on the right side of the tester deck. Bar-to-bar test leads are available in either pistol grip or pencil probe styles. Either style provides for resistance measurement in a 4-wire configuration to allow for maximum accuracy.

DC bar-to-bar pistol grip test leads are shown on the right and pencil probe test leads are shown on the left in Figure 2-8.

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Figure 2-8: Bar-to-Bar Test Leads

EMAX Test Leads

EMAX Voltage test leads contain fuses and are color coded black (phase 1), blue (phase 2), red (phase 3), and green (common). They connect to the Voltage connector on the right side of the tester deck. Figure 2-9 shows an EMAX Voltage test lead.



Figure 2-9: EMAX Voltage Test Leads

EMAX Current test leads consist of three individual current probes and are connected through a 3 BNC to a Fischer adaptor cable. The BNC side of the adaptor is color coded black for Phase 1, blue for Phase 2, and red for Phase 3. The Fischer side of the adaptor cable connects in the space provided on the right side of the tester deck.

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When connecting the three clamp-on current probes to each phase of the three phase motor, ensure that the arrows on the current probes point in the direction of the motor or generator being tested.

NOTE: Current probes are sensitive to current flow direction. Follow the arrow prompt located on the probe.

Figure 2-10 shows EMAX Current probes.



Figure 2-10: EMAX Current Test Leads

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Specifications

MCE

MCE performs tests in accordance with the following specifications:

Ground Resistance Test Voltages:

250-5000 V in 50 V steps
250-1000 V in 50 V steps
Range (Accuracy):
20 K Ω to 100 M Ω @250-500v (±2%)
100 M Ω to 1 G Ω @250-5000v (±2.5%)
1 G Ω to 220 G Ω @250-5000v (±5%)
220 G Ω to 1000 G Ω @1kV-5kV (±5%)
1 T Ω to 3 T Ω @1kV-5kv (±20%)
Short circuit current: 2 mA
Charge current: 1 mA

Capacitance Measurement:

Range (Accuracy):
1000 to 220,000 pF @1200 Hz (±5%)
220,000 to 1,000,000 pF @300 Hz (±5%)
Resolution:
250 pF

Inductance Measurement:

Range (Accuracy@1200 Hz):
.05mH to 250mH (±1%)
Range (Resolution):
.05mH to <50mH (.01mH)
50mH to <100mH (.05mH)
100mH to 250mH (.1mH)

Range (Accuracy @300 HZ):
220mH to <700mH (±1%)
700mH to 2000mH (±2%)
>2000mH to 5000mH (±5%)
Resolution:
.1mH to 25mH

Resistance Measurement:

Range (Accuracy):
100 µ Ω to 2000 Ω (±1%)
Range/Resolution:
.00010 Ω .02000 Ω (.00001 Ω)
.0200 Ω to 2.000 Ω (.0001 Ω)
2.00 Ω to 50.0 Ω (.001 Ω
50.00 Ω to 1000.00 Ω (.01 Ω)
1000.0 Ω to 2000.0 Ω (.1 Ω)

Test Lead Set:

10 ft. (3.05 m.)

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Table 2-1: MCE Electrical Specifications

Item	Description
Battery Rating	14.4 VDC 6.6 Amp-Hour
Battery Type	Li-ion
MCE Connector Max Outputs	Polarization Index 5000 VDC @≤2mA
	Resistance-to-Ground 5000 VDC @≤1mA
	Resistance Phase-to-Phase ≤6 VDC @1A
	Inductance/Capacitance 10 VAC @300Hz or 1200Hz

EMAX

Voltage Measurement:

AC Voltage 0-1000 VAC
Direct line ±1% (10 to 100% of range)
Secondary line ±1% + PT error (10 to 100% of range)
MTAP Leads 0-35 VAC ±1% +PT error (10 to 100% of range)

DC Voltage 0-1000 Vpeak (Qualitative only)

Current Measurement AC/DC:

±0.5% of input (± accuracy of the probes)

Standard Current Probe Set:

PdMA 2128.14
±1%(of reading) ±0.1mV from 1 to 12A @100mV/A
±1%(of reading) ±2mV from 10 to 80A @10mV/A
±2.5%(of reading) ±2mV from 100 to 150A @10mV/A

Power Measurement:

THD/HVF/ Spectrum – 50th harmonic

Current Spectrum Analysis:

8,000 lines resolution

In-Rush/Start-Up Test:

Sampling rate 3,600/second
Test duration 1 minute

Rotor Evaluation Test:

Sampling rate 960/second
Fmax 0-480 Hz
Resolution 8,000 lines

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Eccentricity and Power Test:

Sampling rate 12,288/second
Fmax 0-6,000 Hz
Resolution 8,000 lines

Test Lead Set:

10 ft. (3.05 m.) fused voltage leads for 3 phases and ground.
10 ft. (3.05 m) current probe cable connects 3 probes via BNC connector
Voltage probe accessory kit
Three 6 ft. (1.83 m.) current probes for three phases

Table 2-2: EMAX Electrical Specifications

Item	Description
Battery Rating	14.4 VDC 6.6 Amp-Hour
Battery Type	Li-Ion
Current Connector Max Input	3V RMS
Voltage Connector Max	1000 VAC
Voltage Probe Fuse Type	F/0.5A/1000V/6x44mm
Current Probe	Refer to the probe manufacturers documentation included with the EMAX unit.

Hardware

Shipping Case

Table 2-3: Shipping Case Specifications

Item	Description
Color	Gray
Material	Lexan and Aluminum
Outside Dimension (LxWxD)	22.5x18.5x18 inches 57.15x46.99x45.72 centimeters
Inside Dimension (LxWxD)	18.5x5.5x12.5/19x8.75x12.5 inches
Inside Front pocket	46.99x13.97x31.75/ centimeters
Inside Back pocket	48.26x22.225x31.75 centimeters
Weight - empty/full	35/75 pounds 15.826/34.02 kilogram

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Tester Case

Table 2-4: Tester Case Specifications

Item	Description
Color	Black
Material	ABS Resin
Outside Dimension (LxWxD)	18.5x14.5x6 inches 46.99x36.83x15.24 centimeters
Inside Dimension (LxWxD)	18x13x5 inches 45.72x33.02x12.7 centimeters
Computer Area Dimension (LxWxD)	11x14x2 inches 27.94x35.56x5.08 centimeters
Weight, without computer	19 pounds 8.62 kilograms
Weight, with computer	26 pounds 11.79 kilograms

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CHAPTER 3: MCEGOLD

INTRODUCTION

MCEGold® is the software that controls the motor tester. This chapter covers the operation of MCEGold Version 3.0 and the MCEMAX® tester. MCEMAX powered by MCEGold has several versions, therefore, your tester may not have some of the functions described in this chapter. If you are using MCEGold Lite it is described in detail on page 3-78.

NOTE: In this manual the full version of MCEGold is referred to as MCEGold. MCEGold Lite, which is a simplified interface designed principally to collect data, is referred to as Lite. See page 3-78 for detailed information about Lite.

The software uses standard Window conventions. For example, there is a menu bar, a toolbar with icons, the red button with an X in the upper right corner closes the window or exits the program, etc. It is possible to have multiple windows open at the same time.

STARTING MCEGOLD

The program executable is located at:
C:\PdMA Corporation\MCEGold\UI\MCEGold.exe.

1. To start MCEGold, Select Start from the task bar, then All Programs, PdMA Corporation, MCEGold or click on the desktop icon  .

2. At the Login shown in Figure 3-1, select the Site and the Testing Mode if applicable, Verify the display mode as MCEGold and click **OK**. Selecting a Site will be necessary if the database has been detached during a previous session or you want to change databases.

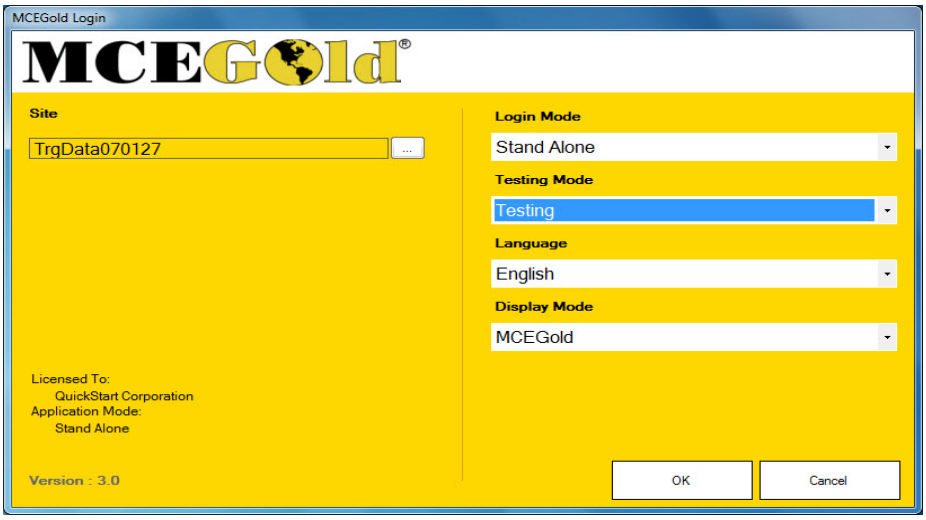


Figure 3-1: Login

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MCEGOLD HOME WINDOW

The Home window shown in Figure 3-2 opens displaying the Site Navigator, Site Condition, WatchList, and Message Center windows. The Home window uses standard Window conventions and multiple windows may be open at the same time.

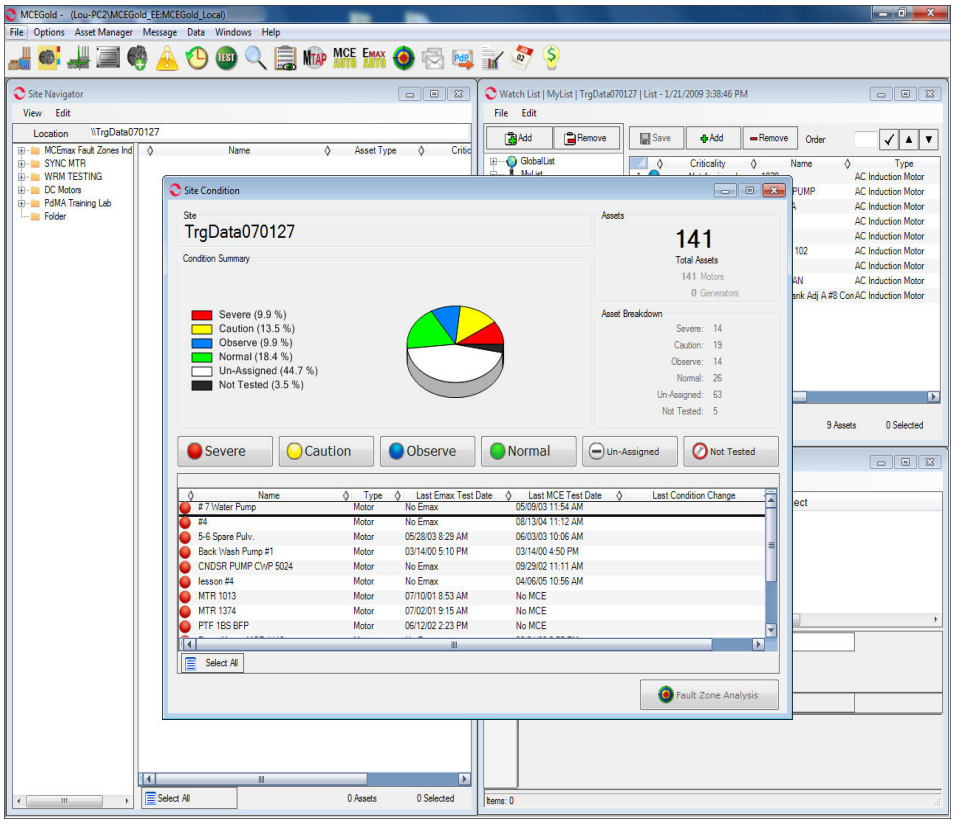


Figure 3-2: Home Screen

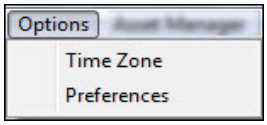
Title Bar

The title bar is the horizontal blue line across the top of the window. It displays the PdMA logo, the name of the program, and the testing mode.

Menu

The menu area is directly below the Title Bar. If you are using MCEGold Lite it is discussed on page 3-78.

File - Close, closes MCEGold.



Options - Time Zone, changes the default System Time Zone and the default Date/Time to user defined values.

To change the Time Zone:

1. Select Options, Time Zone.

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2. Select the Time Zone tab in the Regional Settings window shown in Figure 3 - 3.

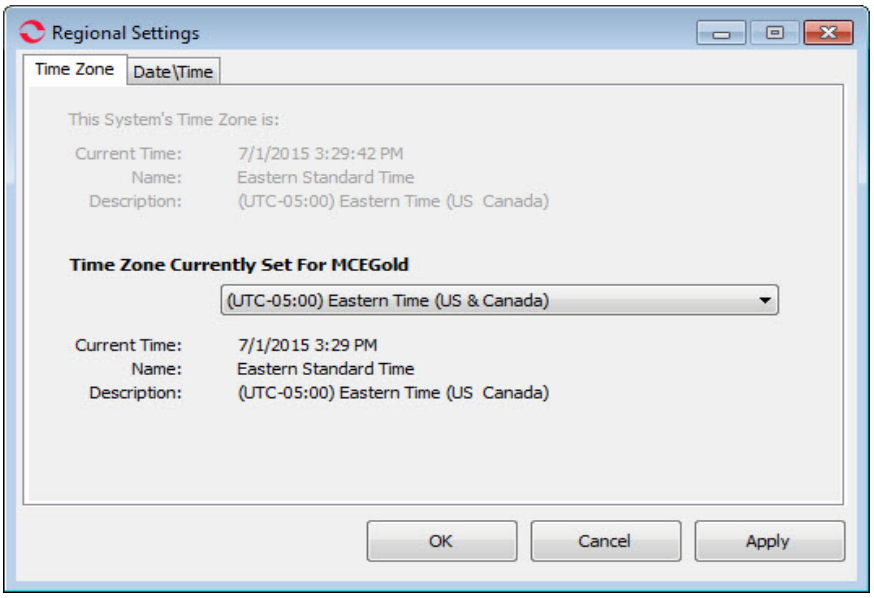
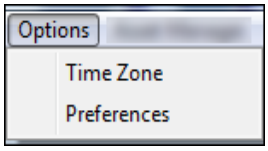


Figure 3-3: Regional Settings

3. Choose the desired time zone from the drop-down list. To access the drop-down list, click on the down arrow to the right of the box.

4. Click **Apply** to apply the change and leave the Regional Settings window open or click **OK** to apply the change and close the Regional Settings window.



To change the Date and Time format:

1. Select Options, Time Zone.

2. Select the Date/Time tab in the Regional Settings window shown in Figure 3-4.

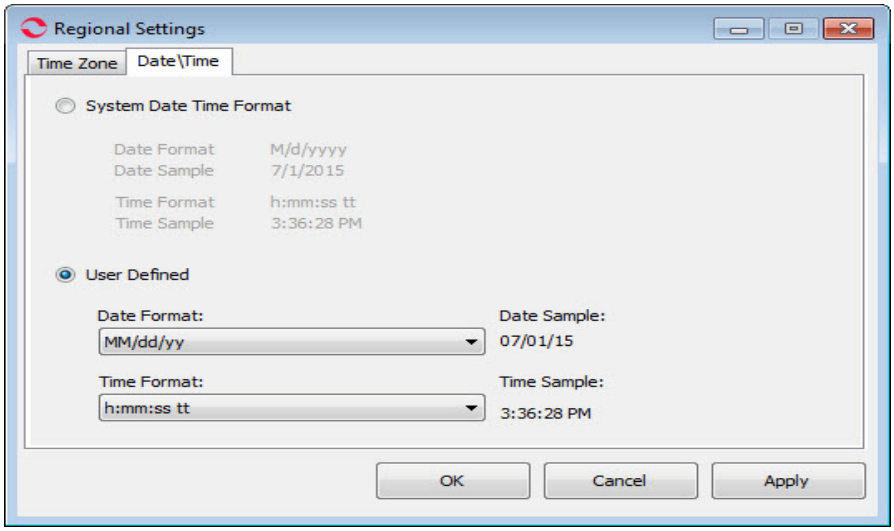


Figure 3-4: Regional Settings Window

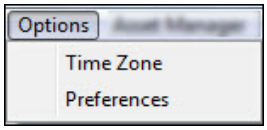
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3. Select the User Defined option button, which is the default.

4. Choose the desired date format from the Date Format drop-down list. To access the drop-down list, click on the down arrow on the right of the box.

5. Choose the desired time format from the Time Format drop-down list. To access the drop-down list, click on the down arrow on the right of the box.

6. Click **Apply** to apply the change and leave the Regional Settings window open or click **OK** to apply the change and close the Regional Settings window.



Options - Preferences opens the Asset Management Preferences window shown in Figure 3-5. This window allows you to set a search limit (Search Results tab), change the default save location and control detaching the stand alone database when closing MCEGold (General tab). If you have a Workstation license and the computer is set up as a workstation, the default site, search by options, and on-screen keyboard functions can be selected using the Workstation Settings tab.

Search Results tab allows you to set a limit on how many results are returned when using the search function. Placing a check in the Limit Search Results check box activates the drop down list. Select from 10, 25, 50, 100, or 200. After making your selection click **Save** or if you do not wish to make a change click **Close** to close the window.

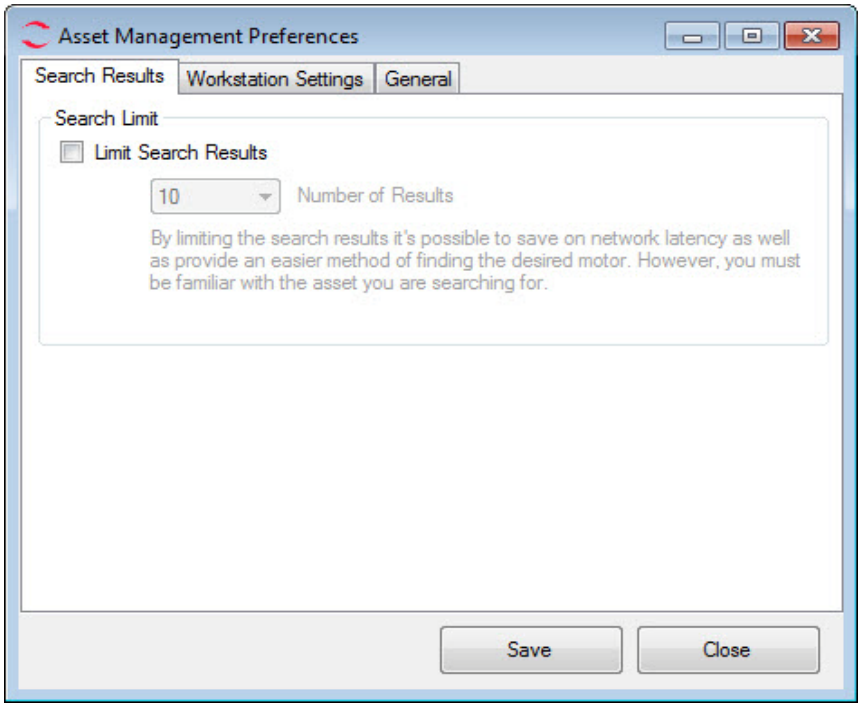


Figure 3-5: Asset Management Preferences Window

Workstation Settings tab (not available for all users) shown in Figure 3 - 6, controls how the workstation conducts a search. Select the default site from the drop-down menu. Use the radio buttons to define which search options, Asset Name, User Asset ID, or Both you wish to use. If you want an exact match to the search criteria then check the appropriate check box, if not leave it unchecked. If you want to have an on screen keyboard available

check the appropriate check box, if not leave it unchecked. After making your selection/s click **Save** or if you do not wish to make a change click **Close** to close the window.

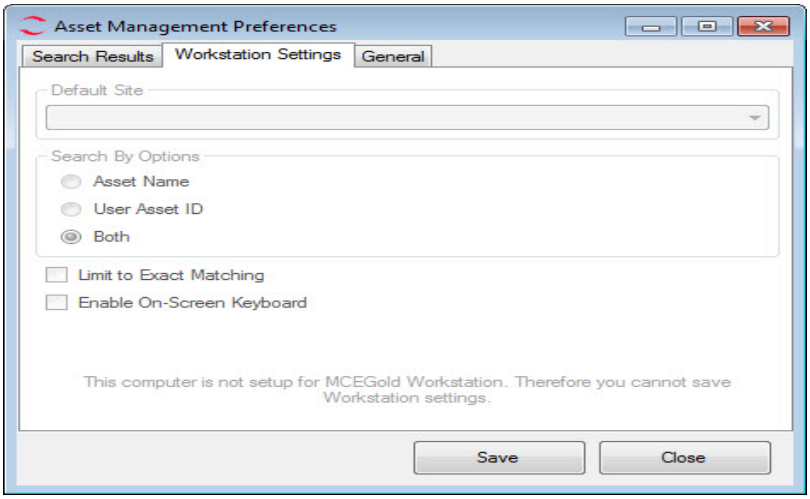


Figure 3-6: Asset Management Preferences - Workstation Settings

The *General tab* shown in Figure 3 - 7 controls the disposition of the database when MCEGold is closing. The Default Save Location is the location the database is currently saved in. You may change the location by using the browse button to select a new location. NOTE: You must remember the location, so that you will know where to look for the database in the future. This is especially true if you are going to detach the database.

To select an option for handling the database when MCEGold closes, click the radio button in front of the option you wish to select. The default option is "Prompt to detach the database." This causes a detach database message to appear when you are closing MCEGold. "Always detach the local database when closing MCEGold" will automatically detach the database without a notification. "Never detach the local database when closing MCEGold" does not detach the database or give you the option on closing to detach it. After making your selection/s click **Save** or if you do not wish to make a change click **Close** to close the window.

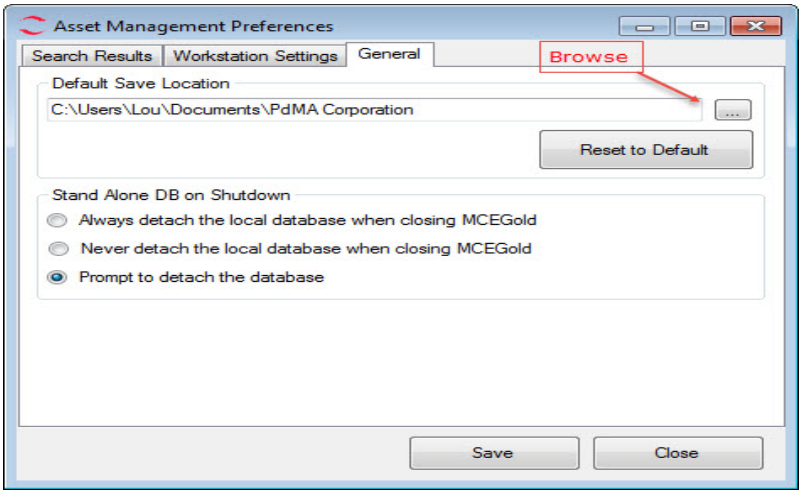
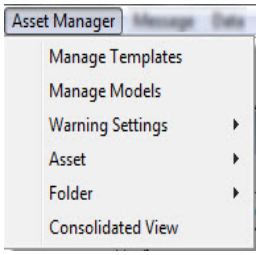


Figure 3-7: Asset Management Preferences - General

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Asset Manger - Use Asset Manager to setup the assets (motors) and folders that are displayed in Site Navigator. Under the Asset Manager the functions are Manage Templates, Manage Models (active only with certain licenses), Warning Settings, Asset, Folder, and Consolidated View. Some of the functions may not appear until a folder or asset is selected.

Manage Templates allows you to develop templates for kinds types of assets. By assigning a unique template to an asset, the test results, alarm, and caution values are more meaningful. To open the Manage User Templates window shown in Figure 3-8 select Asset Manger, Manage Templates from the menu.

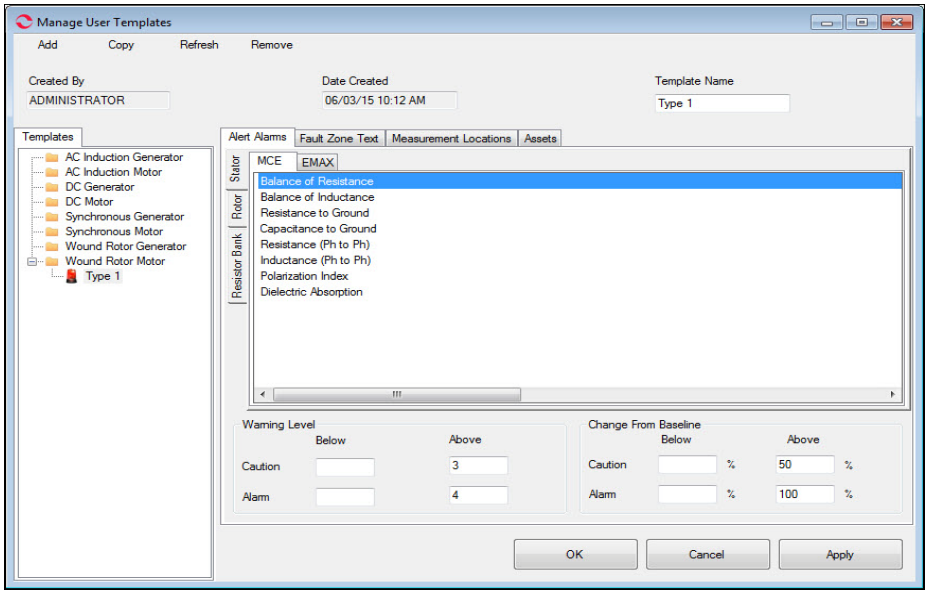


Figure 3-8: Manage User Templates

The Manage User Templates window consists of menu items (Add, Copy, Refresh, and Remove) across the top, a list of templates by asset type on the left side, and the right side is devoted to Alert Alarms, Fault Zone Text, Measurement Locations, and Assets tabs. The options below these tabs changes depending on the tab chosen.

To *Add* a new template:

1. Click **Add** in the Manage User Templates window. Add is located at the top of the window under the window name.

2. Select the asset type from the drop-down list in the Add Template window shown in Figure 3-9. To access the drop-down list, click on the down arrow on the right of the box.

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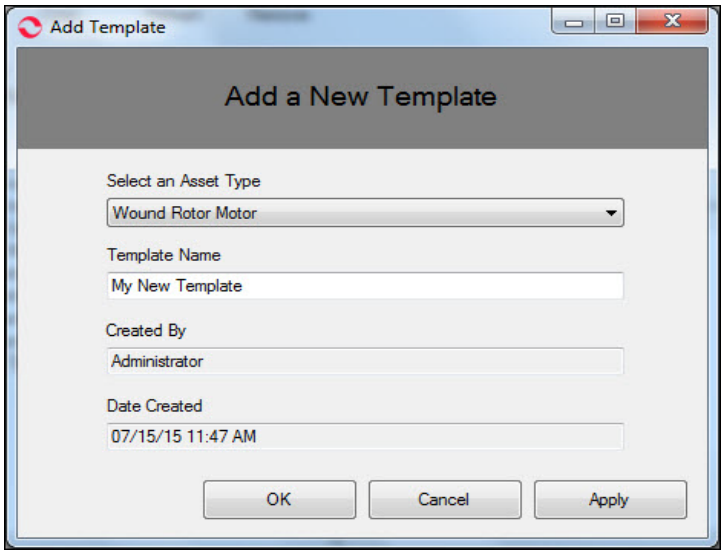


Figure 3-9: Add Template

3. Type the template name in the Template Name textbox. Created By and Date Created are automatically filled in by the software.

4. Click **Apply** to add the template and leave the window open or click **OK** to add the template and close the window. The template is added in the templates folder for the asset type chosen. To exit without creating a new template, click **Cancel**.

To *Copy* an existing template:

1. Highlight the template you wish to copy in the Templates section.

1. Click **Copy**. Copy is located at the top of the window under the window name.

2. Enter the new template name in the Template Name text box of the Copy Template window shown in Figure 3-10. Created By and Date Created are automatically added by the software.

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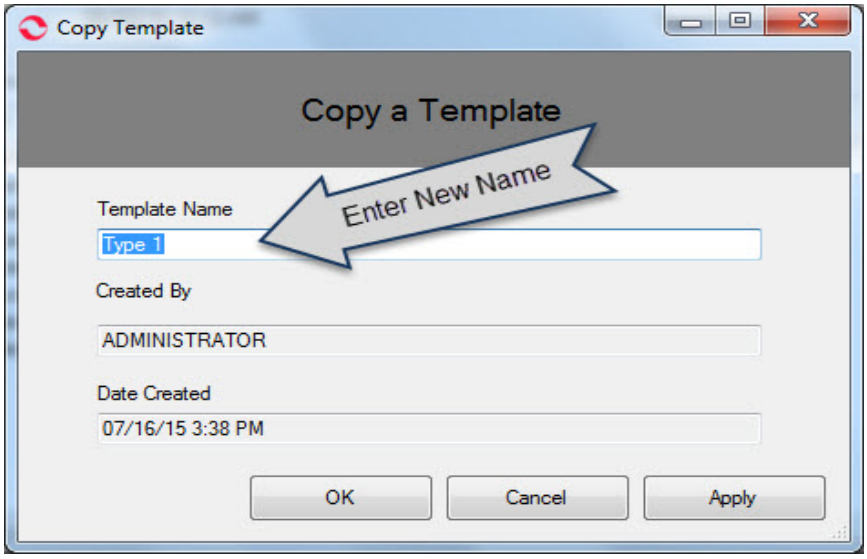


Figure 3-10: Copy Template Window

3. Click **Apply** to add the new template and leave the Copy Template window open or Click **OK** to add the new template and close the window. The new template is added to the same folder as the original template. To exit without creating a new template, click **Cancel**.

To *Refresh* the window*:*

1. Click **Refresh** to update the window after changes have been made. Refresh is located at the top of the window under the window name.

To *Remove* a template:

1. Highlight the desired template name in the Templates list.

1. Click **Remove**. Remove is located at the top of the window under the window name.

2. You will be asked to verify that you want to remove the template, click **Yes**.

3. Click **OK**, when informed the template is removed.

To *change the template name:*

1. Highlight the desired template name in the Templates list.

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2. Type the new name in the Template Name text box located in the upper right side of the Manage User Templates window shown in Figure 3-11.

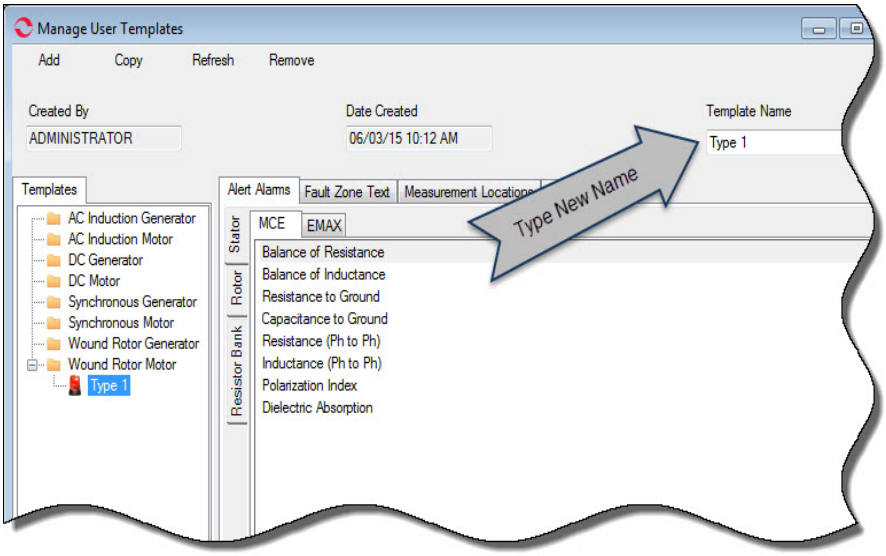


Figure 3-11: Manage User Templates

3. Click **Apply** in the lower right corner of the window to save the change and keep the Manage User Templates window open or click **OK** to save the change and close the Manage User Templates window. To exit without changing the name, click **Cancel**.

To *change the alert alarms* on a template:

1. Select the template name in the Templates section of the Manage User Templates window.

2. Select the Alert Alarms tab and either the MCE or EMAX tab. The tab you select drives the alert alarm values displayed in the window shown in Figure 3-12.

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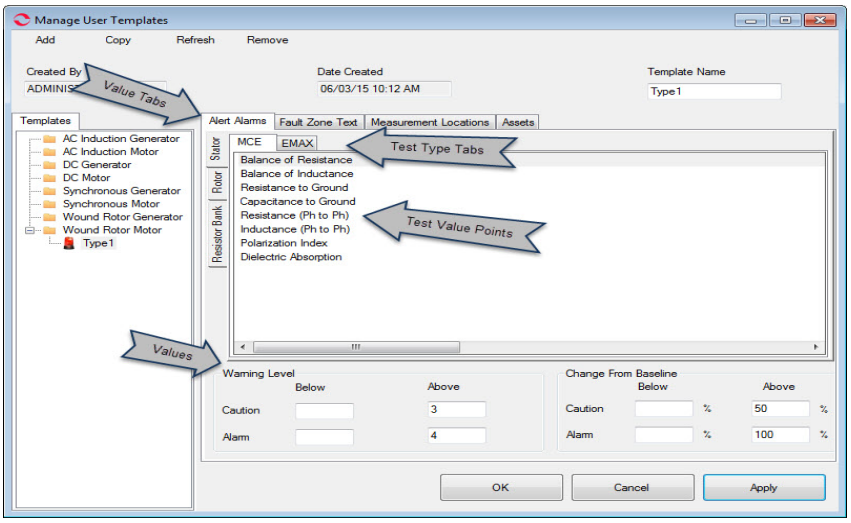


Figure 3-12: Manage User Templates Window

3. Highlight the desired test from the list in the Alert Alarms section.

4. Change the Warning Level and Change from Baseline values in the alert alarm sections located at the bottom of the window.

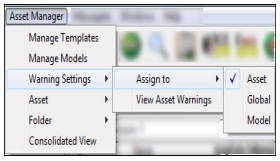
5. Click **Apply** to save the changed the values and leave the window open or click **OK** to save the changed the values and close the window. To exit without changing the values, click **Cancel**.

The *Fault Zone Text* tab causes the display to list the six fault zones and a description of the selected fault zone. Highlight the desired fault zone to read a description of that fault zone and the recommended actions for assets in caution or severe condition.

The *Measurement Locations* tab displays the measurements appropriate for the selected asset template highlighted in the Templates section. To read a description, select a measurement from the list. The description appears in the Measurement Location Description section.

The *Assets* tab displays a list of the assets that have been assigned the template that is highlighted in the Templates section.

Manage Models - Manage Models is active for a few limited versions. Instructions are provided individually to users with the active Manage Models function.



Warning Settings

Assign to: Asset - Highlight an asset on the Site Navigator. Select Asset Manager from the menu, then Warning Setting, Assign to, Asset. The asset values are returned to the caution and alarm default settings. The asset values shown are assigned to the selected asset.

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Assign to: Global - Highlight an asset on the Site Navigator. Select Asset Manager from the menu, then Warning Setting, Assign to, Global. The Assign Template Warning Settings window shown in Figure 3-13 opens. The templates listed in the Select a Template drop down list reflect the asset type of the highlighted asset. Select a template and click **Assign**. The template and its values are assigned to that asset and the window remains open. Click **OK** the template and its values are assigned to that asset the window closes. To close the window without assigning a template click **Cancel**.

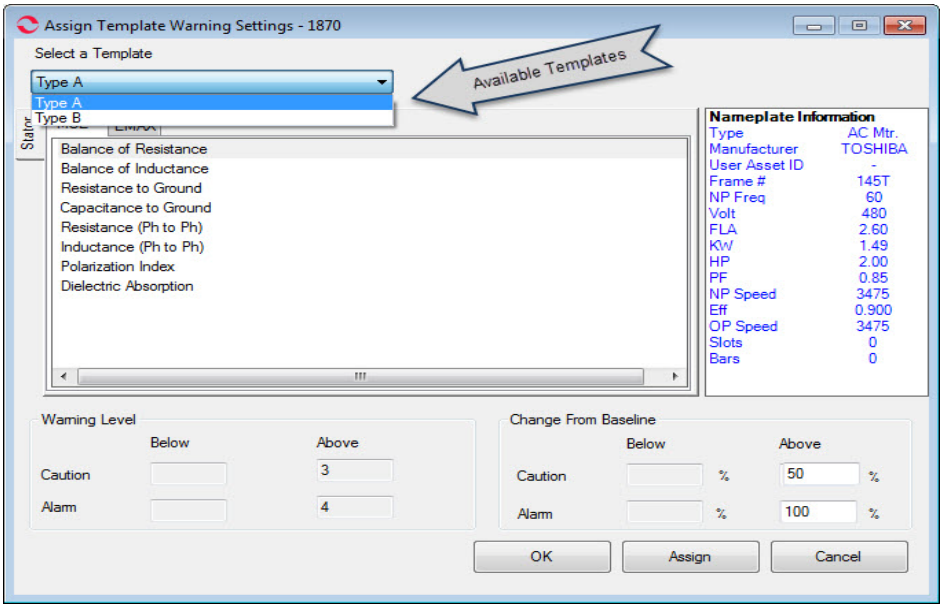
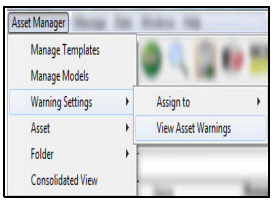


Figure 3-13: Assign Template Warning Settings Window



View Asset Warnings - Changes made to the warning settings here apply only to the selected asset. Highlight an asset on the Site Navigator. Select Asset Manager from the menu, then Warning Settings, View Asset Warnings. This opens the Warning Settings window shown in Figure 3 - 14, for the selected asset. To reset the values to the default values click **Reset To Default**. To adjust other values, make the desired changes in the text boxes making sure you adjust the values for both the MCE and EMAX tabs if appropriate. Click **Apply** to save the changes and keep the window open or **OK** to save the changes and close the window. To exit without changing the warning settings, click **Cancel**.

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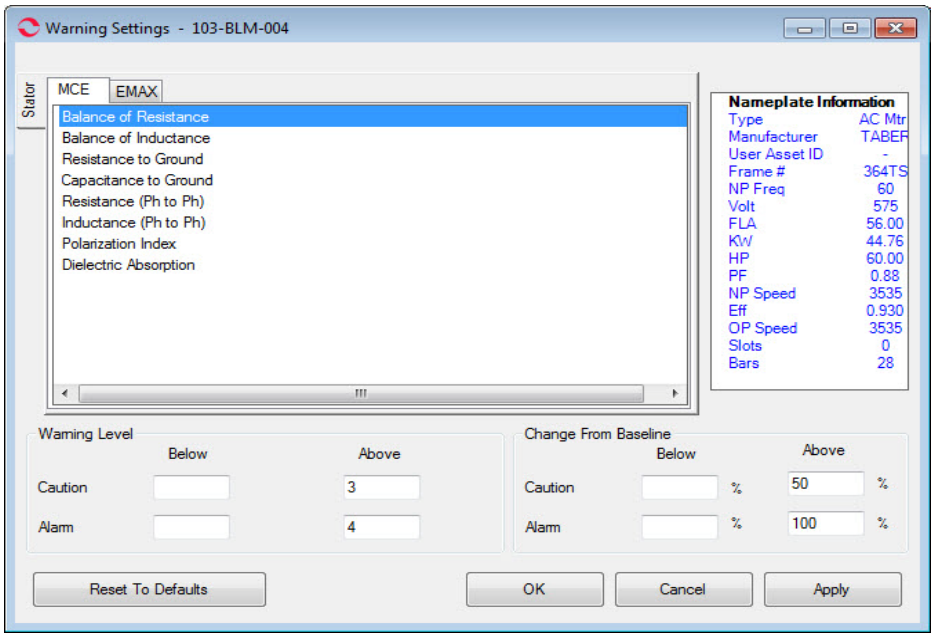
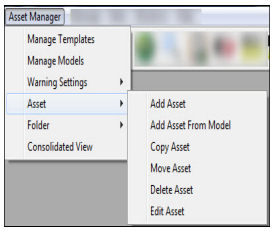


Figure 3-14: Warning Settings Window



Asset

Using the Asset Manager, Asset menu allows you to Add, Add Asset From Model (not available for all users), Copy, Move, Delete, and Edit assets.

Add Asset

1. Highlight or create the folder in the Site Navigator (see Asset Manager, Add Folder) where you want to add the asset.

2. Select Asset Manager, Asset, Add Asset from the menu.

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3. In the Add Asset window shown in Figure 3-15, use the drop-down menu to select an asset class. Currently the choice is either generator or motor. When the asset class is selected the Select An Asset Type drop-down menu becomes active as shown in Figure 3 - 16. The choices are dependent on the asset class selected.Select an asset type.

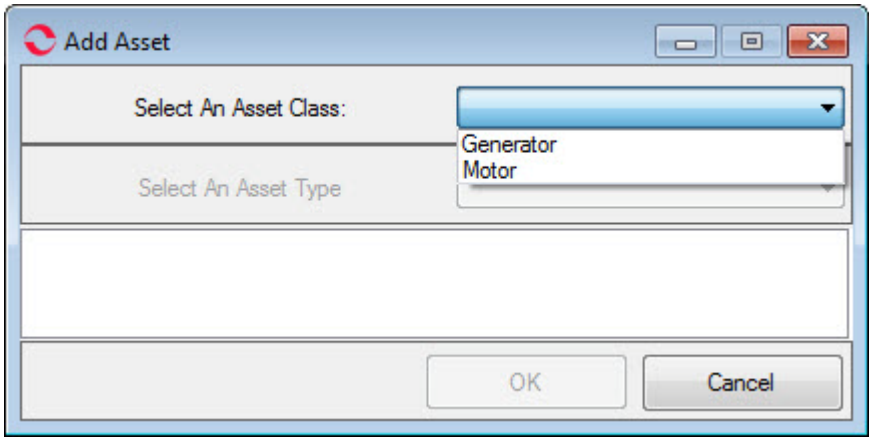


Figure 3-15: Add Asset - Select An Asset Class

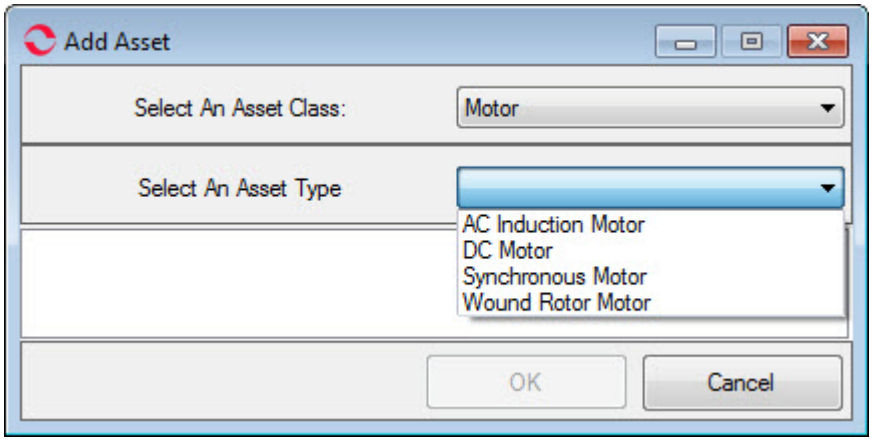


Figure 3-16: Add Asset - Select An Asset Type

4. The remainder of the Add Asset window becomes active displaying the appropriate text boxes for the asset class and type selected shown in Figure 3-17. The required fields are highlighted in red. The Identification tab is the default active tab. Fill in the Asset Name

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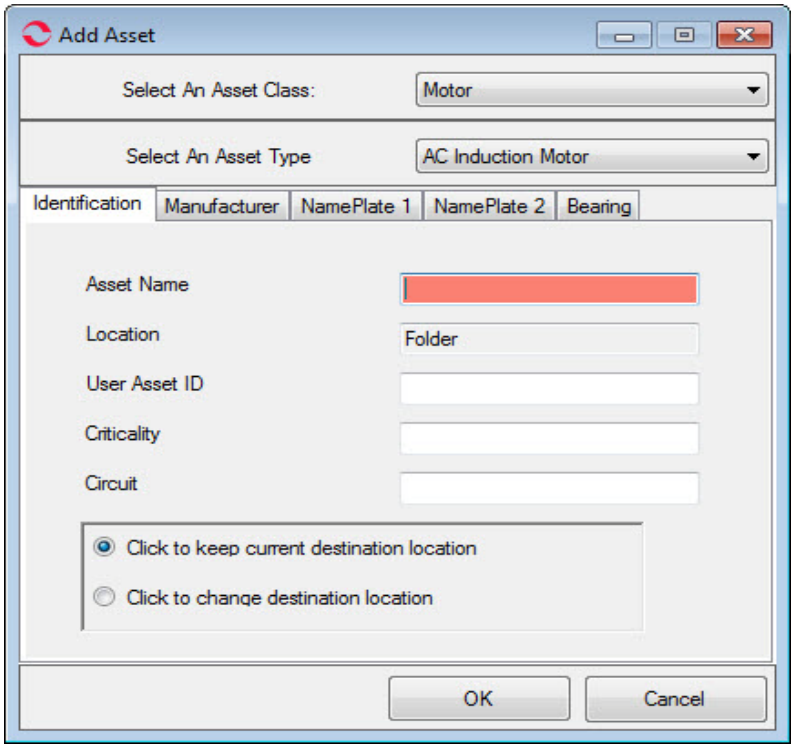


Figure 3-17: Add Asset

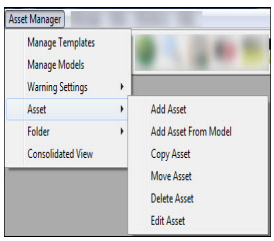
5. The location is automatically entered based on the folder originally highlighted. on the Site Navigator. If a different location is desired, select the "Click to change destination location" option button and highlight the new location on the Site Navigator. The new location will be entered in the Location text box.

6. Enter a User Asset ID, if desired. The User Asset ID can be any combination of alpha and numeric.

7. Assign a criticality code to the asset, if desired. The code is limited to four characters in any combination of alpha and numeric. The criticality code is used in several places in the MCEGold software, most notably the WatchList.

8. Select each tab, Identification, Manufacturer, Nameplate 1, Nameplate 2, and Bearing to verify that all required fields are filled in. Changes to the values may be made at this time. For more information on the nameplate see page 3-33.

9. Click **OK**, when all tabs and required fields have been completed. The asset will be added to the folder.



Add Asset From Model is not available to all users and will not be active.

Copy Asset

1. Highlight the asset on the Site Navigator that you wish to copy.

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2. Select Asset Manager, Asset, Copy Asset from the menu. The Add Asset window shown in Figure 3-18 opens. Some of the text boxes are filled in based on the asset being copied. The Asset Name text box is blank and must be filled in.

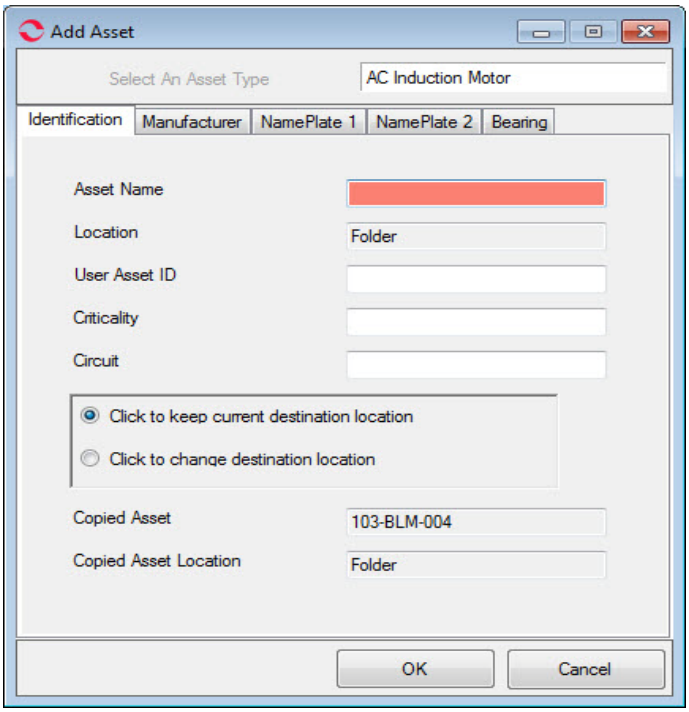
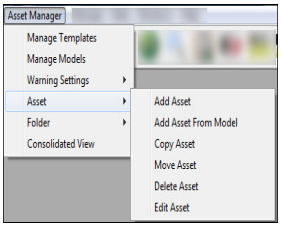


Figure 3-18: Add Asset Using Copy Asset

3. To change the location of the new asset select the "Click to change destination location" option button and highlight the new location on the Site Navigator. The new location will be entered in the Location text box.

4. Select each tab, Identification, Manufacturer, Nameplate 1, Nameplate 2, and Bearing to verify that all required fields are filled in. Changes to the values may be made at this time.

5. Click **OK** to add the new asset.



Move Asset

1. Highlight the asset on the Site Navigator that you wish to move.

2. Select Asset Manager, Asset, Move Asset from the menu. The Move Asset window shown in Figure 3-19 appears. Note: The Asset Name corresponds to the asset highlighted on Site Navigator and the Current Location corresponds to the folder highlighted on the Site Navigator.

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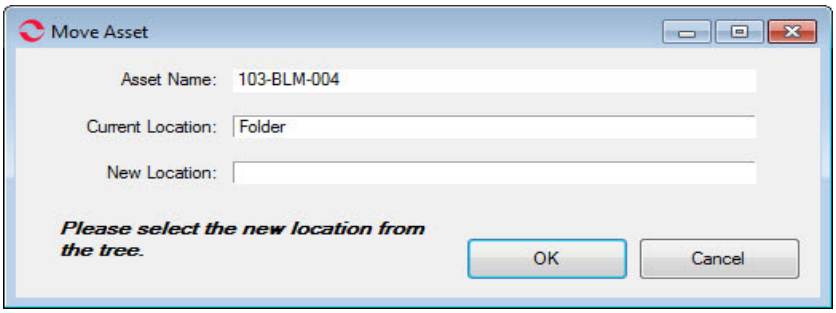
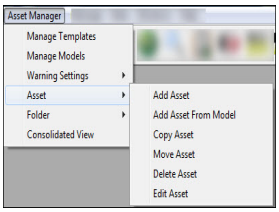


Figure 3-19: Move Asset

3. To select the New Location, click on the folder on Site Navigator and the new location will be entered in the New Location text box. The selection must be made by highlighting the new folder location on the Site Navigator. You cannot type in the text box.

4. Click **OK** to move the asset to its new location.



Delete Asset

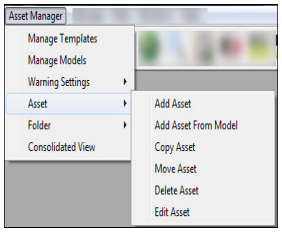
1. To delete an asset, highlight the asset on Site Navigator.

2. Select Asset Manager, Asset, Delete Asset from the menu.

3. The Delete Asset window opens with the selected asset name in the Delete text box and the folder name in the From text box.

4. Verify it is the correct asset. Click **OK**.

5. Click **Yes** in response to, “Do you want to delete this asset?”



Edit Asset

1. To edit an asset, highlight the asset on the Site Navigator.

2. Select Asset Manager, Asset, Edit Asset from the menu.

3. The Nameplate window shown in Figure 3-20 opens.

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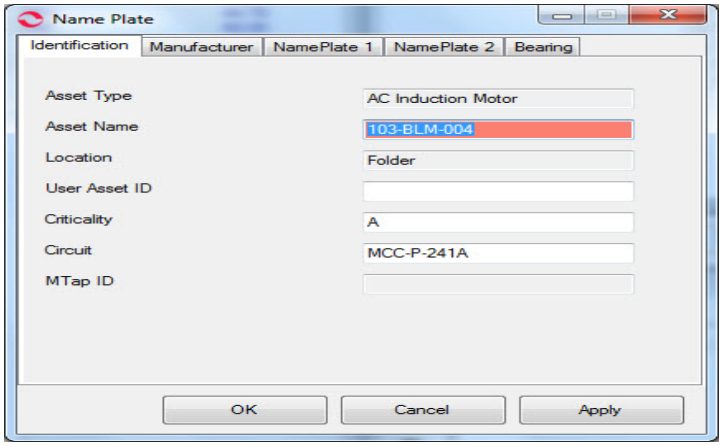


Figure 3-20: Nameplate Window Using Edit Asset

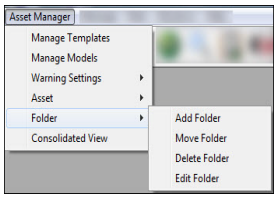
4. Asset Type and Location cannot be edited. All other text boxes can be edited. Change desired information by selecting the tab and entering the new information in the appropriate textbox.

5. Click **Apply** to make the changes and keep the Nameplate window open. The Nameplate window will remain open and a confirmation box appears. When informed the Nameplate information has been updated, click **OK**.

6. Click **OK** to make the changes and close the Nameplate window. The Nameplate window will close after a confirmation box appears.When informed the Nameplate information has been updated, click **OK**.

Folder

Using the Asset Manager, Folder menu allows you to Add, Move, Delete, and Edit the folders.



Add Folder

1. Select Asset Manager, Folder, Add Folder. The Add Folder window shown in Figure 3-21 opens.

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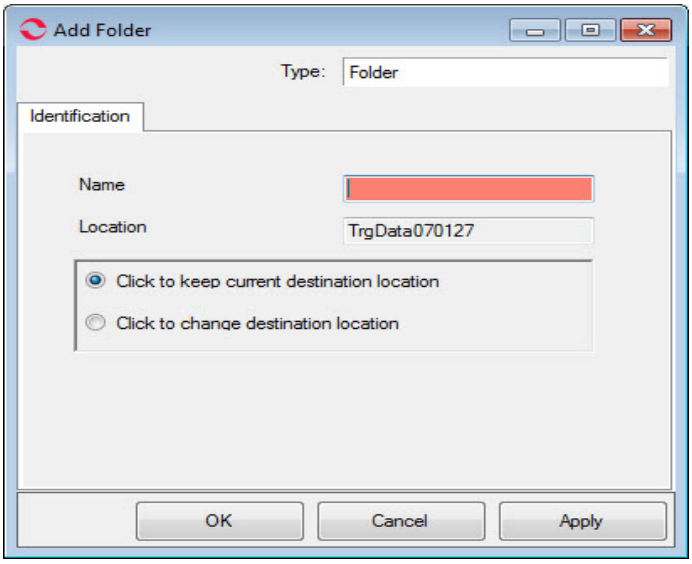


Figure 3-21: Add Folder

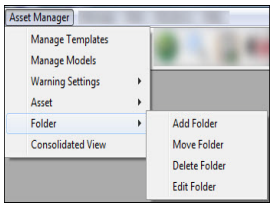
2. Enter the folder name.

3. Verify the Location is the correct location. If an existing folder on the Site Navigator window is not highlighted then the Add Folder window shows the site name as the Location. If a folder is highlighted then the Add Folder window shows the name of the highlighted folder as the Location.

4. To change the location of the folder, select the "Click to change destination location" option. Click OK in the Location Change window then highlight a new site or folder on the Site Navigator window. The location will be entered in the Location text box.

   Note: If you have multiple sites, you can display the site icons and names by selecting View, Sites from the Site Navigator menu.

5. Click **OK** to add the new folder and close the Add Folder window or click **Apply** to add the new folder and keep the Add Folder window open to add additional folders.



Move Folder

1. To move an existing folder to a new location, highlight the folder on Site Navigator. Select Asset Manager, Folder, Move Folder.

2. The Move Folder window shown in Figure 3-22 opens. The folder name and current location are automatically displayed.

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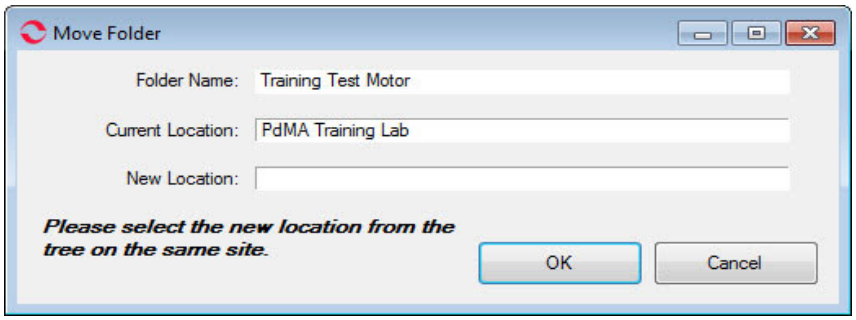
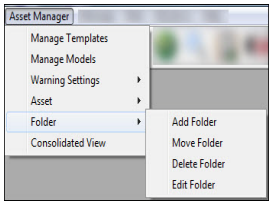


Figure 3-22: Move Folder

3. Highlight the new location on the Site Navigator window. The new location name will display in the Move Folder window.

4. Click **OK,** the folder is moved.

5. Click **OK** when informed "Folder moved successfully." Both windows will close.



Delete Folder

1. Highlight the folder to be deleted on the Site Navigator window.

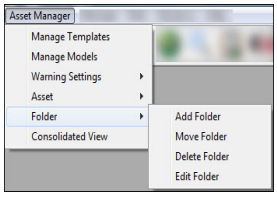
2. Select Asset Manager, Folder, Delete Folder.

3. The Delete Folder window opens.

4. Verify the correct folder name is displayed in the Delete text box and the correct location of the folder in the From text box is displayed. If not, click **Cancel** and begin the process again. You cannot make changes in the Delete Folder window.

5. If they are correct, click **OK**.

6. Click **Yes** to "Do you want to delete this folder?" The folder is deleted and the window is closed.



Edit Folder

Edit Folder is used to change the name of the folder.

1. Highlight the folder on the Site Navigator window.

2. Select Asset Manager, Folder, Edit Folder.

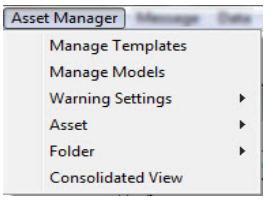
3. The Edit Folder window opens.

4. Enter the new name in the Name text box.

5. Click **Apply** to make the change and leave the window open or click **OK** to make the change and close the window. The change is updated on the Site Navigator.

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6. Click **OK** when informed the folder information has been updated.



Consolidated View - Selecting Asset Manager, Consolidated View opens the Asset Assignment Summary List shown in Figure 3 - 23. The assets that are highlighted on the Site Navigator are listed by Name and the list includes their Template Name, Warning Assignment, Warning Status, and Asset Type. You may add or delete from the list and Update the selection to reflect changes in the asset's status.

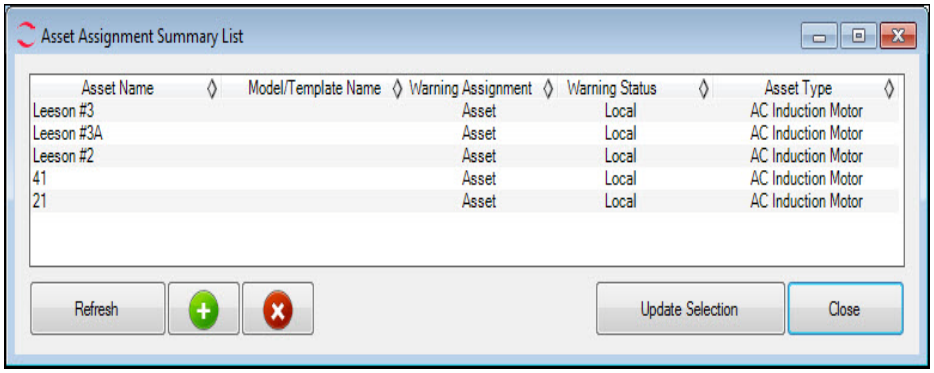


Figure 3-23: Asset Assignment Summary List Window

1. Highlight one or more assets on the Site Navigator.

2. Select Asset Manager, Consolidate View.

3. The Asset Assignment Summary List window opens displaying the asset/s selected.

4. To sort entries in any column use the diamond shaped icon ◊ to the right of the column title. The Asset Name column sorts alphabetically the first time, second click reverse sorts the column. Subsequently it acts as a toggle. Asset Type sorts alphabetically and lumps each type of asset together. The second click reverse sorts. Subsequently it acts as a toggle.

Refresh

If a change is made on the Site Navigator to one or more of the assets listed in the Asset Assignment Summary List, it is possible to update the asset/s by clicking the **Refresh** button.

Add an Asset

1. With the Asset Assignment Summary List window open, highlight the desired asset on the Site Navigator.

2. Click the green circle with the plus sign.

3. The asset information appears in the list.

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Delete an Asset

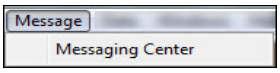
1. With the Asset Assignment Summary List window open, highlight the desired asset name in the list.

2. Click the red circle with the "x". 

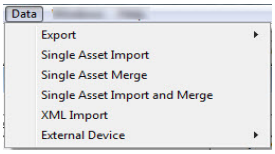
3. The asset information disappears from the list.

Update Selection

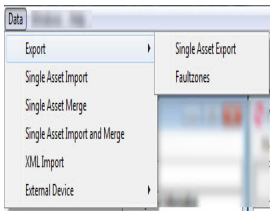
If a change is made on the Site Navigator to one or more of the assets listed in the Asset Assignment Summary List, it is possible to update the asset/s by highlighting the asset/s in the list and click **Update Selection**.



Message – Messaging Center opens the Message Center window if it is not open. The Message Center is one of four windows that automatically open when MCEGold is started. It can also be reached by clicking the Message icon  on the toolbar. In Message Center you can enter, view, edit, and delete notes for one asset or a list of assets. For more information see the Message Center section in this chapter on page 3-53.



Data – The Data submenus allow an asset's data file to be created so that it can be exported or imported to or from another computer electronically or merge two data files for the same asset.



Export/Single Asset Export

1. Highlight on Site Navigator the single asset to be exported.

2. Select Data, Export, Single Asset Export from the menu.

3. In the Create Export File window shown in Figure 3-24, select a location to store your file.

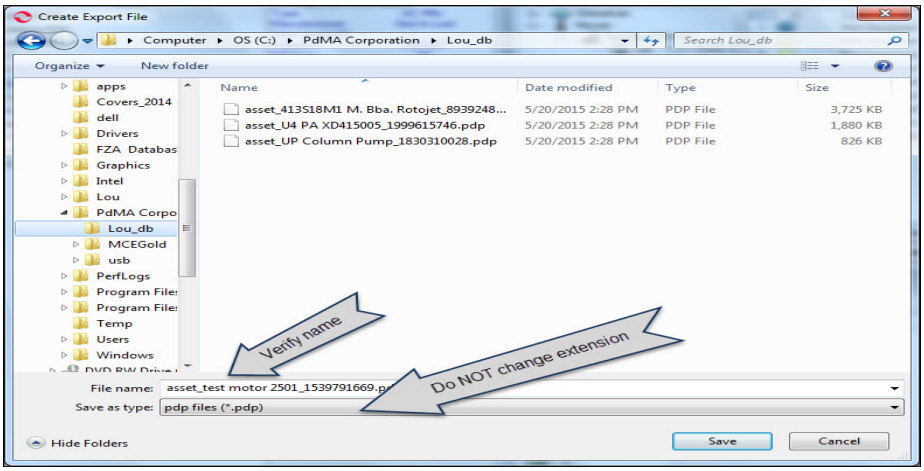


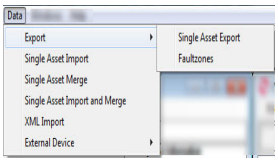
Figure 3-24: Create Export File

4. Change the File Name if desired. The file extension is .pdp. **Do not change the extension.**

5. Click **Save**.

6. When the file is complete, the Single Asset Export message box informs you it is complete. Click **OK**.

7. The file is now ready to send as an attachment or be imported by another MCEGold tester.
   NOTE: Data exported from MCEGold 3.0 cannot be imported into older MCEGold versions.



Export/Fault Zones

The Export Fault Zone function allows the Fault Zone Analysis to be imported into an XML interfaced program, such as SAP, Maximo, Indus.

1. Highlight the asset on the Site Navigator.

2. Select Data, Export, Fault Zones from the menu.

3. In the Create Export File window, select a location to save the Fault Zone file. See Figure 3-25.

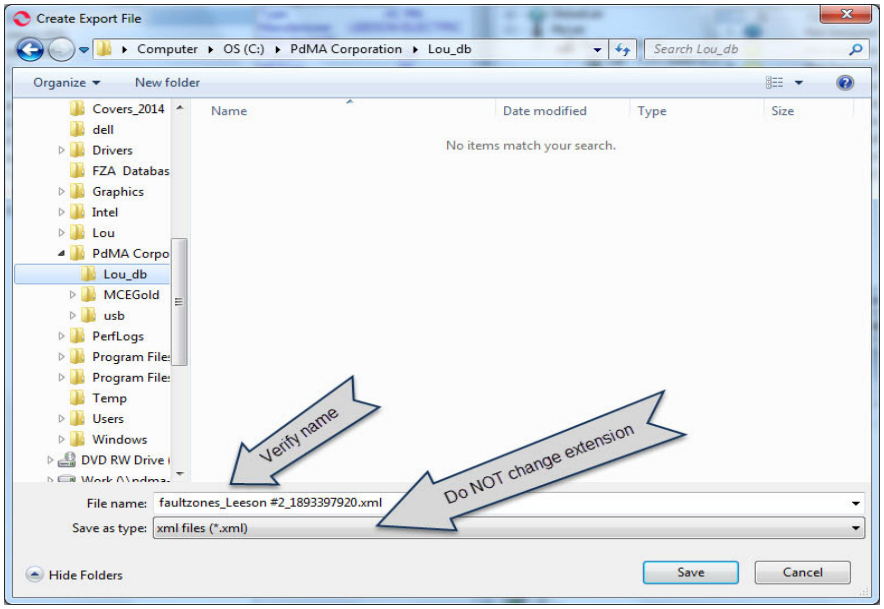


Figure 3-25: Create Export File

4. Change file name if desired. The file extension is .xml. **Do not change the extension.**

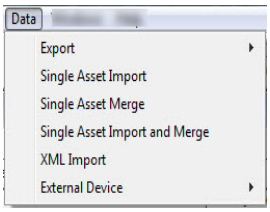
5. Click **Save**.

6. You will be informed the Fault Zone Export is complete. Click **OK**.

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7. The .xml file is now ready to use in your management programs.

NOTE: There are two files created XSD and XML. The XSD file is a schema template that the xml file exports.



Import/Single Asset Import

This function is used to retrieve a data file that has been sent to you electronically.

1. Highlight the folder you wish to import the asset information into.

2. Select Data, Import, Single Asset Import.

3. Locate the file and highlight it using the Open Import File window shown in Figure 3 - 26. The file will have a .pdp file extension.

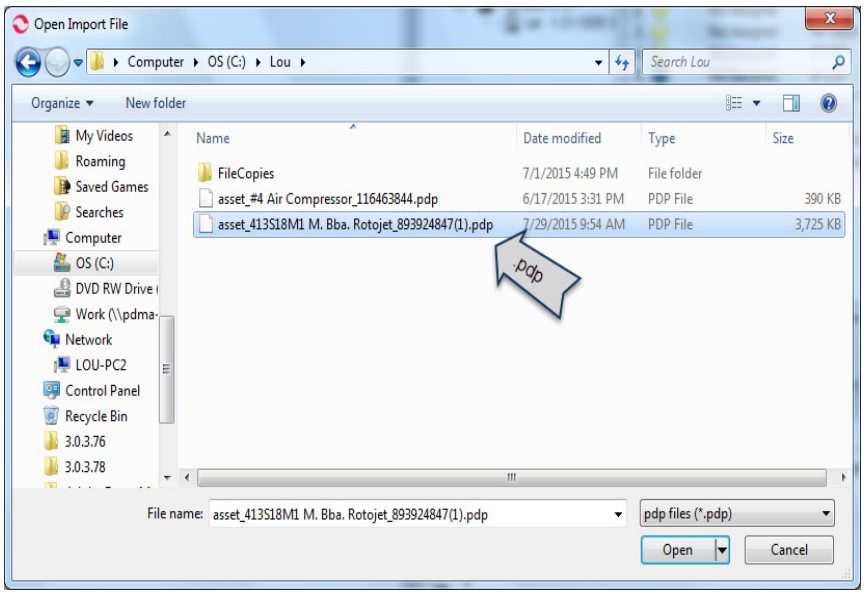


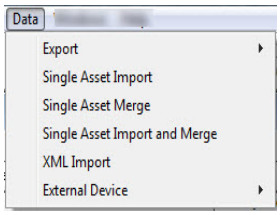
Figure 3-26: Open Import File Window

4. Click **Open**.

5. You will be asked to verify the location of the import.

6. The Single Asset Import window informs you of the progress of the import.

7. When you are notified the import is complete, click **OK**.



Data/Single Asset Merge

Single Asset Merge is used to combine two assets into one.

1. Highlight the asset the data is being merged into.

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2. Select Data, Single Asset Merge. The Merge Asset Window shown in Figure 3- 27 opens.

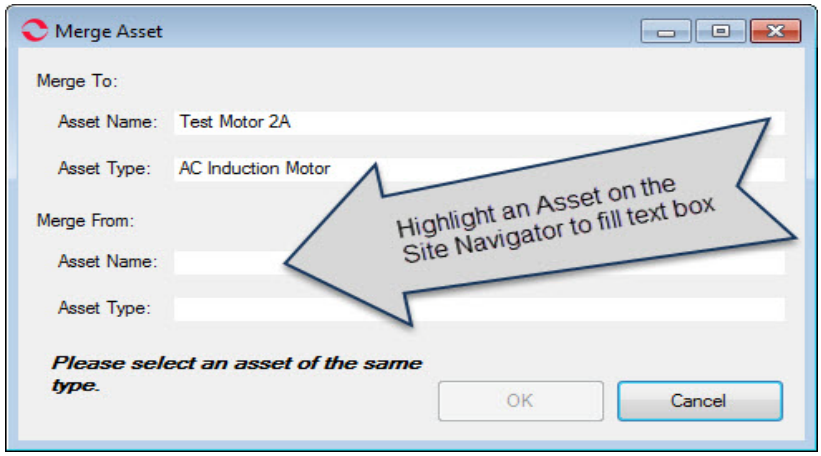


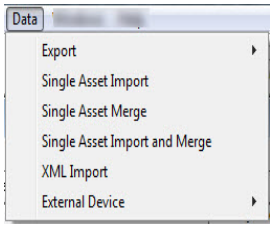
Figure 3-27: Merge Asset Window

3. Highlight the asset that is being merged from on the Site Navigator. It is not possible to type the name and type in the text boxes.

4. When the correct Asset Name and Type are entered, click **OK**.

5. A window displays the progress. When complete, click **OK**.

6. The second asset (asset merged from) is automatically deleted from the database and no longer displays on the Site Navigator.



Data/Single Asset Import and Merge

The Single Asset Import and Merge function imports the data from a pdp file and directly merges it with the selected asset. A new asset will not appear on the Site Navigator, the data is directly merged into an existing asset.

1. Highlight the asset the data is being merged into on the Site Navigator.

2. Select Data, Single Asset Import and Merge.

3. The Open Import File window shown in Figure 3-28 opens.

4. Locate and select the pdp file you are importing the data from and click **Open**.

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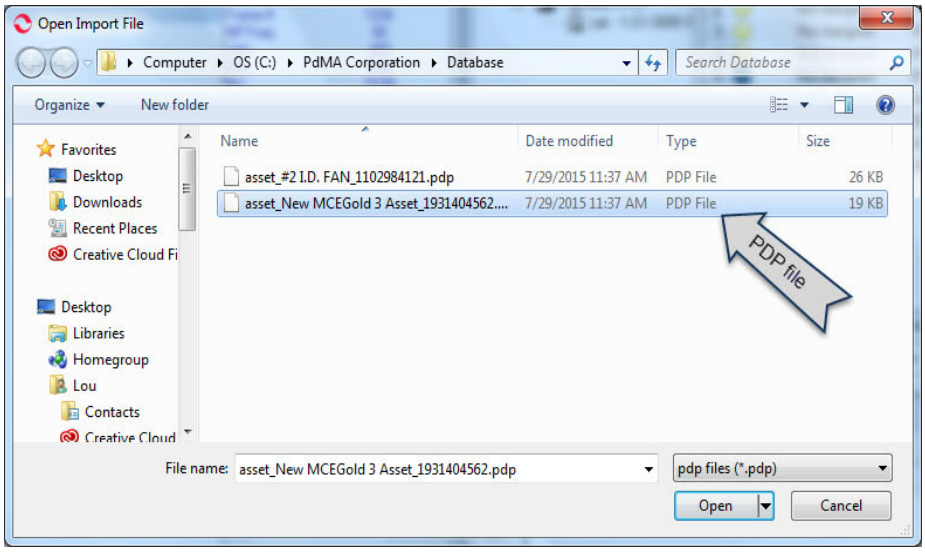


Figure 3-28: Open Import File Window

5. In the Single Asset Import verify box, verify the asset you are importing test data into and click **Yes**.

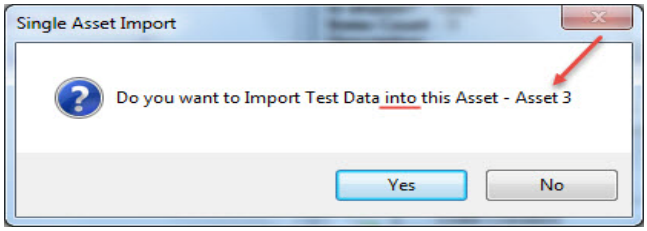
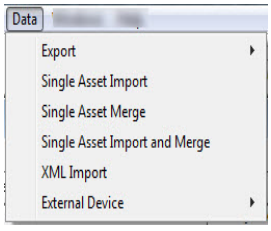


Figure 3-29: Single Asset Import Verify Box

6. The Single Asset import window informs you of the progress of the import.

7. When you are notified the import is complete, click **OK**.

8. The data will import and merge by data and time into the selected asset. To view the merged asset information in the Test History window you may have to select Test, Show Tests, and All Tests since some tests from the merged asset may have been taken prior to the baseline test in the original asset.



Data/XML Import

XML Import imports an asset via XML format. All asset Nameplate information is automatically imported into MCEGold as a new asset.

1. Select a folder on the Site Navigator.

2. Select Data, XML Import. The Open Import File window opens.

3. Locate and select the xml file to be imported and click **Open**.

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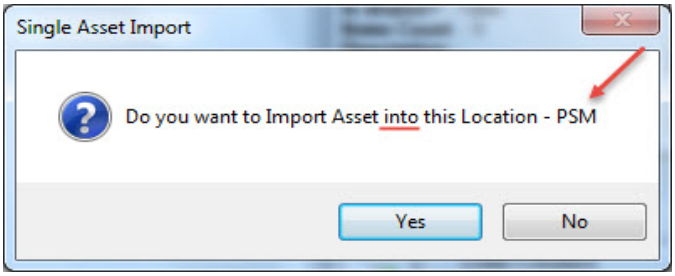
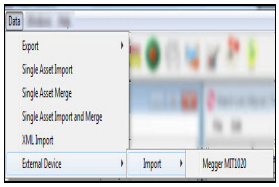


Figure 3-30: Single Asset Import Verify Box



Data/External Device Import

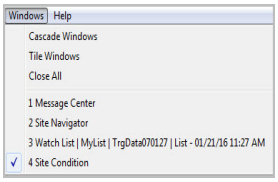
The External Device Import/ Megger is used to import data collected using an external device the Megger MIT1020 10kV insulation tester.

1. Select a folder on the Site Navigator.

2. Highlight the asset the data is to be imported into.

3. Select Data, External Device, Import, Megger MIT1020. The Open MIT1020 File window opens.

4. Locate and select the MIT1020 file to be imported. The file will have a .cvs file type extension. Click **Open**.



Windows

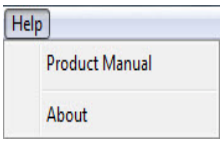
MCEGold 3. 0 uses standard Windows operations.

Cascade Windows causes all of the open windows to display one on top of the other in a cascading manner with only the title bars for each window showing and a full view of the top window.

Tile Windows causes all of the open windows to display side by side, so that the full window is shown. The more windows that are open the smaller they will display so that they can all be accommodated.

Close All closes all open windows, but does not close MCEGold.

A list of the open windows is below these commands. A check mark in front of the window name indicates it is the active window. Click on any name on the list to make the window active.



Help

The Help menu provides access to the Product Support Manual and About information.

Product Manual - Selecting Product Manual opens a window displaying the complete MCEGold Product Support Manual in PDF. Each chapter is listed separately to assist you in locating the information you are seeking.

About - Selecting About from the menu opens the About MCEGold window. The customer information including version number, installed technology, shipping address, and technical support information is displayed in this window. This information is useful if you need to contact PdMA regarding your tester. Click **OK** to close the About window.

Toolbar

The Toolbar icons are designed to quickly access common MCEGold functions with one click. This section provides a graphic of the icon and a brief description. Each function is discussed in depth in its own section.



Site Navigator provides a graphical view of the sites, folders, and assets/motors. Use this icon to restore the Site Navigator window. *See the Site Navigator section on page 3-29 for more information*.



Asset Summary provides Last Test Dates, Asset Condition, and Fault Zone information for the selected asset. *See the Asset Summary section on page 3-32 for more information*.



Site Condition automatically displays when MCEGold starts and displays selected information about all of the assets. The data automatically updates when a different site is chosen. Use this icon to restore the Site Condition window to the MCEGold Home window if it has been closed. *See the Site Condition section on page 3-32 for more information.*



Nameplate displays the nameplate data for the selected Asset so you can view or modify the data. Some fields are automatically entered by the tester and cannot be modified. An area to assign a criticality code to the motor is provided. The code is limited to four characters, any combination of alpha and numeric. *Discussion of the nameplate is found in the Add Asset section on page 3-14 steps 4 and 5* and page 3-33.



Add Asset maybe used in place of selecting Asset Manager, Asset, Add Asset or right clicking on a folder in the Site Navigator and selecting Add Asset. *See the Add Asset section on page 3-12 for more information.* Note: Throughout MCEGold, the term asset is used to denote various types of assets and motors.



Warning Settings displays the warning settings for the selected asset. If the asset hasn't been assigned a template (using Asset Manager, Warning Setting from the menu) the default settings are displayed. Changes to the setting can be made here. *See the Warning Settings section on page 3-38 for more information.*



Test History displays the MCE and EMAX test data, nameplate information, and Condition Code for the selected asset. *See the Test History section on page 3-39 for more information.*



Test Selection opens the Test Selection window that is used to select individual MCE and EMAX tests for the selected asset. If an automatic combination of tests are preferred the MCE Auto or EMAX Auto icons can be chosen from the toolbar. *See the Testing section on page 3-43 for more information*.



Search opens the Asset Search window to simple search. For a more detailed search click the Advance button which opens the Advanced Search window. You may return to the simple search by clicking the Simple Search button. *See the Search section on page 3-44 for more information*.

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WatchList automatically displays when MCEGold starts. WatchList allows you to set up lists of assets. A list may be of assets to watch for criticality purposes or to set up a service route for a technician. Use this icon to restore the WatchList window to the MCEGold Home window if it has been closed. *See the WatchList section on page 3-47 for more information*.



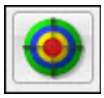
M*TAP* opens the M*TAP* configuration window. You must first select an asset before the icon is active. The window provides information if the asset is linked to an M*TAP* or allows you to manually link the asset to an M*TAP*.



MCE Auto automatically starts the Standard Test followed by the Polarization Index. At the end of the tests the results are saved and Fault Zone Report is displayed. Before selecting the MCE Auto icon, an asset must be highlighted on the Site Navigator. *See the MCE Auto section on page 3-52 for more details.*



EMAX Auto automatically starts the Rotor Evaluation, Eccentricity, Power, and Demod tests. At the completion of the tests, after the test results are saved, the Fault Zone Analysis window displays. Before selecting the EMAX Auto icon an asset must be highlighted on the Site Navigator. *See the EMAX Auto section on page 3-52 for more details*.



Fault Zones displays the Fault Zone Analysis window for the motor/asset highlighted on the Site Navigator window. *See Fault Zone Analysis section on page 3-52 for more details.*



Message restores the Message Center window to the MCEGold Home window if is has been closed. The Message Center window automatically displays when MCEGold starts. In the Message Center you can enter messages, view message, and delete messages for one or a list of assets. *See the Message Center section on page 3-53 for more information*.



Export File opens the Create Export File window, which is used to create an export file to send data electronically for the selected asset. *See the Export file section on page 3-57 for more information*.



Report opens the Report Selection window. *See the Reports section on page 3-58 for more information*.



Scheduler opens the Asset Schedule Configurations window which is used to set up the selected asset for scheduled testing on a one-time or reoccurring basis. *See Appendix B for more information.*



Energy Analysis opens the Energy Cost Analysis window which analyzes operating and replacement cost for AC Induction Design B motors only. *See Appendix C for more information.*

Site Navigator Window

The Site Navigator window opens when MCEGold is started or if it has been closed it can be opened using the Site Navigator icon  on the toolbar.

The Site Navigator window displays the site(s), folders, and motor/assets using the Windows tree format. The nameplate information is displayed when an asset is selected. MCEGold is available in single or multiple site versions. Each site has its own unique

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folders and motor/assets. Figure 3-31 shows the Site Navigator window for a single site version containing folders and motor/assets.

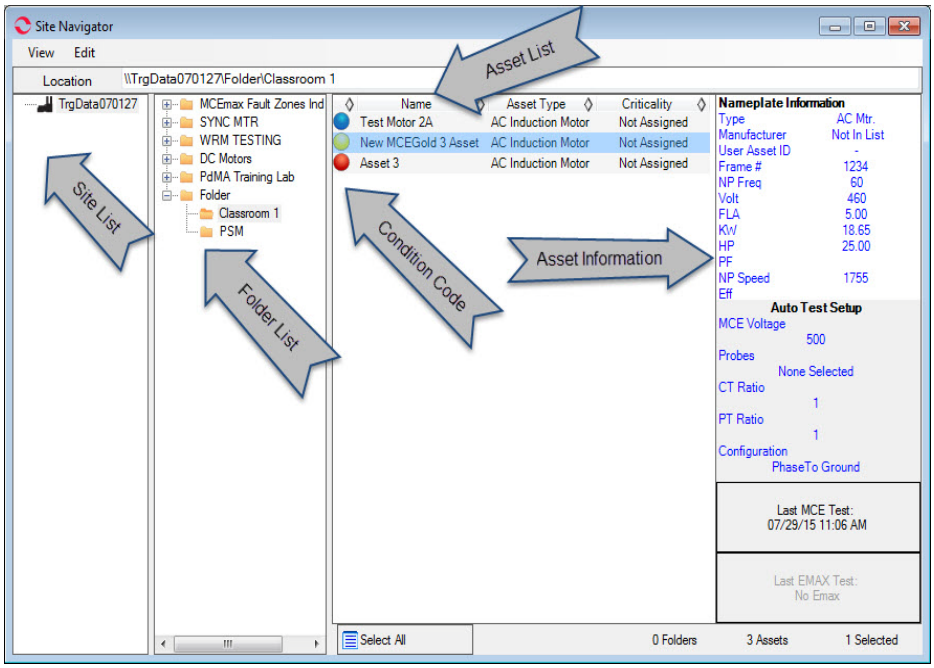
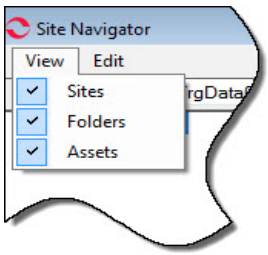


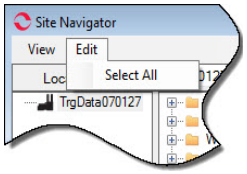
Figure 3-31: Site Navigator

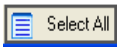


The site, folders, and assets can be displayed or hidden by selecting View and the appropriate sub-menu from the Site Navigator menu. A check mark in front of sub-menu name indicates it is displayed in the window. To hide the information remove the check mark by clicking on it. The check mark acts as a display/hide toggle.

To locate an asset in the Site Navigator, locate the folder that contains the asset, open the folder and any subsequent folders, then click on the asset. The asset information appears in the right section. Beginning from the left of the line, a round icon is color coded to the condition assigned to the asset. The asset name appears next. Asset type and if criticality has been assigned to the asset during setup it is displayed. On the far right is the nameplate information. You may also find an asset using the Search function, which is reached by clicking on the Search icon on the toolbar and described on page 3-44.

For *multi-site version*, display the site names using the View menu on the Site Navigator window and selecting the Sites sub-menu. This places a checkmark in front of Sites and opens a column to the left of the folder column displaying the site names. Highlight the desired site and the folders and motor/assets in that site will display in the columns to the right. To close the site column, select View and click Sites to remove the check mark.



Edit, Select All - When multiple assets are displayed, it is possible to highlight them all at one time by selecting Edit on the Site Navigator window and then Select All. You can also use the Select All button 

located at the bottom of the asset section.

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Right Click

A quick way to work with folders and assets in Site Navigator is to right click on the Site, Folder, or Asset name. Right click on a site closes open folders and assets lists. Right click on a folder opens a sub-menu that allows you to Add Asset, Add Asset From Model (if available), Add, Move, Delete, and Edit folders. Right click on an asset opens the sub-menu that allows you to Add Asset, Add Asset From Model (if available), Copy, Move, Delete and Edit the selected asset. Also, you can Show Test History and Show Warning Settings for the selected asset.

To add a folder to the Site Navigator, right click on the Site icon. The sub-menu shown in Figure 3-32 opens. The only option available under Site location is Add Folder. Select Add Folder and proceed as described on page 3-17, Add Folder.

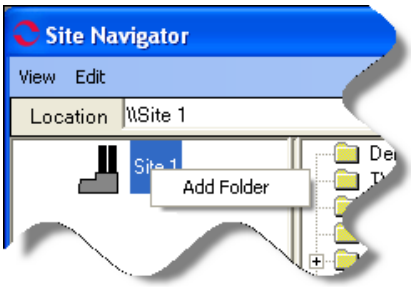


Figure 3-32: Right Click Site Icon

To work with the folders in the Site Navigator, right click the folder you wish to work with. The sub-menu shown in Figure 3-33 opens. Select the desired function.

Instructions on how to preform these activities are discussed previously in this chapter. Add an Asset instructions are found on page 3-12, Add Folder is found on page 3-17, Move Folder is found on page 3-18, Delete Folder and Edit Folder are found on page 3-19.

.

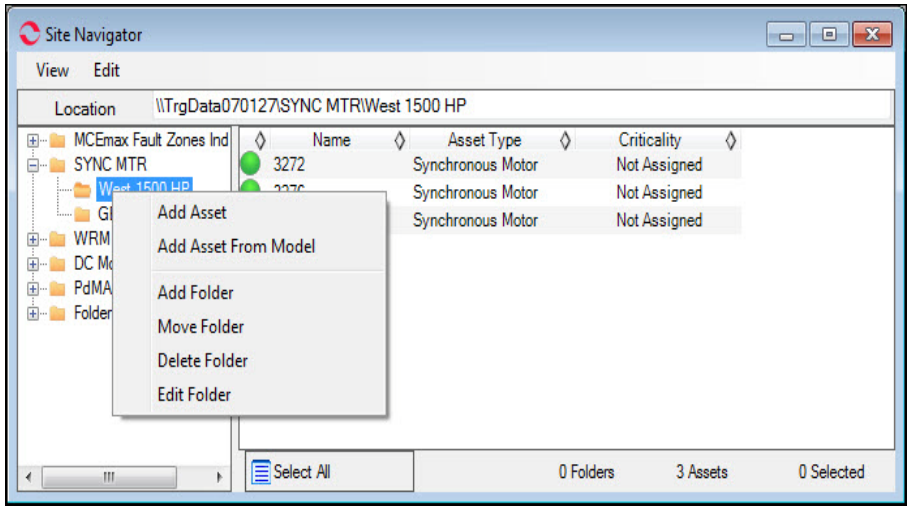


Figure 3-33: Right Click Folder Sub-menu

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To work with the assets in the Site Navigator, right click the asset you wish to work with. The sub-menu shown in Figure 3-34 opens. Select the desired function.

Instructions on how to perform these activities are discussed previously in this chapter. Add an Asset instructions are found on page 3-12, Copy Asset is found on page 3-14, Move Asset is found on page 3-15, Delete and Edit Asset are found on 3-16.

Selecting Show Test History and Show Warning Settings open the respective windows for the asset. The Test History window is discussed later in this chapter on page 3-39 and the Warning Settings window is discussed on page 3-38.

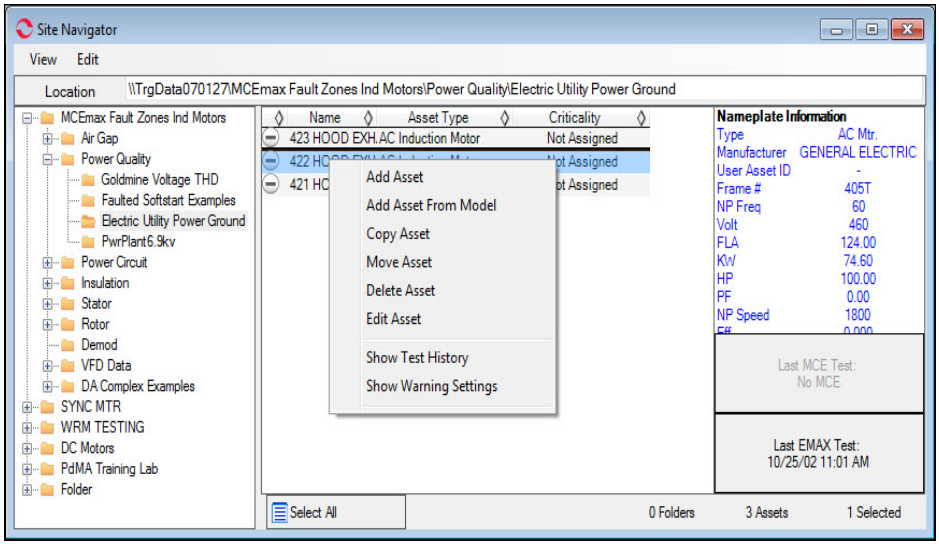


Figure 3-34: Right Click Asset Sub-menu

Asset Summary

Selecting the Asset Summary icon  on the toolbar opens the Asset Summary window shown in Figure 3-35. Note: You must highlight the asset in the Site Navigator before selecting Asset Summary.

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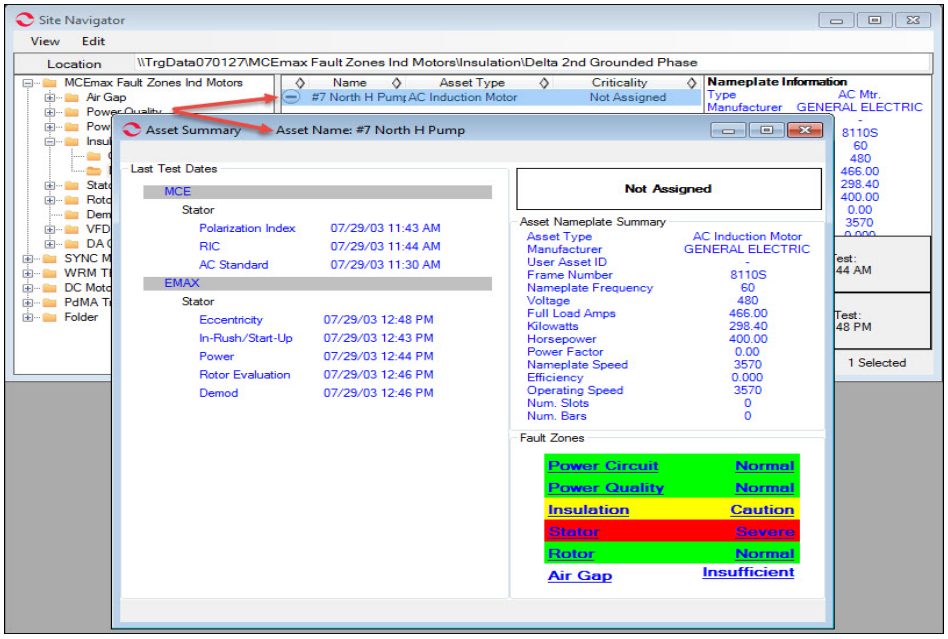


Figure 3-35: Asset Summary Window

The window displays last test dates for MCE and EMAX tests, asset condition, nameplate summary and links to the Fault Zone Report. Clicking on any test name opens the Test History for that test. Click in the nameplate area and the nameplate window opens. Changes to the nameplate values can be made in the window. Click on any item in the Fault Zone area to open the Fault Zone Report. The Fault Zone Report is fully discussed in Chapter 5, MCE on page 5-10, Chapter 6, EMAX Current Analysis, and Chapter 7, EMAX Power Analysis.

Site Condition

The Site Condition window shown in Figure 3-36 automatically displays when MCEGold is opened. It displays information about the assets in the site. If you have multiple site software, the data automatically updates each time a different site is chosen. The window does not have to be closed and reopened. If the Site Condition window has been closed use this icon  to restore the Site Condition window to the MCEGold Home window.

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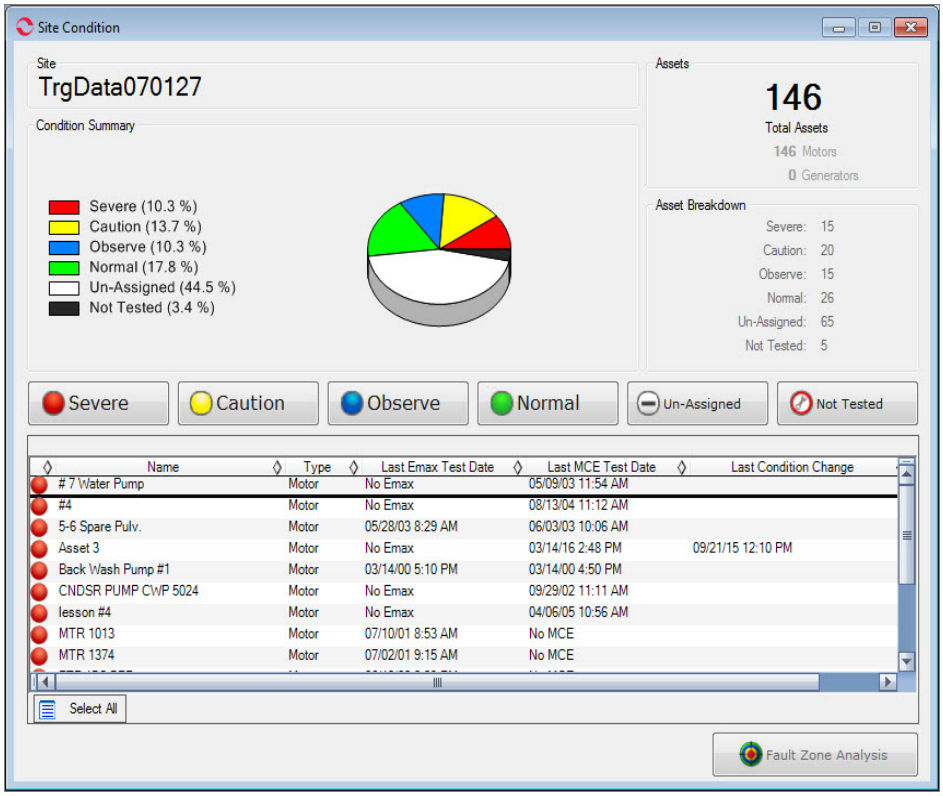


Figure 3-36: Site Condition Window

The Site Condition window opens with the assets in Severe condition listed. To see a list of assets in a specific condition code, unassigned, or not tested click on the appropriate button above the asset list. The assets in the selected condition will be listed below. To locate a listed asset in Site Navigator, click on its name and it will be highlighted on the Site Navigator window.

The lists opens in alpha/numeric order. You may change the order of any column by clicking on the small diamond at the top of the list. Depending on which column you choose it may sort the list alphabetically or in the case of test date sort numerically. The diamond changes to an up/down triangle indicating the list has been sorted. The triangle acts like a toggle.

Select All can be used to create a WatchList or used for a report.

The Fault Zone Analysis button in the lower right hand corner opens the Fault Zone Analysis window for the asset highlighted in the list. If multiple assets are highlighted it will display the Fault Zone Analysis window for the first asset on the list.

Nameplate

Nameplate displays the nameplate information that was entered when the asset was added. You must highlight an asset in Site Navigator before selecting the Nameplate icon  on the toolbar. The nameplate window shown in Figure 3-37 opens. You may make changes or add to the nameplate information using the nameplate window. The text boxes

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highlighted in red are required fields. Keep in mind the more information you enter on the nameplate the more useful your test data interpretation will be.

Identification Tab

The Identification tab shown in Figure 3-37 contains text boxes for Asset Type, Asset Name (required), Location, User Asset ID, Criticality, Circuit, and M*TAP* ID. The Asset Type, Location, and M*TAP* ID are automatically entered by MCEGold and cannot be changed. For the other text boxes, enter the desired information and click **OK** to save the changes and close the window or **Apply** to save the changes and keep the Nameplate window open.

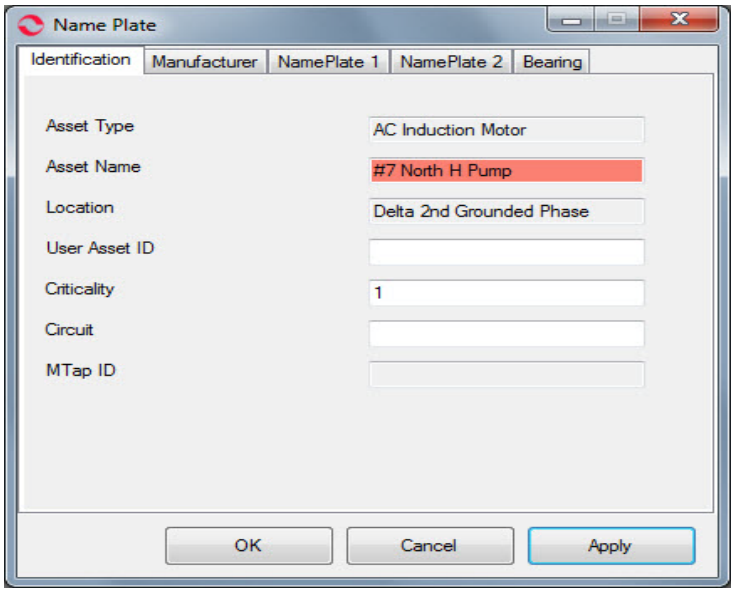


Figure 3-37: Nameplate: Identification Tab Contents

Manufacturer Tab

The Manufacturer tab shown in Figure 3-38 contains text boxes for Manufacturer Name, Model Number, Revision Number, Serial Number, and Asset Received Date. The Asset Received Date text box has a drop down calendar to assist you in entering the date. There are no required fields on this tab. Enter the desired information and click **OK** to save the changes and close the window or **Apply** to save the changes and keep the Nameplate window open.

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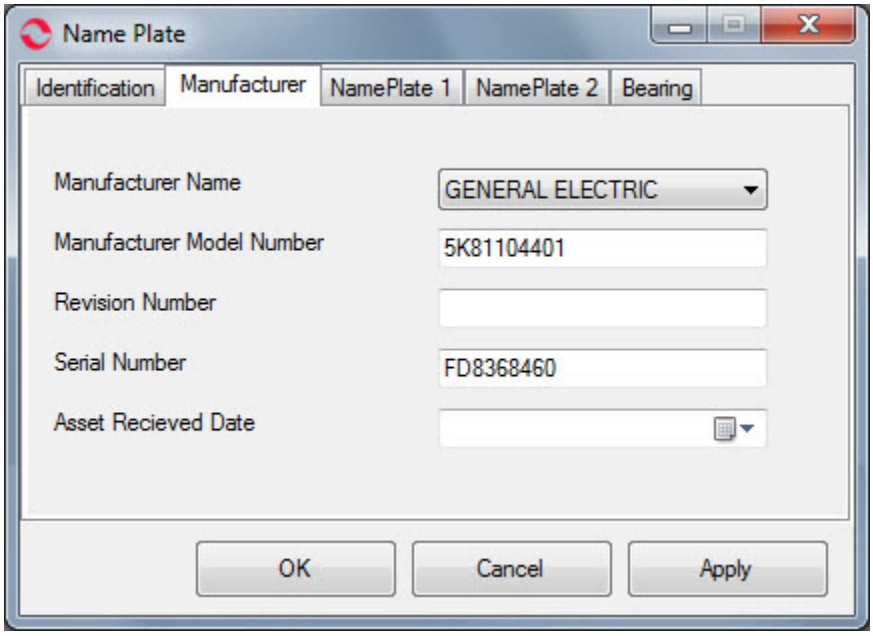


Figure 3-38: Nameplate: Manufacturer Tab Contents

Nameplate 1 Tab

The Nameplate 1 tab shown in Figure 3-39 contains text boxes for Nameplate Frequency, Voltage, Horsepower, Kilowatts, Full Load Amps, Nameplate Speed, Operating Speed, and Frame Number. All, except Operating Speed, are required fields. Enter the required information and click **OK** to save the changes and close the window or **Apply** to save the changes and keep the Nameplate window open.

Hint: MCEGold will automatically compute the Kilowatts based on the Horsepower entered by entering the Horsepower and press the <Enter> key on the keyboard. It works in reverse too. Enter the Kilowatts and press <Enter> to get the horsepower.

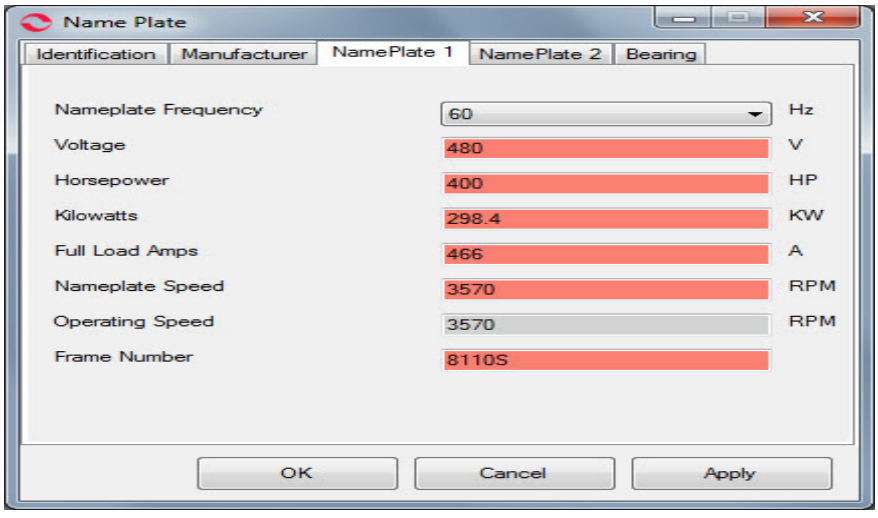


Figure 3-39: Nameplate: Nameplate 1 Tab Contents

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Nameplate 2 Tab

The Nameplate 2 tab shown Figure 3-40 contains text boxes for Insulation Type, Service Factor, Power Factor, Efficiency, Number of Bars, Number of Slots, Design Type, and Winding Date. There are no required fields. Enter the desired information and click **OK** to save the changes and close the window or **Apply** to save the changes and keep the Nameplate window open.

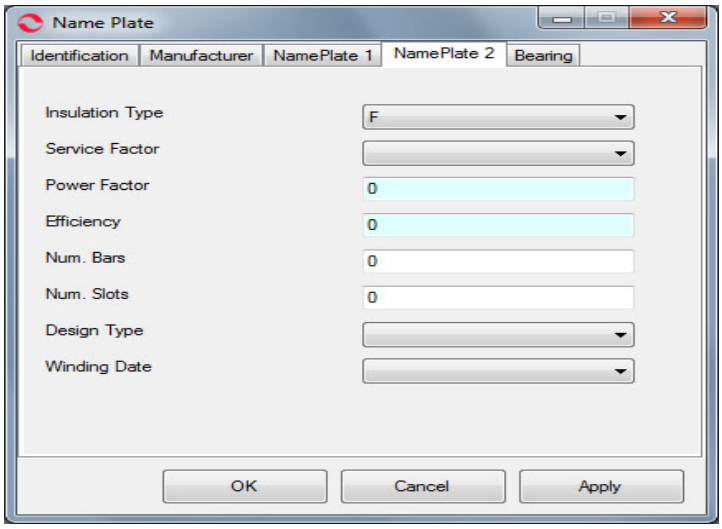


Figure 3-40: Nameplate: Nameplate 2 Tab Contents

Bearing Tab

The Bearing tab Shown in Figure 3-41 has text boxes for Shaft-End Bearing Number, Shaft-End Bearing Type, Opposite-End Bearing Number, and Opposite-End Bearing Type. There are no required fields. Shaft-End Bearing Type and Opposite-End Bearing Type have drop down lists to make your choice from. Enter the desired information and click **OK** to save the changes and close the window or **Apply** to save the changes and keep the Nameplate window open.

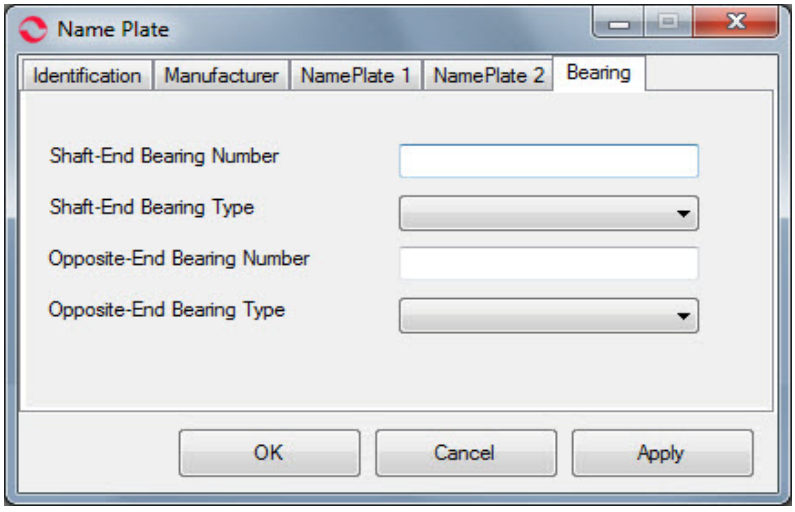


Figure 3-41: Nameplate: Bearing Tab Contents

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Resistor Bank Tab

The Resistor Bank tab shown in Figure 3-42 only appears for Wound Rotor assets. It has text boxes for (Res. Bank) Type, (Resistor Bank) Kilowatts, Full Load Current, and Cooling Method. There are no required fields. Enter the desired information and click **OK** to save the changes and close the window or **Apply** to save the changes and keep the Nameplate window open.

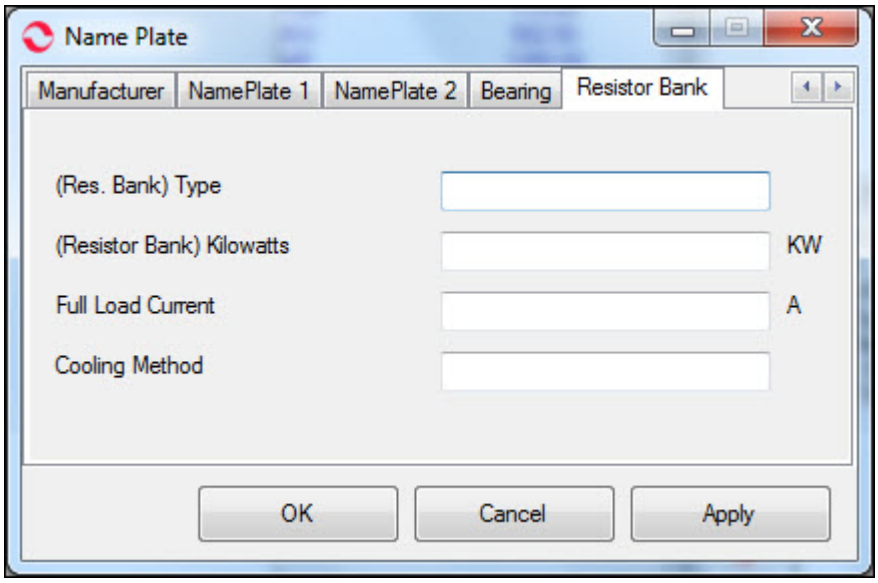


Figure 3-42: Nameplate: Resistor Bank (Wound Rotor Asset)

Brush Assembly Tab

The Brush Assembly tab shown in Figure 3-43 appears for Synchronous and DC assets. It has text boxes for Brush Grade, Brush Dimensions, Number of Brushes, and Minimum Brush Length. There are no required fields. Enter the desired information and click **OK** to save the changes and close the window or **Apply** to save the changes and keep the Nameplate window open.

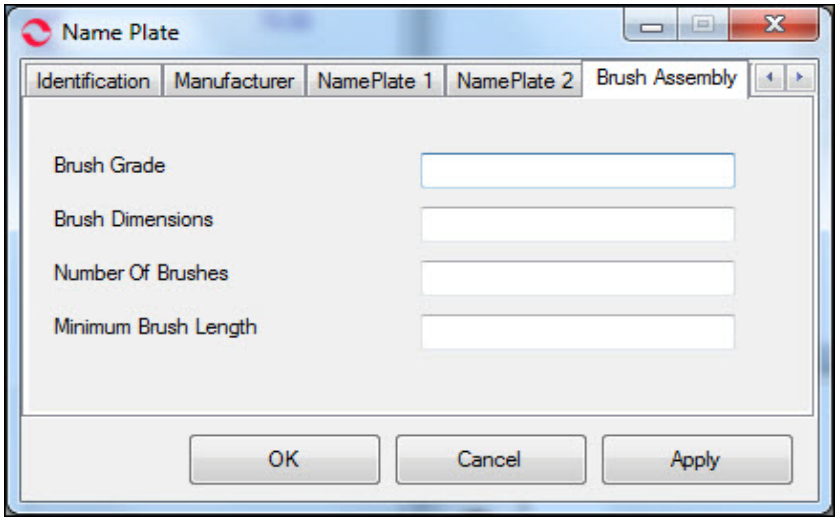


Figure 3-43: Nameplate: Brush Assembly Tab (Synchronous Asset)

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Armature Tab

The Armature tab shown in Figure 3-44 appears for DC assets only. It has text boxes for Number of Poles, Commutator Segments and Armature Type. There are no required fields. Enter the desired information and click **OK** to save the changes and close the window or **Apply** to save the changes and keep the Nameplate window open.

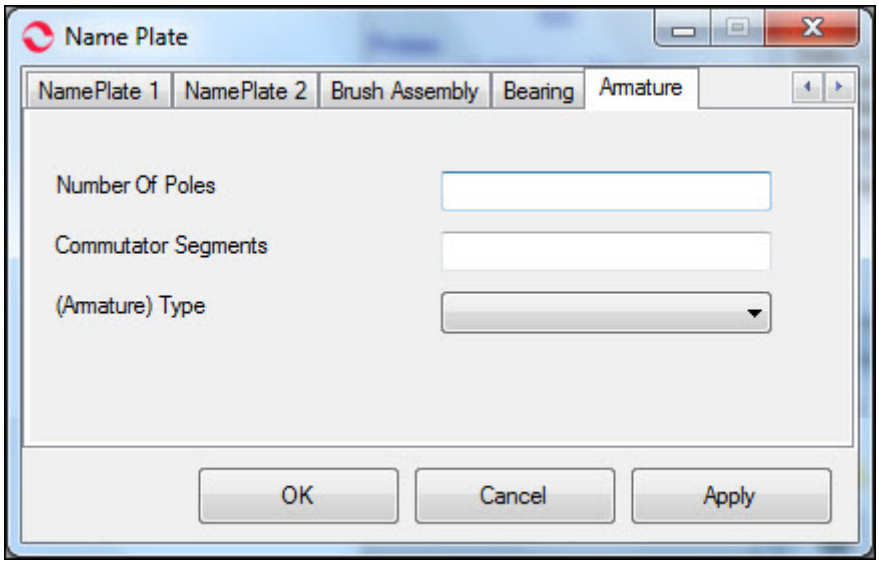


Figure 3-44: Nameplate: Armature Tab (DC Asset)

Add Asset

You can quickly add an asset by selecting the Add Asset icon 

from the toolbar.

Adding an asset is discussed on page 3-12.

Warning Settings

Warning Settings enables you to change the warning settings for the asset that has been highlighted on the Site Navigator. If the asset hasn't been assigned a template (using the Asset Manager, Warning Setting from the MCEGold menu) the default settings are displayed.

1. Highlight the asset on the Site Navigator.

2. Select the Warning Settings icon  on the toolbar. The Warning Settings window shown in Figure 3-45 opens.

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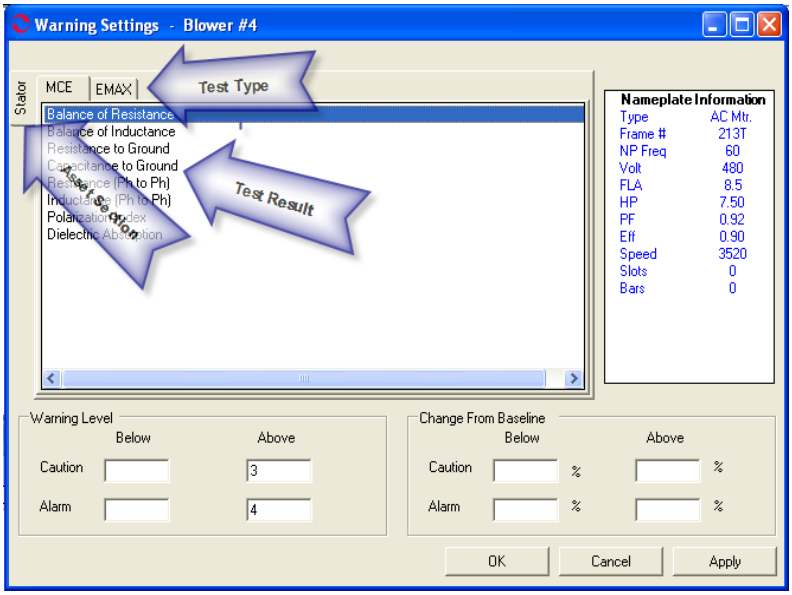


Figure 3-45: Warning Settings Window

3. Select the Test Type and Asset Section tabs.

4. Highlight the test results you wish to change the warning setting for.

5. Make the changes in the Warning Level and Change From Baseline values.

6. Click **Apply** to apply the new settings and keep the window open or click **OK** to apply the new settings and close the window.

Test History

Highlight an asset in the Site Navigator and select the Test History icon on the toolbar. The Test History window for the selected asset opens. The window opens to the MCE test results, shown in Figure 3-46. To view EMAX tests results, click the EMAX button. The window will change to show the EMAX test results tabs as seen in Figure 3-47. To view the various test results select the appropriate tab.

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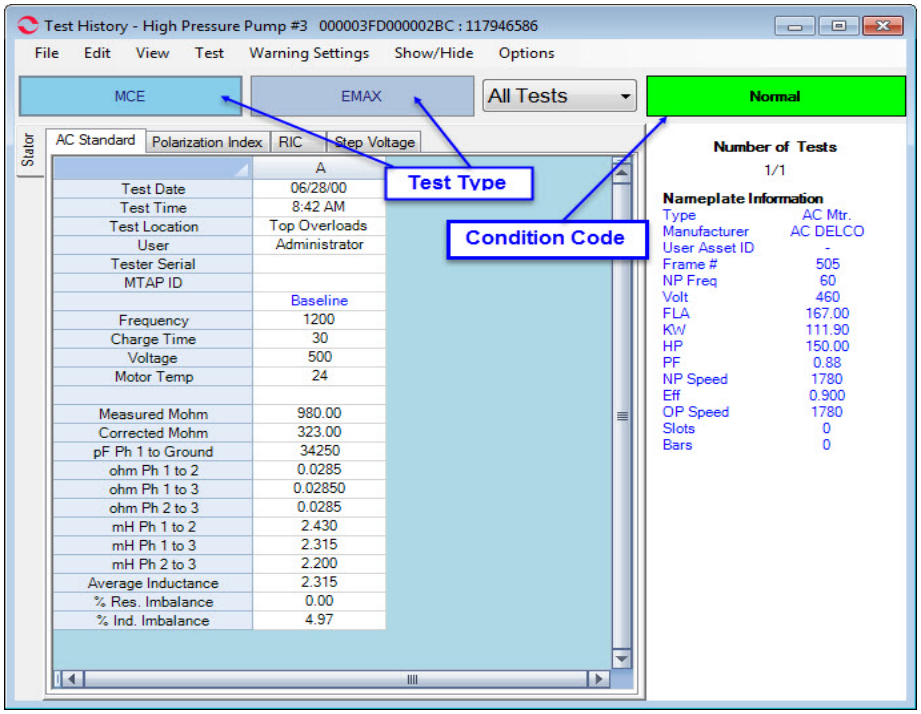


Figure 3-46: Test History Window-MCE Tests

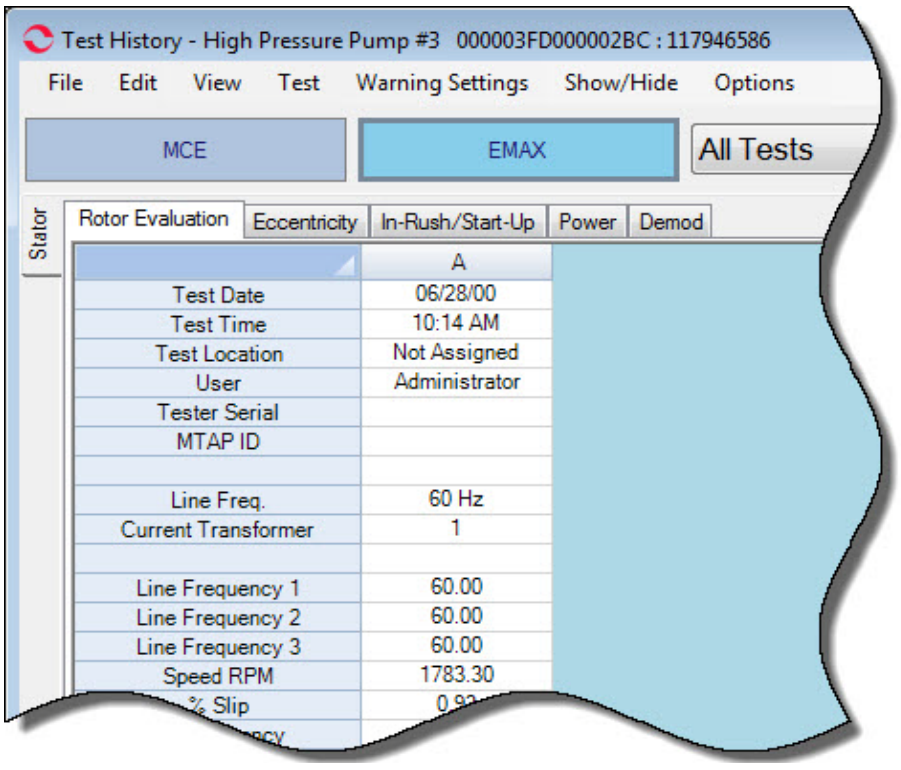
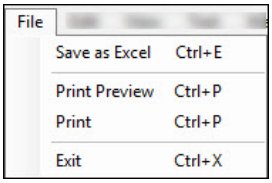


Figure 3-47: Test History Window-EMAX Tests

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Test History Menu

File



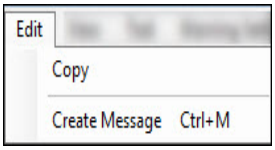
Save As Excel (Ctrl+E). To save the test results as an Excel file, select File from the menu and Save As Excel or Ctrl+E. The Save Data window opens. Enter the location and a File name, and click **Save**.

Print Preview (Ctrl+P). Selecting File, Print Preview shows the selected report on the computer screen before printing. You can print from this window using the tool bar.

Print (Ctrl+P). Selecting File, Print causes the Print window to open. Select the desired printer and options and click **Print**.

Exit (Ctrl+X). Selecting File, Exit or Ctrl+X closes the Test History window.

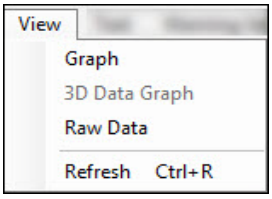
Edit



Copy. The Copy function works in conjunction with preparing a Detailed Report. See Detailed Report section on page 3-65.

Create Message (Ctrl+M). To add a note to the asset, select Edit, Create Message from the Test History window. The Compose Asset Message window opens. Compose Asset Message is covered in the Message Center Section on page 3-55.

View



Graph. A graph can only be prepared if there are more than one test of the same type on the asset. Highlight the row or rows containing the measured data to be graphed. Select View, Graph to display the History Graph. The resulting graph may be saved, print previewed, printed, or the window closed using the File menu on the History Graph window.

3D Data Graph. This option is inactive/grayed out for MCE, but active for EMAX. To view the 3D graph, highlight one or multiple EMAX test(s) and select View 3D Graph from the menu. To change the perspective of the graph, click on the graph and use the cursor to rotate/change the view.

Raw Data. To view the raw data, select the test results tab, highlight the test, and select View, Raw Data from the Test History window menu. Figure 3-48 is a sample of the raw data window for a eccentricity test. Test History and data interpretation are discussed in Chapter 5-MCE, Chapter 6-EMAX Current Analysis, and Chapter 7- EMAX Power Analysis.

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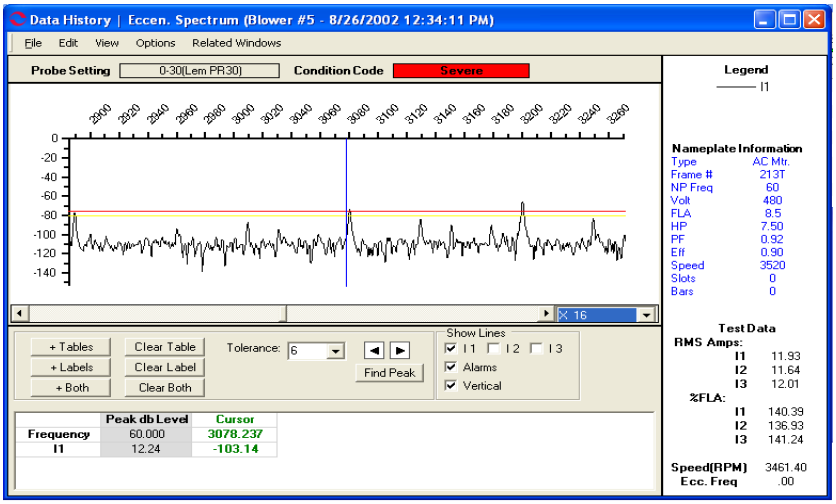
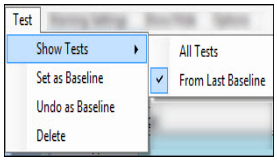


Figure 3-48: Data History Using the Raw Data Menu

Refresh (Ctrl+R). Refresh updates the Test History window with changes that have been made to the asset.



Test

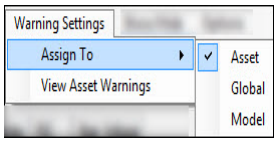
Show Tests: All Tests. Selecting Test, Show Tests, All tests causes the Test History window to display all test results for the selected asset.

Show Tests: From Last Baseline. Selecting Test, Show Tests, From Last Baseline causes the Test History to hide any tests before the last baseline and display all tests subsequent to the last baseline test.

Set as Baseline. To set a particular test as the baseline, highlight the test, select Test, Set as Baseline from the Test History window. The word Baseline will appear in the column below the M*TAP* ID and just above the test results.

Undo as Baseline. To undo a baseline designation, highlight the test results column, select Test, Undo a Baseline from the Test History window menu. The word Baseline will be removed from the test results column and alarm conditions from subsequent test results dependent on the baseline will be removed.

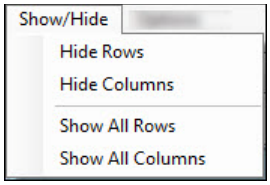
Delete. To remove test results for a particular test, highlight the test results column, select Test, Delete from the Test History window menu. Click **OK** when informed the selected test has been deleted. Note: When test results are deleted it is permanent and they are irretrievable.



Warning Settings

Warning settings are discussed previously in this chapter in the Asset Manager, Warning Settings section on pages 3-10 and 3-38.

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Show/Hide

Hide Rows. To hide one row or many rows of test data, highlight the row/s and select Show/Hide, Hide Rows from the Test History window menu. This is useful when you have more rows than will display on the computer screen or you just want to see specific test results.

To select rows that are contiguous, highlight the first row, then press and hold the shift key on the keyboard, click on the last row you want to be included, release the shift key. All rows between will be highlighted. Then select Show/Hide, Hide Rows from the Test History window menu.

To select rows that are not contiguous highlight the first row, then press and hold the Ctrl key on the keyboard and click the next row to be highlighted. Continue until all rows you wish to hide are highlighted. Release the Ctrl key. All rows will be highlighted. Then select Show/Hide, Hide Rows from the Test History window.

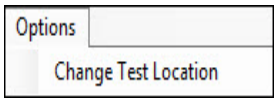
Hide Columns. To hide one column or many columns of test data, highlight the column/s and select Show/Hide, Hide Columns from the Test History window menu. This is useful when you have more columns than will display on the computer screen or you just want to see specific test results.

To select columns that are contiguous, highlight the first column, then press and hold the shift key on the keyboard, click on the last column you want to be included, release the shift key. All columns between will be highlighted. Then select Show/Hide, Hide Columns from the Test History window menu.

To select columns that are not contiguous highlight the first column, then press and hold the Ctrl key on the keyboard and click the next column to be highlighted. Continue until all columns you wish to hide are highlighted. Release the Ctrl key. All columns will be highlighted. Then select Show/Hide, Hide Columns from the Test History window.

Show All Rows. To show rows that have been previously hidden select Show/Hide, Show All Rows from the Test History window menu.

Show All Columns. To show columns that have been previously hidden select Show/Hide, Show All Columns from the Test History window menu.



Options

Change Test Location. To change the test location of an asset, select Options, Change Test Location from the Test History window menu. The Change Test Location window opens. Select the desired test location from the drop down box and click **Save**.

Test Selection

Test Selection is used to perform individual tests. If an automatic combination of tests is preferred the MCE Auto or EMAX Auto icons should be chosen from the toolbar. See MCE Auto or EMAX Auto on page 3-52. Highlight an asset on the Site Navigator and select Test Selection icon 

on the toolbar. The Test Selection window shown in Figure 3-49 opens. Select the MCE or Emax tab and highlight the desired test. Verify the testing values are correct and click **Test**. Using the Test Selection window and testing is discussed in more detail in Chapter 5, MCE Testing, Chapter 6, EMAX Current Analysis, and Chapter 7, EMAX Power Analysis.

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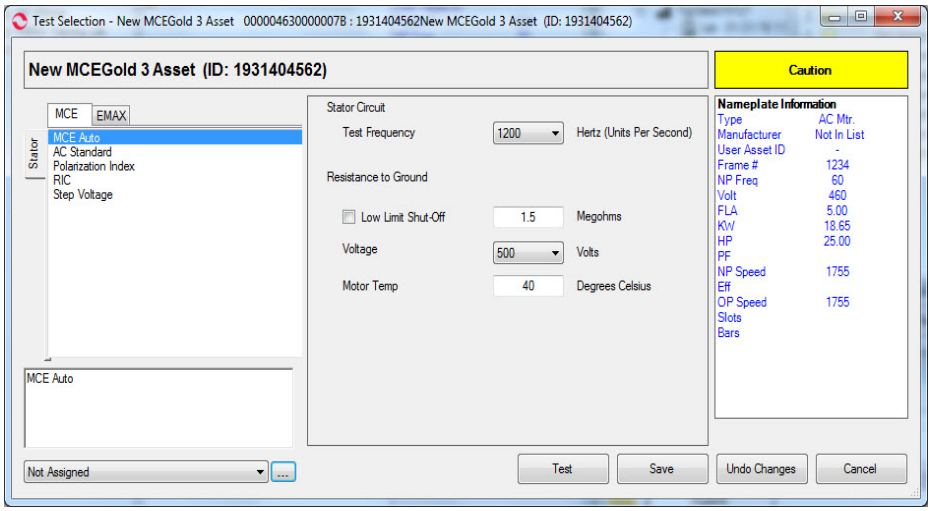


Figure 3-49: Test Selection Window

Search

The Search function enables you to locate a specific asset in the Site Navigator. Selecting the Search icon 

from the toolbar opens the Asset Search window shown in Figure 3-50. There are two types of search, simple or advanced search.

Simple Search

If you know the name of the asset or folder, select the Asset/Segment Name option button and enter the name in the search textbox and click **Search.** The asset/folder will be listed in the Search window and highlighted on the Site Navigator. You may also search by User Asset ID, by selecting the User Asset ID option and typing the Asset ID in the textbox and click **Search**.

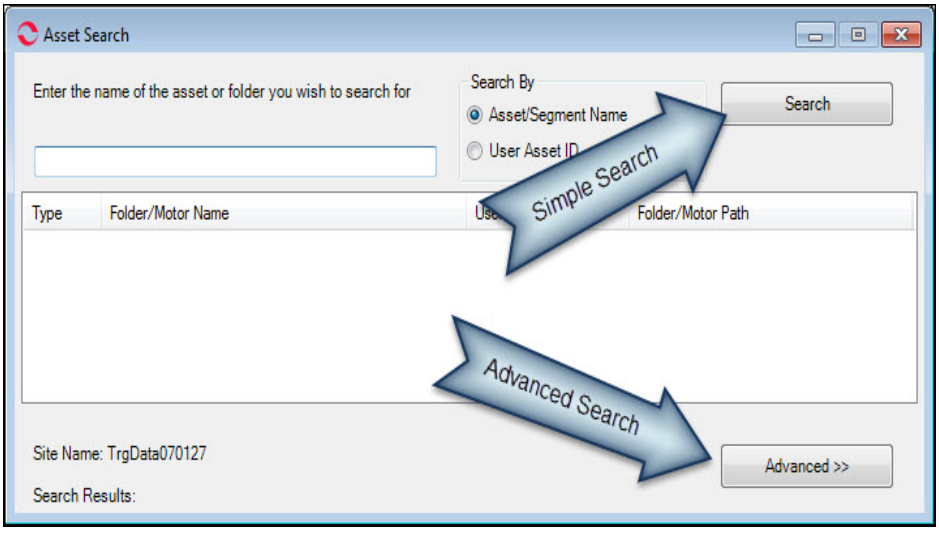


Figure 3-50: Asset Search Window

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Advanced Search

Advanced Search is an extensive program that searches the entire database to locate specific assets using the nameplate data and/or test results. You can use as many or as few of the search criteria as needed, but at least one criteria must be selected. Depending upon the criteria chosen, the results will be displayed as a single asset or a list of assets in a new window titled Search Results. From the Asset Search window, click the Advanced button. This opens the Advanced Search window shown in Figure 3 - 51.

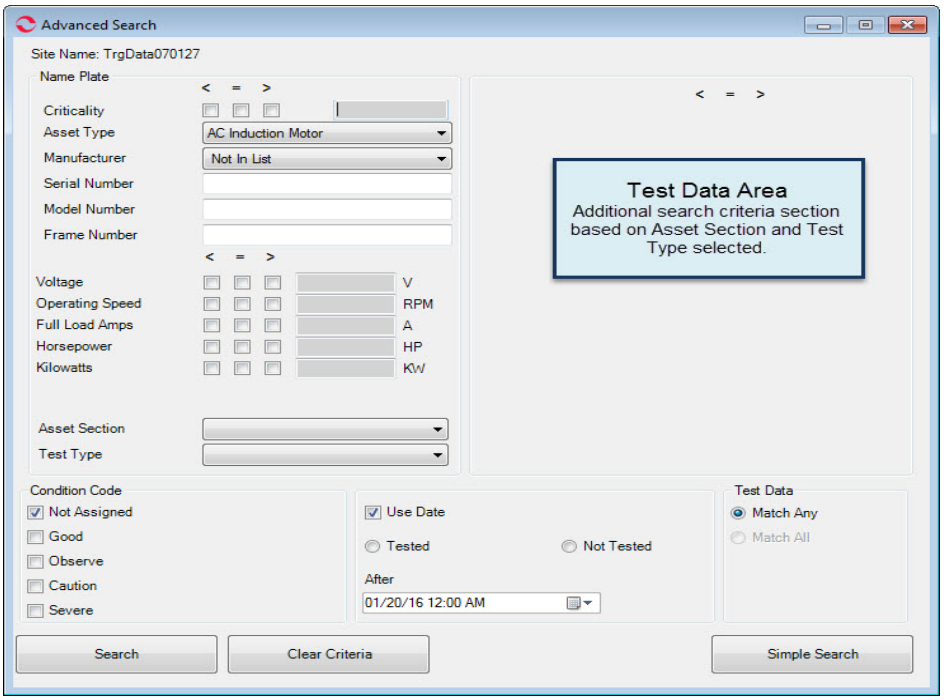


Figure 3-51: Advanced Search Window

Search Criteria

Criticality is assigned at the time the asset is setup.

Asset Type is a drop-down list box. You can select from the drop-down list or leave it blank. Click the down arrow and scroll through the list to select the asset type.

Manufacturer is a drop-down list box displaying the manufacturer list database. Click the down arrow and scroll through the list to select the manufacturer or type the first letter of the name and click the down arrow to go to that alphabetical section of the list.

Serial Number, Model Number, and Frame Number are text boxes. Type the motor identifier in the text box, matching spaces and dashes, but it is not necessary to match case.

Voltage, Operating Speed, Full Load Amps, Horsepower, and Kilowatts all have check boxes to indicate values that are less than (<), equal to (=), or greater than (>). You may select one or two, but not < and > together. If a box is checked, a value must be entered in the text boxes to the right of the check boxes.

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Asset Section is a drop-down list box displaying the asset sections appropriate for the asset type chosen. A asset type selection must be made before selecting an asset section. If an asset type is not chosen, the asset section list will be empty.

Condition Code searches based on asset condition. A check mark in the box indicates the code is selected. Any combination of boxes is allowed.

Test Type is a drop-down list box displaying all of the test types. When the test type is selected, the upper right hand section of the window displays additional search criteria based on the test type. See Test Data information on this page.

Date Section contains three options:

Use date is inactive until selected. Selecting Use Date activates the Tested, Not Tested and After functions.

Tested will search for assets that have been tested after the date in the After text box. The date can be manually changed to the desired date by typing it in or using the drop down calendar.

Not Tested will search for assets that have not been tested after the date in the After text box. The date can be manually changed to the desired date by typing it in or using the drop down calendar.

After is the test date criteria chosen. It can be manually changed to the desired date by typing it in or using the drop down calendar

Test Data area is located in the upper right corner. The area is blank until a test type is selected, then the appropriate test data criteria are displayed. Figure 3-52 shows how the area would look if Power is selected as the test type. The check boxes indicate values that are less than (<), equal to (=), or greater than (>). You may select one or two, but not < and > together or all three. If a box is checked, a value must be entered in the text boxes to the right of the check boxes.

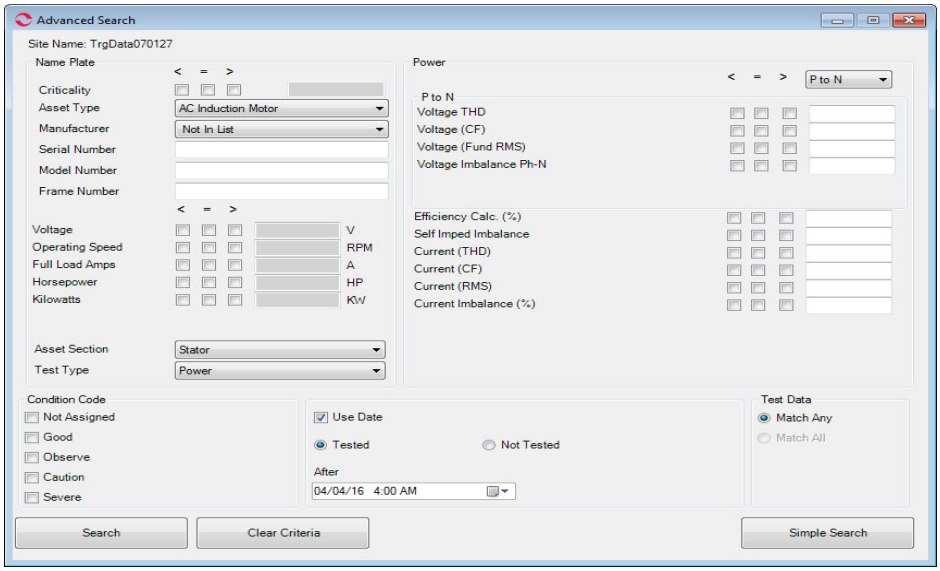


Figure 3-52: Advanced Search Window

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Search Buttons

Search

Search searches the entire database using the criteria selected. When completed, a list of assets matching the search criteria is displayed in a new window titled Search Results, shown in Figure 3-53. To locate a listed asset on the Site Navigator highlight it. To view the search criteria, you can use the scroll buttons or click the Show All button, which opens a new window displaying the search criteria.

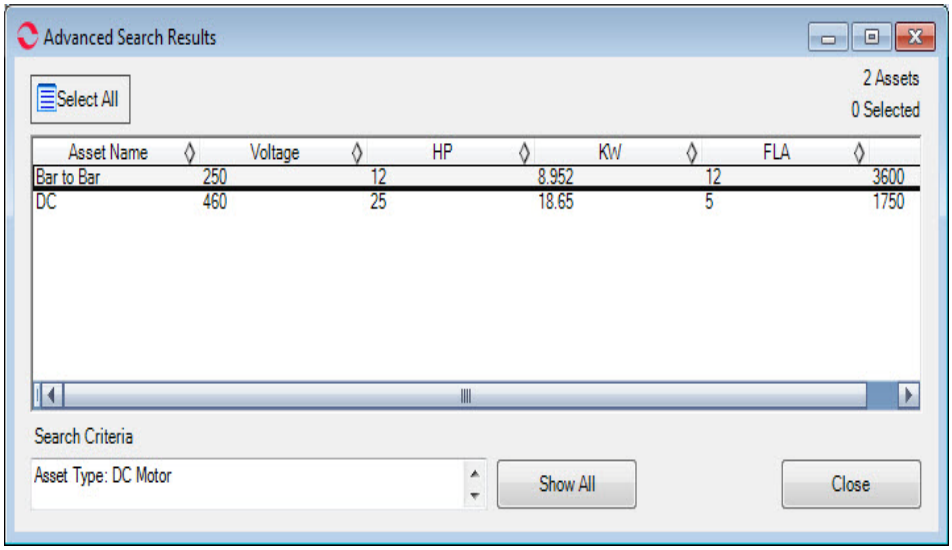


Figure 3-53: Advanced Search Results Window

Clear Criteria

Clear Criteria removes all previously entered search criteria, so you may begin a new search using different criteria.

Simple Search

The Simple Search button returns you to the initial window where you can search by name or scrolling through the asset list.

WatchList

The WatchList window, shown in Figure 3-54, is one of four windows that open automatically when MCEGold is started. If it is closed you may re-open it by selecting the WatchList icon  on the toolbar.

The WatchList can be used for multiple purposes. For example, it can be a list of critical assets or a work list for the technician or both. The WatchList can have multiple user developed lists. The window consists of three sections, the upper left section displays the names of the lists, the lower left section gives the administrative details of the selected list, and the large section on the right displays the assets and selected details of the selected WatchList. The asset details are: condition code (represented by a color coded icon), Criticality, Name, Type, Last EMAX Test Date, Last MCE Test Date, Last Condition Change.

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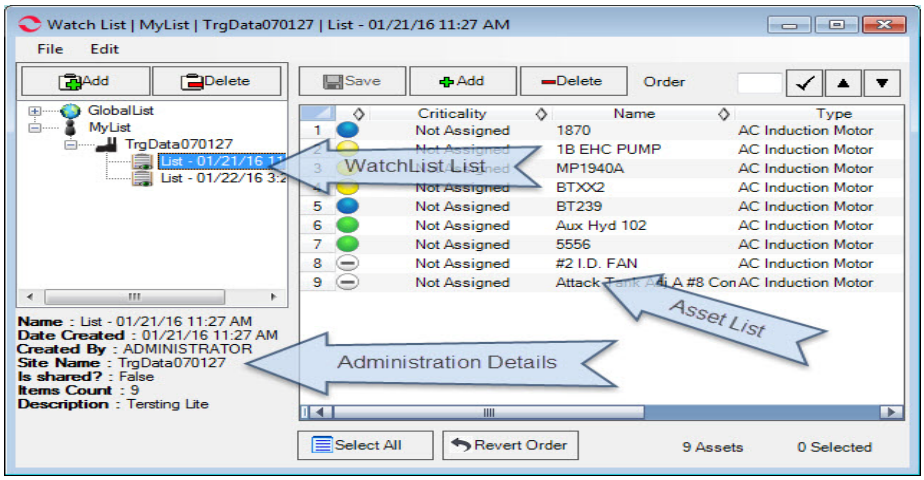
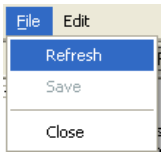


Figure 3-54: WatchList

WatchList Menu

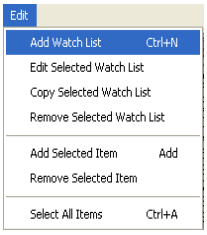


File

Refresh. Using the Refresh function updates the WatchList window after changes have been made.

Save. The save function saves changes that have been made to the WatchList.

Close. The Close function closes the WatchList window.



Edit

Add Watch List (Ctrl+N) . The Add Watch List function creates a new WatchList this may also be accomplished by clicking the Add button 

. See the section titled Create a WatchList for more information.

Edit Selected WatchList. Edit Selected WatchList opens the WatchList Edit window which allows you to modify the name, change the shared function, and add or modify the description. When changes have been made, click **OK**. The changes will update automatically on the window, but you must save them (File, Save) before exiting the WatchList or MCEGold or the changes will be lost.

Copy Selected WatchList. To copy a WatchList select Edit, Copy Selected WatchList from the WatchList window menu. The WatchList Copy window shown in Figure 3-55 opens.

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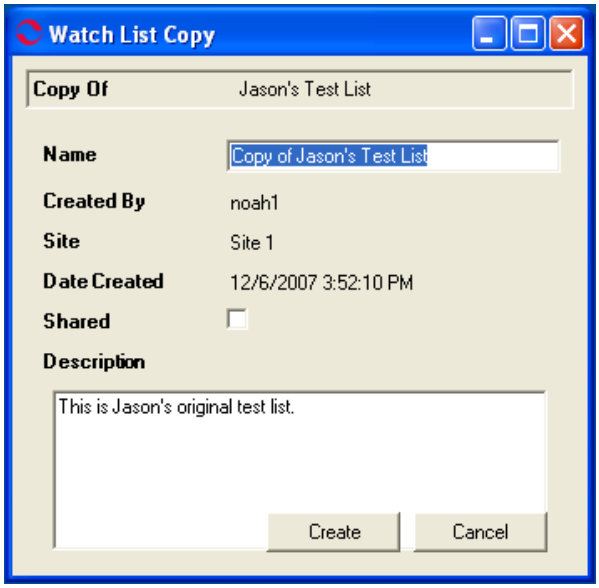
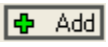


Figure 3-55: WatchList Copy Window

You may change the name, shared feature, and description. Then click **Create**. The new copied WatchList will automatically appear on the WatchList list.

Delete Selected WatchList. To completely delete a WatchList, select File, Delete Selected WatchList from the WatchList window menu. This may also be accomplished by using the Delete button 

. See the section titled Delete WatchList for more information.

Add Selected Item. To add a selected asset to a WatchList, select File, Add Selected Item from the WatchList window menu. See the section titled Add Asset to WatchList for more information. This may also be accomplished by clicking the Add button 

. See the section titled Add Asset to WatchList on page 3-50 for more information.

Delete Selected Item. To delete an asset from a WatchList, select File, Remove Selected Item from the WatchList window menu. See the section titled Delete Asset from WatchList on page 3-50 for more information.

Select All Items (Ctrl+A). To highlight all of the assets in a selected WatchList, highlight the WatchList name, select File, Select All Items from the WatchList window menu. All of the assets in the asset list will be highlighted.

Create a WatchList

1. If the WatchList window is not open, click the WatchList icon on the MCEGold Home window toolbar.

2. In the WatchList window (upper left section), click 

.

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3. In the WatchList Create window shown in Figure 3-56, fill in the list name, check the Shared box if you wish others to be able to make changes to this list, and enter a description. All other information is automatically entered for you. Click **Create**.

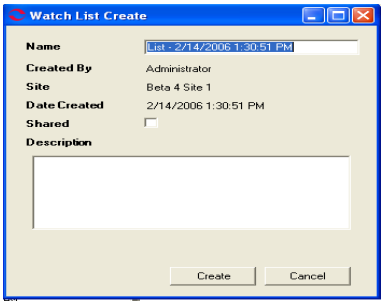


Figure 3-56: WatchList Create

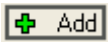
4. The list name will appear on the layout in the upper left section displaying WatchList names. The name will be preceded by an icon  representing a WatchList. The lower left section gives the administrative details of the list.

5. The asset list on the right side is blank. You are now ready to add assets to the new WatchList.

Add Asset to WatchList

1. Highlight a WatchList from the list of name on the WatchList window.

2. Highlight a single or multiple assets on the Site Navigator window. You may also select assets from a list generated by the Site Condition window.

3. Click 

on the asset section of the WatchList window. The asset's information is added to the WatchList.

4. Click Save 

on the asset section of the WatchList to save the additions to the WatchList.

Delete WatchList

1. Highlight a WatchList in the WatchList section (upper left).

2. Click the **Delete** button, 

, found in the upper left section.

3. The Confirm Delete window opens. Verify the correct WatchList is being deleted and click **Yes**. The list will be removed immediately.

Delete Asset From WatchList

1. Highlight an asset on the asset section (right side) of the WatchList window.

2. Click the **Delete** button, 

, found in asset section on the right side of the WatchList window. This deletes the highlighted asset from the WatchList.

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3. Click **Save** Save to save the changes made to the asset list.

Asset List Section

Selected information is displayed for the assets in a WatchList. This information is: Condition Code (represented by a color coded icon) Criticality, Name, Type, Last EMAX Test Date, Last MCE Test Date, Last Condition Change.

Re-ordering the List. When a WatchList is created there is an order number associated with each asset in the list. The order number is located in the first column of the list. It is possible to change the order the assets appear on the list. The original order number is displayed to the right of the **Delete** button and does not change when the asset is moved to a different place in the list.

To move the asset to another location on the list, highlight the asset to be moved, enter the desired order number in the text box located just above the list, and click the **Change** button ✓.

To move an asset up or down one line at a time, highlight the asset to be moved, and use the **Up** button ▲ or **Down** button ▼.

See Figure 3-57 for the order number before re-ordering the list. Figure 3-58 shows the order number after re-ordering.

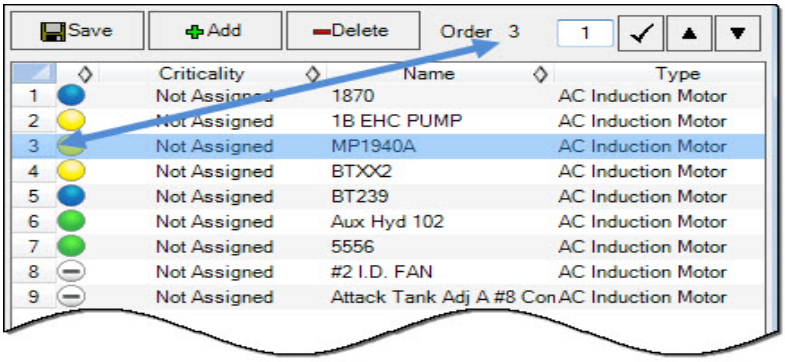


Figure 3-57: Asset List Order Number Before Re-order

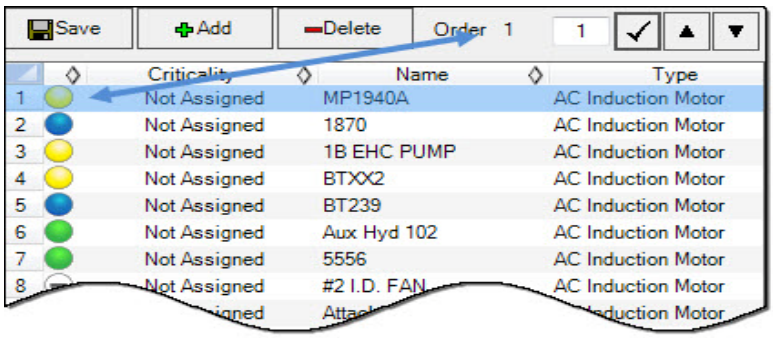


Figure 3-58: Asset Order Number After Re-order

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MCE Auto

MCE Auto performs a Standard test followed by a Polarization Index Test, then saves the test data and produces a Fault Zone Report. Selecting the MCE Auto icon 

by-passes the Test Selection window and starts the Standard test using the previously saved test setup settings.

> Note: If you need to change the test setup settings, select the Test Selection icon, the Test Selection window opens, make your changes, and select MCE Auto on the Test Selection window.

MCE Auto Test

1. Highlight an asset on the Site Navigator.
2. Click the MCE Auto icon 

on the toolbar.
3. The testing begins automatically and ends with the display of the Fault Zone Report.

There is a full discussion of the MCE Auto test and its windows in Chapter 5, MCE.

EMAX Auto

EMAX Auto automatically starts the Rotor Evaluation tests, followed by the Eccentricity, Power, and Demod tests. At the completion of the tests, the test results are saved, and the Fault Zone Report is displayed.

Selecting the EMAX Auto icon 

by-passes the Test Selection window and starts the Rotor Evaluation test using the previously saved test setup settings.

> Note: If you need to change the test setup settings, select the Test Selection icon, the Test Selection window opens, make your changes, and select EMAX Auto on the Test Selection window.

EMAX Auto Test

1. Highlight an asset on the Site Navigator.
2. Click the EMAX Auto icon 

on the toolbar.
3. The testing begins automatically and ends with the display of the Fault Zone Report.

Fault Zones

Selecting the Fault Zone icon  from the toolbar opens the Fault Zone Report for the selected Asset. You must have an asset highlighted on the Site Navigator. See Figure 3-59.

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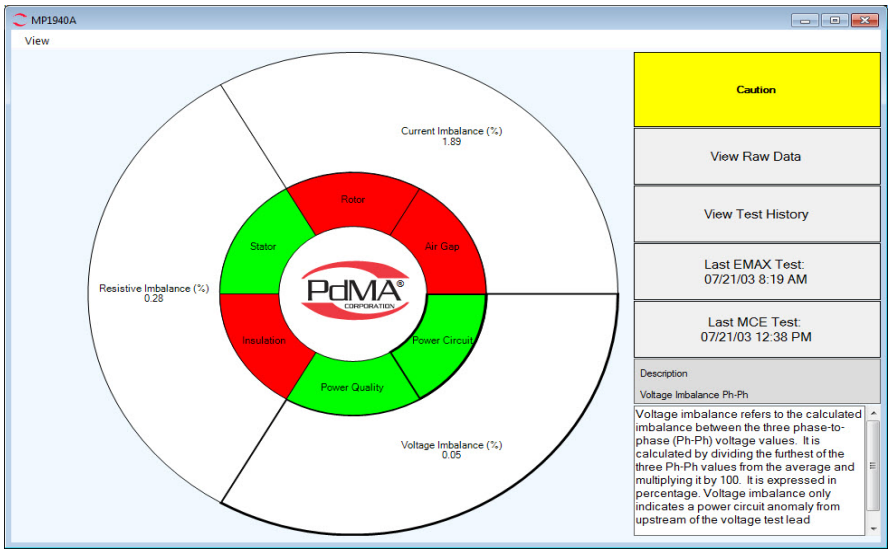


Figure 3-59: Fault Zone Report Window

The Fault Zone window contains an optical presentation of the six fault Zones in the center and areas on the right hand side for the Condition Code button, View Raw Data button, View Test History button, the date of the last EMAX test, Date of the last MCE test, and a description of the item highlighted on the optical chart.

Condition Code. Click on the Condition Code button to open the Condition Code Update window. From this window you can change the condition code by clicking on the code choices on the left. The selected code will appear in the Selected Condition Code box. Click Update Condition to change the code and exit the window or Cancel to exit the window without making any changes.

View Raw Data. Click on the View Raw Data button to open the Data History window.

View Test History. Click on the View Test History to open the Test History window.

Last Emax Test. Click on the Last EMAX Test button to open the Test History window displaying the EMAX test results.

Last MCE Test. Click on the Last MCE Test button to open the Test History window displaying the MCE test results.

Description. The Description area changes as values on the optical chart are highlighted. No changes can be made to the descriptions.

Message Center

The Message Center window, shown in Figure 3-60, is one of four windows that open automatically when MCEGold starts. It is located across the lower part of the MCEGold Home window. When it opens initially the right hand pane is blank. If the Message Center has been closed, it can be re-opened by selecting the Message icon  on the toolbar.

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In Message Center you can enter, view, edit, and delete notes for one asset or a list of assets.

Notes are automatically generated when a condition is assigned or changed or when the warning levels are changed. Other notes are entered by the user.

If an asset has notes associated with it, they will be automatically listed whenever the asset name is highlighted on Site Navigator.

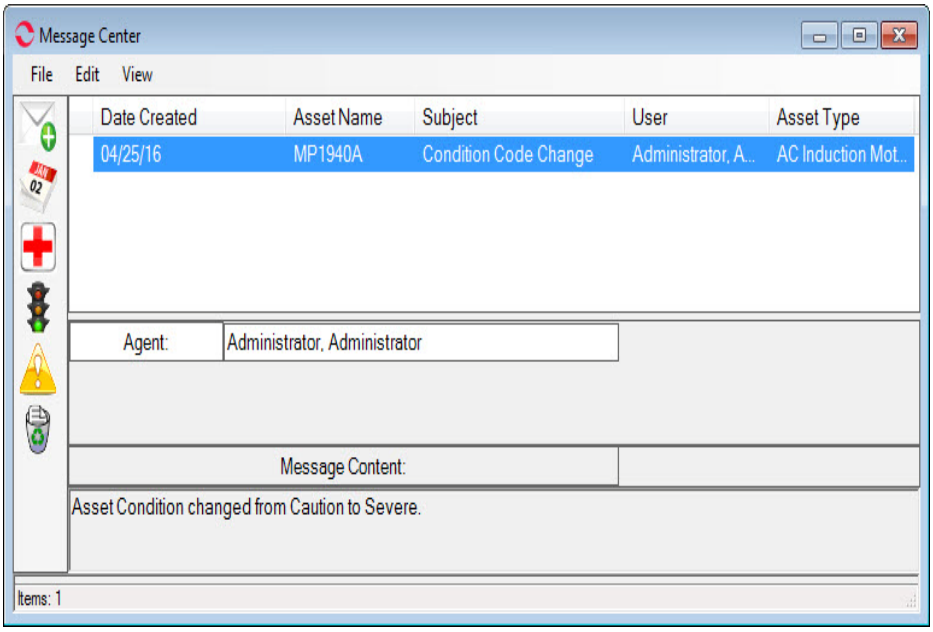
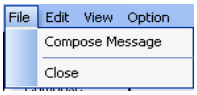


Figure 3-60: Message Center

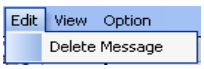
Message Center Menu



File

Compose Message. An asset must be highlighted on the Site Navigator to compose a note in the Message Center. Select File, Compose Message from the Message Center window menu. The Compose Message window opens. The window and a discussion are shown on page 3-55.

Close. Selecting File, Close from the Message center window menu closes the Message Center. You can re-open it by clicking the Message icon on the MCEGold Home window toolbar.

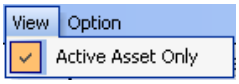


Edit

The Edit menu displays only Delete Message unless the Trash icon is selected. If the Trash icon is selected, a list of deleted notes waiting for disposal appears and the Edit menu displays the Restore Message and Delete Message sub-menu functions. See Trash on page 3-57 for information on deleting or restoring messages from the trash.

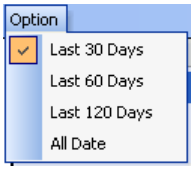
Delete Message. To delete a message highlight the message in the Message Center window and select Edit, Delete Message from the Message Center menu. You will be asked to confirm you wish to send the message to the trash can. Click **Yes**.The message will be deleted and held in the Trash.

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View

Active Asset Only. Active Asset Only causes the Message Center to provide information only for the asset highlighted on the Site Navigator when Asset diagnostics is selected. If it is unchecked a list of all assets in the database with notes will be generated when Asset Diagnostics is selected. The check mark acts as a toggle to view either active/ selected asset or all assets with notes.



Option

The Option function allows you to see messages created in a specific period of time, last 30, 60 or 120 days, or all dates. A check mark indicates the selection.

View Notes

1. Select Message icon  on the toolbar, if the Message Center window is not open.

2. Verify that Active Asset Only on the View menu of Message Center window is in the checked or unchecked position (which ever is desired).

3. Select the note date range from the Option menu of the Message Center window.

4. Click the Asset Diagnostic icon  . A list of assets will be compiled depending on the status of the Active Asset Only and date range selections from the menu.

   Note: Unless you have Active Asset Only checked in the View menu, when Asset Diagnostic is clicked it will display a list of all the assets in the Site Navigator that have notes. If Asset Only is checked, then only the asset highlighted on Site Navigator is displayed.

5. To view the notes associated with an asset, highlight the line for the asset. The notes are displayed in the section below the list.

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Compose

Using Compose allows you to add a note or attach files to a selected asset's record. Compose can be reached by selecting File, Compose Message on the Message Center menu or clicking the Compose icon  .

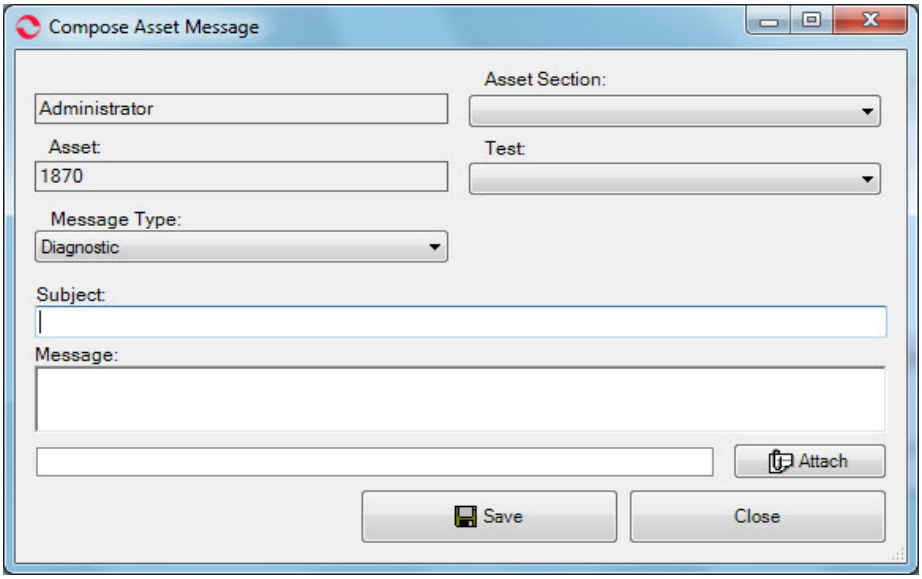


Figure 3-61: Compose Asset Message

Compose Message

1. Highlight an asset on the Site Navigator or in the WatchList.
2. Select File, Compose Message from the Message Center window menu or click the Compose icon  .
3. The Compose Asset Message window, Figure 3-61, opens.
4. The User and Asset names are automatically entered by MCEGold.
5. Enter a subject (required field).
6. Message Type, Asset Section, and Test text boxes are drop-down lists. They are not required fields.
7. Type your message in the blank area at the bottom of the window. A message is required.
8. To attach a file or document. click the **Attach** button.
9. The Open window opens. Locate the file and highlight it so that the name displays in the File Name textbox and click **Open**.
10. The file name is displayed in the Attachments area of the window.

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11. Click the **Save** button.

12. On the Message Center window, a paperclip to the left of the message line indicates a file or files are attached to the note.

View Attachment

1. Highlight the line of the message you wish to view.

2. Select the attached file from the drop-down list in the Attachment File textbox.

3. Select either the Open it or Save it to Disk option and click **OK**.

Scheduler

See Appendix B for a complete discussion of the scheduler function.

Asset Diagnostic

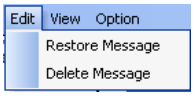
Click the Asset Diagnostic icon  in the left panel to display the desired asset or a list of all assets. Unless you have Active Asset Only checked in the View menu, when Asset Diagnostic is clicked it will display a list of all the assets in the Site Navigator. If Asset Only is checked, then only the notes for the asset highlighted in Site Navigator is displayed.

Asset Condition

A note is automatically generated by MCEGold when the condition code of an asset is changed. To view a list of the assets that have had a condition code change, click the Asset Condition icon  , then highlight the asset from the displayed list to view the associated notes.

Asset Warning Levels

A note is automatically generated by MCEGold when the warning levels of an asset are changed.To view a list of the assets that have had changes to their warning levels, click the Asset Warning Levels icon  , then highlight the asset from the displayed list to view the associated notes.



Trash

Clicking the Trash icon  displays a list of deleted notes.

Restore Message. You can restore a message to its original location by highlighting the note and selecting Edit, Restore Message from the Message Center window menu.

Delete Message . To permanently delete a message, select Edit, Delete Message from the Message Center window menu. This will permanently delete the message. You will be asked to verify that you wish to continue. Click **Yes** and the message disappears.

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Note: The Edit menu displays Delete Message when the message is highlighted. If the Trash icon is clicked, a list of deleted notes appears and the Edit menu contains Restore Message and Delete Message submenu functions.

Export File

Export File is used to create a file so that it can be sent to another computer electronically.

1. Highlight a single asset in Site Navigator.

2. Select the Export icon  on the toolbar.

3. In the Create Export File window, Figure 3-62, select a location to store your file.

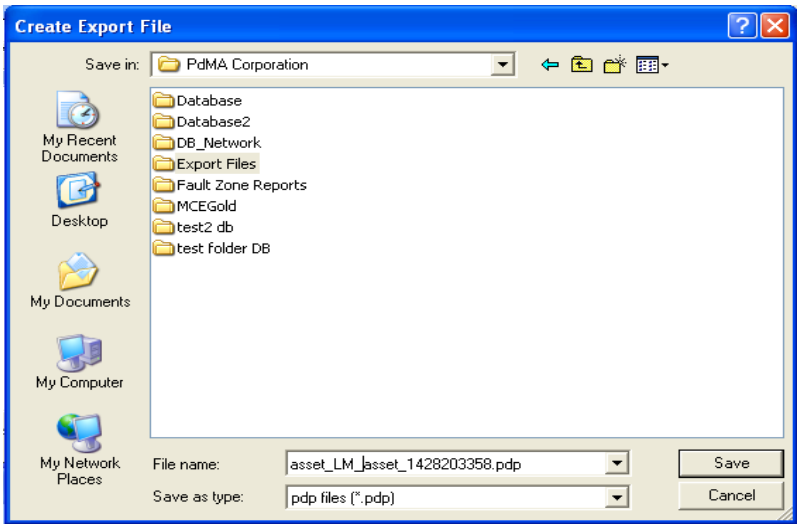


Figure 3-62: Create Export File

4. Change the File Name if desired. The file extension is .pdp. **Do not change the extension.**

5. Click **Save**.

6. Click **OK, w**hen the Single Asset Export message box informs you it is complete.

7. The file is now ready to send as an attachment or to be imported by another MCEGold tester.

Report

Report is reached by highlighting an asset on the Site Navigator and selecting the Report icon  on the toolbar. The Report window shown in Figure 3-63 opens. There are seven reports available: AC EMAX Summary, Asset Condition Code, Asset Inventory, MCE Summary, Message History, PI/DA Summary, and Detailed. An additional option is

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Word Report Templates. When a report type is selected its description will display in the Report Type Description area directly below Report Name. Not all of the options on the Report Selection window are available for every report. If an option is not available it will appear dimmed.

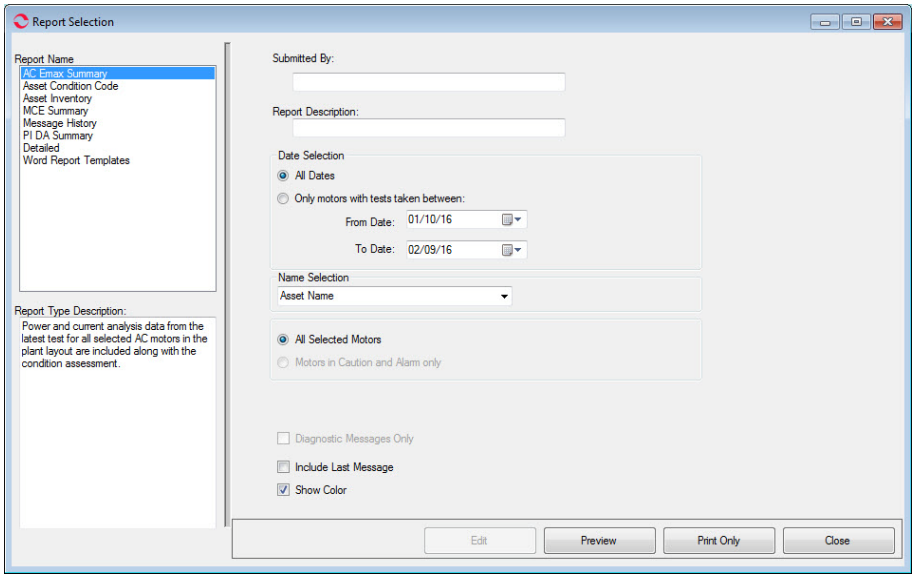


Figure 3-63: Report Selection Window

AC EMAX Summary

1. Highlight one or multiple assets on the Site Navigator.

2. Select the Report icon  from the MCEGold Home window toolbar.

3. Select AC EMAX Summary from the Report Name list, if not already highlighted. This is the default selection.

4. Fill in the Submitted By and Report Description text boxes.

5. Select the date. The choices will produce a report showing test data for All Dates or a selected date range depending on which radio button is selected. The default is All Dates.

   To select a date range, select the *Only motors with tests taken between* option button. Then either manually enter the date or use the drop-down calendar to select a date in the From Date and To Date text boxes.

6. Name Selection will be used in future versions.

7. The All Selected Motors option is automatically selected. For MCE and PI DA Summary reports Motors in Caution and Alarm Only may be selected.

8. Include Last Message in not selected by default, click on the check box to select this option if desired.

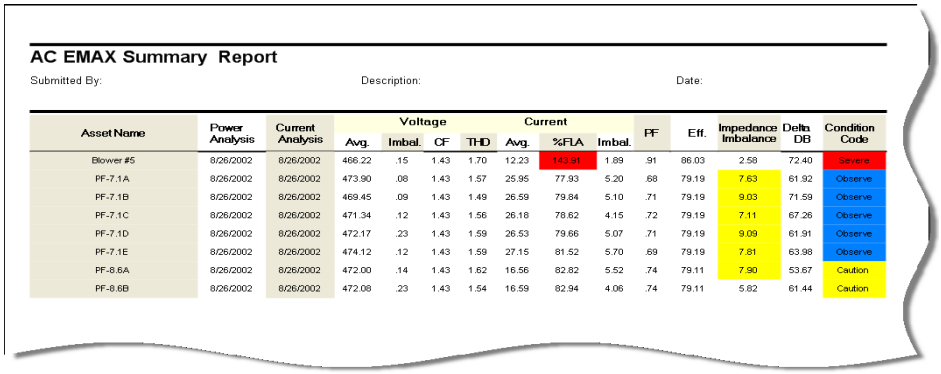
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9. Show Color is selected by default and causes the condition code color to appear on the report. Uncheck the box to deselect this option.

10. Click **Preview** to preview the report on the screen before printing or **Print Only** to print the report to your default printer. Figure 3-64 shows a completed report.

11. If there is no data for the asset, a message window opens indicating there is no data for the selected asset.

12. Close the Report Selection window using the **Close** button.



AC EMAX Summary Report

Submitted By: Description: Date:

Asset Name	Power Analysis	Current Analysis	Voltage				Current			PF	Eff.	Impedance Imbalance	Delta DB	Condition Code
			Avg.	Imbal.	CF	THD	Avg.	%FLA	Imbal.					
Blower #5	8/26/2002	8/26/2002	466.22	.15	1.43	1.70	12.23	143.91	1.89	.91	86.03	2.58	72.40	Severe
PF-7.1A	8/26/2002	8/26/2002	473.90	.08	1.43	1.57	25.95	77.93	5.20	.68	79.19	7.63	61.92	Observe
PF-7.1B	8/26/2002	8/26/2002	469.45	.09	1.43	1.49	26.59	79.84	5.10	.71	79.19	9.03	71.59	Observe
PF-7.1C	8/26/2002	8/26/2002	471.34	.12	1.43	1.56	26.18	78.62	4.15	.72	79.19	7.11	67.26	Observe
PF-7.1D	8/26/2002	8/26/2002	472.17	.23	1.43	1.59	26.53	79.66	5.07	.71	79.19	9.09	61.91	Observe
PF-7.1E	8/26/2002	8/26/2002	474.12	.12	1.43	1.59	27.15	81.52	5.70	.69	79.19	7.81	63.98	Observe
PF-8.6A	8/26/2002	8/26/2002	472.00	.14	1.43	1.62	16.56	82.82	5.52	.74	79.11	7.90	53.67	Caution
PF-8.6B	8/26/2002	8/26/2002	472.08	.23	1.43	1.54	16.59	82.94	4.06	.74	79.11	5.82	61.44	Caution

Figure 3-64: AC EMAX Summary Report - Preview

Asset Condition Code

1. Highlight one or multiple assets on the Site Navigator

2. Select the Report icon  from the MCEGold Home window toolbar.

3. Select Asset Condition Code from the Report Name list.

4. Fill in the Submitted By and Report Description text boxes.

5. All Dates is the default Date Selection and cannot be changed.

6. Name Selection will be used in future versions.

7. All Selected Motors is the default and cannot be changed.

8. Include Last Message is not selected by default, click on the check box to select this option if desired.

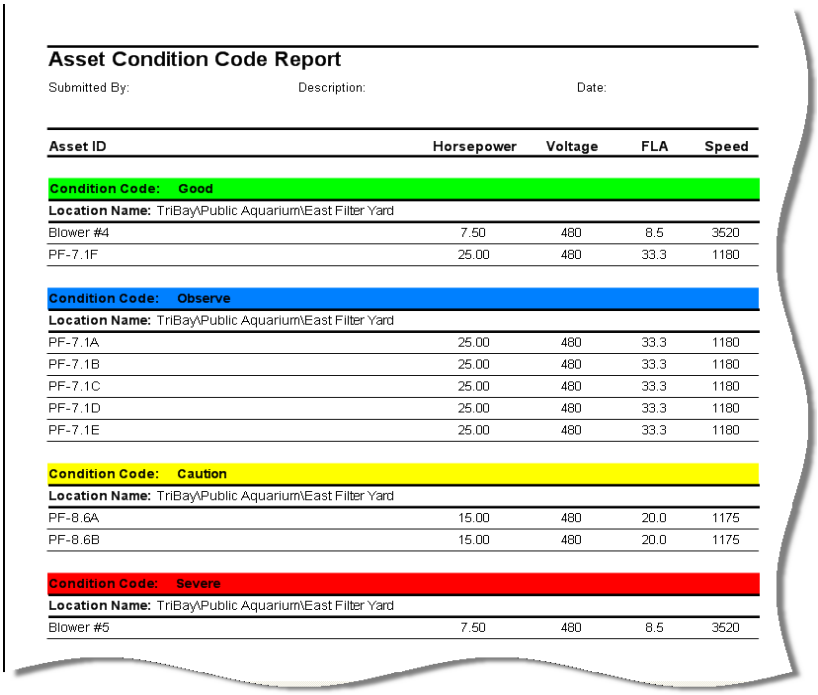
9. Show Color is selected by default and causes the condition code color to appear on the report. Uncheck the box to deselect this option.

10. Click **Preview** to preview the report on the screen before printing or **Print Only** to print the report to your default printer. Figure 3-65 shows a completed report.

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11. If there is no data for the asset, a message window opens indicating there is no data for the selected asset.

12. Close the Report Selection window using the **Close** button.



Asset Condition Code Report

Submitted By: Description: Date:

Asset ID	Horsepower	Voltage	FLA	Speed
Condition Code: Good				
Location Name: TriBay\Public Aquarium\East Filter Yard				
Blower #4	7.50	480	8.5	3520
PF-7.1F	25.00	480	33.3	1180
Condition Code: Observe				
Location Name: TriBay\Public Aquarium\East Filter Yard				
PF-7.1A	25.00	480	33.3	1180
PF-7.1B	25.00	480	33.3	1180
PF-7.1C	25.00	480	33.3	1180
PF-7.1D	25.00	480	33.3	1180
PF-7.1E	25.00	480	33.3	1180
Condition Code: Caution				
Location Name: TriBay\Public Aquarium\East Filter Yard				
PF-8.6A	15.00	480	20.0	1175
PF-8.6B	15.00	480	20.0	1175
Condition Code: Severe				
Location Name: TriBay\Public Aquarium\East Filter Yard				
Blower #5	7.50	480	8.5	3520

Figure 3-65: Asset Condition Code Report - Preview

Asset Inventory

1. Highlight one or multiple assets on the Site Navigator

2. Select the Report icon  from the MCEGold Home window toolbar.

3. Select Asset Inventory from the Report Name list.

4. Fill in the Submitted By and Report Description text boxes.

5. All Dates is the default Date Selection and cannot be changed.

6. Name Selection will be used in future versions.

7. All Selected Motors is the default and cannot be changed.

8. Include Last Message is not selected by default, click on the check box to select this option if desired.

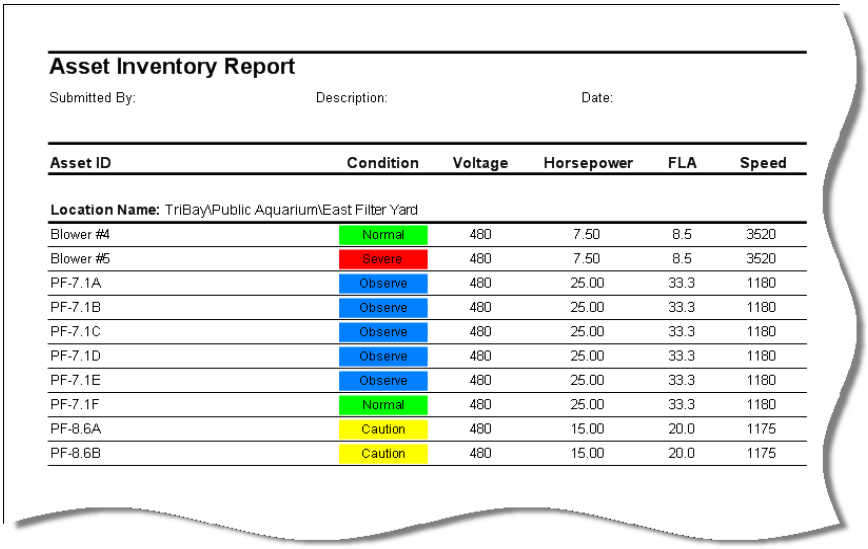
9. Show Color is selected by default and causes the condition code color to appear on the report. Uncheck the box to deselect this option.

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10. Click **Preview** to preview the report on the screen before printing or **Print Only** to print the report to your default printer. Figure 3-66 shows a completed report.

11. If there is no data for the asset, a message window opens indicating there is no data for the selected asset.

12. Close the Report Selection window using the **Close** button.



Asset Inventory Report

Submitted By: Description: Date:

Asset ID	Condition	Voltage	Horsepower	FLA	Speed
Location Name: TriBay\Public Aquarium\East Filter Yard					
Blower #4	Normal	480	7.50	8.5	3520
Blower #5	Severe	480	7.50	8.5	3520
PF-7.1A	Observe	480	25.00	33.3	1180
PF-7.1B	Observe	480	25.00	33.3	1180
PF-7.1C	Observe	480	25.00	33.3	1180
PF-7.1D	Observe	480	25.00	33.3	1180
PF-7.1E	Observe	480	25.00	33.3	1180
PF-7.1F	Normal	480	25.00	33.3	1180
PF-8.6A	Caution	480	15.00	20.0	1175
PF-8.6B	Caution	480	15.00	20.0	1175

Figure 3-66: Asset Inventory Report - Preview

MCE Summary

1. Highlight one or multiple assets on the Site Navigator

2. Select the Report icon  from the MCEGold Home window toolbar.

3. Select MCE Summary from the Report Name list.

4. Fill in the Submitted By and Report Description text boxes.

5. Select date. The choices are to produce a report showing test data for all dates or select a date range. The default is All Dates.

   To select a date range, select the *Only motors with tests taken between* option button. Then either manually enter the date or use the drop-down calendar to select a date in the From Date and To Date text boxes.

6. Name Selection will be used in future versions.

7. All Selected Motors option is the default. Select *Motors in Caution and Alarm only* if that option is desired.

8. Include Last Message is not selected by default, click on the check box to select this option if desired.

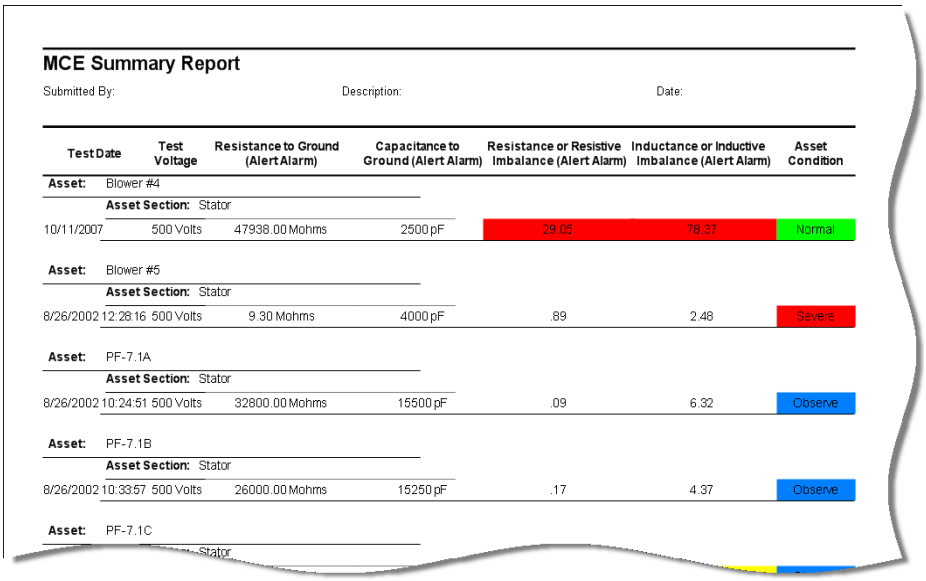
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9. Show Color is selected by default and causes the condition code color to appear on the report. Uncheck the box to deselect this option.

10. Click **Preview** to preview the report on the screen before printing or **Print Only** to print the report to your default printer. Figure 3-67 shows a completed report.

11. If there is no data for the asset, a message window opens indicating there is no data for the selected asset.

12. Close the Report Selection window using the **Close** button.



MCE Summary Report

Submitted By: Description: Date:

Test Date	Test Voltage	Resistance to Ground (Alert Alarm)	Capacitance to Ground (Alert Alarm)	Resistance or Resistive Imbalance (Alert Alarm)	Inductance or Inductive Imbalance (Alert Alarm)	Asset Condition
Asset: Blower #4						
Asset Section: Stator						
10/11/2007	500 Volts	47938.00 Mohms	2500 pF	29.05	78.37	Normal
Asset: Blower #5						
Asset Section: Stator						
8/26/2002 12:28:16	500 Volts	9.30 Mohms	4000 pF	.89	2.48	Severe
Asset: PF-7.1A						
Asset Section: Stator						
8/26/2002 10:24:51	500 Volts	32800.00 Mohms	15500 pF	.09	6.32	Observe
Asset: PF-7.1B						
Asset Section: Stator						
8/26/2002 10:33:57	500 Volts	26000.00 Mohms	15250 pF	.17	4.37	Observe
Asset: PF-7.1C						
Stator						

Figure 3-67: MCE Summary Report - Preview

Message History

1. Highlight one or multiple assets on the Site Navigator

2. Select the Report icon  from the MCEGold Home window toolbar.

3. Select Message History from the Report Name list.

4. Fill in the Submitted By and Report Description text boxes.

5. Select date. The choices are to produce a report showing messages for all dates or select a date range. The default is All Dates.

   To select a date range, select the *Only motors with tests taken between* option button. Then either enter the date or use the drop-down calendar to select a date in the From Date and To Date text boxes.

6. Name Selection will be used in future versions.

7. All Selected Motors option is the default and cannot be changed.

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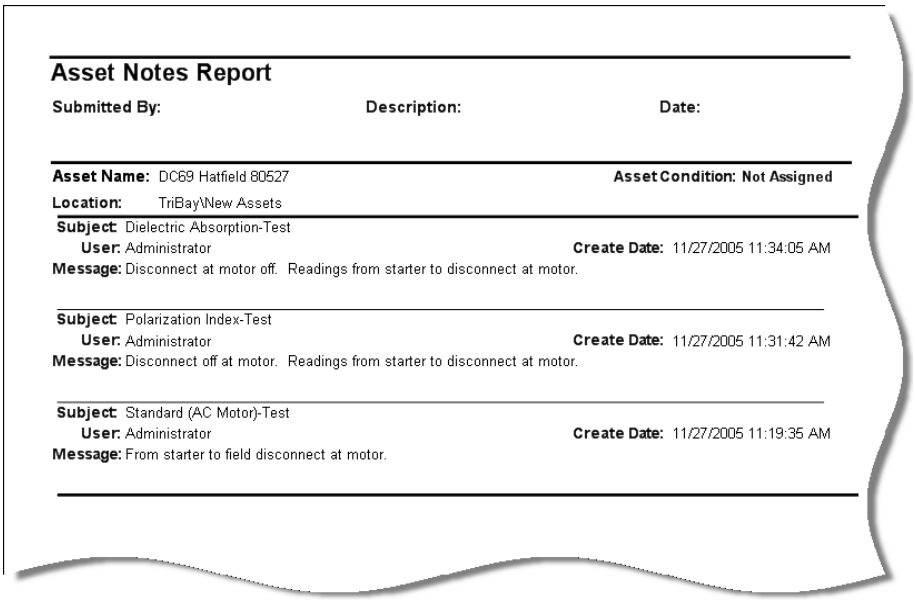
8. Diagnostic Messages Only is unchecked by default. Check the box to select the option if desired.

9. Show Color is selected by default and causes the condition code color to appear on the report. Uncheck the box to deselect this option.

10. Click **Preview** to preview the report on the screen before printing or **Print Only** to print the report to your default printer. Figure 3-68 shows a completed report.

11. If there is no data for the asset, a message window opens indicating there is no data for the selected asset.

12. Close the Report Selection window using the **Close** button.



Asset Notes Report

Submitted By: **Description:** **Date:**

Asset Name: DC69 Hatfield 80527 **Asset Condition: Not Assigned**
Location: TriBay\New Assets

Subject: Dielectric Absorption-Test
User: Administrator **Create Date:** 11/27/2005 11:34:05 AM
Message: Disconnect at motor off. Readings from starter to disconnect at motor.

Subject: Polarization Index-Test
User: Administrator **Create Date:** 11/27/2005 11:31:42 AM
Message: Disconnect off at motor. Readings from starter to disconnect at motor.

Subject: Standard (AC Motor)-Test
User: Administrator **Create Date:** 11/27/2005 11:19:35 AM
Message: From starter to field disconnect at motor.

Figure 3-68: Message History Report - Preview

PI/DA Summary

1. Highlight one or multiple assets on the Site Navigator

2. Select the Report icon  from the MCEGold Home window toolbar.

3. Select PI/DA Summary from the Report Name list.

4. Fill in the Submitted By and Report Description text boxes.

5. Select date. The choices are to produce a report for all dates or select a date range. The default is All Dates.

   To select a date range, select the *Only motors with tests taken between* option button. Then either enter the date or use the drop-down calendar to select a date in the From Date and To Date text boxes.

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6. Name Selection will be used in future versions.

7. All Selected Motors option is the default. Select *Motors in Caution and Alarm only* if that function is desired.

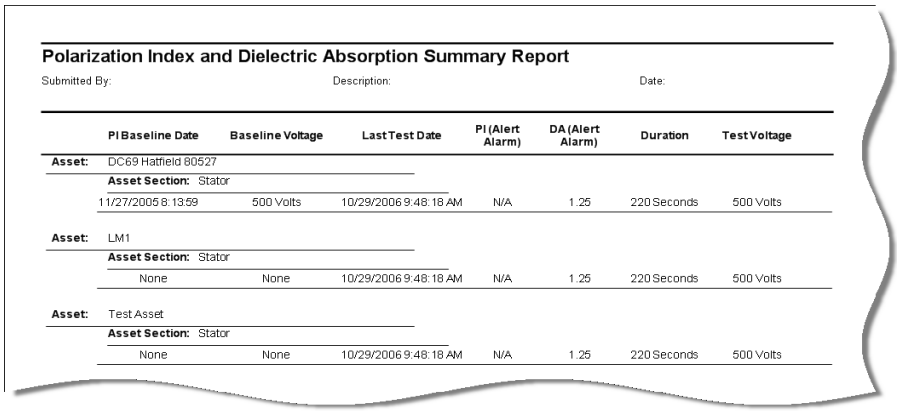
8. Include Last Message is not selected by default, click on the check box to select this option if desired.

9. Show Color is selected by default and causes the condition code color to appear on the report. Uncheck the box to deselect this option.

10. Click **Preview** to preview the report on the screen before printing or **Print Only** to print the report to your default printer. Figure 3-69 shows a completed report.

11. If there is no data for the asset, a message window opens indicating there is no data for the selected asset.

12. Close the Report Selection window using the **Close** button.



Polarization Index and Dielectric Absorption Summary Report

Submitted By: Description: Date:

	PI Baseline Date	Baseline Voltage	Last Test Date	PI (Alert Alarm)	DA (Alert Alarm)	Duration	Test Voltage
Asset:	DC69 Hatfield 80527						
	Asset Section: Stator						
	11/27/2005 8:13:59	500 Volts	10/29/2006 9:48:18 AM	N/A	1.25	220 Seconds	500 Volts
Asset:	LM1						
	Asset Section: Stator						
	None	None	10/29/2006 9:48:18 AM	N/A	1.25	220 Seconds	500 Volts
Asset:	Test Asset						
	Asset Section: Stator						
	None	None	10/29/2006 9:48:18 AM	N/A	1.25	220 Seconds	500 Volts

Figure 3-69: PI/DA Summary Report - Preview

Detailed Report

The Detailed Report window allows you to create a customized report of one or two pages for one or multiple assets. It is possible to drag and drop test results that are open on the desktop into the report, copy and paste test history results, import files, view and/or print previous saved reports.

Create New Detailed Report - Single Asset

To create a new detailed report versus using a saved template.

1. Highlight an asset on Site Navigator.

2. Select the Report icon  on the MCEGold Home window toolbar.

3. Select Detailed from the Report Name list. The right side of the Report Selection window changes to display selections for the detailed report. See Figure 3 - 70.

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Figure 3-70: Detailed Report - Report Selection Window

4. Select Create New option button (default).

5. In the Choose New Report Template section, highlight the desired layout.

6. The Report Type defaults to Single Asset Report. If you are preparing a multiple asset report see the section titled Multiple Asset Report on page 3-64.

7. Click **Design**.

8. The Report Template window opens in the layout selected in step 5. The selected asset information is automatically entered. See Figure 3 - 71.

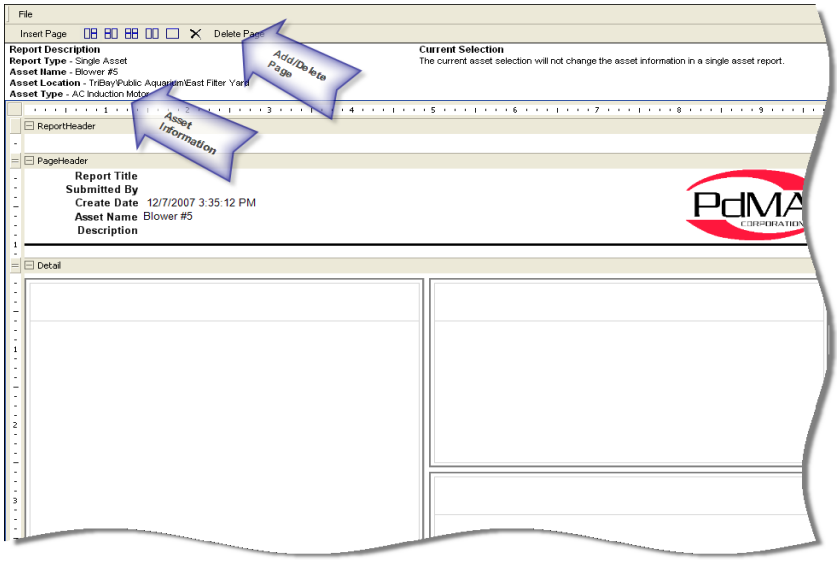


Figure 3-71: Report Template Window

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Multiple Page Option

1. A second page may be added by clicking on the icon representing the desired layout. The icons are located to the right of Insert Page and directly below the menu on the report window. See Figure 3-71.

   You can toggle between page one and two by clicking the tabs at the lower left of the window. See Figure 3-72. There is a maximum of two pages per report.

   To *delete a page*, select the page tab that you wish to delete and click Delete Page, which is located directly to the right of Insert Page and below the menu.

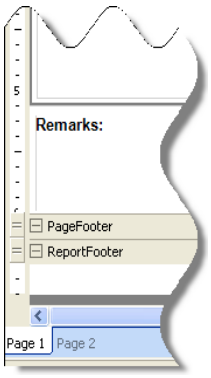


Figure 3-72: Two-page Detailed Report Tabs

2. The section below the Insert Page area contains the Report Description information about the report and the asset. It is automatically generated by MCEGold and cannot be modified.

Page Header

The page header default information is Report Title, Submitted By, Create Date, Asset Name, and Description. Any of these may be modified using the Edit-Header function located along the right side of the window. If the Edit Header area is not visible, click anywhere in the Report Header or Page Header sections.

1. Click on any of the titles. A box displays around the area to be modified and the Edit-Header window opens to the right of the report. See figure 3 - 73.

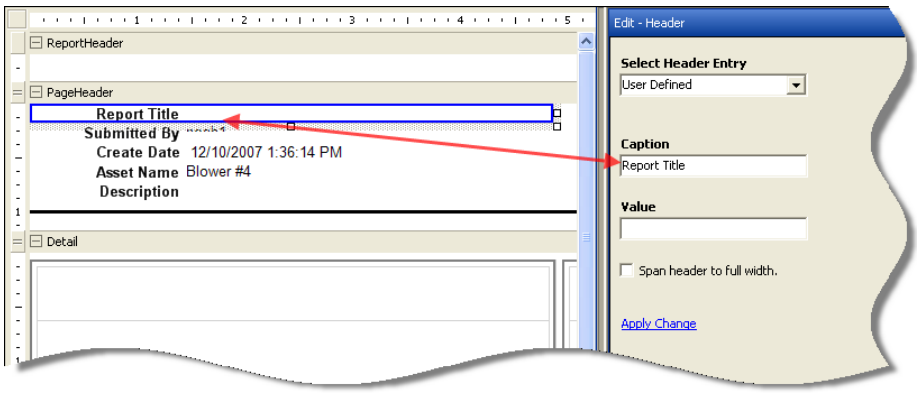


Figure 3-73: Detailed Report Window - Edit Header

2. Select the Header Entry from the drop-down list under Select Header Entry. See Figure 3-74.

   Header Entry List selections and their descriptions are:

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Nothing causes a blank area to display in the header.
User Defined allows you to enter a user defined title by typing it in the Caption text box and entering text in the Value box. See Figure 3-73.
Create Date automatically enters the current date and time.
Submitted By automatically enters the name of the person generating the report.
Asset Name automatically enters the name of the asset.
*User Asset ID a*llows you to enter a user defined asset ID by typing it in the Value box.
Report Title allows you to enter a user defined title by typing it in the Value box.
Asset Location automatically enters the location of the asset.
Asset Condition automatically enters the condition of the asset.

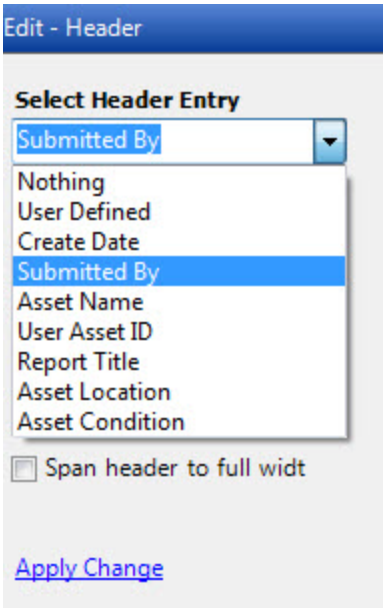


Figure 3-74: Detailed Report Window - Select Header Entry

Span Header to full width causes the text box to go across the entire width of the report header. A check mark indicates the option is selected. Place or remove the check mark and click **Apply Change**.

Note: There are four additional text boxes in the header areas. They are located on the right hand side in the header area to the left of the logo. They do not become apparent until the cursor is placed there and clicked.

3. After selecting and entering the header information, click Apply Change to display the new or modified headers and text.

4. Repeat steps 1 - 3 until you have completed setting up the page header area.

Logo Area

The logo area can also be modified with a user defined choice.

1. Click on the logo and the Select Type window opens.

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2. Select Edit - Image (located at the bottom of the window). The Edit - Image pane shown in Figure 3-75 opens.

3. To insert an image of your choice, select the *From File* option, then click **Insert Picture**. Browse for the location of the picture that you wish to insert into the logo area. Highlight it so that the name appears in the File name text box. Click **Open**. The new image will appear in the logo area.

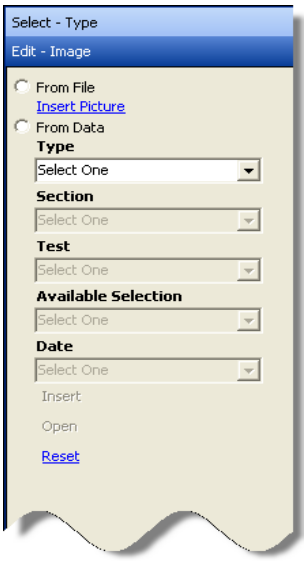


Figure 3-75: Detailed Report - Edit-Image Window

4. You may insert data files in the logo area by selecting the *From Data* option. Make a selection from the Type drop-down list. The choices and descriptions are:

   If you select *Nameplate Information*, you can insert it into the logo area by clicking **Insert**. To view it without inserting it click **Open**.

   If you select *Graph*, you must then select the Section, Test, Available Selection, and Date from the drop-down lists before clicking **Insert.** To view it without inserting it click **Open**.

   If you select *Test History*, you must then select the Section and Test from the drop-down lists before clicking **Insert**. To view it without inserting it click **Open**.

5. *Reset* removes the selections from the drop-down lists and returns you to the From File option.

6. Edit - Image Properties allows you to stretch, zoom, or clip the inserted image.

Detail Area

The main area of the Detailed Report is the detail area. It is configured according to the layout selected.

1. To add information to the detail area, click the area to highlight it. The Select-Type section opens on the right side of the window. Select the desired option in the Select Type window shown in Figure 3-76.

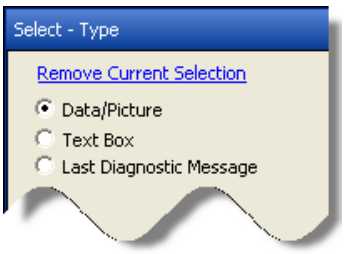


Figure 3-76: Detailed Report - Select - Type Window

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Remove Current Selection clears the highlighted area on the report.
Data/Picture (default value) allows you to insert test results or a picture. See step 2 of the Logo Area section on page 3-68.
Text Box allows you to use the area for comments. Select Text Box and Edit - Comment selection bar located across the bottom of the window. A word processing window opens. Type your comments. They appear in the highlighted area on the report.
Last Diagnostic Message inserts the last message in the selected area of the Detailed Report. Select this option and Insert Last Message.

2. Depending on the type of information inserted into the detail area, some areas may have asset information and a place for comments at the top of the area. To add or change information in this area, select Edit - Comment and make the changes. See Figure 3-77.

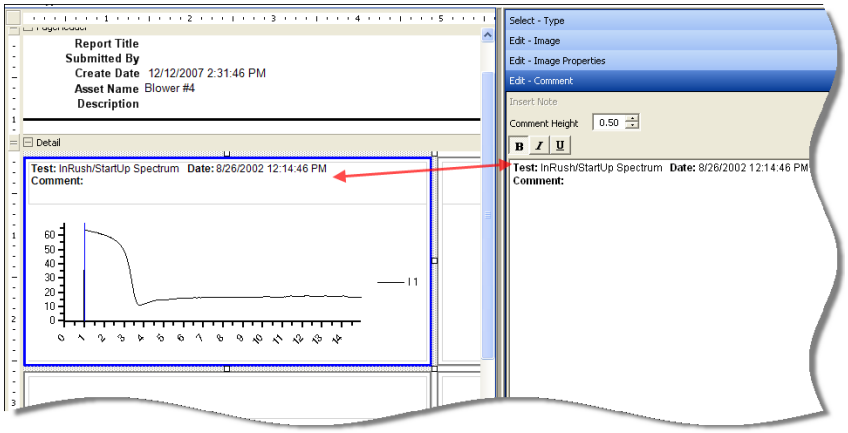
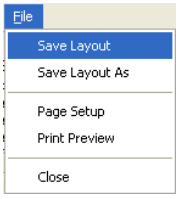


Figure 3-77: Detailed Report - Edit Comments Window

3. When the report is complete you may save it by selecting Save Layout, or Save Layout As from the File menu. See Detailed Report File Menu information following this section.



Detailed Report File Menu

When the report is complete use the File menu to save or print.

Save Layout. Selecting Save Layout opens the Save Report as Template window. See Figure 3-78. Enter a name in the Save As textbox. Click the Set As Default check box if the layout is to be used as a template in the future. Enter a description. Click **Save**.

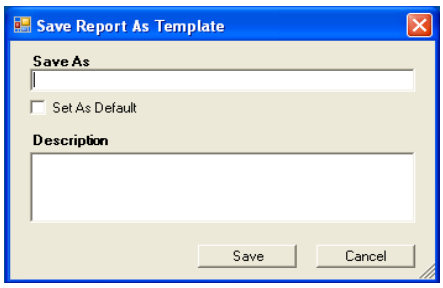


Figure 3-78: Save Report as Template Window

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The Detailed Report remains open. Select File, Close to close the window. You are returned to the Report Selection window, which is displaying the Saved Report Lists.

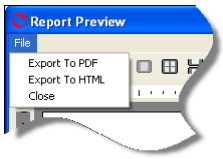
In the future, when the Saved Report List option is chosen on the Report Selection window, the template will be listed. See Saved Reports List on this page.

Save Layout As. Selecting Save Layout As opens the Save Report as Template window. Enter a name in the Save As textbox. Click the Set As Default check box if the layout is to be used as a template in the future. Enter a description. Click **Save**.

When the Saved Report List option is chosen on the Report Selection window, the template will be listed. Select Template (menu) and desired function or right-click the line and get the same choices. See Saved Reports List on this page.

Page Setup. Selecting the Page Setup function opens the Report Settings window. In this window you can adjust the looks of the printed page.

Print Preview. Print Preview displays the Detailed Report on your computer screen as it will appear when printed.



Print Preview File Menu

Export To PDF saves the Detailed Report as a PDF. Select Print Preview, Export to PDF. In the Save As window select a location and enter the file name. Click **Save**.

Export To HTML saves the Detailed Report as a HTML file. Select Print Preview, Export to PDF. In the Save As window select a location and enter the file name. Click **Save**.

Close causes the Print Preview window to close.

Close. Closes the Detailed Report.

Saved Reports List Option

1. Highlight an asset on Site Navigator.

2. Select the Report icon 

on the MCEGold Home window toolbar.

3. Select Detailed from the Report Name list. The right side of the Report Selection window changes to display selections for the detailed report. See Figure 3 - 79.

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Figure 3-79: Detailed Report - Report Selection Window

4. Select the Saved Reports List option. The window displays a list of saved reports.See Figure 3-80.

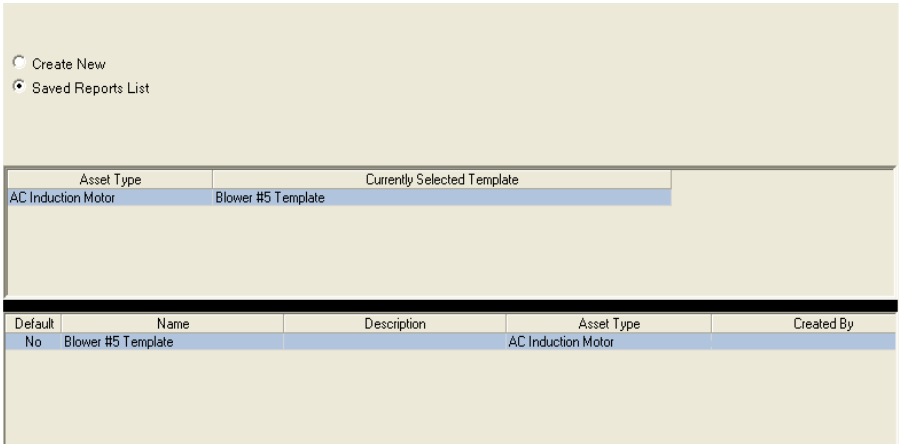
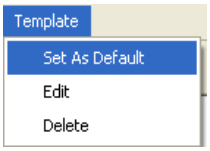


Figure 3-80: Detailed Report - Saved Reports List



5. To work with a detailed report on the list, select Template (menu) and desired function or right-click the line and get the same choices.

   Set as Default causes the selected template to be the default template. The status changes from No to Yes in the default column and the template moves to the top of the list.

   Using *Edit* opens the report so that you may make changes or print the report using the File menu on the Detail Report window.

   Selecting *Delete* causes the report to be deleted. You will be asked to confirm if its deletion.

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Multiple Asset Detailed Report

If you are creating a report for multiple assets, select the Multi-Asset Report option button in the Report Type section of the Report Selection window and click **Design**. This allows you to import information from more than one asset into the detailed report.

The section below the Insert Page area contains information about the report and the asset. It cannot be modified. On a multi-asset report the asset information is not displayed and under the asset name in the page header section it displays Multi-Asset Report.

Continue preparing the report as with a single asset for the layout selection (page 3-65), header information (page 3-67), and logo area (page 3-68).

Detail Section

1. Click the desired detail area of the Detailed Report.

2. Highlight an asset on the Site Navigator or WatchList.

3. Use the Edit functions located on the right side of the window.

   Note: In the highlighted area the asset information displays across the top. Use Edit Comments to add Notes or make changes.

4. Repeat steps 1 - 3 until the report is complete.

5. See the Detailed Report File Menu section (page 3-70) to save and/or print the report.

Alternative Methods of Inserting Asset Information.

Edit Functions. These are covered on page 3-67 (single asset) and this page (multiple assets)

Drag and Drop. When test results or a graph are open, arrange the windows so that both are visible. Then click on test/graph, hold the mouse button, and drag the results to the desired location on the detailed report window.

Copy and Paste. When test data or a graph are open, right click the test/graph and select copy from the menu. On the report, right click the area of the report to receive the results and select Paste from the menu.

Word Report Templates

Note: When installing or updating MCEGold, a Word Add-in driver is installed. You may receive a message informing you that “Windows can’t verify the publisher of this driver software.” Select “Install this driver software anyway”.

You must have MS Word installed on your computer to use the Word Report Templates function. The templates allow you to either use templates generated by PdMA (PdMA Default Templates) or define templates that are more meaningful to you for your reports (User Defined Templates). The PdMA Default Templates are only available for AC Induction motors at this time.

The Report Selection window for Word Report Templates is shown in Figure 3-81.

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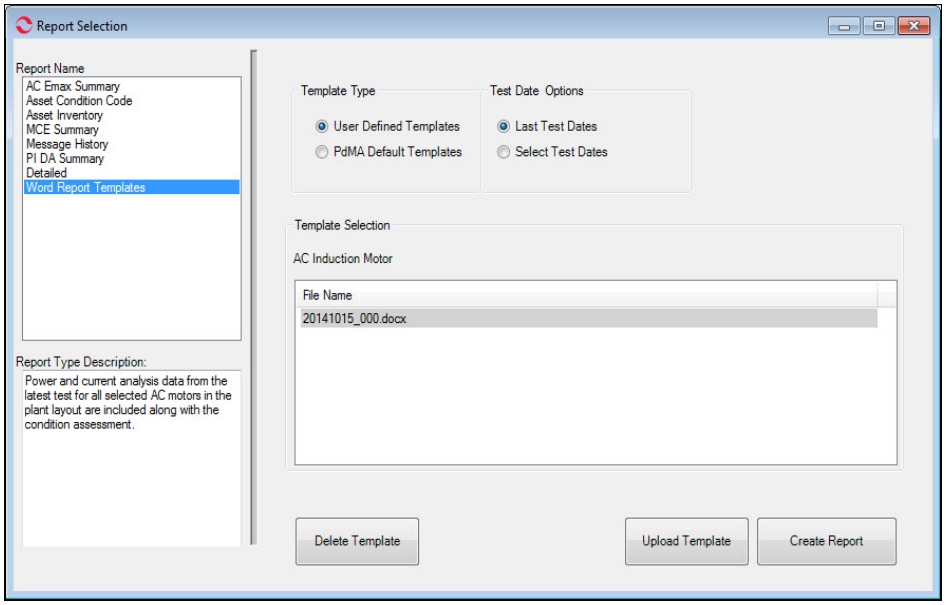


Figure 3-81: Report Selection Window: Word Report Templates

Template Type - There are two options for a template, User Defined and PdMA Default. When an option button is selected the names of available templates for that option appear in the File Name section.

Selecting the *User Defined* option displays a list of templates created by you in the Template Selection window.

Selecting the *PdMA Default Templates* option displays a list of three templates created by PdMA in the Template Selection window.

Test Date Options - There are two options for the report, Last Test Dates and Select Test Dates. These are used to collect test report data.

Template Selection - The Template Selection area displays the available file names for the template selected.

PdMA Default Template

Use these instructions to prepare a report using a PdMA Default Template.

1. Highlight one or multiple assets on the Site Navigator.

2. Select the Report icon  on the tool bar.

3. Select Word Report Templates from the Report Name section.

4. Select the Template Type (PdMA Default Templates) from the Template Type section on right side of the window shown in Figure 3 - 82.

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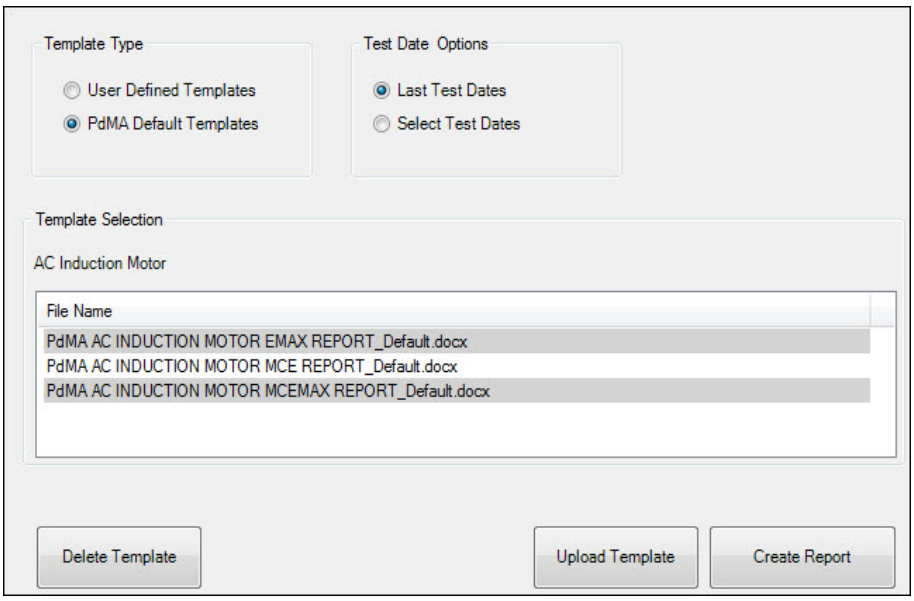


Figure 3-82: PdMA Default Templates

5. Select the Test Date Option. There are two options for test dates, Last Test Dates and Select Test Dates. If Select Test Dates is selected a Date Selector window opens allowing you to select the dates for the tests in the report.

6. Select the file name of the desired template from the Template Selection list. The Template Selection area displays the available file names for the template type selected.

7. Click **Create Report**. When all selections have been made, clicking Create Report produces a report in Word format.

8. The Save As window opens. Select a location for the file. You may change the name of the file or accept the MCEGold generated name. Click **Save**.

9. The Report Saved window opens asking if you would like to view the report. Click **Yes** to open the report in Word format or **No** to close the window without viewing the report.

   When the report opens it will be multiple pages in order to display all of the test data. Most fields are editable by clicking on them. The actual test data is a graphic and cannot be changed, but it can be deleted and replaced. If no test data is available that will be indicated in the appropriate spot.

User Defined Templates

Use these instructions to prepare a report using User Defined Templates. You must first create a template to be used. See the section Creating a User Defined Template on page 3-76.

1. Highlight one or multiple assets on the Site Navigator.

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2. Select the Report icon  on the tool bar.

3. Select Word Report Templates from the Report Name section.

4. Select the Template Type (User Defined Templates) from the Template Type section on right side of the window.

5. Select the Test Date Option. There are two options for test dates, Last Test Dates and Select Test Dates. If Select Test Dates is selected a Date Selector window opens allowing you to select the dates for the tests in the report.

6. Select the file name of the desired template from the Template Selection list. The Template Selection area displays the available file names for the template type selected.

7. Click **Create Report**. When all selections have been made, clicking Create Report produces a report in Word format.

8. The Save As window opens. Select a location for the file. You may change the name of the file or accept the MCEGold generated name. Click **Save**.

9. The Report Saved window opens asking if you would like to view the report. Click **Yes** to open the report in Word format or **No** to close the window without viewing the report.

   When the report opens it will be multiple pages in order to display all of the test data. Most fields are editable by clicking on them. The actual test data is a graphic and cannot be changed, but it can be deleted and replaced. If no test data is available that will be indicated in the appropriate spot.

Creating a User Defined Template

1. Open Word and click the MCEGold tab on the menu bar as shown in Figure 3 - 83. This displays the tool bar shown in Figure 3-84 that is used in creating MCEGold templates. This tool bar may be wider than your monitor can display. Look for the small arrow at the far right indicating more fields are available.

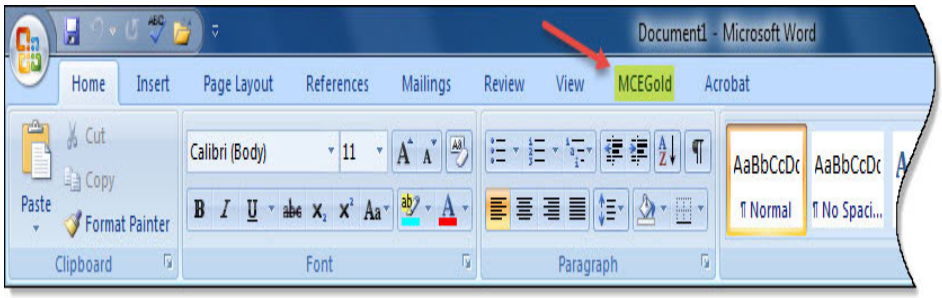


Figure 3-83: Word Add-In

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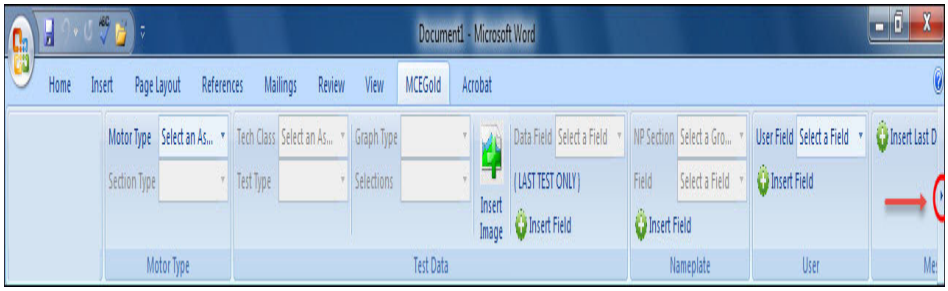


Figure 3-84: Word MCEGold Tool Bar

2. Select Motor and Section Type from the drop down lists. Available options in the Section Type are driven by the Motor Type selected.

3. Select Tech Type and Test Type. Available options in Test Type are driven by the Tech type selected.

4. Select Graph Type and Selections. Available options in Selection are driven by the Graph Type selected.

5. After selecting the Motor Type and Test Data selections use the areas on the right hand side to design your template. Place the cursor in the place on the Word page that you want to insert a field or image. Use Insert Image to insert the graph placeholder. Make a selection from the drop down lists and click Insert Field to insert that placeholder on your Word document.

6. After your template is complete, use File, Save As, Word Template. Enter a name and select a location to save. Make a note of the name and location. Click **Save**.

7. To use the template, start MCEGold and use the Reports function. See the user Defined Templates section on page 3-75.

Create Report Button. Create Report is used to produce the report. It is described in the procedures.

Delete Template Button. Delete Template removes the template that is highlighted in the Template Selection area and removes it from your hard drive.

Upload Template Button. Upload Template is used to save a report generated using the User Defined Template function. This option can only be used with User Defined Templates.

1. Highlight the User Defined Templates option button.

2. Select a template name from the Template Selection area, click **Upload Template**.

3. Select the location to save the file.

4. Type a name in the File Name textbox and click **Open**.

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EXITING MCEGOLD

MCEGold may be shut down by selecting File, Close from the menu or clicking the close button (X) in the upper right corner. You will be asked to verify that you want to Close MCEGold. Click **OK**.

Detach Local Database. Before MCEGold closes a window giving you the option to detach the local database opens if you have set that option up in Preferences, Asset Management. If desired, click **Yes** to detach the database and close MCEGold. When you detach the database, the next time you start MCEGold you will need to select a database before continuing. Click **No** to close MCEGold and leave the current database attached.

MCEGOLD LITE INTRODUCTION

MCEGold® is the software that controls the motor tester. This section covers the operation of MCEGold Lite (identified as Lite) and the MCEMAX tester.

NOTE: In this manual the full version of MCEGold is referred to as MCEGold. MCEGold Lite, which is a simplified interface designed principally to collect data, is referred to as Lite.

The Lite software uses modified Window conventions. For example, there is not a menu bar, the toolbar with buttons is located across the bottom of the screen, the red button with an X in the upper right corner closes the window or exits the program, but there is an additional Close button in the lower right hand corner of the Home window. Depending on your screen resolution you may see scroll bars to be used to display more buttons or more of the window.

Lite is designed to operate in conjunction with a WatchList. A WatchList displays the assets that are scheduled to be tested making it easier for you to test without searching the full database for the asset. WatchLists are set up in MCEGold and Lite will not open if there are no WatchList.

STARTING LITE

The program executable is located at:
C:\PdMA Corporation\MCEGold\UI\MCEGold.exe.

1. To start Lite, Select Start from the task bar, then All Programs, PdMA Corporation, MCEGold or click on the desktop icon  .

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2. At the Login (Figure 3-85) select the Site. Verify the Testing Mode (if applicable). Selecting a Site will be necessary if the database has been detached during a previous session or you want to change databases. Use the Display Mode drop down menu to select MCEGold Lite, and click **OK.**

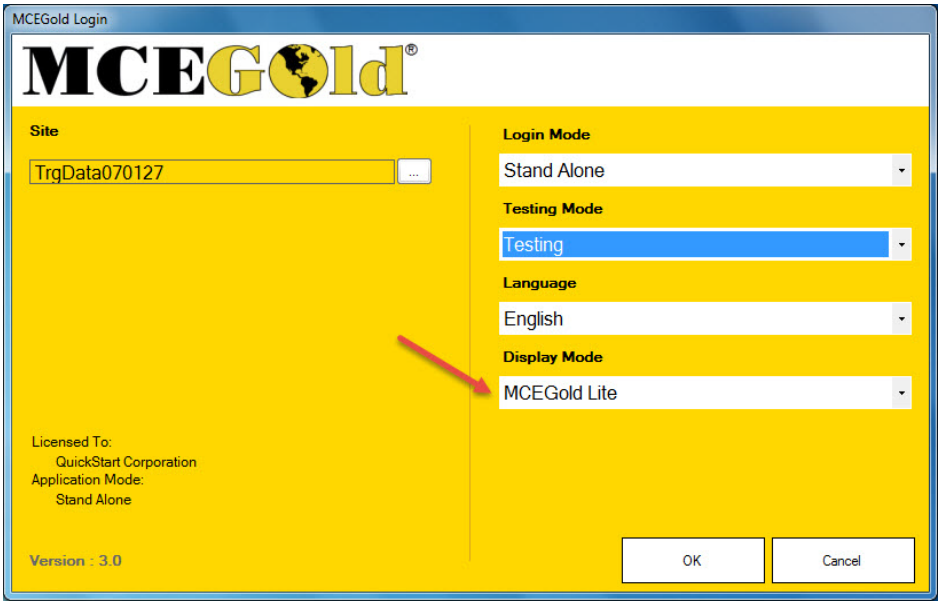


Figure 3-85: MCEGold Login

3. The Home Screen shown in Figure 3-86 opens.

LITE HOME SCREEN

The buttons are not active until an asset has been selected. The Home screen has no menu items. Due to its simplicity, the functions are activated using buttons which are located across the bottom of the screen. The Scroll bar indicates more buttons are available. In our example Scheduler is not shown until you scroll down.

.

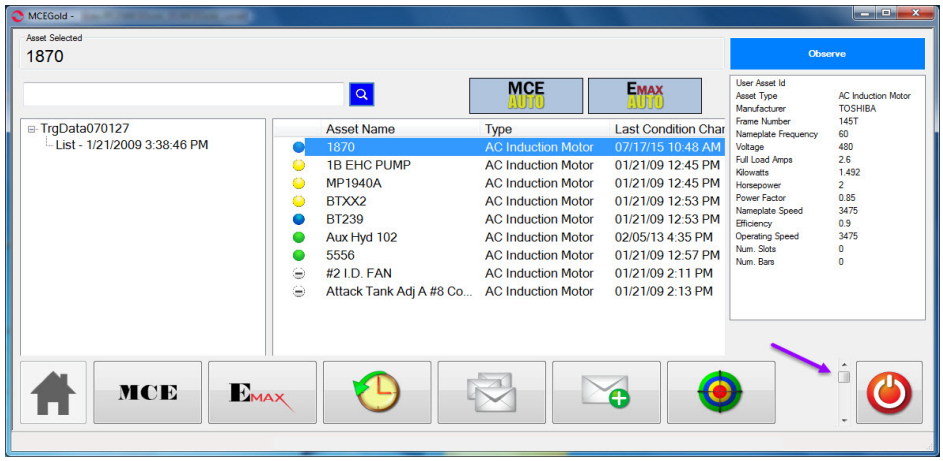


Figure 3-86: Lite Home Screen

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Title Bar

The title bar is the horizontal blue line across the top of the window. It displays the PdMA logo, the name of the program, and the testing mode.

Asset Selected

This area displays the asset name that has been selected. It changes as different assets are selected from the asset list. It will display “No Asset Selected” until one is selected.

Search

The Search text box, located below the Asset Selected area, allows you to enter the name of an asset you are trying to locate in the database. Type the asset name in the box and click the Search button . If you search for partial names, it will find assets with those characters in the name.

Left Panel

The left panel, shown in Figure 3-87, displays the WatchList imported from MCEGold, which is shown in Figure 3 - 87. If there are no WatchList in MCEGold nothing will display in this panel.

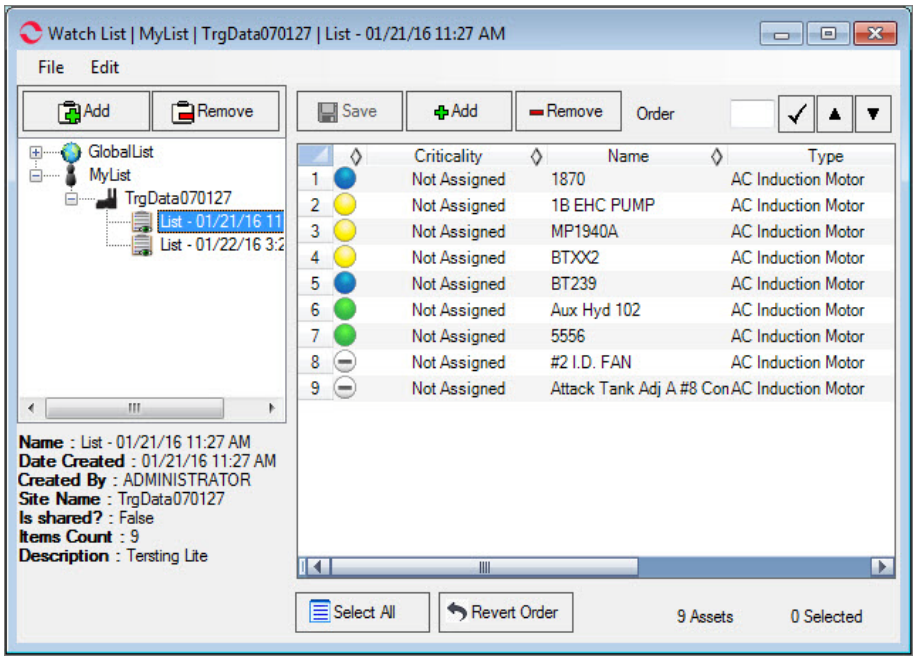


Figure 3-87: MCEGold WatchList

Center Panel

The center panel, shown in Figure 3-87, is blank until a list is selected from the left panel. After a list is selected, the panel is populated with a round colored circle indicating the condition code, Asset Name, Type, Last Condition Change, Criticality, and Location. You may need to use the scroll bar located across the bottom to see all of the contents.

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Right Panel

The right panel, shown in Figure 3-87, displays the Nameplate information for the asset selected in the center panel list. Above the Nameplate information is a colored bar indicating the condition code for the asset.

Testing Buttons

Above the center panel are two testing buttons; MCE Auto and EMAX Auto, shown below. Selecting an asset and clicking either button starts the appropriate testing. See page 3-49 for more information.





TOOLBAR

The Toolbar buttons located across the bottom of the window are designed to quickly access common Lite functions with one click. The buttons are inactive unless an asset has been selected from the list. This section provides a description of the buttons.



Home returns you to the Home screen. In some cases, depending on where you are in the process, the return button  in the lower right is visible and may be used to go back one or more steps.



MCE starts MCE testing. For information about using the MCE Test Selection window and MCE testings see Chapter 5, MCE Testing.



EMAX starts EMAX testing. For more information about using the EMAX Test Selection window and EMAX testing see Chapter 6, EMAX Current Analysis and Chapter 7, EMAX Power Analysis.



Test History opens the Test History window of the selected asset. For a complete discussion about the Test History window see page 3-39.



Message Center displays the messages for the selected asset. For a complete discussion about using the Message Center see page 3-53.



Create Message opens the Compose Message window so that you may compose a message to be stored in the Message Center. For a complete discussion about using the Compose Message window see page 3-56.

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Fault Zone opens the optical view of the Fault Zone Analysis. For a complete discussion about using the Fault Zone Analysis see page 3-52.



Scheduler opens the Created Schedules window which displays testing scheduled for the asset selected.



Go Back displays when you are not on the Home screen. It is located in the same spot as the Close button and is visible depending upon where you are in the program. It allows you to return to the previous screen.



Close causes Lite to close/exit.

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CHAPTER 4: MCEGOLD NETWORK

The network edition of MCEGold® is designed to accommodate multiple sites/servers and multiple formats, such as desktops and field testers. The number of sites, formats, and seats/users is dependent on the license purchased. The license may be upgraded/changed using the MCEGold Utility program.

There are three different login modes Network Desktop, Field Tester Network, and Field Tester Local.

Network Desktop. Installed on desktops only for MCEGold operations. This format does not communicate with or operate field testers

Field Tester Network. This login is for communication and operation of a field tester. It supports testing and saving data directly to the network. It must be used to synchronize data between the network and field testers. See page 4-18 for more information.

Field Tester Local. This login is for a field tester that is not connected to the network. It supports testing and saving data to the tester, which must be UpSynced to the network. See page 4-18 for more information.

The difference in the MCEGold desktop home window between stand alone and network edition, is that for the network edition the Site Navigator displays multiple site icons and during the synchronization process Deleted Assets and New Assets folders may be automatically added. See Figure 4-1.

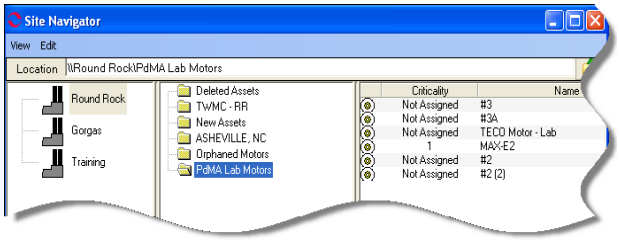


Figure 4-1: Network Edition - Site Navigator

Clicking on a site icon causes the folders and assets associated with that site to be displayed in all of the appropriate home window areas (WatchList, Site Condition, and Message Center).

A Deleted Assets folder is created when an asset from the field tester is synchronized with the network and the asset on the network has been deleted. The asset is placed in the Deleted Assets folder during the UpSync process.

A New Assets folder is created when a field tester UpSyncs an asset that has been created in the field. After UpSyncing the asset can be moved to the correct folder.

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The difference in the MCEGold home screen between Field Tester Local and Field Tester Network is that on the Field Tester Local when MCEGold starts the home screen displays only the WatchList and Message Center. The Site Navigator and Site Condition windows are not available and the buttons are not on the tool bar. See Figure 4-2. On the Field Tester Network the DataSync icon is included on the tool bar. See page 4-18 for more information on the testers.

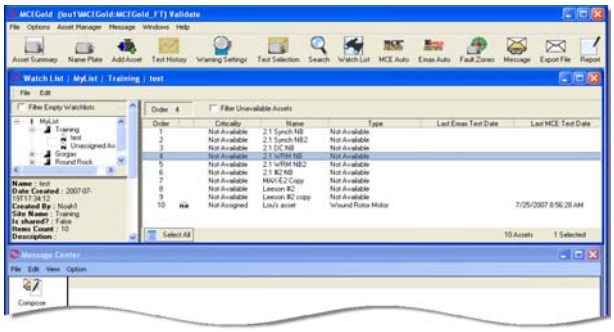


Figure 4-2: Field Tester Local Home Window

A login name and password are required to start MCEGold network. Login names and passwords are created by the Administrator or IT personnel using the Account Manager program. See page 4-6 for more information.

There are five short audio/video tutorials available Home Window, Site Condition, Site Navigator, WatchList, and Message Center. To view them select Help, Tutorial, and the tutorial you wish to view. It will begin playing automatically.

UTILITY PROGRAM

The Utility Program is used to verify the server key information and perform tasks related to the license key, database, and calibration. Table 4-1 displays which utility programs are available for each version. The Utility Program is located at Start, All Programs, PdMA Corporation, Utilities. Figure 4-3 is the Desktop Utility window and Figure 4-4 is the Field Tester Utility window.

Table 4-1: Utility Programs

Utility	Desktop	Field Tester
License Key	X	X
Database	X	X
Server	X	
Calibration		X

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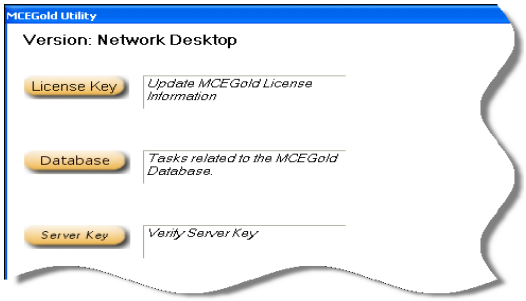


Figure 4-3: Network Desktop Utility Window

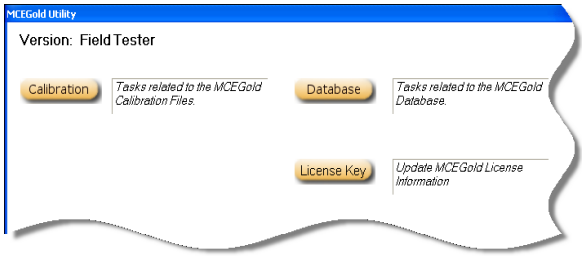


Figure 4-4: Network Field Tester Utility Window

License Key

Selecting the License Key button from the Utility window allows you to change/upgrade your MCEGold license. You would do this if you purchased a different MCEGold version or more sites/seats. This button is available on both desktop and field tester.

The License Key window is shown in Figure 4-5. Fill in the company name and License Key exactly as provided to you. When entering the license key the cursor automatically advances to the next box as you are entering the information. Information entered in the License Key text boxes is not case sensitive. Click **Submit**.

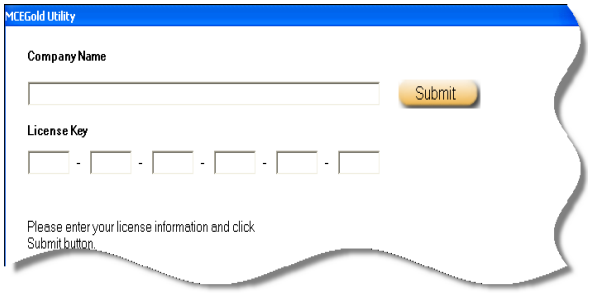


Figure 4-5: Utility License Key

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Database

Selecting the Database button from the Utility window allows you to change the server location and database. This button is available on both desktop and field tester, however the procedure is different for desktops and field testers.

Desktop Database Utility

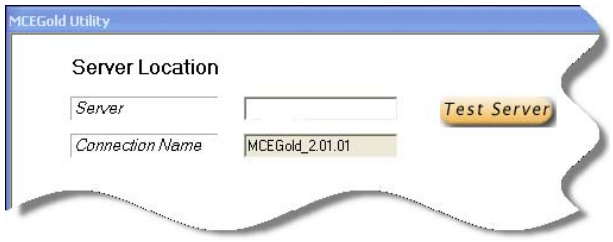


Figure 4-6: Network Desktop Database Window

1. Enter the server name in the text box. See Figure 4-6. Click **Test Server** to validate correct server information has been entered.

2. The Server Located window opens (Figure 4-7). Click **OK**.



Figure 4-7: Server Location

3. When the server has been verified, the Submit button appears on the MCEGold Utility window (Figure 4-8). Enter the connection name, database, login, and password information. Click **Submit**.

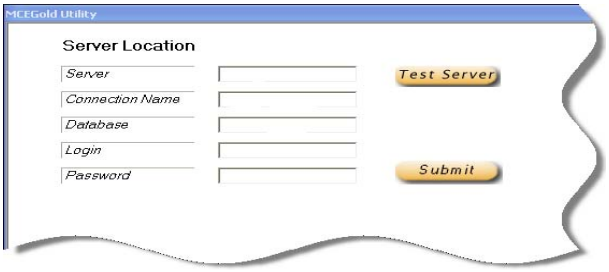


Figure 4-8: Network Desktop Database Window

4. Click **OK** in the Database Updated dialog box (Figure 4- 9).

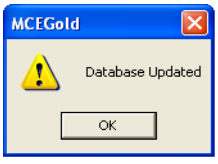


Figure 4-9: Database Updated

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Network Tester Database Utility

Selecting the Database button from the Utility window for network testers allows you to detach a database (for backup purposes) and change the server location.

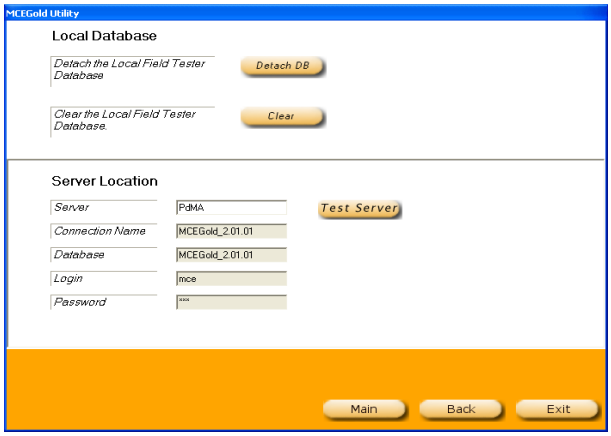


Figure 4-10: Network Field Tester Database Window

Local Database. The Local Database section has two buttons. The *Detach DB* button toggles with *Attach DB*. Detach allows you to detach the database from the tester, perform a backup, and then using the *Attach DB* button reattach the same database back to the tester.

The *Clear* button clears the database permanently from the tester.

Server Location. The Server Location section functions the same as the Desktop Database Utility. See page 4-4, Desktop Database Utility, for more information.

Server (Desktop Only)

The Server Key button on the Utility window, Figure 4-3, is used to verify or make changes to the license key. To update the license information fill in the Company Name and License Key and click **Submit**. See Figure 4- 11.

The lower portion of the window displays the current license information, including the licensee name, number of seats and sites, license type, and database server type.

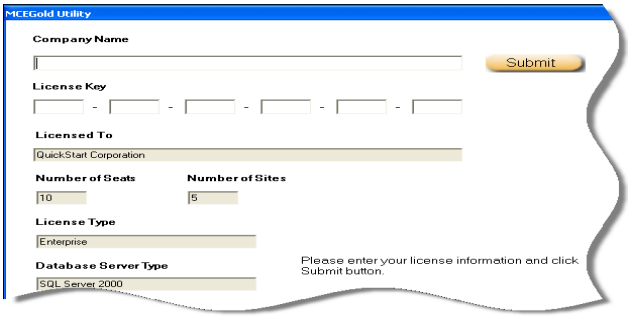


Figure 4-11: Network Desktop Server Window

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Calibration (Tester Only)

The Calibration button on the Utility window, Figure 4-4, allows you to convert WinVis CalValue.txt and EmaxCal.mdb files to MCEGold files. In the MCEGold Utility Window (Figure 4-12), click the browse button [...] and locate the cal file you wish to convert, then click **Convert**.

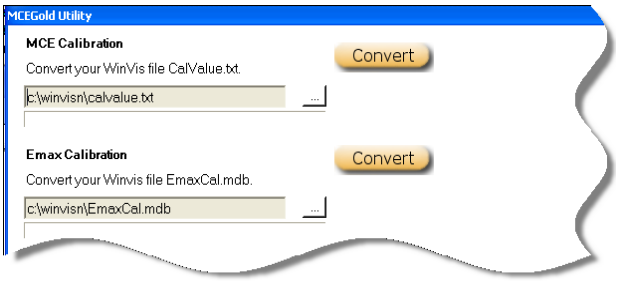


Figure 4-12: Network Field Tester Calibration Window

MCEGOLD ACCOUNT MANAGER

The MCEGold Account Manager program allows you to manage multiple sites and accounts (users). The number of sites and seats is limited by the MCEGold license you purchased. However, an unlimited number of accounts may be added. The administrator creates the sites and groups, and assigns accounts to a site and a group. The groups have specific functions/rights that they are allowed to perform at their assigned site. If an account is assigned to a site and not to a group, he has read only rights.

After the MCEGold network software is installed the Account Manager program is started by selecting Start, All Programs, PdMA Corporation, Account Manager.

On the Login window shown in Figure 4-13, enter your name, password, and click **OK**.



Figure 4-13: MCEGold Account Manager Window

The Account Manager home window is shown in Figure 4-14. If PdMA has converted your database for you, then the site/s have already been set up and you are ready to set up groups and accounts. See Add Accounts to Group on page 4-11

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If this is a new database then you must first create a site and then set up groups and accounts. See Create a Site on page 4-9.

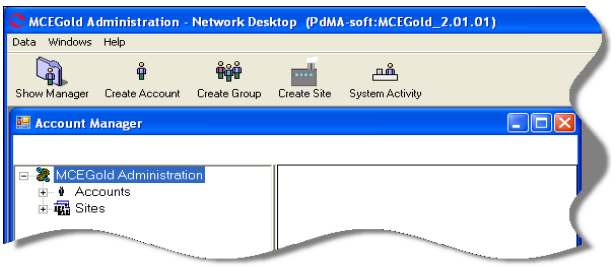


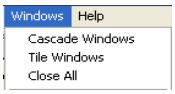
Figure 4-14: Account Manager Home Window

Account Manager Menu Items



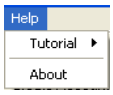
Data

The only choices under Data are Site, Delete. Selecting this deletes a site and all its groups and accounts from the Account Manager. You must have a site highlighted to delete it.



Windows

In the Windows menu, the choices are Cascade Windows, Tile Windows, and Close All. These are standard window functions that control the appearance of multiple open windows.



Help

In the Help menu, the choices are Tutorial and About. Tutorial is discussed on page 4-27. About opens the About MCEGold window, which provides the customer, technology, and technical support contact information.

Account Manager Tool Bar Icons

Show Manager



This opens the Account Manager window. You may have multiple Account Manager windows open at one time. See Account Manager on this page for more information.

Create Account



This opens the Create New Account Wizard window. A site must be highlighted before selecting Create Account. See page 4-12 for more information.

Create Group



This opens the Create New Group Wizard window. A site must be highlighted before selecting Create Group. See page 4-10 for more information.

Create Site



This opens the Create New Site Wizard. See page 4-9 for more information.

System Activity



System Activity opens a window that shows a list of the accounts that are online and their activity.

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Account Manager Window

The Account Manager Window consist of two panes. The left pane contains the folders for Accounts and Sites in the familiar Windows tree format.

Highlighting the Accounts or Sites folder, causes a summary to display in the right pane (Figure 4-15) and activates an Edit function (located at the bottom of the pane).

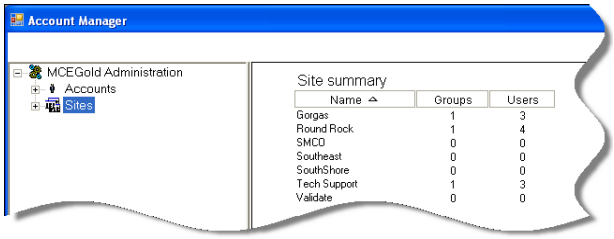


Figure 4-15: Site Summary

Double clicking the folder name or clicking on the + sign causes the folder to open and reveal individual components. Highlighting a component causes a summary to be displayed in the right pane and activates an Edit or Remove function (located at the bottom of the pane). Figure 4-16 shows an open account pane, Figure 4-17 shows an open site pane, and Figure 4-18 shows an open group pane.

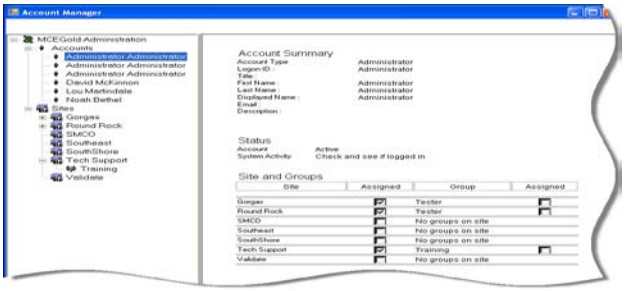


Figure 4-16: Account Summary

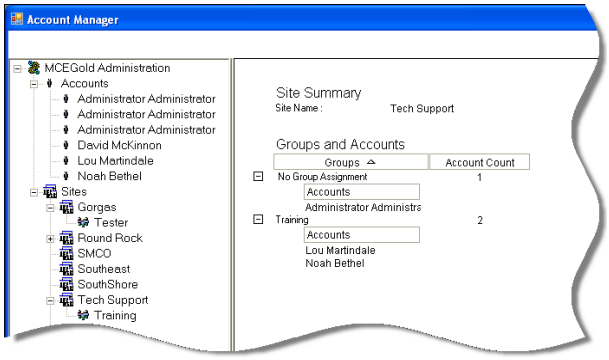


Figure 4-17: Site Summary

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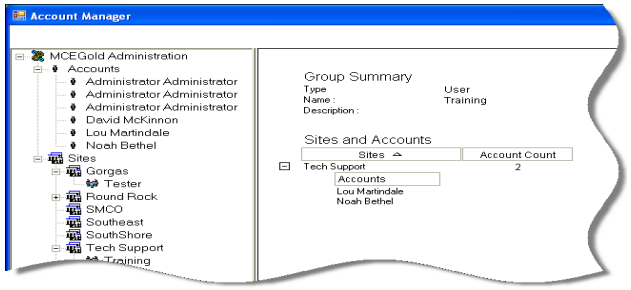


Figure 4-18: Group Summary

Create a Site

Select the Create Site icon on the tool bar. In the Create New Site Wizard window, Figure 4-19, enter the Site Name and click **Create Site**. Note: The Create Site button does not appear until a name has been entered in the Site Name text box.



Figure 4-19: Create New Site Window

The Create New Site Wizard window shown in Figure 4-20 opens, which allows you to add accounts to the group and/or add a new group to the site.



Figure 4-20: Create New Site Wizard

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Create New Group

Select "Add new group to this site" from the Create New Site Wizard. Note: A new group may be created using the Create Group icon on the tool bar. If the tool bar icon is used a site must be highlighted first.

The Create New Group Wizard window shown in Figure 4-21 opens. Fill in the Group Name (required) and a description (optional). Click **Next**. Note: the Next button doesn't appear until a name is entered in the Group Name text box.

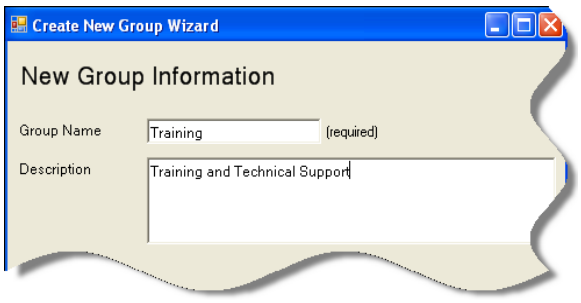


Figure 4-21: Create New Group - New Group Information

Select a Group Type, Figure 4-22. *Global Group* makes a copy of the group and adds it to each site. *Local Group* applies the group to the site you are creating or have highlighted in the Sites folder.

For this example we chose Local Group. Note: the Create Group button does not appear until a selection has been made. Click **Create Group**.



Figure 4-22: Create New Group - Select a Group Type

In the Edit Group Rights window, Figure 4-23, place a check mark in front of the rights/ functions that you are assigning to this group. When all rights have been chosen, click **OK**

to assign the rights and close the window or **Apply** to assign the rights and leave the Edit Group Rights window open.

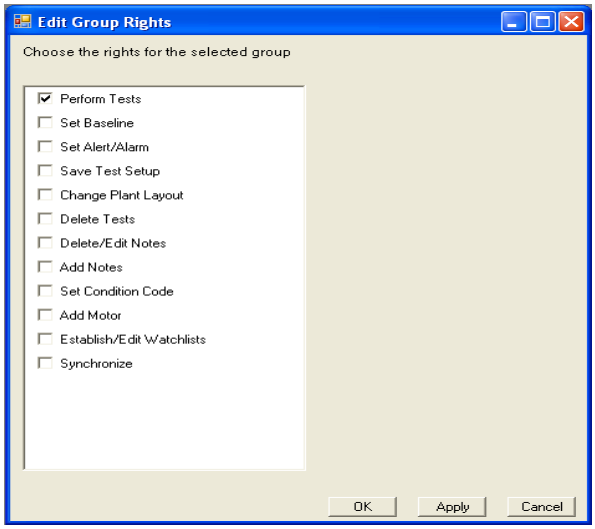


Figure 4-23: Edit Group Rights

The site with the new group is added to the Sites folder or the new group is added to the highlighted site. The Create New Group Wizard window remains open.

If you are adding a new site it is now necessary to add accounts to the new group. See Add Accounts to Group on this page.

If you are not adding a new site, click **Finish**. The Create New Group Wizard window closes.

Add Accounts to Group

In the Create New Group Wizard window (Figure 4-24) select "Add accounts to this group."



Figure 4-24: Create New Group Wizard

In the Select Account window shown in Figure 4-25, click each box in front of the names of the accounts you wish to add to the group. Remove a check mark by clicking on it. When all of the accounts have been selected, click **OK**. Click **Finish** in the Create New Group Wizard.

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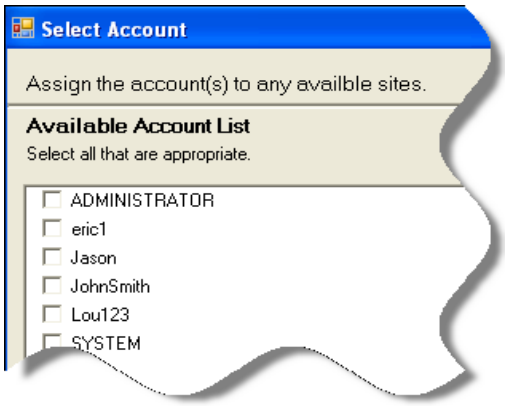


Figure 4-25: Select Account Window

Create a New Account

To create a new Account, highlight a site and select the Create Account icon on the tool bar. The Create New Account Wizard window opens, Figure 4-26. Fill in the text boxes. All are required fields except Company Name, Email Address, and Description. Click **Next**. Note: The Next button does not appear until the last required text box is filled in.



Figure 4-26: Create New Account - New Account Information

Select the Account Type in the next Create New Account Wizard - Select An Account Type window, Figure 4-27. The choices are Administrator, User, or Guest. A description of the account type is provided at the bottom of the window when the mouse hovers over the account type.



Figure 4-27: Create New Account- Select an Account Type

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Click **Create Account**. Note: This button does not appear until an account type has been selected.

Click **Finish** in the Create New Account Wizard - Assign Account to a Site and Group window, Figure 4-28. This adds the account to the Accounts folder and to the highlighted site, but without a group assignment.



Figure 4-28: Create New Account - Assign Account to Site and Group

Assigning Group Assignments and Account Rights

Group assignments and rights may be added from the Account Manger window (see Edit Account on page 4-14) or from the Create New Account Wizard - Assign Account to a Site and Group window, Figure 4-28.

If using the Create a New Account Wizard, select “Add this account to more sites” or “Add this account to a group.”

Add this account to more sites. Select “Add this account to more sites” from the Create New Account Wizard - Assign Account to a Site and Group window, Figure 4-28. In the Select Sites window, Figure 4-29, click on the box in front of the sites to be added or removed and click **OK**.

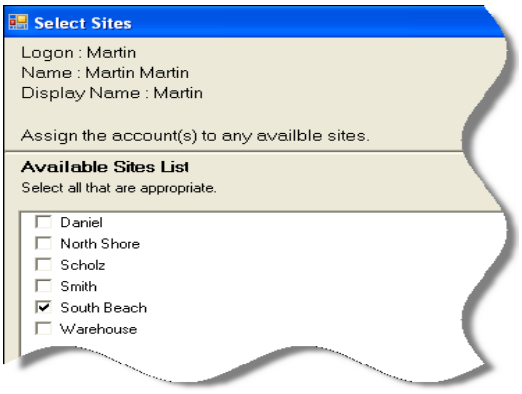


Figure 4-29: Select Sites

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Add this account to a group. Select "Add this account to a group" from the Create New Account Wizard - Assign Account to a Site and Group window, Figure 4-28. In the Select Groups window, Figure 4-30, click on the box/es in front of the group/s to assign the account to. Click **OK**.



Figure 4-30: Select Group

In the Create New Account window, click **Finish**.

Editing Account, Group, and Site

Edit Account

In the Account Manager window, highlighting an account name in the Account folder in the left pane causes the Account Information to display in the right pane as shown in Figure 4-31. At the bottom of the pane are options to Edit Account and Remove Account.

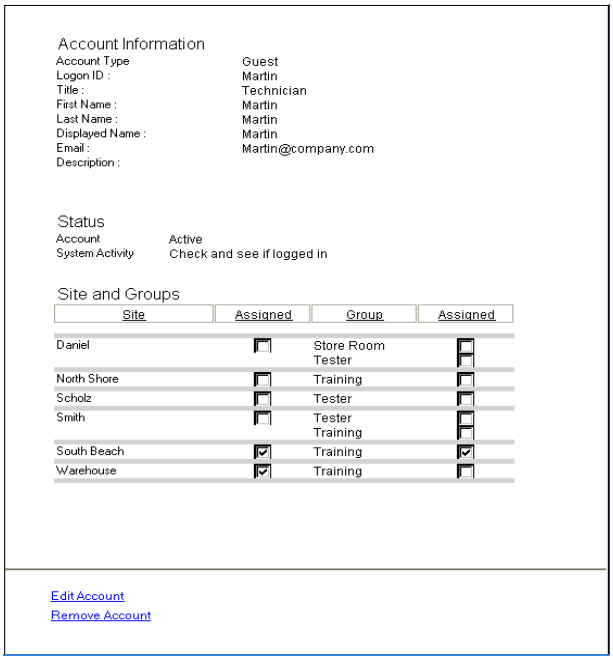


Figure 4-31: Account Manager - Account Information

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Selecting Edit Account opens the Edit Account window shown in Figure 4-32. There are three tabs for information that can be edited: Details, Role Type, and Assignments.

Details. The Details tab, Figure 4-32, allows you to change the name, password, email, and description.

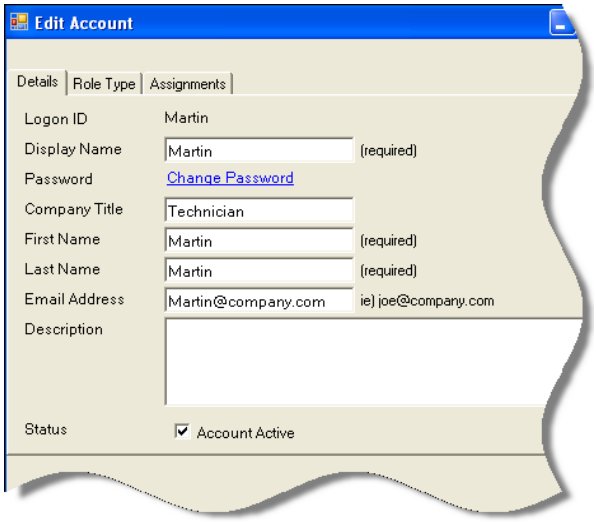


Figure 4-32: Edit Account - Details

Role Type. The Role Type tab, Figure 4-33 allows you to change between Administrator, User, and Guest.

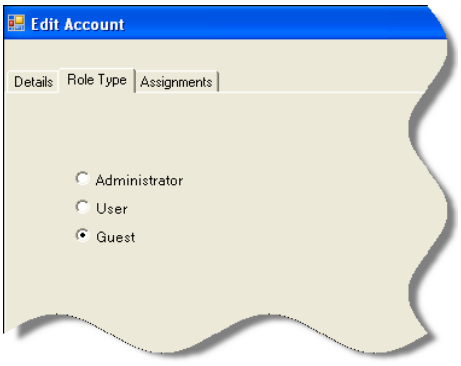


Figure 4-33: Edit Account - Role Type

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Assignments. The Assignments tab, Figure 4-34 allows you to add the account to another site and/or group.

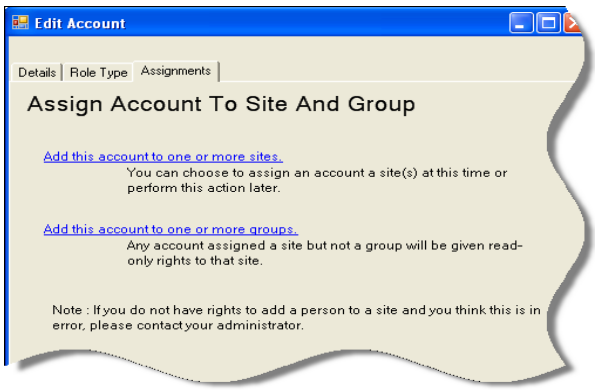


Figure 4-34: Edit Account - Assignments

When all edits have been made to the account click **OK**.

Remove Account

To remove an Account select Remove Account at the bottom of the Account Information pane of the Account Manager window. You may also right click the account name and select Remove from the list. The Remove Account window, Figure 4-35, asks you to verify removal. Click **Yes**.



Figure 4-35: Remove Account

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Edit Group

In the Account Manager window, open the site folder and highlight the group you wish to edit. The bottom section of the right pane will display the Edit Group function. Click **Edit Group**. The Edit Group Wizard window, Figure 4-36, opens.



Figure 4-36: Edit Group Wizard

Select the Assignments tab. The Edit Group Wizard window opens with the Edit the Group Rights and Edit Account Assignment for This Group functions. Select the desired function.

Edit the Group Rights. The Edit Group Rights window opens. This window is discussed on page 4-11.

Edit Account Assignment for This Group. The Select Account window opens. This window is discussed on page 4-11 as Add Accounts to Group.

Remove Group

You may remove a group from the site by clicking the Remove Group command at the bottom of the right pane. You may also right click the group name and select Remove from the list. The Remove Group window shown in Figure 4-37 opens. Verify this is the group you wish to remove and click **Yes**.

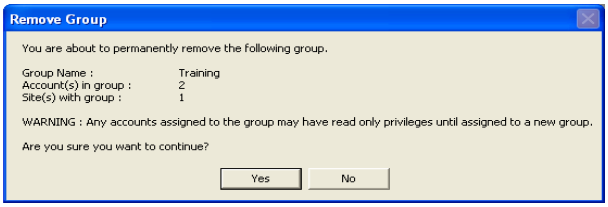


Figure 4-37: Remove Group

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Edit Site

Highlight a site folder in the left pane of the Account Manager window. Click the Edit Site command, which is located at the bottom of the right pane. You may also right click on the site name and select Edit This Site. The Edit Site Wizard window, Figure 4-38, opens. You may change the site name under the Details tab or select the Assignment tab to Add accounts or a new group to the site. See Figure 4-39.



Figure 4-38: Edit Site Wizard Window

Select the function you wish to perform. These functions have been discussed earlier in this document. Add accounts is located on page 4-11, Add Accounts, and Add new group is located on page 4-10, Create New Group.



Figure 4-39: Edit Site Wizard Window

FIELD TESTER, LOCAL AND NETWORK

When signing on to MCEGold with a tester, the options are to sign on as a Field Tester Local or a Field Tester Network. See Figure 4-40.

A *Field Tester Network* is attached to the network either physically or wirelessly. It can perform test and analysis using the network database and/or data sync.

A *Field Tester Local* is one that has already DownSynced and is not attached to the network. In order to sign on as a Field Tester Local you must have already signed on to the network as a Field Tester Network, DownSynced, and signed off of the network.

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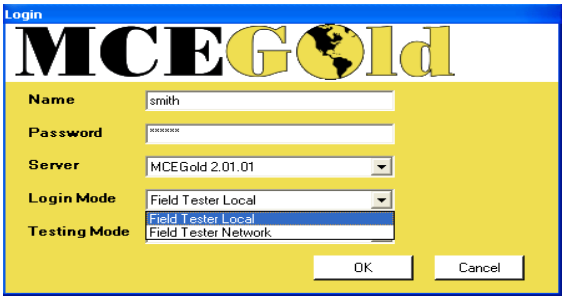


Figure 4-40: MCEGold Tester Login

DataSync

DataSync is performed in Login Mode Field Tester Network only.

DownSync

DownSync copies the selected assets from the network to the Field Tester Network according to the selections made in the DataSync Preferences window.

To DownSync (download) assets from the network to the tester:

1. Connect the tester to the network.

2. Enter your name, password, and select Field Tester Network from the Login Mode drop down list. See figure 4-40. Click **OK**.

3. Highlight the assets to be tested on the Site Navigator or the WatchList, and click the DataSync icon on the tool bar. The DataSync window, Figure 4-41, appears.

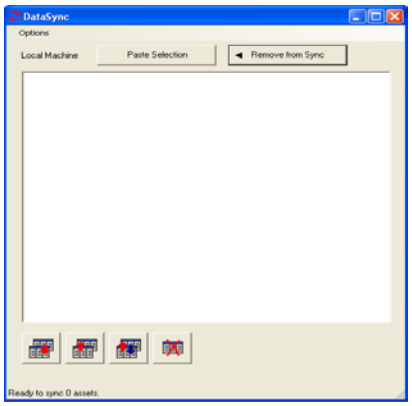
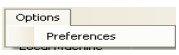


Figure 4-41: DataSync Window



4. Verify the DataSync preferences by selecting Options, Preferences form the menu. The DataSync Preferences window, Figure 4-42, opens.

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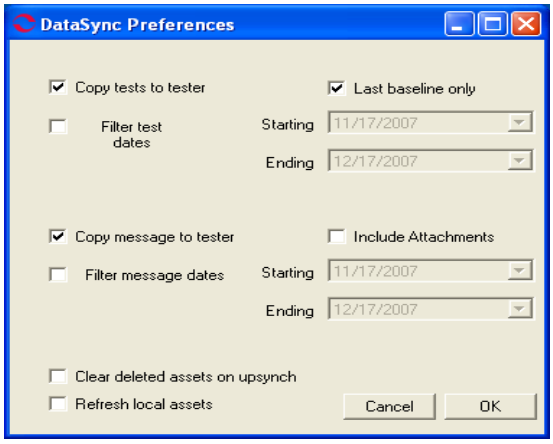


Figure 4-42: DataSync Preferences Window

A function is activated by placing a check mark in the box preceding the function. To disable the function remove the check from the text box.

Copy tests to tester

Copy Tests to Tester is the default, but may be disabled so that no test data is copied to the tester. If it is selected, the options are to copy Last baseline only (default) or Filter test dates.

Last Baseline Only. Use Last Baseline Only to datasync only the test results for the last baseline. Last baseline only is the default. If Filter Test Dates is selected Last Baseline Only is deselected.

Filter Test Dates. Use Filter Test Dates if more than the baseline test is desired. Select a starting and ending test date from the drop down calendar or type the dates in the text boxes. If Filter Test Dates is selected the Last Baseline Only is automatically deselected.

Copy Message to Tester

Copy Message to Tester controls messages that are copied to the tester during the datasync. If it is disabled no messages are copied to the tester. If it is selected it may be modified to include all attachments and/or filter messages by starting and ending dates.

Note: Keep in mind the more test data, information, and attachments you download the larger your database on the tester will be.

Include Attachments. Copy Message to Tester (default) must be selected before Include Attachments can be selected. When a datasync is performed attachments with notes will be copied to the tester.

Filter Message Dates. Use Filter Message Dates if messages in a certain date range are desired. Select a starting and ending date from the drop down calendar or type the dates in the text boxes.

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Clear Deleted Assets on Upsync

If an asset has been deleted from the network while it was downsynced to the tester, selecting Clear Deleted Assets on Upsync will delete the asset and it's test results from the tester.

Refresh Local Assets

Refresh local assets is used to control overwriting changes to an asset on the tester. If the box is checked and a change has been made to the asset on the tester and that asset is downsynced again from the network, the information on the server will overwrite the tester. If the box is unchecked and the asset is downsynced again from the network, the asset will not be overwritten during the downsync.

5. Make desired selections in the DataSync Preferences window and click **OK**.

6. Click **Paste Selection** on the DataSync window. A list of the selected assets will appear in the DataSync window. See Figure 4-43. If you need to remove one or more assets, highlight the asset and click **Remove from Sync**. When you are satisfied with the assets in the list click the DownSync button  at the bottom of the window.

   Note: If an asset has been selected to downsync that is not in a WatchList it will be placed in a folder labeled Unassigned Assets. If it is included in a WatchList it will be placed in a folder labeled with the WatchList name.

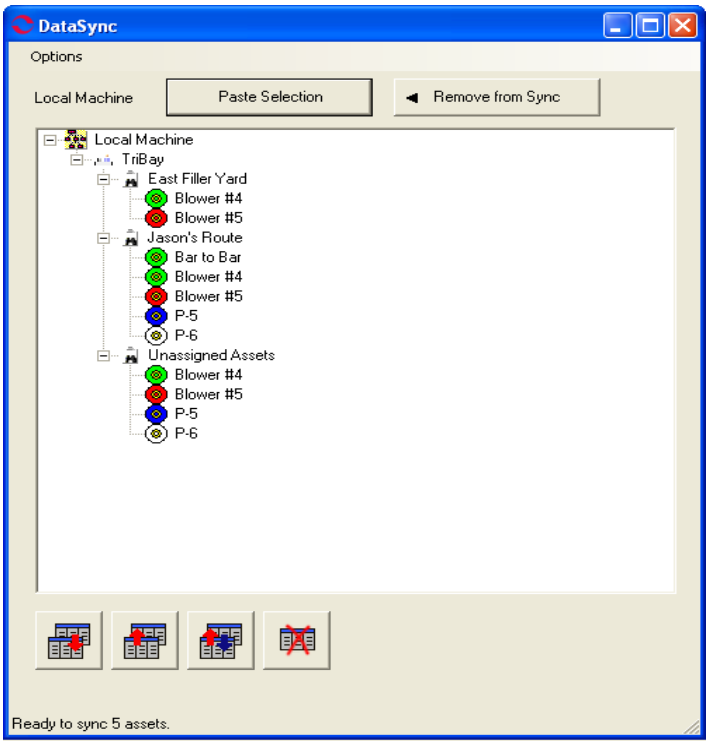


Figure 4-43: DataSync Window

7. The DataSync window displays the datasync progress and a message appears when the datasync is complete. Click **OK**. The Condition Code icon in front of the asset changes to a check mark. See Figure 4-44.

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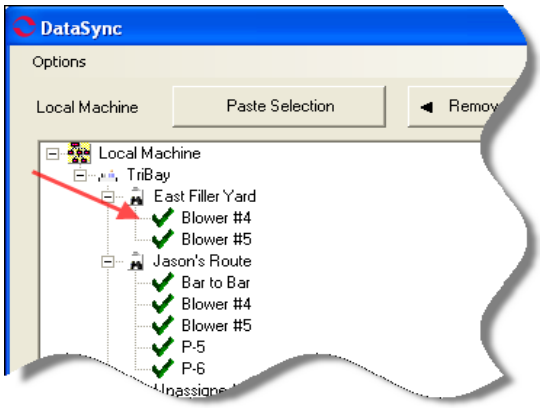


Figure 4-44: DataSync Window After DownSync

8. Close the DataSync window. Disconnect the tester from the network.

UpSync

UpSync uploads to the network server the asset data added to the Field Tester Local database, but leaves the assets and their data on the tester.

To UpSync to the network server database:

1. Connect the tester to the network.

2. Enter your name, password, and select Field Tester Network from the Login Mode drop down list. Click **OK**.

3. Click the DataSync icon on the tool bar. The DataSync window shown in Figure 4-45 opens.

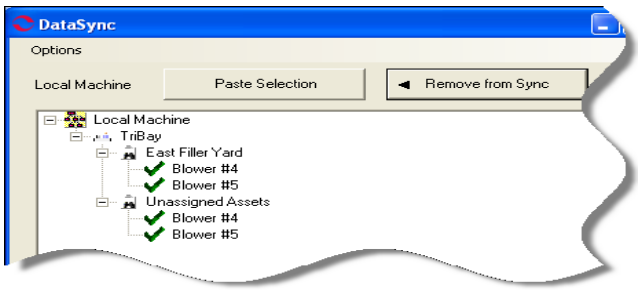


Figure 4-45: DataSync Window - Field Tester Network

4. Click the UpSync button located at the bottom of the DataSync window.

5. The DataSync Progress window displays the progress of the sync and a data sync complete message at the conclusion.

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6. Click **OK**. The progress window closes and the Data Sync window remains open. You may take further data sync action or close it.

Two Way Sync

Two Way Sync is used to UpSync new data added to the Field Tester Local database and DownSync new data that has been added to the network database since the last DownSync.

To Two Way Sync:

Follow steps 1 - 3 in the UpSync section on page 4-22.

4. Click the TwoWaySync button located at the bottom of the DataSync window.

5. The DataSync Progress window displays the progress of the sync and a DataSync complete message at the conclusion.

6. Click **OK**. The progress window closes and the DataSync window remains open. You may take further data sync action or close it.

Clear Local Database

Clear Local Database gives the option to upsync data to the network and then clear the data from the tester.

To Clear Local Data follow steps 1 - 3 in the UpSync section on page 4-22.

4. Click the Clear Local Database button located at the bottom of the DataSync window.

5. The Clear Local Data window shown in Figure 4-46 opens.

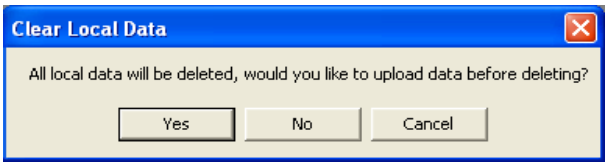


Figure 4-46: Clear Local Data Window

6. Click **Yes** to upload data before deleting it or **No** to delete the data without an UpSync.

7. The DataSync Progress window displays the progress of the sync and a DataSync complete message at the conclusion. Click **OK**.

8. If the data was upsynched or if No was selected in step 6, the Clear Local Data window remains open, however the message has changed. See figure 4-47.

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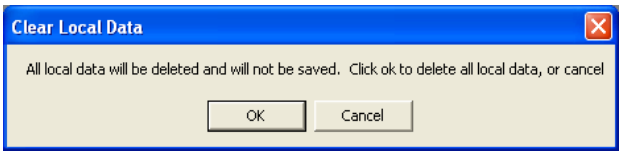


Figure 4-47: Clear Local Data Window

9. Click **OK** to delete the data or click **Cancel** to return to the DataSync window without deleting the data.

10. If you click **OK**, the asset list is removed from the DataSync window and a message box (Figure 4-48) informs you the database is cleared.



Figure 4-48: Local Database Cleared

11. Click **OK** to close the DatasSync window.

Field Tester Local

You must have DownSynced asset data as a Field Tester Network before being able to start the tester as a Field Tester Local.

To start the Field Tester Local:

1. Enter your name, password, and select Field Tester Local from the Login Mode drop down list.

2. Click **OK**. The home window of the Field Tester Local displays the WatchList and Message Center windows only. The Site Navigator, Site Condition, and DataSync buttons are not available. See Figure 4-49.

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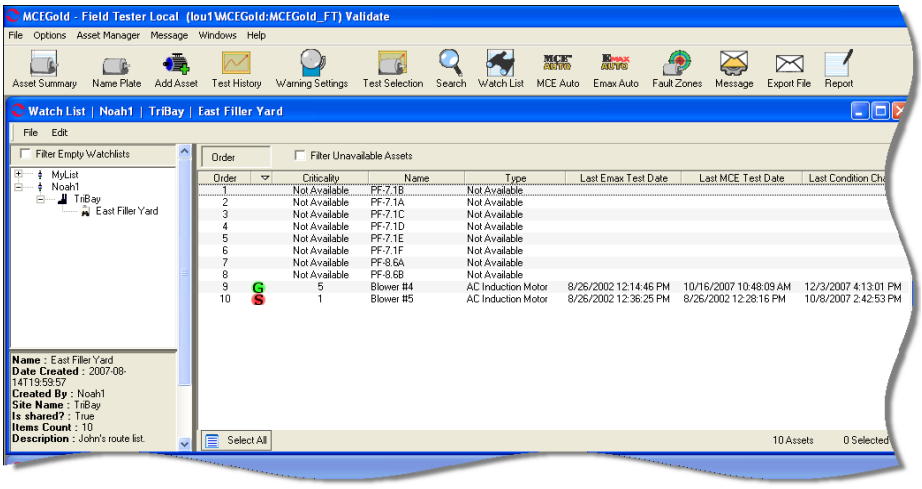


Figure 4-49: Field Tester Local - Home Window

If a selected asset resides on more than one WatchList or folder, when a DownSync is performed the complete list of assets in each WatchList or folder containing the selected asset is DownSynced. Data will not be DownSynced for the unselected assets and the asset will be labeled "Not Available."

3. The unselected assets can be hidden by using the Filter Empty WatchLists or Filter Unavailable Assets functions. See Figure 4-50.

   In the left pane, place a check in the Filter Empty WatchLists box to hide any list that has no selected assets in it. They will be designated with the term Unassigned Assets.

   In the right pane, place a check in the Filter Unavailable Assets to hide assets that were not selected. They will be designated with the term Not Available under the Criticality column.

   The empty WatchLists and unselected assets will disappear from the window. See Figure 4-51.

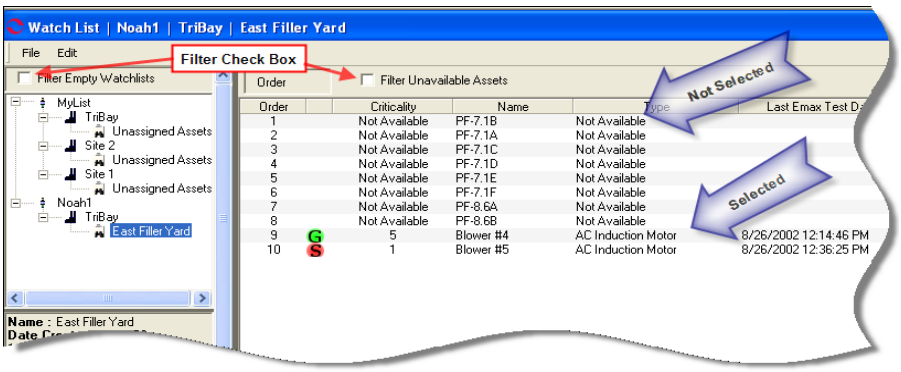


Figure 4-50: WatchList With Not Available Assets

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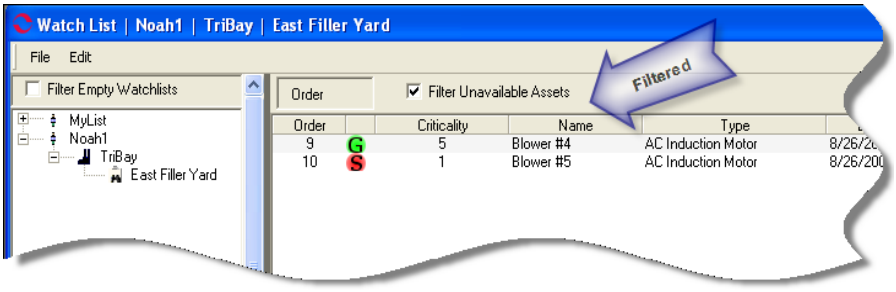


Figure 4-51: WatchList Filtered for Unavailable Assets

4. Select the asset to be tested and click either the Test Selection 

, MCE Auto 

, or EMAX Auto 

icons on the tool bar. Testing procedures are discussed in Chapter 5, MCE; Chapter 6, EMAX Current Analysis; and Chapter 7, EMAX Power Analysis.

5. At the completion of testing, shut down the tester, then connect to the network and follow the procedures for UpSync on page 4-22.

Deleted and New Assets Folders

The Site Navigator window is available on the Field Tester Network and the Desktop only. Under certain conditions during an UpSync two new folders are automatically created by the MCEGold software. They are Deleted Assets and New Assets. See Figure 4-52.

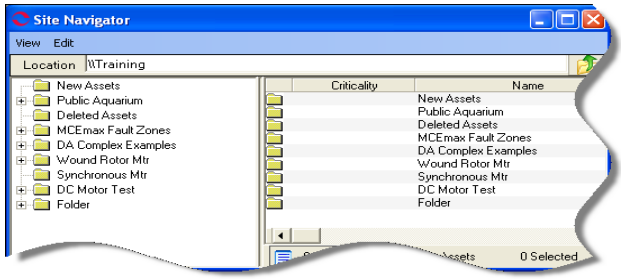


Figure 4-52: Site Navigator - Deleted Assets and New Assets Folders

Deleted Assets Folder

If an asset in the network database has been deleted, while it has been DownSynced to the Field Tester and an UpSync is performed, a new folder labeled Deleted Assets will be created and the asset placed in that folder during the UpSync process. See Figure 4-53. At the end of the UpSync it can be processed by right clicking on the asset and selecting the appropriate action.

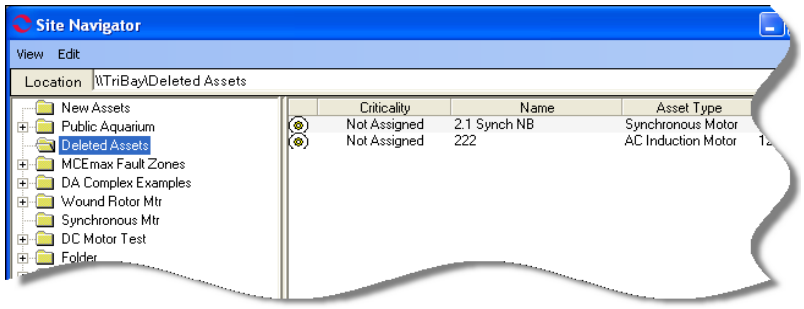


Figure 4-53: Site Navigator - Deleted Assets Folder

New Assets Folder

If an asset is added to the Field Tester and an UpSync is performed, a new folder labeled New Assets will be created and the asset placed in that folder. See Figure 4-54. At the end of the UpSync it can be moved to the desired location in the network database by right clicking on the asset and selecting Move Asset.

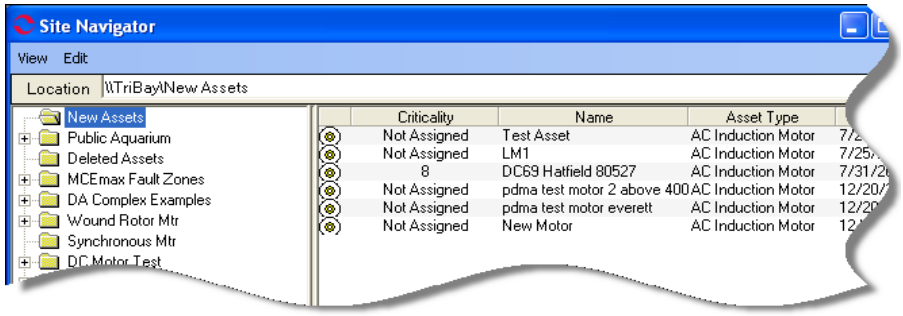


Figure 4-54: Site Navigator - New Assets Folder

Tutorials

There are short audio/video tutorials included in the software. These are Home Window, Site Condition, Site Navigator, WatchList, and Message Center. Depending on your software version you may have additional tutorials.

To view the tutorials, select Help on the menu bar, then Tutorial, and the tutorial you wish to view. It will begin playing automatically.

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CHAPTER 5: MCE

TESTING QUICK START

MCE testing may be started by selecting either the Test Selection  or the MCE Auto  icons on the toolbar.

Selecting the MCE Auto icon automatically runs the Standard Test followed by the Polarization Index test. It uses the existing testing setup values. MCE Auto is discussed in detail on page 5-7.

Selecting the Test Selection icon allows you to verify and/or change the testing setup values and select which test you want to run. Test Selection is discussed in detail on page 5-3.

1. Start MCEGold.
2. On the Site Navigator or WatchList highlight the asset to be tested.
3. Select the Test Selection icon  on the tool bar to open the Test Selection window.
4. In the Test Selection window the default is set to MCE testing. For EMAX testing click the EMAX tab at the top and see Chapters 6 & 7. The asset section tabs along the left side will vary depending on the type of asset being tested. Nameplate Information is automatically filled in by MCEGold from the nameplate data.
5. Select the asset section tab along the left side corresponding to the section to be tested.
6. Select the test to be performed from the list of tests. The available selections are driven by the type of asset and the asset section selected for testing. The Notes section provides instructions that are relevant for the selected test.
7. Select the asset test location by using the drop-down list or using the search button to open the Test Location Selection window.
8. Select the Test Frequency from the drop-down list. The Test Frequency default is driven by the type of asset selected for testing.
9. Select the Resistance-to-Ground by entering in the Mohms if they are different from the default. Check the Low Limit check box if you want the unit to shut down automatically upon measuring a specified low resistance to ground value.
10. Select the Voltage from the drop-down list box. The choices are: 250, 500, 1000, 2500, and 5000.
11. Set the asset Temperature if different from the default value of 40.

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12. Select the charge time from the drop-down list box. The choices are in 15 second increments, beginning at 15 and ending at 600 seconds.

13. Click **Save** to save the MCE Test Setup values selected for this particular asset or click **Reset** to restore the original values. Note: Original values may only be reset if new values have not been saved. If you have clicked the Save button it will be necessary to manually change them back to the originals and save them.

14. Click **Test** to go the test window.

15. Click **Test** on the Test window. From this point the process will differ depending on the test being performed. Each test is covered in detail later in this chapter.

INTRODUCTION

The MCE tester measures natural characteristics of a deenergized asset and its circuit to determine its condition. These characteristics are resistance-to-ground, capacitance-to-ground, winding resistance, and winding inductance. MCE testing can identify faults in the power circuit, insulation, stator, rotor, and the air gap between the rotor and stator.

The tests that can be run on a asset vary, depending on the asset type. For AC assets (Induction, Synchronous, and Wound Rotor) the tests are AC Standard Test, Polarization Index (PI) which includes a Dielectric Absorption Ratio, Rotor Influence Check (RIC), and Step Voltage. For DC assets the tests are DC Standard Test, Polarization Index (PI) which includes a Dielectric Absorption Ratio, Bar-to-Bar (Armature Circuit only), and Step Voltage.

Both AC and DC assets have an MCE Auto test which runs the Standard test followed by the Polarization Index test, automatically saves the test results, and displays the Fault Zone Report at the end of testing.

The frequency and type of asset testing you perform is based on your experience with the tester, the condition of each individual asset, and the criticality/application of each asset. Since it may be impossible to test each and every asset in your facility, ask yourself the following questions when deciding which assets to test.

- Is the asset easily replaceable and if so, is a replacement readily available?
- Would buying a new asset cost less than repairing the old asset?
- Is the asset redundant or non-critical?

If you answered yes to all three of these questions, you may not want to consider this asset for your monitoring program.

If you are unfamiliar with an asset, review its maintenance history of test results, problems, and repairs before testing it. Talk with the operators who run it and anyone who may have information about its repair history. This will give you a more complete picture of the condition of the asset.

MCE test results give you a comprehensive picture of the electrical condition of the asset. MCE results can be utilized, along with results obtained from other technologies, to get a complete picture of the health of the asset. Some examples of other technologies include vibration, oil analysis, and infrared thermography.

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Some of the MCE tests give you enough information to call an asset good or bad, based on results from one test. Other MCE tests give you data which is best used for trending and comparison.

Trending means comparing sequential test results for the same asset over time. This tracks what the particular asset is doing, how it is holding up, when it may need to be cleaned, when it needs more detailed maintenance, or when a fault develops.

Test frequency depends on the asset's criticality and the condition of the asset when it is first tested. As the asset ages, you may decide to test it more frequently to better track its condition.

When you first start testing with the MCE, the initial test is automatically designated as the baseline test. After maintenance is performed on an asset and it is returned to optimal condition, measure subsequent tests against that condition by designating the first test after the maintenance as the new baseline.

Comparison means comparing individual test results on one asset with test results from an identical asset operating in a similar environment. By identical asset we mean the same manufacturer, voltage and horsepower rating, cable length for MCC, etc. For example, if there are four like assets operating side by side performing the same task, all running at approximately the same load, each running about the same amount of time, the test data should be very close for all of them. If all four assets are tested, and three are basically the same, but the fourth is very different from the other three, look for potential problems with the fourth asset.

MCE testing is performed on a deenergized asset. However, there may be energized circuitry in the same cabinet in which you connect the tester.



FOLLOW ALL ELECTRICAL SAFETY PRECAUTIONS AND PROCEDURES FOR WORKING IN THE VICINITY OF ENERGIZED EQUIPMENT. READ THE ELECTRICAL SAFETY PRECAUTIONS IN CHAPTER ONE BEFORE PERFORMING ANY TESTS.

For AC assets, test lead colors of black, blue, and red connect to phases 1, 2, and 3 (left to right, top to bottom); green connects to ground. For DC assets, test lead colors of black and blue connect to F1/A1 and F2/A2; the red lead is not used; green connects to ground. The DC Bar-to-Bar pistol grip or pencil probe test leads connect to commutator bars.

Some asset circuits may have surge capacitors and/or power factor correction capacitors installed. It is important to know about them since these components affect the values of the collected data and increase the time and number of steps involved in troubleshooting. Testing can be performed with the power or surge capacitors installed, however, surge capacitors must be removed for the accurate measurement of the asset's insulation resistance-to-ground. If an asset appears faulty with the power factor capacitors installed, disconnect them and perform the testing again to isolate the fault.

TEST SELECTION WINDOW

In this chapter, the MCE aspects of asset testing are discussed. EMAX testing is discussed in the Power and Current Analysis chapters. The Test Selection window discussion is followed by the Step-by-step testing procedures, Test Data Analysis on page 5-53, and finally MCE Analysis on page 5-74.

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Note: Selecting the MCE Auto test icon on the tool bar bypasses the Test Selection window and automatically runs the Standard Test followed by the Polarization Index test using either the default or previously saved test settings, at the end of testing the test results are saved, and the Fault Zone Report opens.

To open the Test Selection Window click the Test Selection icon on the tool bar.

The Test Selection window is shown in Figure 5-1. The asset name is located on the title bar to the right of the window name. The Test Selection window is used for both MCE and EMAX testing by selecting the desired test type tab.

The asset section tabs are found along the left side of the test selection area and are dependent on the asset type. Possible sections are Armature Circuit, Field Circuit, Resistor Bank, Rotor, and Stator.

- For AC Induction assets, the only option is Stator.
- For AC Synchronous assets, options are Field Circuit and Stator.
- For Wound Rotor assets, options are Stator, Rotor, and Resistor Bank.
- For DC assets, options are Armature and Field Circuit.

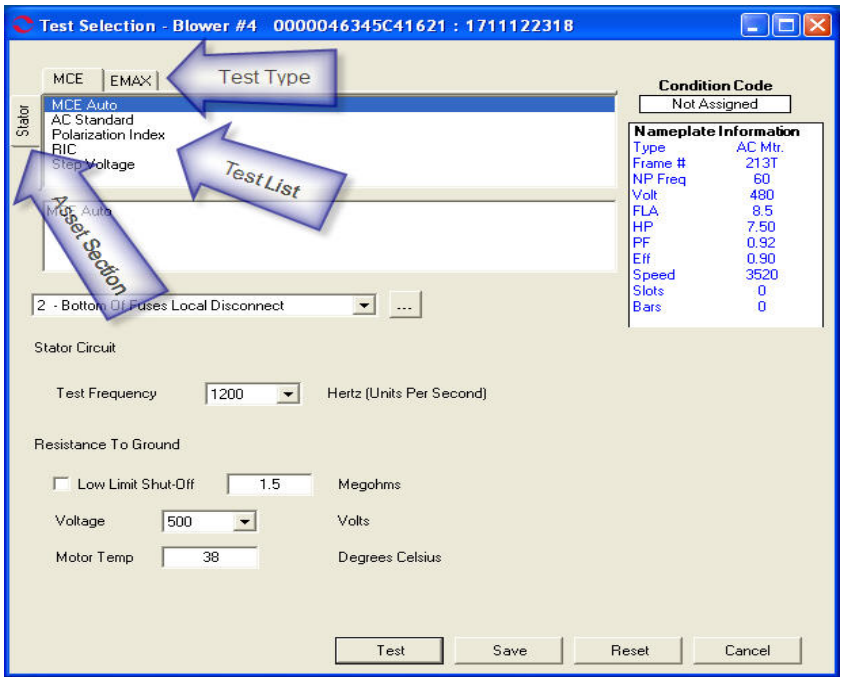


Figure 5-1: Test Selection Window

Test List

The top left section of the window contains a list of test selections for either MCE or EMAX, depending on asset type, test type and asset section tabs selected. The test lists section displays the various tests which may be performed based on the asset type and asset section chosen. When a test is selected, the name of the test is highlighted blue and

the test set up area changes to values appropriate for the test selected. The test list possibilities for MCE testing are:

- MCE Auto
- Standard (AC asset)
- Standard (DC asset)
- Polarization Index
- Rotor Influence Check (RIC)
- Step Voltage
- Synchronous (Synchronous, Field section)
- Resistor Bank (Wound Rotor, Resistor Bank section)
- Commutator Bar-to-Bar (DC asset)

Asset Information

Asset Information is located on the right side. This area displays the Condition Code and nameplate information of the asset being tested. The information comes from the nameplate data that was entered when the asset was set up and cannot be edited on this window. Information displayed, depending on asset type, may include: Type, Frame #, NP Frequency, Voltage, FLA, HP, PF, Eff, Speed, Slots, and Bars. Also, Field Volts and Field Current are listed for DC assets.

MCE Test Setup

The lower half of the Test Selection window is devoted to test set-up selections. The set-up options depend on the asset type and test selected.

Asset Test Location

The Asset Test Location default is Not Assigned. To assign a test location, click the down arrow and select from the list. If the location is not known, click the browse button ... . The Test Location Selection window opens displaying a test location graph for the type of asset selected. See Figure 5-2. Use the graph to determine the location, then click the down arrow in the Test Location text box, select the location from the list, and click **OK.**

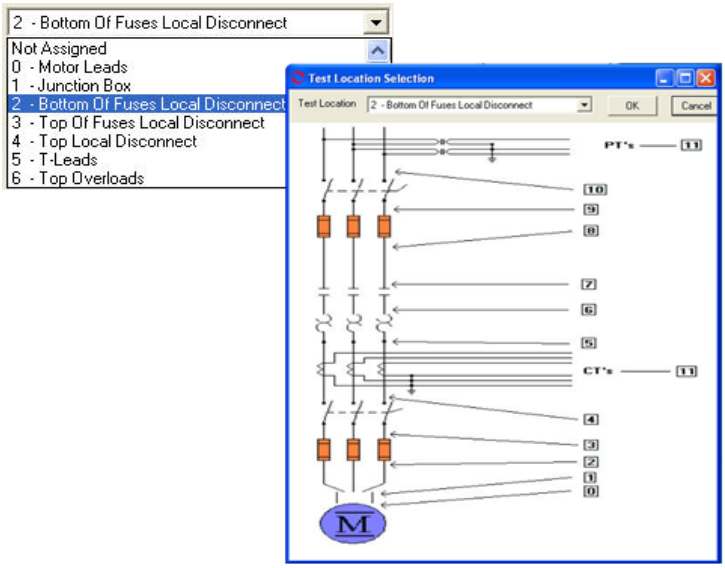


Figure 5-2: AC Asset Test Location

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Test Frequency

Test Frequency is selected from a drop-down box. Click the down arrow and select from the list to change the frequency. The choices are 300 or 1200 Hz depending on the section being tested. Test Frequency is not available for the resistor bank section of a wound rotor asset.

Resistance-to-Ground

Resistance-to-Ground provides the option to check (turn on) the Low Limit Shut Off and enter a shut off voltage.

Voltage

Voltage is selected from a drop-down list. Click the down arrow and select from the list to change the voltage. The voltage choices are from 250, 500, 1,000, 2,500, and 5,000.

Select a voltage of 500 or 1000 volts, based on the asset's voltage. EASA (Electrical Apparatus Service Association), in their booklet How to Get the Most From Your Electric Motors, suggests 500 volts for assets rated ≤2400 volts and 1000 volts for assets rated at >2400 volts.

Asset Temperature

The default value is 40° C. The value may be changed by typing in a new value.

Span

Span selection is only available for Bar-to-Bar testing of the armature section of DC assets.

Charge Time

Charge time is available for the Standard test of an AC Induction, Wound Rotor, Synchronous, and DC assets. The default value is 60 seconds. To change the charge time, click the down arrow and select from the list of between 15 and 600 seconds.

Test Button

Click **Test** to advance to the test window.

Save Button

Click **Save** when the test set-up selections are complete. This saves the settings as default values for that asset for subsequent tests, but is not required. If you forget to save and click Test, you will be asked if you want to save your changes.

Reset Button

Click **Reset** to set values back to the pre-changed value. Note: If you have clicked the Save button they will not reset and it will be necessary to manually change them back.

Cancel Button

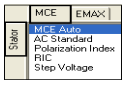
Click **Cancel** to close the Test Selection window without saving setup changes or proceeding to the test window. You will be asked if you want to save test setup settings.

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TEST WINDOW

Once the asset section and setup parameters are selected, you are ready to run the test. This section explains each test by asset type and asset section. The test window is discussed followed by step-by-step testing procedures. Test analysis information begins on page 5-53.

AC Induction Assets



The MCE tests for an AC Induction asset are MCE Auto, AC Standard, Polarization Index, RIC, and Step Voltage. They are discussed in detail in this section.

Note: To minimize the influence of stored energy on test results, perform the tests in the following order. If a test is not to be performed, skip to the next test.

- Rotor Influence Check (RIC)
- Standard Test
- Polarization Index (PI)/Dielectric Absorption (DA) If a PI is performed, it is not necessary to perform a separate DA.

Some circuits may have surge capacitors and power factor correction capacitors installed. This is important since these components affect the values of the collected data and increase the time and number of steps involved in troubleshooting. Testing can be performed with the power factor capacitors installed. However, a test should be taken with surge capacitors removed for future comparison. If an asset appears faulty with the power factor capacitors installed, disconnect them and perform the testing again to isolate the fault.

MCE Auto Test

MCE Auto test performs a standard test followed by a Polarization Index test, then saves the data and produces a Fault Zone Report.

MCE Auto test can be started by clicking the MCE Auto icon 

on the toolbar or selecting MCE Auto from the test list in the Test Selection Window. If you select the MCE Auto icon, the MCE Auto test window opens bypassing the Test Selection window.

If you need to change the test setup settings, select the Test Selection icon 

. The Test Selection window opens, make your changes, and then select MCE Auto from the test list and click **Test**. The MCE Auto Test window, Figure 5-3, opens. The MCE Auto Test window menu consist of three options: File, View, and Options.

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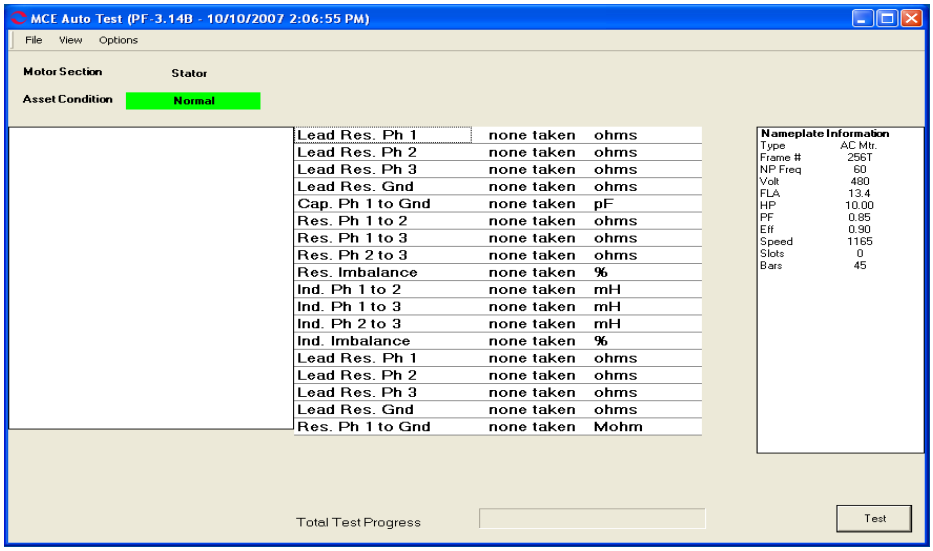


Figure 5-3: MCE Auto Test Window

File Menu

Save. Save (Ctrl+S) is not active, it appears dimmed, until after testing is complete.

Exit. Exit (Ctrl+X) closes the MCE Auto Test and Test Selection windows and returns you to the Home window.

View Menu

Create Message . Create Message opens the Compose Asset Message window (Figure 5-4). Messages created here are viewed in the Message Center. For more information on the Message Center, see Chapter 3, page 3-41.

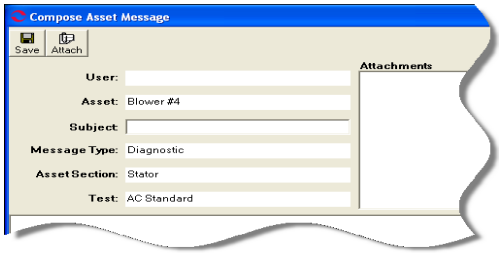


Figure 5-4: Compose Asset Message Window

Options Menu

Set Condition Code. Change the condition code, by selecting the option button corresponding to the condition (Figure 5-5). The Asset Condition box on the MCE Auto Test window changes and a note is automatically generated by the software. The note is viewed in the Message Center. For more information on the Message Center, see Chapter 3, page 3-43.

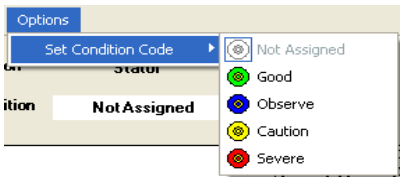


Figure 5-5: Set Condition Code Window

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Test Button

To begin testing click **Test**. During testing the menu items are dimmed (not available) and the Test button changes to Stop. The test takes approximately 11 minutes.

The tester automatically proceeds from the Standard test to the Polarization Index (PI) test. A status bar displays the testing progress. During the Standard test there is one Total Test Progress bar. When the PI test is performed there is a PI progress bar, a Total Progress bar, and a graph in the lower left displaying the test results. See Figure 5-6.

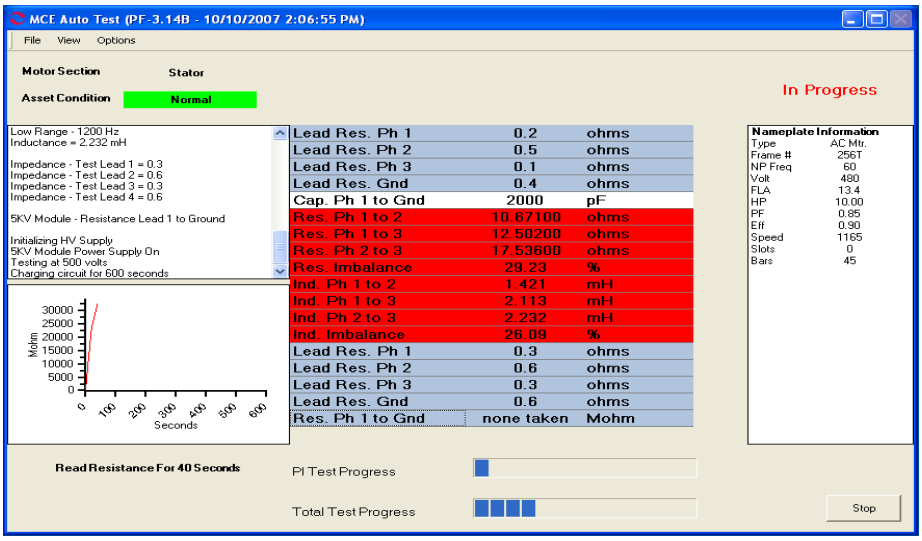


Figure 5-6: MCE Auto Test Window - PI Test

At the end of the PI test, the test results are automatically saved and the Fault Zone Report is generated and displayed. See Figure 5-7.

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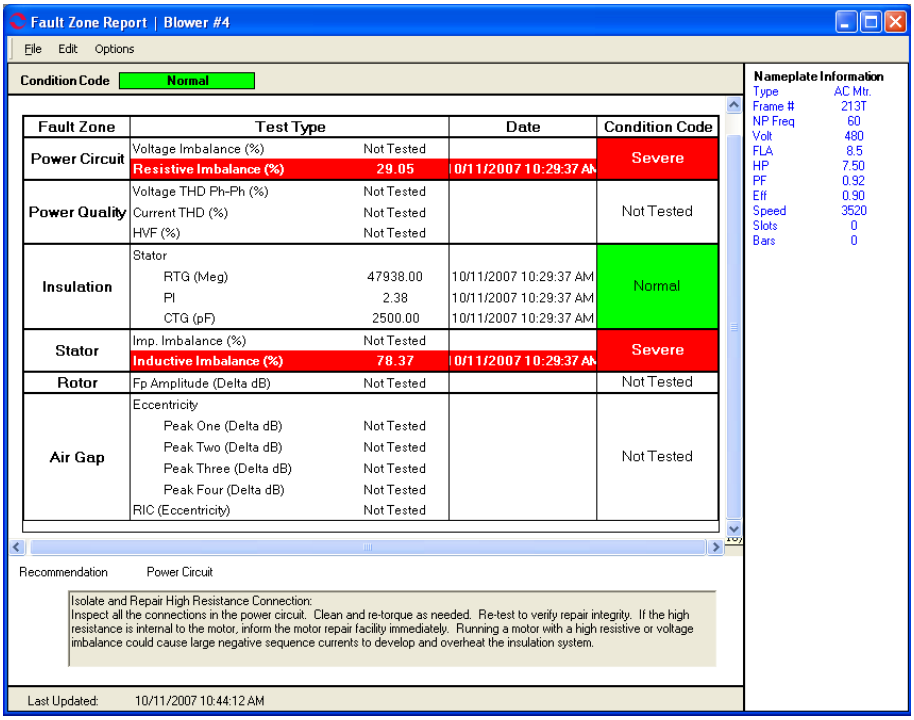


Figure 5-7: MCE Auto Test Fault Zone Report

Fault Zone Report

NOTE: The information for the Fault Zone Report, beginning with File Menu and ending with To View Test History on page 5-12, has been replaced with a new and improved ocular format. A description of the ocular fault zone can be found on page 3-52 in Chapter 3-MCEGold3.

File Menu

Print Preview. Print Preview, shown in Figure 5-8, displays the Fault Zone Report as it will be printed. Using the File menu on the Print Preview window, you can export the report to PDF or HTML or add comments before printing.

To *create a PDF file*, select File, Export to PDF, select the location you wish to save the file in, enter a file name, and click **Save**.

To *create a HTML file*, select File, Export to HTML, select the location you wish to save the file in, enter a file name and click **Save**.

To *add comments*, select File, Add Comments. In the Add Remarks window type your comments and click **Add**. The comments appear in the Comments section at the bottom of the report. They will appear on the printed report, but are not saved for the future. Permanent comments should be entered in the Message Center using Edit, Create Message, which is discussed on page 5-11.

To *print the report* click the **Print** icon on the Print Preview toolbar.

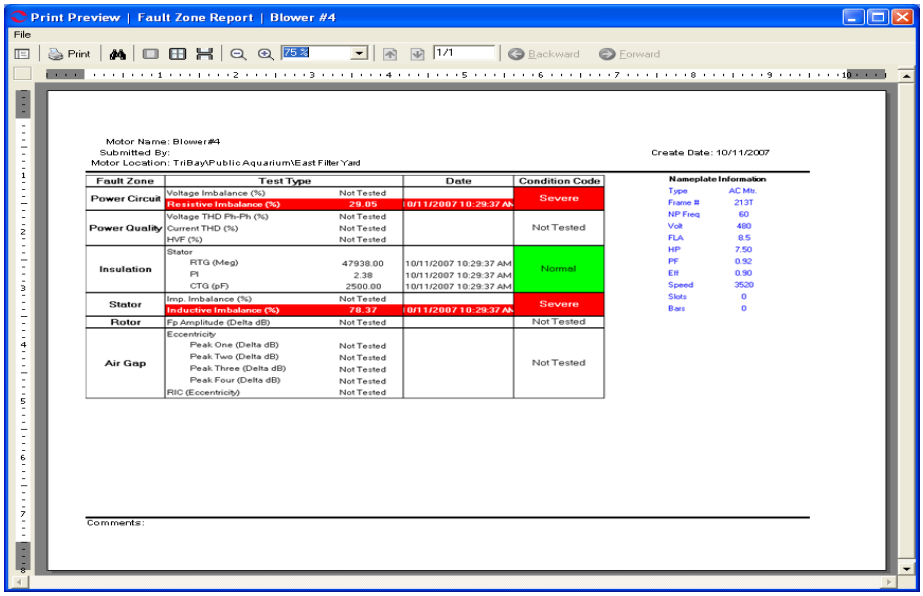


Figure 5-8: Print Preview

Print. Print prints the report to your default printer.

Exit (Ctrl+Q). Exit the report by using File, Exit (Ctrl+Q) or clicking the Close button (red X in the upper right corner).

Edit Menu

Create Message (Ctrl+M). You may enter permanent notes by selecting Create Message (Ctrl+M). This opens the Compose Asset Message window shown in Figure 5-4 on page 5-8. The note is viewed from the Message Center. See the section on Message Center in Chapter 3, page 3-41.

Options Menu

Refresh (Ctrl+R). The Refresh function is used to update the Fault Zone Report when changes have been made to the warning settings.

Set Condition Code. Change the condition code, by selecting an option button, the Condition Code box changes, and a note is automatically generated by the software. The note is viewed from the Message Center. See the section on Message Center, in Chapter 3, page 3-43.

Description/Recommendation

The blank area at the bottom of the report is designed to provide additional information, such as descriptions of the Fault Zones and Test Types or recommended actions for the Condition Code. It is for on screen viewing only and does not appear on the printed report.

To **view a description** of the Fault Zone or Test Type, click on the name in the Fault Zone report. The description will appear in the text box at the bottom of the window.

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To **view the recommended course of action** for a condition code, click the condition code name. The recommended course of action will appear in the text box at the bottom of the window. Figure 5-7 shows how the window would appear if severe condition code of the power circuit was selected.

To View Test History

To **open the Test History** click on the test type result value or the date. The Test History window opens.

AC Standard Test

The AC Standard test is reach by selecting AC Standard from the test list on the Test Selection window. See page 5-3, Test Selection Window for more information. Verify that the test set-up settings are correct and click **Test**. The AC Standard Test Window (Figure 5-9) opens.

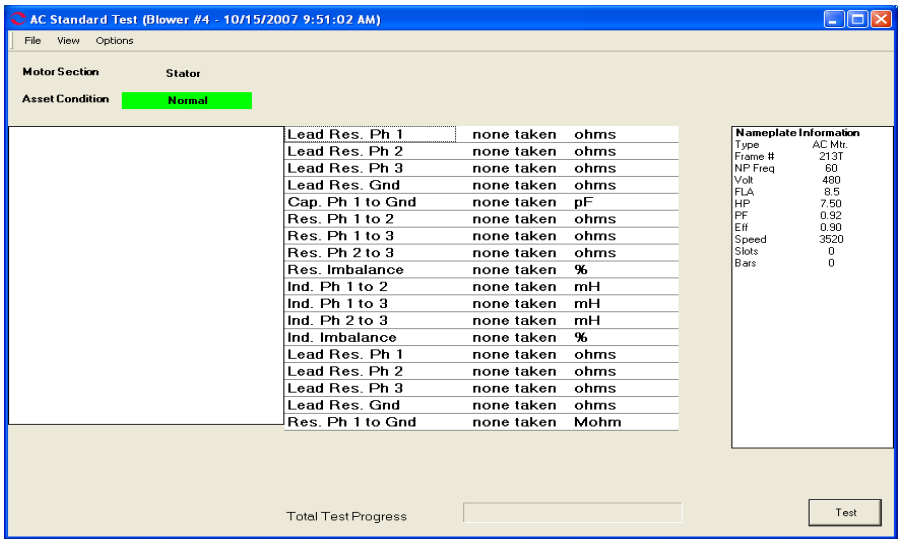


Figure 5-9: AC Standard Test Window

The AC Standard Test window menu consist of three options: File, View, and Options.

File Menu

Save. Save (Ctrl+S) is not active, it appears dimmed, until after testing is complete.

Exit. Exit (Ctrl+X) closes the AC Standard test window and returns you to the MCEGold Home window.

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View Menu

Create Message. Create Message opens the Compose Asset Message window (Figure 5-10). Messages created here are viewed in the Message Center. For more information on the Message Center, see Chapter 3, page 3-41.

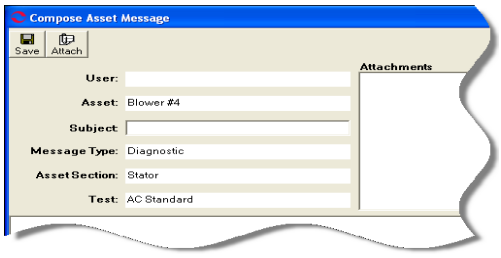


Figure 5-10: Compose Asset Message Window

Options Menu

Set Condition Code. Change the condition code, by selecting an option button (Figure 5-11). The Asset Condition box on the AC Standard Test window changes and a note is automatically generated by the software. The note is viewed in the Message Center. For more information on the Message Center, see Chapter 3, page 3-43

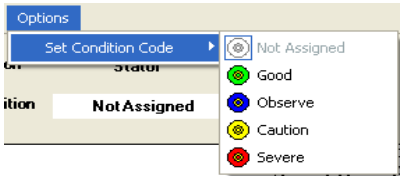


Figure 5-11: Options, Set Condition Code Menu

Step-by-Step AC Standard Testing

1. Deenergize and lock out the starter and the asset.

2. Check for low level induced voltages using a Fluke multimeter or equivalent.

   Verify that the values do not exceed 0.5 VAC phase-to-phase and 15 VAC phase-to-ground. Check for low level stored voltage by verifying less than 15 VDC phase-to-ground.

3. Connect the MCE to the circuit, in the same manner each time, as referenced in Table 5-1. This ensures that the test data is trendable/repeatable.

Table 5-1: Test Lead Connections

MCE test leads	Black	White	Red	Green
motor phase	A	B	C	gnd
“T” lead	T1	T2	T3	gnd
vertical	top	mid	bot	gnd
horizontal	left	mid	right	gnd

4. Highlight the asset to be tested on the Site Navigator.

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5. Select the Test Selection icon on the toolbar. The Test Selection window opens, Figure 5-12.

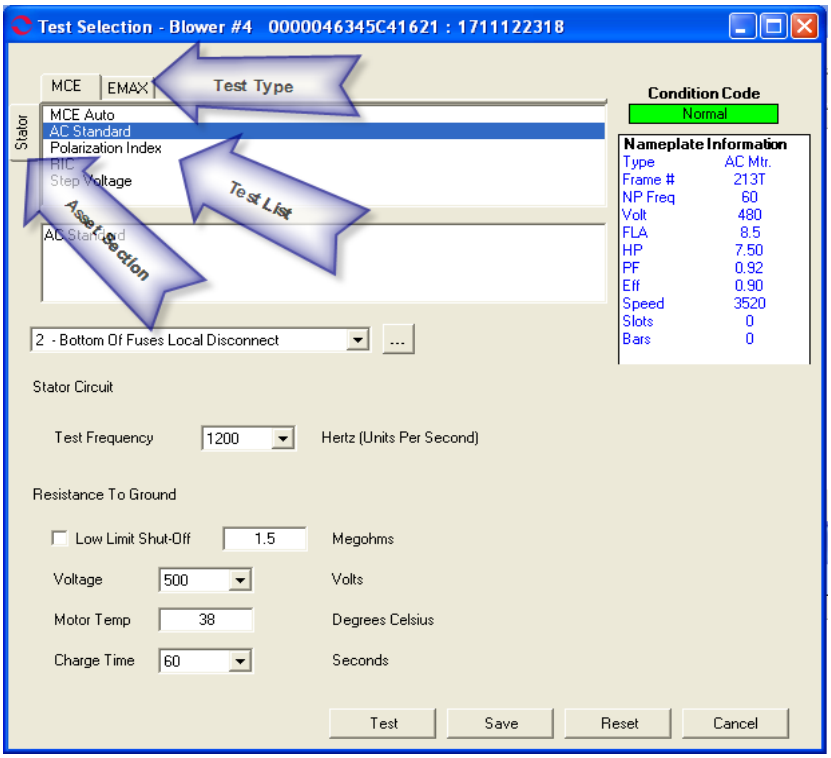


Figure 5-12: Test Selection Window

6. Verify that the MCE (Test Type) and Stator (Asset Section) tabs are selected. The type of asset determines which asset sections are available.

7. Click AC Standard from the Test List.

   If all of the settings in the MCE Test Setup are correct, click **Test** to go directly to the test. Go to step 16.

8. Verify the Test Location in the Test Setup section.

   To insure consistent trending and assist in trouble shooting, the actual test location should be stored for each test.

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The Test Location default is Not Assigned. To assign a test location, click the down arrow and select from the list. If the location is not known, click the browse button . The Test Location Selection window opens displaying a test location graph for the type of asset selected. Use the graph to determine the location, then click the down arrow, select from the list, and click **OK**. See Figure 5-13.

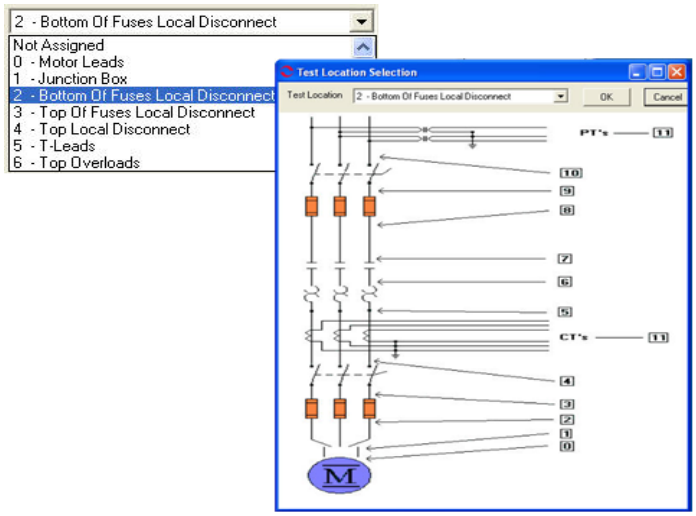


Figure 5-13: Asset Test Location

9. Verify the Test Frequency.

   Click the down arrow and select the frequency from the drop-down list. The values are 300 or 1200.

10. Verify the Low Limit Shut Off condition.

    Check the box to activate the low limit shut off and enter the desired Mohms.

11. Verify the Voltage.

    Click the down arrow and select the voltage from the drop-down list. Select test voltage based on asset nameplate voltage.

12. Enter the temperature.

    Adjust the Temperature ° C to stator core temperature at the time of testing.

13. Select the Charge Time Seconds.

    Click the down arrow and select the seconds from the drop-down list. The choices are from 30 to 180 seconds at 15 second increments.

14. Click **Save** to save the settings for this asset for future testing. Or click **Reset** to return the original settings. This can only be done if the new settings have not been saved.

15. Click **Test** to go to the testing window.

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16. Click **Test** in the AC Standard Test Window.

17. Verify that you are about to apply "X" volts to the circuit by clicking **Yes**.

18. Testing begins, progress bars are displayed for Total Test Progress and Discharge Progress at various times. The test values are filled in as testing proceeds. At the end of testing Test Completed appears above the Nameplate Information area. See Figure 5-14.

    To stop the test at any time, click **Stop**. Click **Exit** to close the AC Standard test window and return to the Home window.

19. Click **OK** when the test is complete.

20. Re-test any individual point, if needed. If not go to step 21.

    If any portion of the test needs to be re-tested, double click the tab which appears to the right of the individual test point. This rechecks only that test point in "manual mode." See Figure 5-14.

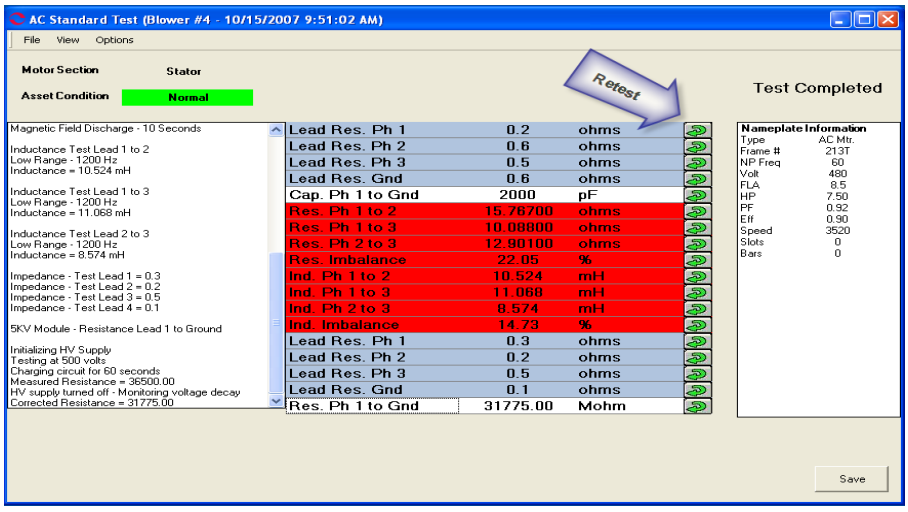


Figure 5-14: AC Standard Test Window

21. When retesting is complete or if no re-testing is needed, click **Save** or select File, Exit, or Ctrl+X, or use the close button (X in the upper right corner).

22. Click **OK** in the Save Complete window.

23. Click **Exit** in the AC Standard Test Window.

Polarization Index

The Polarization Index (PI) test is reached by selecting Polarization Index from the test list on the Test Selection window. See page 5-3, Test Selection Window for more information.

Verify that the test set-up settings are correct and click **Test**. The PI test window opens. See Figure 5-15.

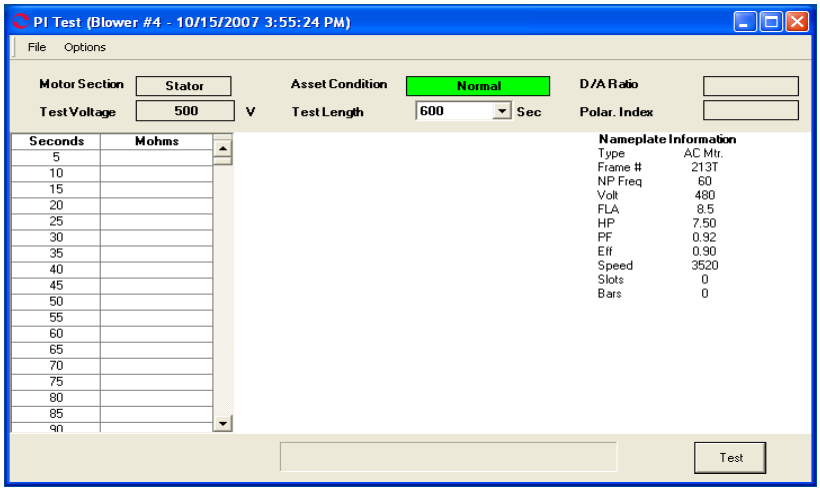


Figure 5-15: PI Test Window

File Menu

Save. Save (Ctrl+S) is not active, it appears dimmed, until after testing is complete.

Exit. Exit (Ctrl+X) closes the PI Test window and returns you to the Home window.

Options Menu

Set Condition Code. Change the condition code, by selecting the option button corresponding to the condition (Figure 5-16). The Asset Condition box on the PI Test window changes and a note is automatically generated by the software. The note is viewed in the Message Center. For more information on the Message Center, see Chapter 3, page 3-41.

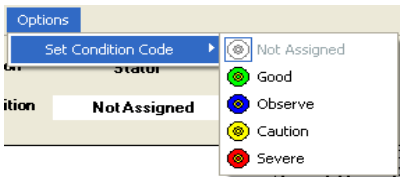


Figure 5-16: Set Condition Code Window

Step-by-Step Polarization Index Testing

The PI test takes ten minutes. During the test the menu items are dimmed (not available) and the **Test** button changes to **Stop**.

1. Deenergize and lock out the starter and the asset.

2. Check for low level induced voltages using a Fluke multimeter or equivalent.

   Verify that the values do not exceed 0.5 VAC phase-to-phase and 15 VAC phase-to-ground. Check for low level stored voltage by verifying less than 15 VDC phase-to-ground.

3. Connect the MCE to the circuit, in the same manner each time, as referenced in Table 5-2. This ensures that the test data is trendable/repeatable.

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Table 5-2: : Test Lead Connections

MCE test leads	Black	White	Red	Green
motor phase	A	B	C	gnd
“T” lead	T1	T2	T3	gnd
vertical	top	mid	bot	gnd
horizontal	left	mid	right	gnd

4. Highlight the asset to be tested in the Site Navigator.

5. Select the Test Selection icon on the toolbar. The Test Selection window opens, Figure 5-17.

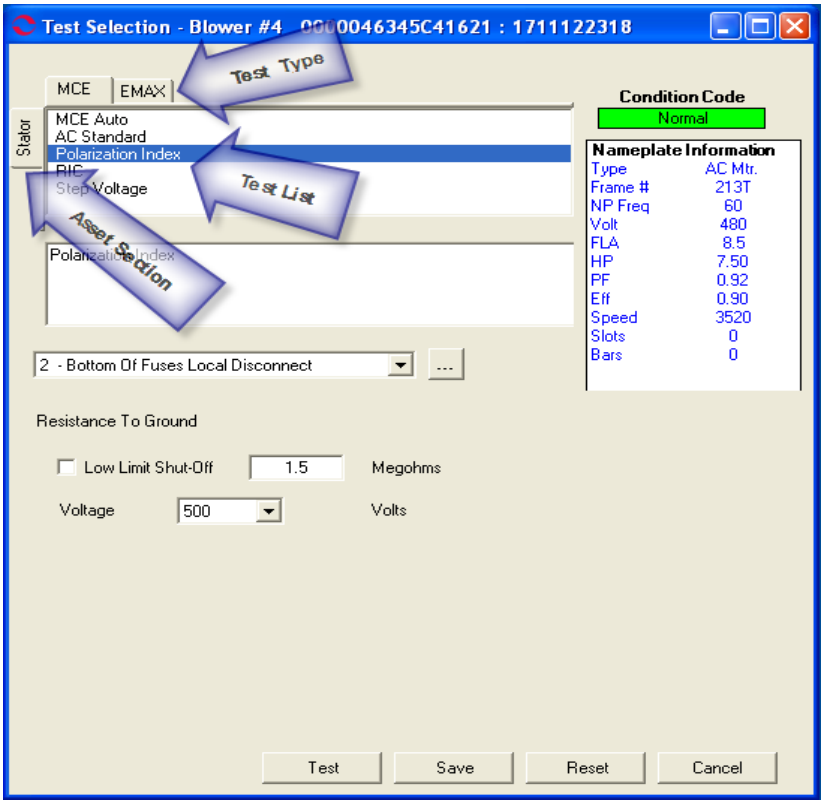


Figure 5-17: Test Selection Window

6. Verify that the MCE (Test Type) and Stator (Asset Section) tabs are selected. The type of asset determines which asset sections are available.

7. Verify the Test Location in the Test Setup section.

   To insure consistent trending and assist in trouble shooting, the actual test location should be stored for each test.

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The Test Location default is Not Assigned. To assign a test location, click the down arrow and select from the list. If the location is not known, click the browse button . The Test Location Selection window opens displaying a test location graph for the type of asset selected. Use the graph to determine the location, then click the down arrow, select from the list, and click **OK**. See Figure 5-18.

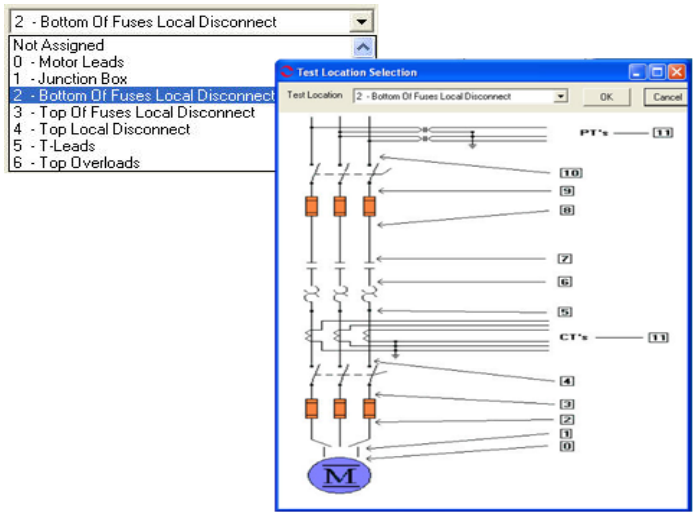


Figure 5-18: Asset Test Location

8. Verify the Low Limit Shut Off condition.

   Check the box to activate the low limit shut off and enter the desired Mohms.

9. Verify the Voltage.

   Click the down arrow and select the voltage from the drop-down list. Select the test voltage based on asset nameplate voltage.

10. Click **Save** to save the settings for this asset for future testing. Or click **Reset** to return the original settings. This can only be done if the new settings have not been saved.

11. Click **Test** to go to the testing window.

12. Click **Test** in the PI Test window.

13. Verify that you are about to apply "X" volts to the circuit by clicking **Yes**.

14. As the test proceeds, the test result values are displayed in the table and plotted on the graph. At the end of one minute the D/A ratio is computed and displayed in the D/A Ratio text box. The progress bar displays the progress of the testing.

    Note: To stop the test, click **Stop.**

15. Click **OK** in the Test Completed window. The menu item become active and the **Stop** button is inactive.

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16. Exit the PI Test window by selecting File, Exit, or Ctrl+X, or the close button (Red X in the upper right corner).

17. You will be asked if you want to save test data. Click **Yes** or **No**.

    If you select **Yes**, click **OK** in the Save Completed widow. The PI Test window closes

    If you select **No**, the PI Test window closes. No test data is saved.

RIC

The RIC test is reached by selecting RIC from the test list on the Test Selection window. See page 5-3, Test Selection Window for more information. Verify that the test set-up settings are correct and click **Test**. The RIC test window opens. See Figure 5-19.

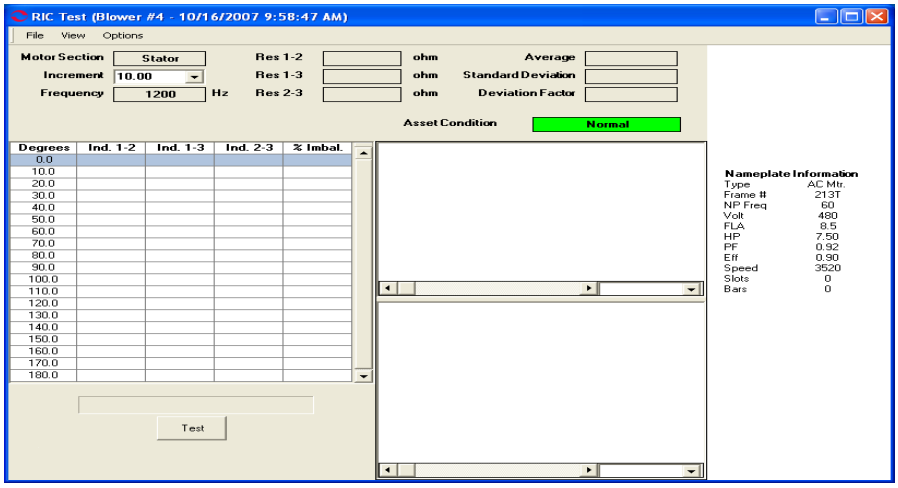


Figure 5-19: RIC Test Window

File Menu

Save. Save (Ctrl+S) is not active, it appears dimmed, until after testing is complete.

Exit. Exit (Ctrl+X) closes the RIC Test window and returns you to the Home window.

View Menu

Create Message . Create Message opens the Compose Asset Message window (Figure 5-20). Messages created here are viewed in the Message Center. For more information on the Message Center, see Chapter 3, page 3-41.

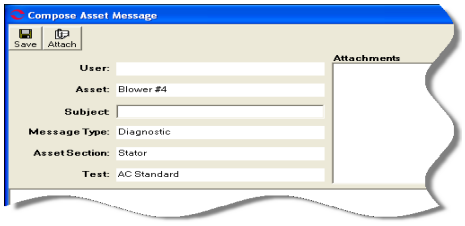


Figure 5-20: Compose Asset Message Window

Options Menu

Set Condition Code. Change the condition code, by selecting the option button corresponding to the condition (Figure 5-21). The Asset Condition box on the RIC Test window changes and a note is automatically generated by the software. The note is viewed in the Message Center. For more information on the Message Center, see Chapter 3, page 3-41.

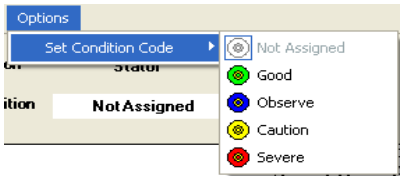


Figure 5-21: Set Condition Code Window

Step-by-Step RIC Testing

During the test the menu items are dimmed (not available). To stop testing, use File, Exit which becomes active after each test point.

1. Deenergize and lock out the starter, disconnect, and the asset. Follow your company's electrical safety procedures for tagouts.

2. Check for low level induced voltages using a Fluke multimeter or equivalent.

   Verify that the voltage does not exceed 0.5 VAC phase-to-phase and 15 VAC phase-to-ground. Check for low level stored voltage by verifying less than 15 VDC phase-to-ground.

3. Place the shaft key way in the up position. This ensures a common starting point for all subsequent tests.

4. Ensure that the field is disconnected from the control circuit.

   This is accomplished by isolating/removing the brushes from the slip rings or by disconnecting the field leads from the diode pack in a self-exited asset. This allows the natural magnetic field on the rotor to expand, enhancing the detection of rotor problems.

5. Connect the MCE test leads to the circuit/asset, in the same manner each time, as referenced in Table 5-3. This ensures that the test data is trendable/repeatable.

Table 5-3: Test Lead Connections

MCE test leads	Black	White	Red	Green
motor phase	A	B	C	gnd
"T" lead	T1	T2	T3	gnd
vertical	top	mid	bot	gnd
horizontal	left	mid	right	gnd

6. Highlight the asset to be tested in the Site Navigator.

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7. Select the Test Selection icon on the toolbar. The Test Selection window opens, Figure 5-22.

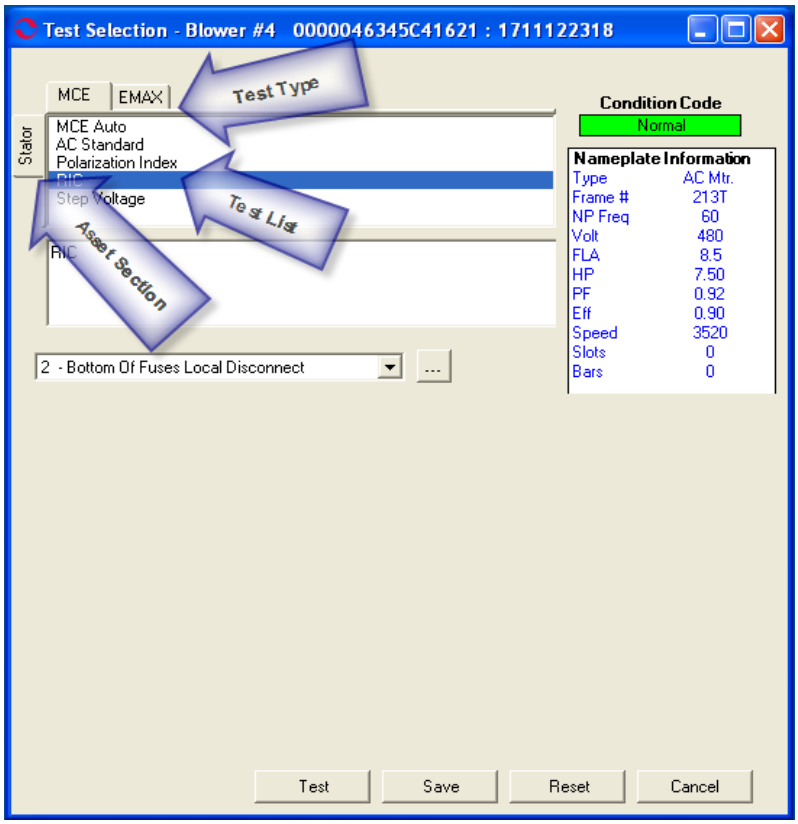


Figure 5-22: Test Selection Window

8. Verify that the MCE (Test Type) and Stator (Asset Section) tabs are selected. The type of asset determines which asset section is available.

9. Select RIC from the Test List box.

10. Verify the Test Location in the Test Setup section.

    To insure consistent trending and assist in trouble shooting, the actual test location should be stored for each test.

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The Test Location default is Not Assigned. To assign a test location, click the down arrow and select from the list. If the location is not known, click the browse button . The Test Location Selection window opens displaying a test location graph for the type of asset selected. Use the graph to determine the location, then click the down arrow, select from the list, and click **OK**. See Figure 5-23.

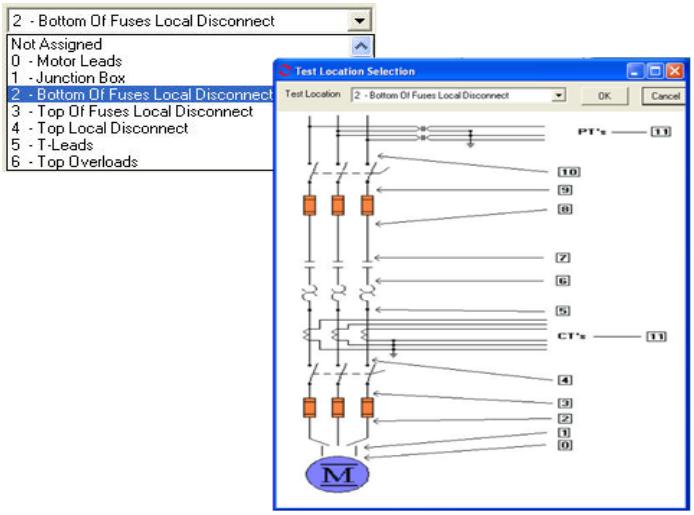


Figure 5-23: Test Locations

11. Click **Save** to save the settings for this asset for future testing. Or click **Reset** to return the original settings. This can only be done if the new settings have not been saved.

12. Click **Test** to go to the test. The RIC test window, Figure 5-24, opens.

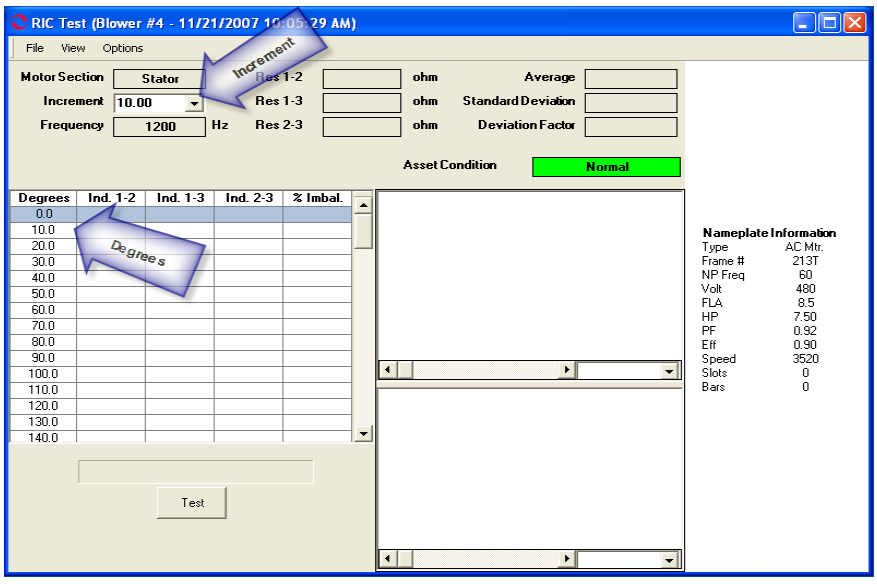


Figure 5-24: RIC Test Window

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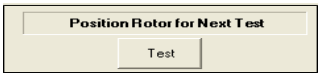
13. Verify that increments to be used during testing are correct. This information is located at the top of the RIC Test window.

    To change the Increments, which automatically computes the appropriate Degrees, click the down arrow and select the increment from the drop-down list.

    The new increments are displayed and the degrees on the test data table is updated.

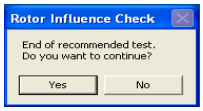
14. Position the rotor to the first position and click **Test** to begin testing.

15. At the end of each test point, you will be reminded to position the rotor for the next test point. Move the rotor and click **Test**. Repeat until the end of the recommended test.



    As the test progresses, the values will be inserted into the table and displayed in the graph areas. The magnification of the graphs can be changed by using the down arrows below each graph area and selecting a new value from the drop down list. The default is Full.

16. At the end of the recommended test you will be asked if you want to continue. Select **Yes** to continue testing or **No** to end testing.



17. Exit the RIC Test window by selecting File, Exit, or Ctrl+X, or the close button (X in the upper right corner).

18. You will be asked if you want to save test data. Click **Yes** or **No**.

    If you select **Yes**, click **OK** in the Save Completed widow. The RIC Test window closes.



    If you select **No**, the RIC Test window closes. No test data is saved.

Step Voltage

The Step Voltage test is reached by selecting Step Voltage from the test list on the Test Selection window. See page 5-3, Test Selection Window for more information. Verify that the test set-up settings are correct and click **Test**. The Step Voltage Test window opens. Figure 5-25.

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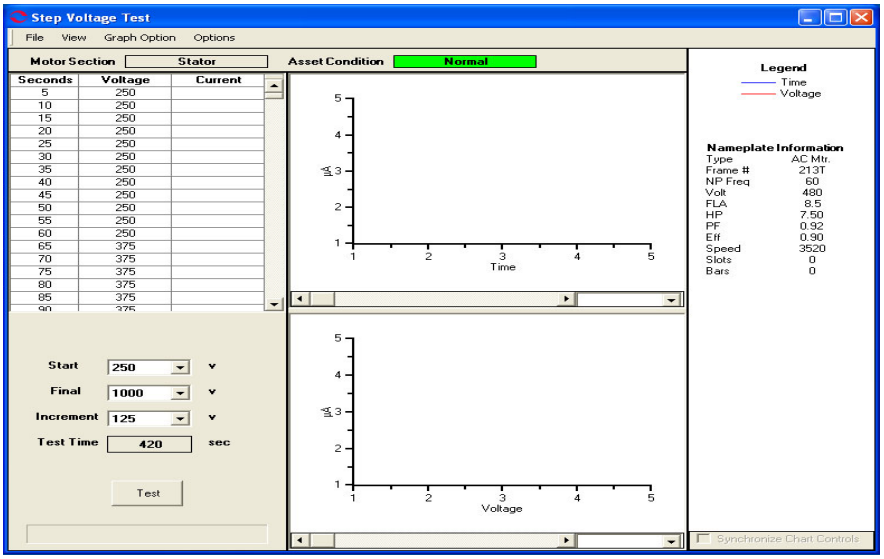


Figure 5-25: Step Voltage Test

File Menu

Save. Save Data is not active, it appears dimmed, until after testing is complete.

Exit. Exit (Ctrl+X) closes the Step Voltage window and returns you to the Home window.

View Menu

Create Message. Create Message (Ctrl+S) opens the Compose Asset Message window (Figure 5-26). Messages created here are viewed in the Message Center. For more information on the Message Center, see Chapter 3, page 3-41.

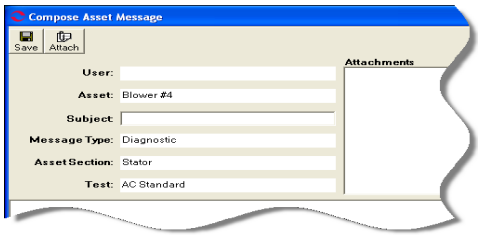


Figure 5-26: Compose Asset Message

Graph Option Menu

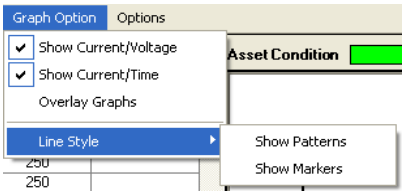
Show Current/Voltage. Show Current/Voltage controls the graph display area. If just Current/Voltage is selected one graph displays on the window. If Show Current/Voltage and Show Current/Time are both selected then two graphs will display.

Show Current/Time. Show Current/Time controls the graph display area. If just Current/Time is selected one graph displays on the window. If Show Current/Time and Show Current/Voltage are both selected then two graphs will display.

Overlay Graphs. Overlay Graphs controls the graph display area. When Overlay Graphs is selected test results are graphed on one graph.

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Line Style. Line Style controls the appearance of the line on the graph.



Show Patterns changes the graph line style from a solid to a pattern. When a change is made to the line style it is reflected in the Legend area of the window, which is located just above the Nameplate Information.

Show Markers inserts markers on the graph line. When a change is made to the line style it is reflected in the Legend area of the window, which is located just above the Nameplate Information.

Options Menu

Set Condition Code. Change the condition code, by selecting an option button (Figure 5-27). The Asset Condition box on the Step Voltage Test window changes and a note is automatically generated by the software. The note is viewed in the Message Center. For more information on the Message Center, see Chapter 3, page 3-41.

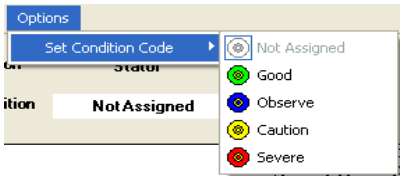


Figure 5-27: Set Condition Code Window

Step-by-Step Step Voltage Testing

During the test the menu items are dimmed (not available).

1. Deenergize and lock out the starter, disconnect, and the asset. Follow your company's electrical safety procedures for tagouts.

2. Check for low level induced voltages using a Fluke multimeter or equivalent.

   Verify that the voltage does not exceed 0.5 VAC phase-to-phase and 15 VAC phase-to-ground. Check for low level stored voltage by verifying less than 15 VDC phase-to-ground.

3. Connect the MCE test leads to the circuit/asset, in the same manner each time, as referenced in Table 5-4. This ensures that the test data is trendable/repeatable.

Table 5-4: Test Lead Connections

MCE test leads	Black	White	Red	Green
motor phase	A	B	C	gnd
"T" lead	T1	T2	T3	gnd
vertical	top	mid	bot	gnd
horizontal	left	mid	right	gnd

4. Highlight the asset to be tested in the Site Navigator.

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5. Select the Test Selection icon on the toolbar. The Test Selection window opens, Figure 5-28.

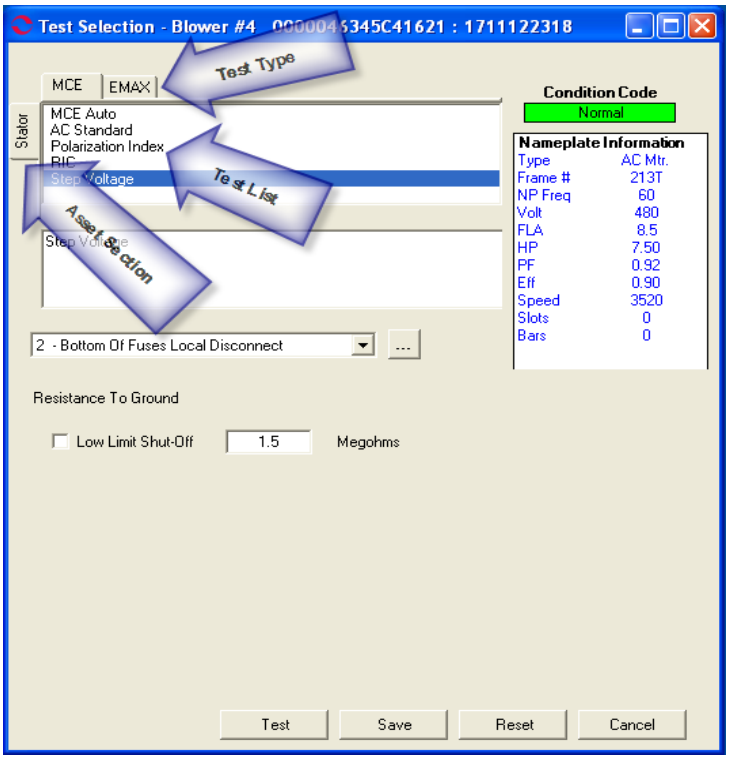


Figure 5-28: Test Selection Window

6. Verify that the MCE (Test Type) and Stator (Asset Section) tabs are selected. The type of asset determines which asset sections are available.

7. Select Step Voltage from the Test List box.

8. Verify the Test Location in the Test Setup section.

   To insure consistent trending and assist in trouble shooting, the actual test location should be stored for each test.

   The Test Location default is Not Assigned. To assign a test location, click the down arrow and select from the list. If the location is not known, click the browse button . The Test Location Selection window opens displaying a test location graph for the type of asset selected. Use the graph to determine the location, then click the down arrow, select from the list, and click **OK**. See Figure 5-29.

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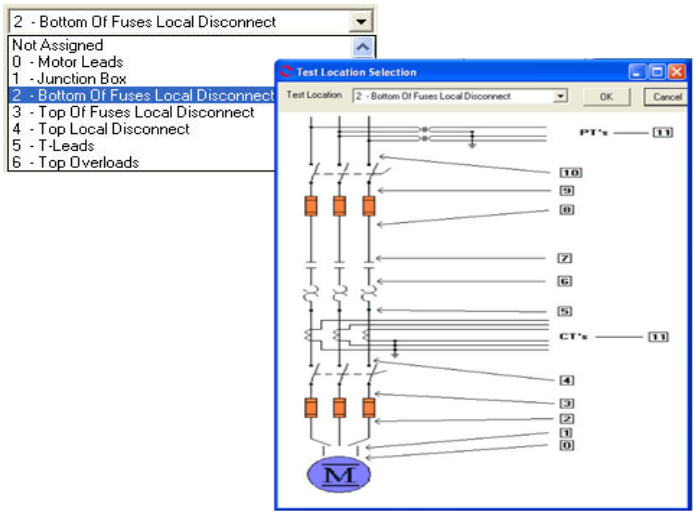


Figure 5-29: Test Locations

9. Verify the Low Limit Shut Off condition.

   Check the box to activate the low limit shut off and enter the desired Mohms.

10. Click **Save** to save the settings for this asset for future testing. Or click **Reset** to return the original settings. This can only be done if the new settings have not been saved.

11. Click **Test** to go to the Step Voltage test window. See Figure 5-30.

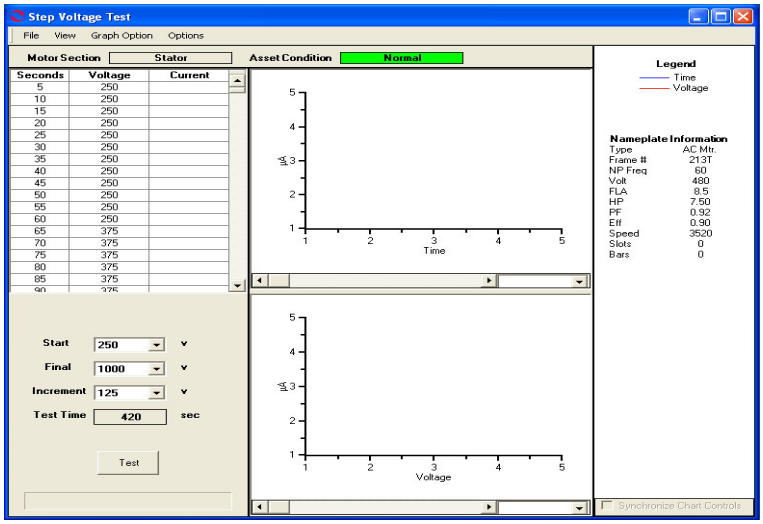


Figure 5-30: Step Voltage Test Window

12. To begin the test click **Test**.

13. Verify that you are about to apply "X" volts to the circuit by clicking **Yes**.

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14. Test values are entered in the table on the left and are displayed in graph format on the right side of the window. The magnification of the graphs can be changed by using the down arrows below each graph area and selecting a new value from the drop down list. The default is Full. A progress bar at the bottom of the screen tracks the testing progress.

    Note: During the test the **Test** button changes to **Stop**, which allows you to interrupt the testing.

15. At the end of testing click **OK** in the Test Completed window.



16. Exit the Step Voltage Window by selecting File, Exit, or Ctrl+X, or the close button (X in the upper right corner).

17. You will be asked if you want to save test data. Click **Yes** or **No**.

    If you select **Yes**, click **OK** in the Save Completed widow. The Step Voltage Test window closes.



    If you select **No**, the Step Voltage Test window closes. No test data is saved.

AC Synchronous Assets

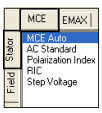
The MCE tests for an AC Synchronous asset are MCE Auto, AC Standard, Polarization Index, RIC, and Step Voltage for the *Stator* section and MCE Auto, Synchronous, Polarization Index, and Step Voltage for the *Field* section.

Note: To minimize the influence of stored energy on test results, perform the tests in the following order. If a test is not to be performed, skip to the next test.

- Rotor Influence Check (RIC)
- Standard Test
- Polarization Index (PI)/ Dielectric Absorption (DA). If a PI is performed, it is not necessary to perform a separate DA.

Synchronous assets are divided into two separate sections (Stator and Field Circuit). The asset Section of the Test Selection window defaults to Stator.

Some asset circuits may have surge capacitors and/or power factor correction capacitors installed. This is important since these components affect the values of the collected data, and increase the time and number of steps involved in troubleshooting. Testing can be performed with the power factor or surge capacitors installed. However, a test should be taken with the surge capacitors removed for future comparison. If a asset appears faulty with the power factor capacitors installed, disconnect them and perform the testing again to isolate the fault.



Stator Section Test

MCE Auto

MCE Auto is the same as for an AC Induction asset. See MCE Auto on page 5-7.

AC Standard

AC Standard is the same as for an AC Induction asset. See AC Standard on page 5-12.

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Polarization Index

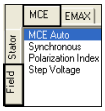
Polarization Index test is the same as for an AC Induction asset. See Polarization Index on page 5-16.

RIC

RIC test is the same as for an AC Induction asset. See RIC on page 5-20.

Step Voltage

Step Voltage test is the same as for an AC Induction asset. See Step Voltage on page 5-24.



Field Section Tests

MCE Auto

MCE Auto is the same as for an AC Induction asset. See MCE Auto on page 5-7.

Polarization Index

Polarization Index test is the same as for an AC Induction asset. See Polarization Index on page 5-16.

Step Voltage

Step Voltage test is the same as for an AC Induction asset. See Step Voltage on page 5-24.

Synchronous

The Synchronous test is reached by selecting the Field Tab and Synchronous from the test list on the Test Selection window. See page 5-3, Test Selection Window for more information. Verify that the test set-up settings are correct and click **Test**. The Synchronous Test window opens. Figure 5-31.

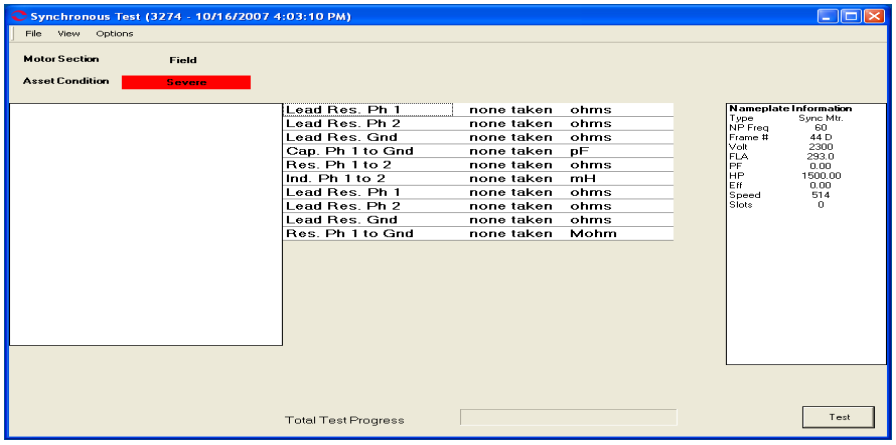


Figure 5-31: Synchronous Test Window

File Menu

Save. Save Data is not active, it appears dimmed, until after testing is complete.

Exit. Exit (Ctrl+X) closes the Synchronous Test window and returns you to the Home window.

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View Menu

Create Message. Create Message (Ctrl+S) opens the Compose Asset Message window (Figure 5-32). The note is viewed in the Message Center. For more information on the Message Center, see Chapter 3, page 3-43.

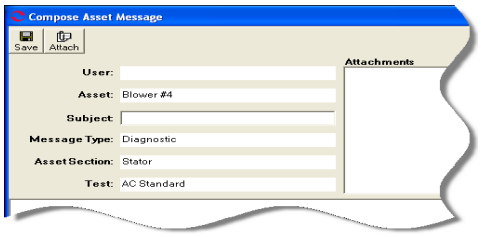


Figure 5-32: Compose Asset Message

Options Menu

Set Condition Code. Change the condition code, by selecting an option button, the Asset Condition box on the Synchronous Test window changes and a note is automatically generated by the software. The note is viewed in the Message Center. For more information on the Message Center, see Chapter 3, page 3-41.

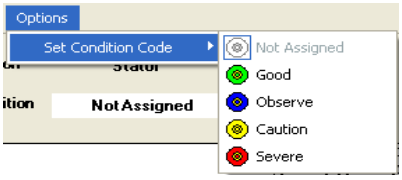


Figure 5-33: Set Condition Code Window

Step-by-Step Synchronous Testing

During the test the menu items are dimmed (not available).

1. Deenergize and lock out the starter, disconnect, and the asset. Follow your company's electrical safety procedures for tagouts.

2. Check for low level induced voltages using a Fluke multimeter or equivalent.

   Verify that the voltage does not exceed 0.5 VAC phase-to-phase and 15 VAC phase-to-ground. Check for low level stored voltage by verifying less than 15 VDC phase-to-ground.

3. Connect the MCE test leads to the circuit/asset, in the same manner each time, as referenced in Table 5-5. This ensures that the test data is trendable/repeatable.

Table 5-5: Test Lead Connections

MCE test leads	Black	White	Red	Green
motor phase	A	B	C	gnd
"T" lead	T1	T2	T3	gnd
vertical	top	mid	bot	gnd
horizontal	left	mid	right	gnd

4. Highlight the asset to be tested in the Site Navigator.

5. Select the Test Selection icon on the toolbar. The Test Selection window opens, Figure 5-34.

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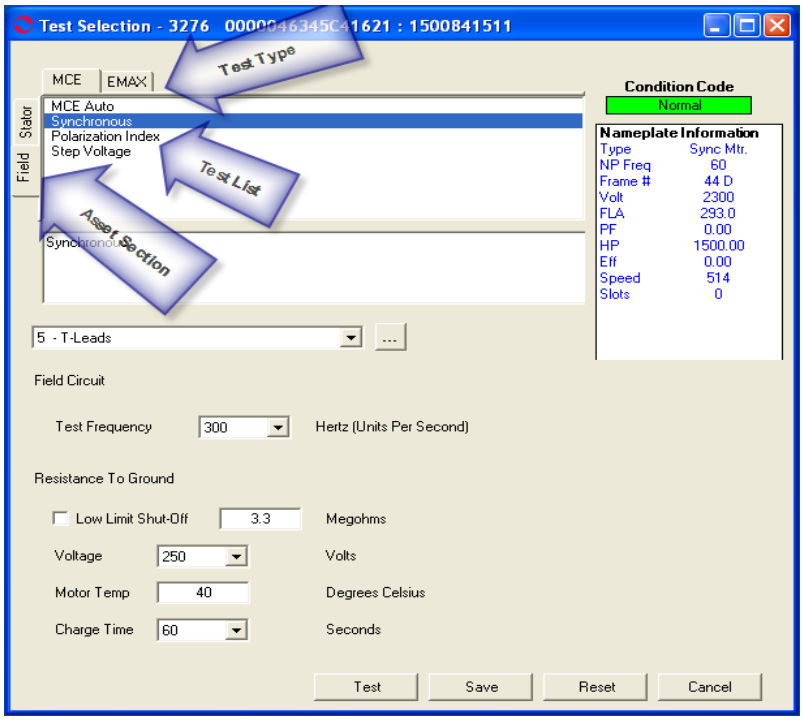


Figure 5-34: Test Selection Window

6. Verify that the MCE (Test Type) and Field (Asset Section) tabs are selected. The type of asset determines which asset sections are available.

7. Select Synchronous from the Test List box.

8. Verify the Test Location in the Test Setup section.

   To insure consistent trending and assist in trouble shooting, the actual test location should be stored for each test.

   The Test Location default is Not Assigned. To assign a test location, click the down arrow and select from the list. If the location is not known, click the browse button . The Test Location Selection window opens displaying a test location graph for the type of asset selected. Use the graph to determine the location, then click the down arrow, select from the list, and click **OK**. See Figure 5-35.

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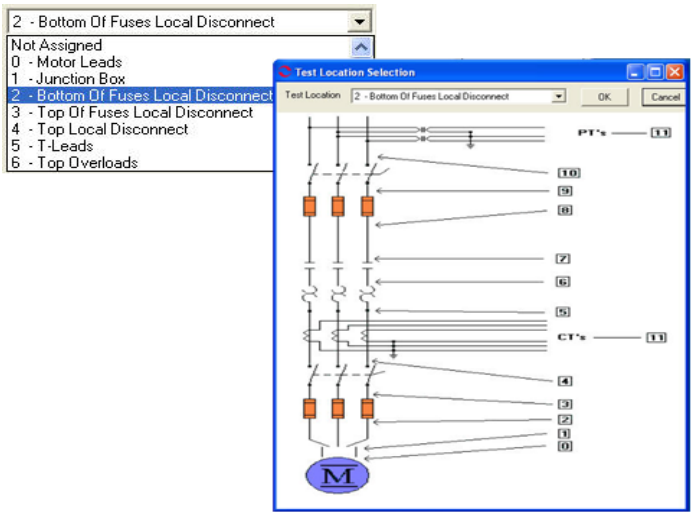


Figure 5-35: Test Locations

9. Verify the Test Frequency.

   Click the down arrow and select the frequency from the drop-down list. The values are 300 or 1200.

10. Verify the Low Limit Shut Off condition.

    Check the box to activate the low limit shut off and enter the desired Mohms.

11. Verify the Voltage.

    Click the down arrow and select the voltage from the drop-down list. Select test voltage based on asset nameplate voltage.

12. Enter the temperature.

    Adjust the Temperature ° C to stator core temperature at the time of testing.

13. Select the Charge Time Seconds.

    Click the down arrow and select the seconds from the drop-down list. The choices are from 30 to 180 seconds at 15 second increments.

14. Click **Save** to save the settings for this asset for future testing. Or click **Reset** to return the original settings. This can only be done if the new settings have not been saved.

15. Click **Test** to go to the Synchronous test window.

16. Verify that you are about to apply “X” volts to the circuit and click **Yes**.

17. Testing begins, progress bars are displayed for Total Test Progress and Discharge Progress at various times. The test values are filled in as testing proceeds.

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18. At the end of testing the **Test** button changes to **Save,** Test Completed appears above the Nameplate Information section, and the progress bars disappear.

19. Re-test any individual point, if needed. If not go to step 20.

    If any portion of the test needs to be re-tested, click the tab which appears to the right of the individual test point. This retests only that test point in “manual mode.” (Figure 5-36)

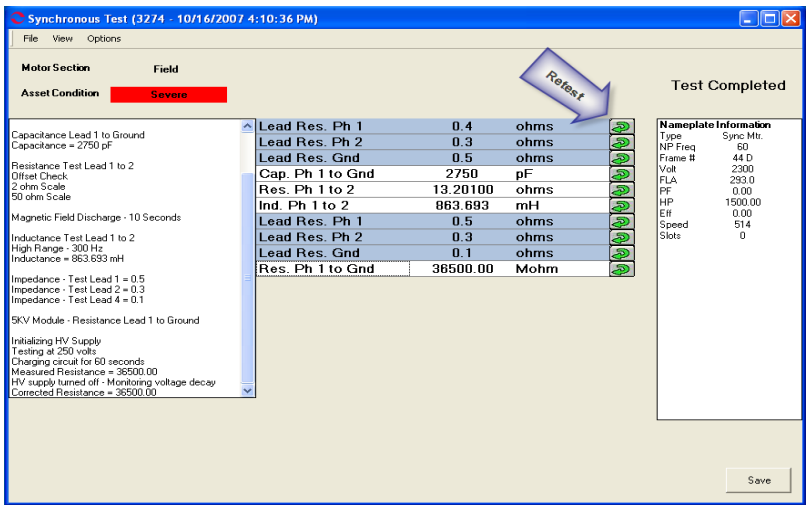


Figure 5-36: Completed Synchronous Test Window

20. When retesting is complete or if no re-testing is needed, click **Save** or File, Exit, or Ctrl+X, or use the close button (X in the upper right corner).

21. Click **OK** in the Save Completed window.

22. Click **Exit** to close the window.

AC Wound Rotor Assets

Wound rotor assets (WRMs) are divided into three separate sections (Stator, Rotor, and Resistor Bank). The asset Section box of the Test Selection window defaults to Stator.

The MCE tests for an AC Wound Rotor asset are MCE Auto, AC Standard, Polarization Index, RIC, and Step Voltage for the Stator section. MCE Auto, AC Standard, Polarization Index, and Step Voltage for the Rotor section. MCE Auto, Resistor Bank, Polarization Index, and Step Voltage for the Resistor Bank section.

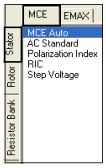
Note: To minimize the influence of stored energy on test results, perform the tests in the following order. If a test is not to be performed, skip to the next test.

- Rotor Influence Check (RIC)
- Standard Test

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- Polarization Index (PI)/ Dielectric Absorption (DA). If a PI is performed, it is not necessary to perform a separate DA.

Some circuits may have surge capacitors and power factor correction capacitors installed. This is important since these components affect the values of the collected data, and increase the time and number of steps involved in troubleshooting. Testing can be performed with the power factor capacitors installed. However, surge capacitors must be removed to ensure valid test data. If a asset appears faulty with the power factor capacitors installed, disconnect them and perform the testing again to isolate the fault.



Stator Section Tests

MCE Auto

MCE Auto is the same as for an AC Induction asset. See MCE Auto on page 5-7.

AC Standard

AC Standard is the same as for an AC Induction asset. See AC Standard on page 5-12.

Polarization Index

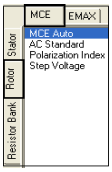
Polarization Index test is the same as for an AC Induction asset. See Polarization Index on page 5-16.

RIC

RIC test is the same as for an AC Induction asset. See RIC on page 5-20.

Step Voltage

Step Voltage test is the same as for an AC Induction asset. See Step Voltage on page 5- 24.



Rotor Section Tests

MCE Auto

MCE Auto is the same as for an AC Induction asset. See MCE Auto on page 5-7.

AC Standard

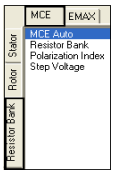
AC Standard is the same as for an AC Induction asset. See AC Standard on page 5-12.

Polarization Index

Polarization Index test is the same as for an AC Induction asset. See Polarization Index on page 5-16.

Step Voltage

Step Voltage test is the same as for an AC Induction asset. See Step Voltage on page 5- 24.



Resistor Bank Section Tests

MCE Auto

MCE Auto is the same as for an AC Induction asset. See MCE Auto on page 5-7.

Polarization Index

Polarization Index test is the same as for an AC Induction asset. See Polarization Index on page 5-16.

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Step Voltage

Step Voltage test is the same as for an AC Induction asset. See Step Voltage on page 5-24.

Resistor Bank Test

The Resistor Bank test is reached by selecting the Resistor Bank tab and Resistor Bank from the test list on the Test Selection window. See page 1-3, Test Selection Window for more information. Verify that the test set-up settings are correct and click **Test**. The Resistor Bank Test window opens. Figure 5-37.

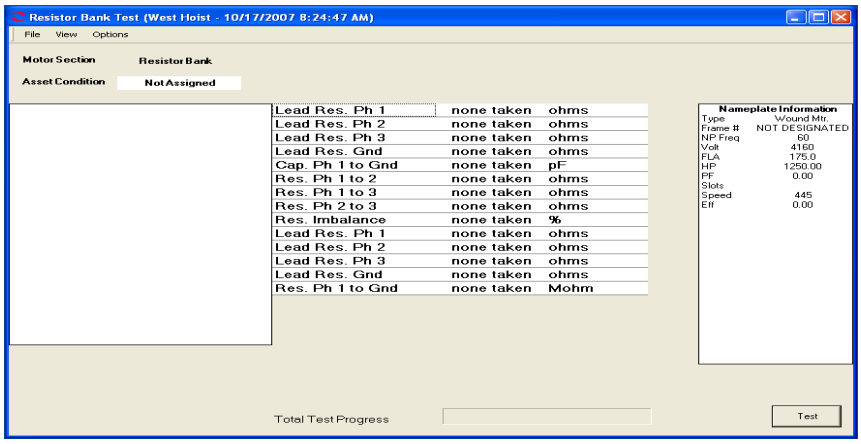


Figure 5-37: Resistor Bank Test Window

File Menu

Save. Save Data is not active, it appears dimmed, until after testing is complete.

Exit. Exit (Ctrl+X) closes the Resistor Bank Test window and returns you to the Home window.

View Menu

Create Message. Create Message (Ctrl+S) opens the Compose Asset Message window (Figure 5-38). The note is viewed in the Message Center. For more information on the Message Center, see Chapter 3, page 3-41.

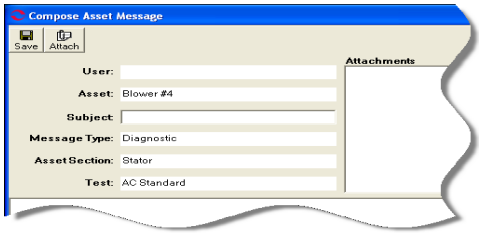


Figure 5-38: Compose Asset Message Window

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Options Menu

Set Condition Code. Change the condition code by selecting an option button (Figure 5-39). The Asset Condition box on the Resistor Bank Test window changes and a note is automatically generated by the software.

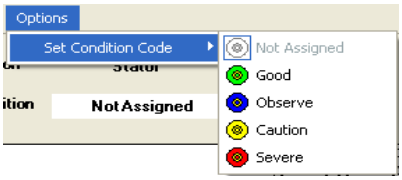


Figure 5-39: Set Condition Code Window

Step-by-Step Resistor Bank Testing

1. Deenergize and lock out the starter, disconnect, and the asset. Follow your company's electrical safety procedures for tagouts.

2. Check for low level induced voltages using a Fluke multimeter or equivalent.

   Verify that the voltage does not exceed 0.5 VAC phase-to-phase and 15 VAC phase-to-ground. Check for low level stored voltage by verifying less than 15 VDC phase-to-ground.

3. Lift the brushes to isolate the resistor bank from the rotor field.

4. Connect the MCE test leads to the circuit/asset, in the same manner each time, as referenced in Table 5-6. This ensures that the test data is trendable/repeatable.

Table 5-6: Test Lead Connections

MCE test leads	Black	White	Red	Green
brushes	brushes over slip ring 1	brushes over slip ring 2	brushes over slip ring 3	gnd

5. Highlight the asset to be tested in the Site Navigator.

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6. Select the Test Selection icon on the toolbar. The Test Selection window opens, Figure 5-40.

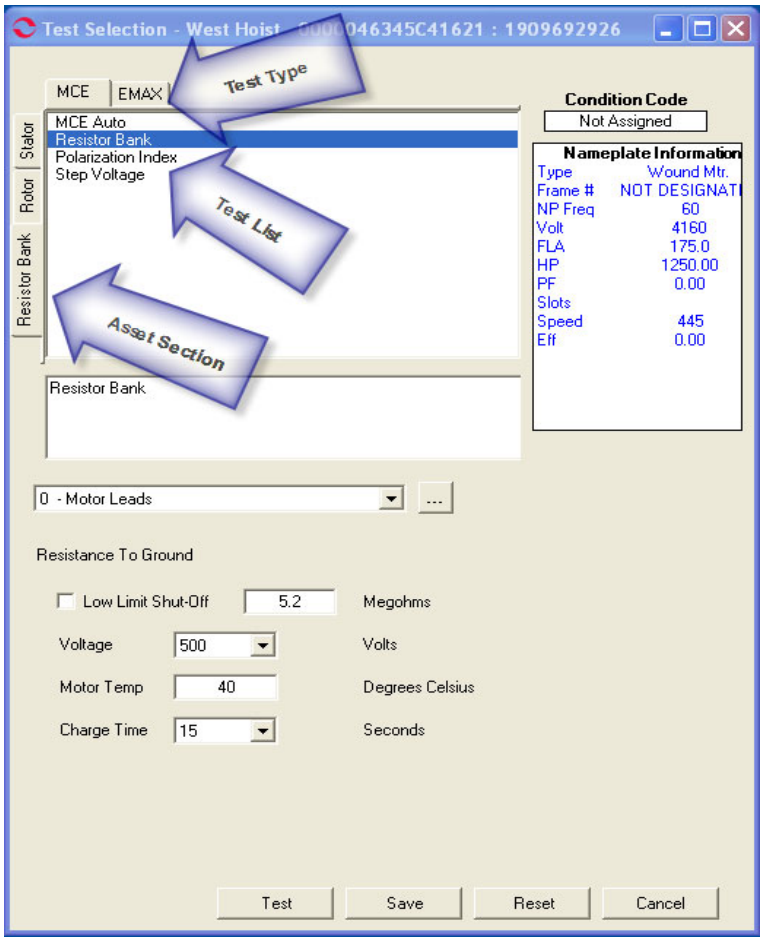


Figure 5-40: Test Selection Window

7. Verify that the MCE (Test Type) and Resistor Bank (Asset Section) tabs are selected. The type of asset determines which asset sections are available.

8. Select Resistor Bank from the Test List box.

9. Verify the Test Location in the Test Setup section.

   To insure consistent trending and assist in trouble shooting, the actual test location should be stored for each test.

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The Test Location default is Not Assigned. To assign a test location, click the down arrow and select from the list. If the location is not known, click the browse button . The Test Location Selection window opens displaying a test location graph for the type of asset selected. Use the graph to determine the location, then click the down arrow, select from the list, and click **OK**. See Figure 5-41.

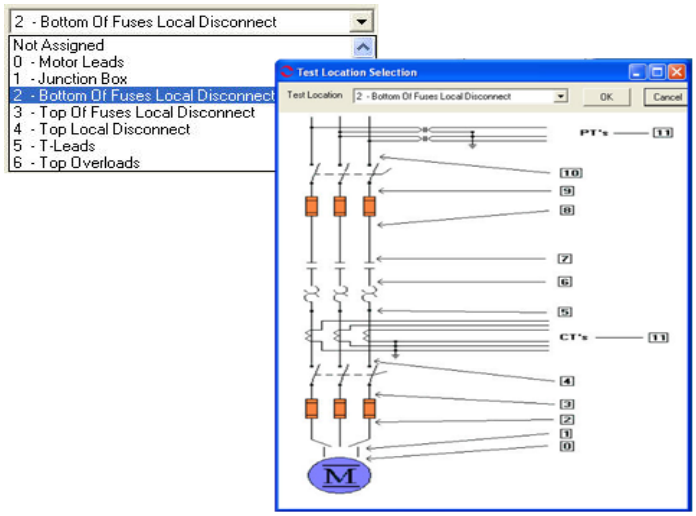


Figure 5-41: Test Locations

10. Verify the Low Limit Shut Off condition.

    Check the box to activate the low limit shut off and enter the desired Mohms.

11. Verify the Voltage.

    Click the down arrow and select the voltage from the drop-down list. Select test voltage based on asset nameplate voltage.

12. Enter the temperature.

    Adjust the Temperature ° C to stator core temperature at the time of testing.

13. Click **Save** to save the settings for this asset for future testing. Or click **Reset** to return the original settings. This can only be done if the new settings have not been saved.

14. Click **Test** to go to the Resistor Bank Test window.

15. To begin the Resistor Bank Test, click **Test**.

16. Verify that you are about to apply "X" volts to the circuit and click **Yes**.

17. Testing begins, progress bars are displayed for Total Test Progress and Discharge Progress at various times. The test values are filled in as testing proceeds. At the end of testing Test Completed appears above the Nameplate Information area.

18. Re-test any individual point, if needed. If not go to step 19.

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If any portion of the test needs to be re-tested, click the green arrow to the right of the point. This rechecks only that test point in “manual mode.” See Figure 5-42.

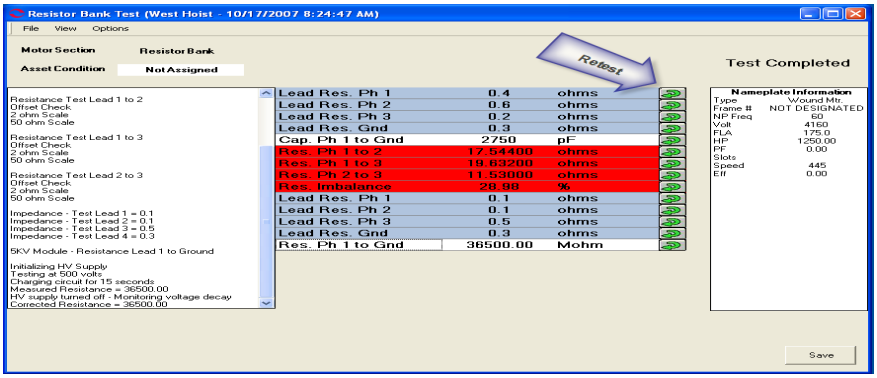


Figure 5-42: Resistor Bank Test Window - Retest Points

19. When retesting is complete or if no re-testing is needed, click **Save,** or File, Exit, or Ctrl+X, or the close button (X in the upper right corner).

20. Click **OK** in the Save Completed window and the Resistor Bank Test window closes.

DC Assets

The MCE tests for a DC asset are MCE Auto, DC Standard, Polarization Index, Bar-to-Bar, and Step Voltage for the *Armature* section. MCE Auto, DC Standard, Polarization Index, and Step Voltage for the *Field* section.

Note: To minimize the influence of stored energy on test results, perform the tests in the following order. If a test is not to be performed, skip to the next test.

- Standard Test
- Polarization Index (PI). If a PI is performed, it is not necessary to perform a separate DA.

DC assets are divided into two separate sections (Armature Circuit and Field Circuit). The Asset Section of the Test Selection window defaults to Armature Circuit.

Armature Section Tests

MCE Auto

MCE Auto is the same as for an AC Induction asset. See MCE Auto on page 5-7.

DC Standard Test

The DC Standard Test is reached by selecting DC Standard from the test list on the Test Selection window. See page 5-3, Test Selection Window for more information. Verify that the test set-up settings are correct and click **Test**. The DC Standard Test Window (Figure 5-43) opens.

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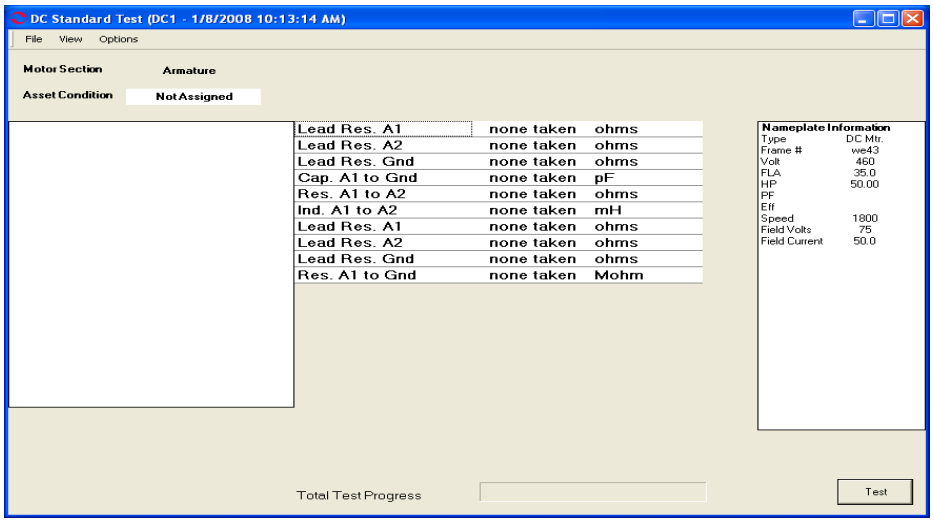


Figure 5-43: DC Standard Test Window

The DC Standard Test window menu consist of three options: File, View, and Options.

File Menu

Save. Save (Ctrl+S) is not active, it appears dimmed, until after testing is complete.

Exit. Exit (Ctrl+X) closes the AC Standard test window and returns you to the MCEGold Home window.

View Menu

Create Message. Create Message opens the Compose Asset Message window (Figure 5-44). The note is viewed in the Message Center. For more information on the Message Center, see Chapter 3, page 3-41.

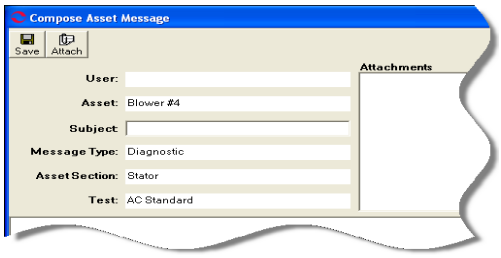


Figure 5-44: Compose Asset Message Window

Options Menu

Set Condition Code. Change the condition code by selecting an option button (Figure 5-45). The Asset Condition box on the AC Standard Test window changes and a note is automatically generated by the software. The note is viewed in the Message Center. For more information on the Message Center, see Chapter 3, page 3-43

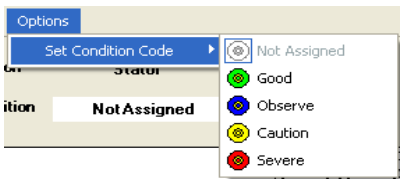


Figure 5-45: Options, Set Condition Code Menu

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Step-by-Step DC Standard Testing

1. Deenergize and lock out the starter and asset.

2. Check for low level induced voltage using a Fluke multimeter or equivalent.

   Verify that the values do not exceed 0.5 VAC phase-to-phase and 15 VAC phase-to-ground. Check for low level stored voltage by verifying less than 15 VDC phase-to-ground.

3. Connect the MCE test leads to the circuit, in the same manner each time, as referenced in Table 5-7 and shown in Figure 5-46. This ensures that the test data is trendable/repeatable.

Table 5-7: Test Lead Connections

MCE test leads	Black	White	Green
motor leads	A1; A1 or S1	A2; S2 or A2	ground

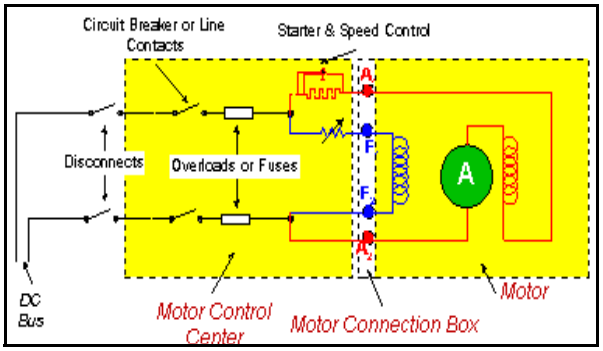


Figure 5-46: DC Asset Circuit Connections

4. Highlight the asset to be tested in the Site Navigator.

5. Select the Test Selection icon on the tool bar to open the Test Selection window.

6. Verify that Armature Circuit is selected in the asset Section box.

7. Select DC Standard Test in the Test List box.

8. Verify the Test Location in the Test Setup section.

   To insure consistent trending and assist in trouble shooting, the actual test location should be stored for each test.

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The Test Location default is Not Assigned. To assign a test location, click the down arrow and select from the list. If the location is not known, click the browse button . The Test Location Selection window opens displaying a test location graph for the type of asset selected. Use the graph to determine the location, then click the down arrow, select from the list, and click **OK**. See Figure 5-47.

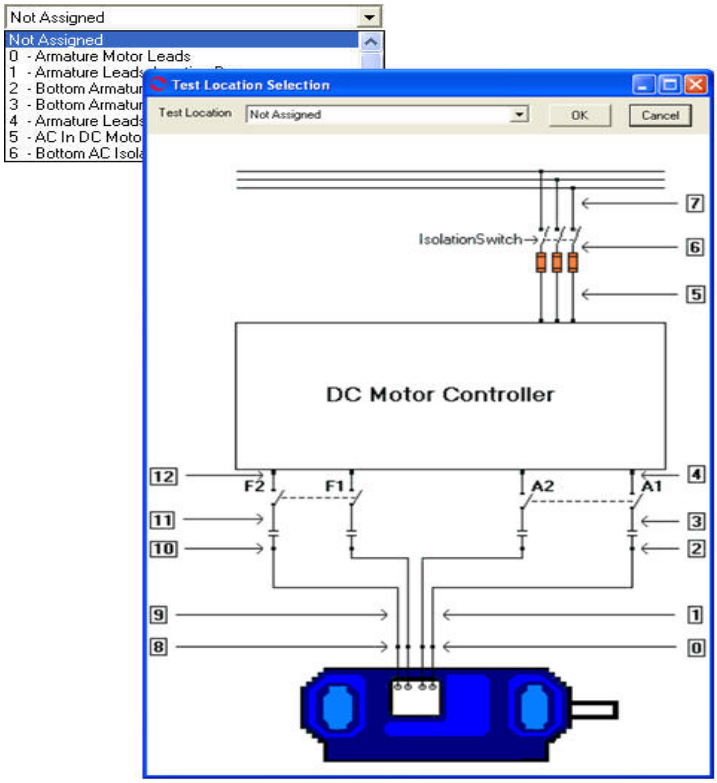


Figure 5-47: DC Asset Test Location

9. Select Test frequency for the Armature Circuit from the drop-down box.

   Click the down arrow and select the frequency from the drop-down list. The values are 300 or 1200.

10. Check the Low Limit Shut Off box and enter Mohms.

11. Select the test voltage for the resistance to ground measurement (500 for ≤ 2400 volts or 1000 for >2400 volts) based on asset nameplate voltage.

    Click the down arrow and select the voltage from the drop-down list.

12. Adjust the Temperature ° C to stator core temperature at the time of testing.

13. Select Charge Time seconds.

    Click the down arrow and select the charge time from the drop-down list. The choices are from 15 to 600 seconds.

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14. Click **Save**, to save the settings for this asset for future testing. Or click **Reset** to return the original settings. This can only be done if the new settings have not been saved.

15. Click **Test** to go to the DC Standard Test Window.

16. Click **Test** to begin testing.

17. Verify that you are about to apply "X" volts to the circuit by clicking **Yes**.

18. Testing begins, progress bars are displayed for Total Test Progress and Discharge Progress at various times. The test values are filled in as testing proceeds. At the end of testing Test Completed appears above the Nameplate Information area. See Figure 5-48.

    To stop the test at any time, click **Stop**. Click **Exit** to close the DC Standard test window and return to the Home window.

19. Re-test any individual point, if needed. If not go to step 20.

    If any portion of the test needs to be re-tested, double click the tab which appears to the right of the individual test point. This rechecks only that test point in "manual mode." See Figure 5-48.

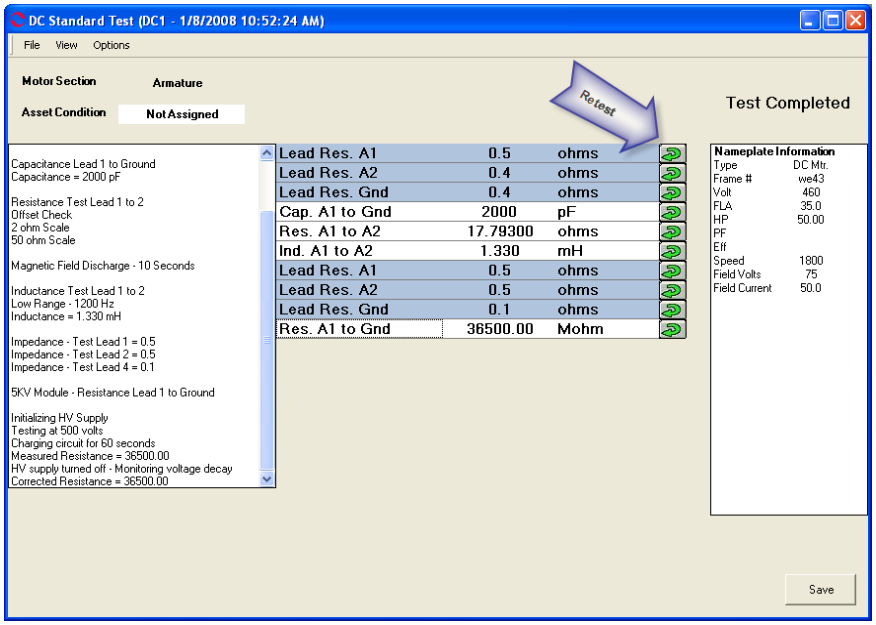


Figure 5-48: DC Standard Test Window

20. When retesting is complete or if no re-testing is needed, click **Save** or select File, Exit, or Ctrl+X, or use the close button (X in the upper right corner).

21. Click **OK** in the Save Complete window.

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22. Click **Exit** in the DC Standard Test Window.

Step-by-Step Polarization Index Testing

1. Deenergize and lock out the starter asset.

2. Check for low level induced voltage using a Fluke multimeter or equivalent.

   Verify that the values do not exceed 0.5 VAC phase-to-phase and 15 VAC phase-to-ground. Check for low level stored voltage by verifying less than 15 VDC phase-to-ground

3. Connect the MCE test leads to the circuit, in the same manner each time, as referenced in Table 5-8 and shown in Figure 5-49. This ensures that the test data is trendable/repeatable.

Table 5-8: Test Lead Connections

MCE test leads	Black	White	Green
motor leads	A1; A1 or S1	A2; S2 or A2	ground

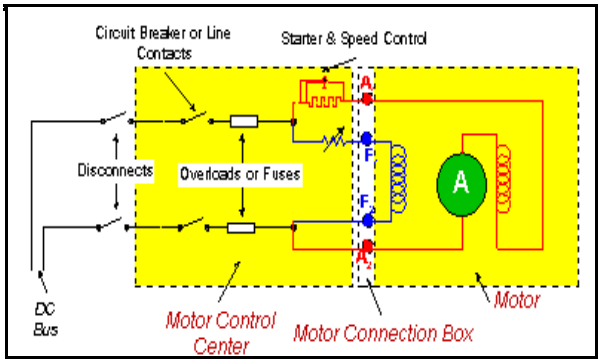


Figure 5-49: Asset Circuit Connections

4. Highlight the asset to be tested in the Site Navigator.

5. Select the Test Selection icon  on the tool bar to open the Test Selection window.

6. Verify that Armature is selected.

7. Select Polarization Index in the Test List Box.

8. Verify the Test Location in the Test Setup section.

   To insure consistent trending and assist in trouble shooting, the actual test location should be stored for each test.

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The Test Location default is Not Assigned. To assign a test location, click the down arrow and select from the list. If the location is not known, click the browse button . The Test Location Selection window opens displaying a test location graph for the type of asset selected. Use the graph to determine the location, then click the down arrow, select from the list, and click **OK**. See Figure 5-50.

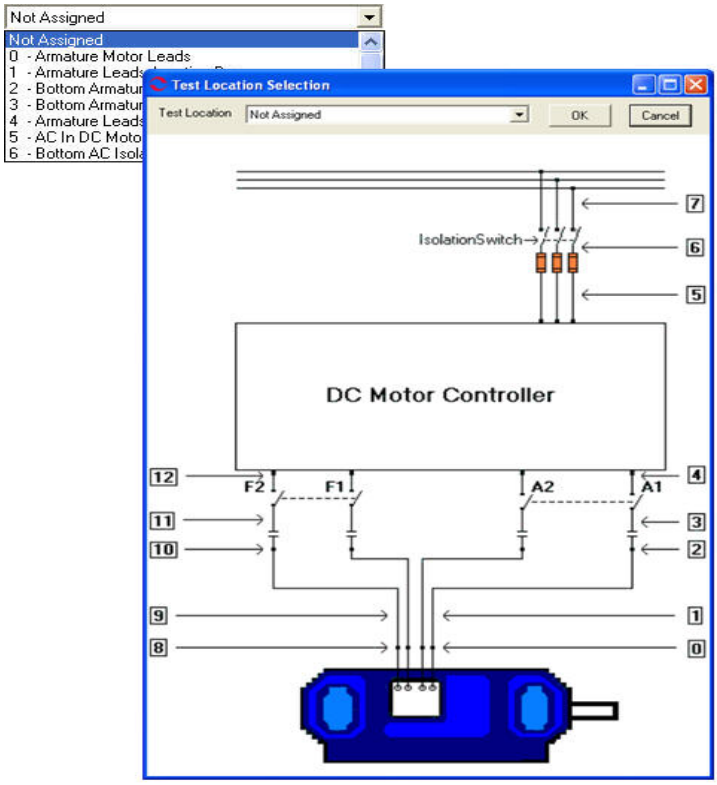


Figure 5-50: DC Asset Test Location

9. Check the Low Limit Shut Off box and enter Mohms.

10. Enter the test voltage for the resistance to ground measurement (500 for ≤ 2400 volts or 1000 for >2400 volts) based on asset nameplate voltage.

    Click the down arrow and select the voltage from the drop-down list.

11. Click **Save**, to save the settings for this asset for future testing. Or click **Reset** to return the original settings. This can only be done if the new settings have not been saved.

12. Click **Test** to go to the PI Test Window. See Figure 5-51.

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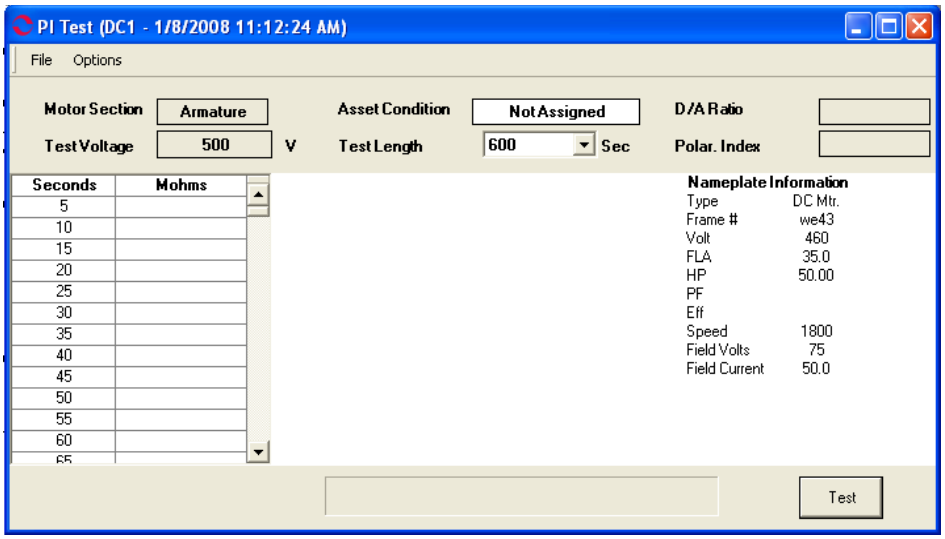


Figure 5-51: PI Test Window

13. Select the test length in seconds from the drop down list.

14. Click **Test** to begin testing.

    To stop the test at any time, click **Stop**. Click **Exit** to return to the Test Selection window.

15. Verify that you are about to apply "X" volts to the circuit by clicking **Yes**.

16. During the testing the D/A ratio and the Polarization Index will be computed and entered in the appropriate text boxes on the window.

17. Click **OK** at the end of testing in the Test Complete window.

18. Close the PI Test window by selecting File, Exit, or Ctrl+X, or the close button (red X in the upper right corner).

19. Click **Yes** to save test data, in the Save Test Data window. Or **No** to exit without saving test data.

20. Click **OK** in the Save Completed window.

Step Voltage

Step Voltage test is the same as for an AC Induction asset. See Step Voltage on page 5-24.

Bar-to-Bar

The Bar-to-Bar test is reached by selecting the Armature tab and Bar-to-Bar from the test list on the Test Selection window. See page 5-3, Test Selection Window for more information. Verify that the test set-up settings are correct and click **Test**. The Bar-to-Bar Test window opens. Figure 5-52.

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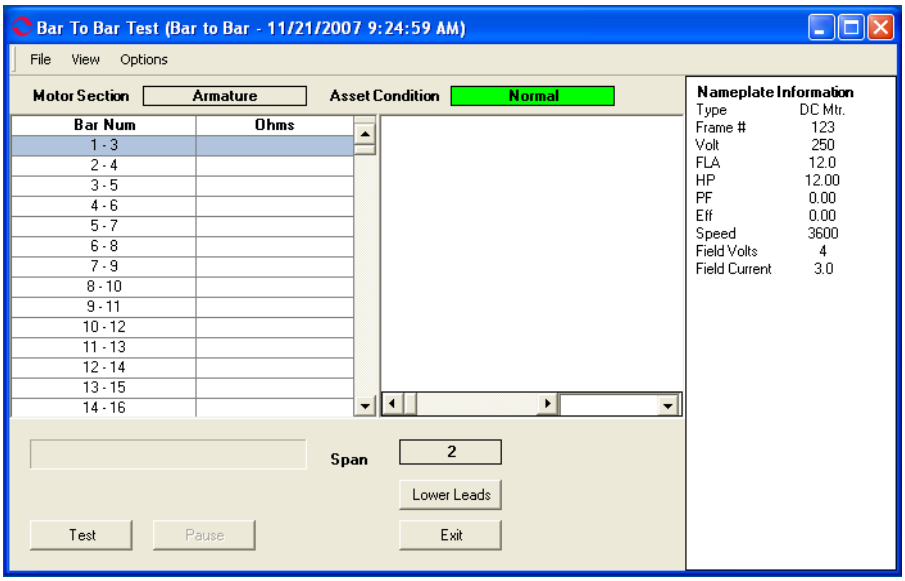


Figure 5-52: Bar-to-Bar Test Window

File Menu

Exit. Exit (Ctrl+X) closes the Bar-To-Bar Test window and returns you to the Home window.

View Menu

Create Message. Create Message (Ctrl+S) opens the Compose Asset Message window (Figure 5-53). The note is viewed in the Message Center. For more information on the Message Center, see Chapter 3, page 3-41.

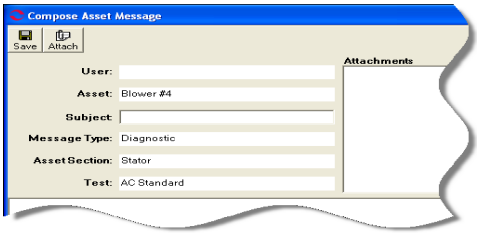


Figure 5-53: Compose Asset Message Window

Options Menu

Set Condition Code. Change the condition code by selecting the desired condition code option button (Figure 5-54). The Asset Condition box on the Bar-To-Bar Test window changes and a note is automatically generated by the software. The note is viewed in the Message Center. For more information on the Message Center, see Chapter 3, page 3-43.

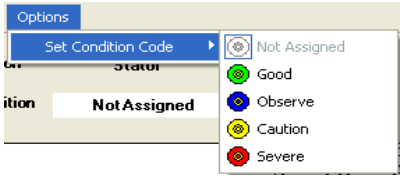


Figure 5-54: Set Condition Code Window

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Raise Leads/Lower Leads Button

The Raise Leads/Lower Leads button toggles to signify the action to be taken with the test leads during testing.

Exit Button

The Exit Button is inactive (dimmed) during testing, but is active between moving the leads.

Pause Button

The Pause Button is inactive (dimmed) during testing, but is active between moving the leads.

Test

The lower left area of the Bar-to-Bar test window, Figure 5-55, informs you what action is required. The Test Dialog box displays the testing progress. The software checks for the leads and if no leads are found displays, “Waiting for Leads” in the text box. When the leads are in position, testing begins automatically. During testing the text box displays Read Resistance, Checking Leads, Test Completed, Waiting for Leads.

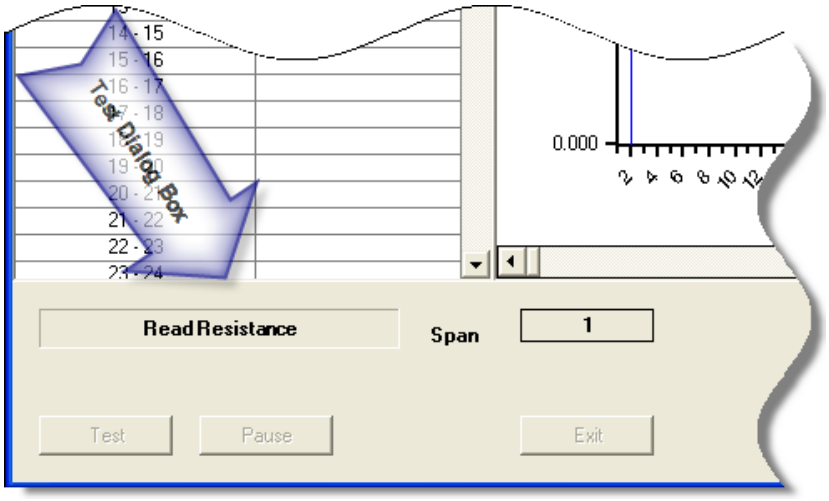


Figure 5-55:

Step-by-Step Bar-to-Bar Testing

1. Deenergize and lock out the starter and the asset.

2. Check for low level induced voltages using a Fluke multimeter or equivalent.

   Verify that the values do not exceed 0.5 VAC phase-to-phase and 15 VAC phase-to-ground. Check for low level stored voltage by verifying less than 15 VDC phase-to-ground.

3. Connect the bar-to-bar test leads to the MCE and to the laptop parallel port.

4. Highlight the asset to be tested on the Site Navigator.

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5. Select the Test Selection icon on the toolbar. The Test Selection window opens, Figure 5-56.

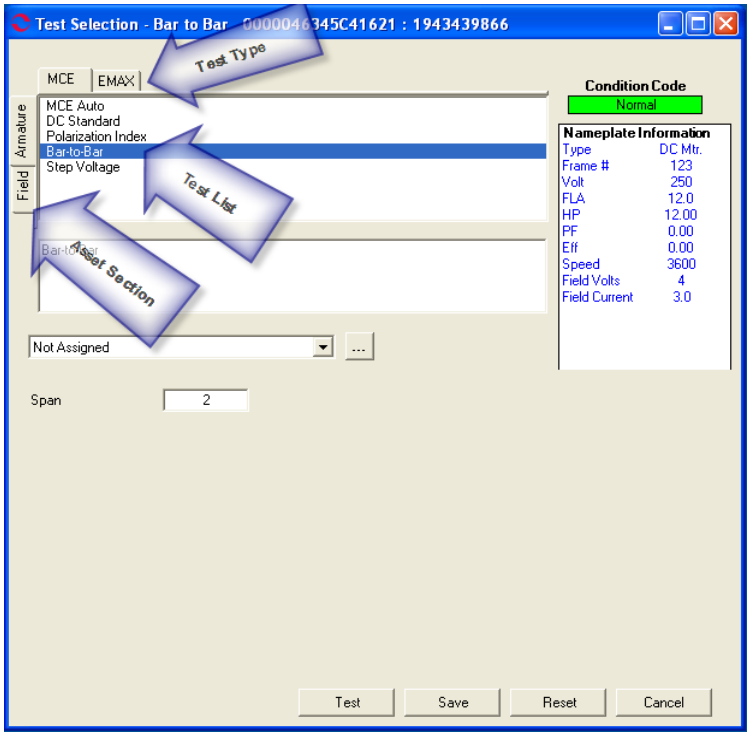


Figure 5-56: Test Selection Window

6. Verify that the MCE (Test Type) and Armature (Asset Section) tabs are selected. The type of asset determines which asset sections are available.

7. Click Bar-To-Bar from the Test List.

8. Verify the Test Location in the Test Setup section.

   To insure consistent trending and assist in trouble shooting, the actual test location should be stored for each test.

   The Test Location default is Not Assigned. To assign a test location, click the down arrow and select from the list. If the location is not known, click the browse button ... . The Test Location Selection window opens displaying a test location graph for the type of asset selected. Use the graph to determine the location, then click the down arrow, select from the list, and click **OK**. See Figure 5-57.

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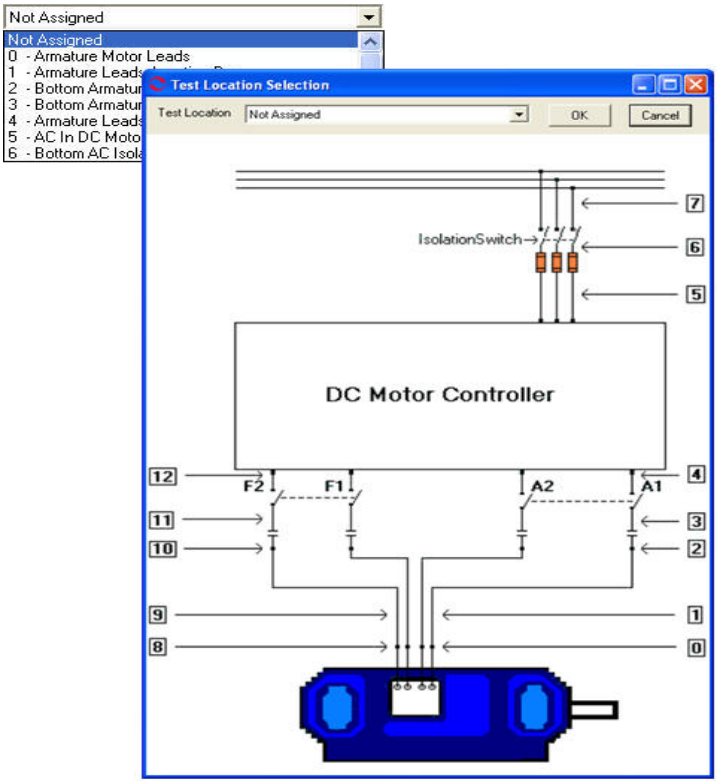


Figure 5-57: DC Asset Test Location

9. Verify the Span is correct.

10. Click **Save** to save the settings for this asset for future testing. Or click **Reset** to return the original settings. This can only be done if the new settings have not been saved.

11. Click **Test** to go to the testing window

12. To begin the Bar-to-Bar Test, click **Test.**

13. When "Waiting for Leads" appears in the Test Dialog Box, position the leads. Testing will begin automatically. The dialog box will inform you of the testing progress beginning with Read Resistance, Checking Leads, and finally Test Complete. See Figure 5-58.

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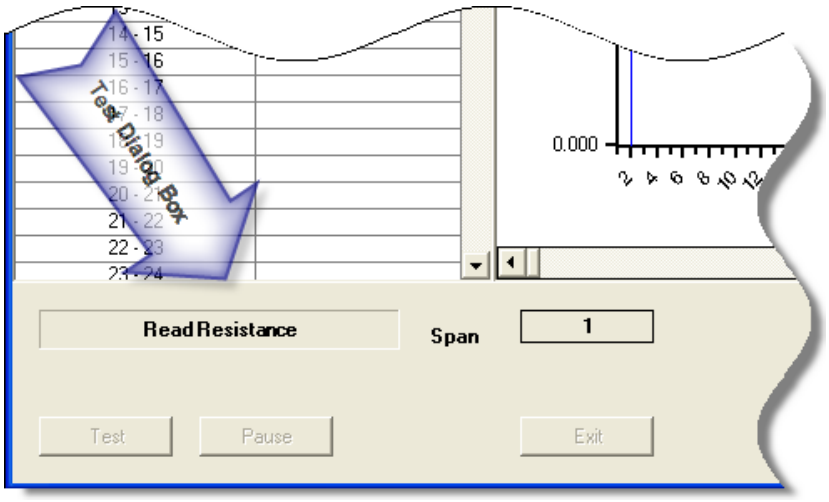


Figure 5-58: Test Dialog Box

14. During testing the test values are entered in the table on the left and are displayed in graph format in the center of the window. The magnification of the graph can be changed by using the down arrows below the graph area and selecting a new value from the drop down list. The default is Full.

15. When Test Complete appears in the Test Dialog box, reposition the leads. Testing will begin automatically.

16. Repeat Step 14 until all bars have been tested.

17. At the end of testing, you will be asked if you want to continue testing. Click **Yes** to continue or **No** to end testing.

18. Click **Exit**. You will be asked if you want to save test data.

    Click **Yes** to save the test data. Click **OK** in the Save Completed window. The Bar-to-Bar test window closes.

    Or click **No** to exit the window without saving.



Field Section Tests

MCE Auto

MCE Auto is the same as for an AC Induction asset. See MCE Auto on page 5-7.

DC Standard

DC Standard test for the Field section is the same as for the Armature section. See DC Standard on page 5-40.

Polarization Index

The Polarization Index test for the Field section is the same as for the Armature section. See Polarization Index on page 5-45.

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Step Voltage

Step Voltage test is the same as for an AC Induction asset. See Step Voltage on page 5-24.

TEST DATA ANALYSIS INFORMATION

Standard Test

The standard test is similar for both AC and DC assets. In an AC asset, the following are either measured or calculated during a standard test:

Resistance-to-ground
Capacitance-to-ground
Resistance phase-to-phase
Inductance phase-to-phase
Resistive imbalance (calculated)
Inductive imbalance (calculated)
Power loss

In a DC asset, the following are either measured or calculated during the standard test:

Resistance-to-ground
Capacitance-to-ground
Armature and/or field resistance
Armature and/or field inductance

Resistance-to-Ground

What Does it Tell You?

The resistance-to-ground (RTG) measurement indicates the cleanliness and health of the insulation system. As the insulation ages, cracks and small holes develop. It also becomes brittle over time, as the wiring expands due to heating and contracts when it cools off. Aging and temperature variations also break down the molecular structure of the insulation.

These factors allow contaminants and moisture, which collect on the surface of the insulation, to penetrate to the conductor. Since current follows the path of least resistance, some of the total current is diverted from the circuit to these alternate paths, and ultimately to ground. As the RTG value decreases over time, capacitance-to-ground often increases, indicating the presence of many current leakage paths to ground and the accumulation of contaminants.

Why is This Important?

A low RTG value indicates that the insulation needs to be cleaned. If the condition causing the low RTG is not corrected and the RTG value continues to drop, the insulation could completely fail and the asset windings could be damaged. This could require a complete rewind of the stator. If the condition causing the low RTG is corrected, a less expensive clean, dip, and bake may suffice.

Setting Warning Levels

Minimum Value. IEEE (the Institute of Electrical and Electronics Engineers, Inc.) has established a standard for the minimum value of insulation resistance which can be applied to most AC windings, DC armature windings, and AC and DC field windings. The

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standard is IEEE Std 43-2001. The equation for most windings made circa 1970 or before, all field windings, and others not noted in the exceptions listed below is IR_{1min}=kV+1.

In the formula:

IR_{1min} is the recommended minimum insulation resistance-to-ground, in megohms, at 40°C (104 °F) at the asset windings

kV is the rated terminal-to-terminal potential, in RMS kilovolts

Examples

A 480 volt asset has a minimum RTG value of 1.48 megohms (480 volts = .480 kilovolts; .48 + 1 = 1.48 megohms)

A 4160 volt asset has a minimum RTG value of 5.160 megohms (4160 volts = 4.160 kilovolts; 4.160 + 1 = 5.160 megohms)

MCEGold computes the minimum acceptable RTG value using this equation. This value is corrected to 40 °C. MCEGold provides both the temperature corrected RTG reading along with the actual measured RTG value. To make comparisons and trending valid, always enter actual asset winding temperature and trend the corrected measurement.

Exceptions to the equation are:

- Most DC armature and AC windings built circa or after 1970 (form wound coils). That standard is $IR_{1\ min}$ = 100.
- Most machines with random-wound stator coils and form-wound coils rated below 1 kV. That standard is IR_{1min}= 5.

Stator of AC Induction, Synchronous, and Wound Rotor Assets; Field and Armature of DC Assets

If the corrected RTG is between R_m and 2 times R_m, then the value is set at caution. The reading appears in yellow on the tester display or underlined on a printed copy of the Test History. If the reading is less than R_m, the value is set at alarm. The reading appears in red on the tester display or bolded on a printed copy.

Wound Rotors, Resistor Banks

Voltages in wound rotors and their three-phase resistor banks are typically too low to use the minimum resistance equation to figure minimum values. The warning levels should be set based on your experience. Establish a baseline test for new assets and assets tested for the first time, and watch the trends. Compare values on similar assets operating under similar conditions.

Exceptions

Some assets may show insulation resistance readings which are lower than the IEEE recommended minimum value and still have “good” insulation. These include:

- Windings with an extremely large surface area
- Large or slow-speed assets
- Assets with commutators

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A DC armature with a low RTG value typically has multiple paths for leakage current, not just one. Because of this, finding the exact location of ground faults is almost impossible and repair is very difficult. This problem is much more complex than in AC assets. Therefore, lower minimum acceptable RTG values are generally tolerated. In these cases, the IEEE standard of IR_{1min}= kV + 1 is typically relaxed to IR_{1min}= kV.

Out-of-service assets, without installed heaters operating, may absorb enough moisture to lower insulation resistance to less than the recommended limits.

Interpreting Readings

There are two factors, which require user input, which affect the value of RTG measurements. They are temperature and charge time. In order to compare temperature-corrected RTG readings for similar assets operating under similar conditions, these factors MUST be taken into account.

Temperature

The Test Selection window uses the IEEE standard reference value of 40°C as the default value for the winding temperature. This can be changed. The corrected RTG reading shown at the end of the test and in the Test History is the value that would be expected at 40°C regardless of the *actual* temperature of the asset winding insulation when the test was performed. In other words, if the reading is always corrected to the same temperature, then temperature is removed as an influencing factor. This allows you to use the corrected RTG value from test to test as a valuable trending tool.

Temperature correction is necessary since the resistance of an insulation material decreases significantly as its temperature increases. The materials which make up insulation have a negative temperature coefficient (inversely proportional). In other words, as the temperature increases their ability to stop current flow decreases. This means it is necessary to know the temperature of the asset when determining the condition of the insulation system.

Therefore, as the temperature of the asset increases, the measured insulation resistance decreases. To compare the reading you got today with a reading you got last month, it is important that you compare like results. The way to do this is to calculate the corrected resistance to a given temperature. MCE resistance values are corrected to a standard temperature of 40°C. This temperature is selected because the normal operating temperature for an asset is typically approximately 40°C (104°F). When comparing the results of different tests note the temperature input for possible variations.

Table 5-9 shows the report results for the same insulation with resistance to ground measurements taken at a variety of temperatures and compensated to different temperatures.

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Table 5-9: Temperature Compensation

Temperature	Actual Resistance	25 °C Compensated	40 °C Compensated
20 °C	20 Megaohm	14 Megaohm	5 Megaohm
25 °C	14 Megaohm	14 Megaohm	5 Megaohm
30 °C	10 Megaohm	14 Megaohm	5 Megaohm
35 °C	7 Megaohm	14 Megaohm	5 Megaohm
40 °C	5 Megaohm	14 Megaohm	5 Megaohm
45 °C	3.5 Megaohm	14 Megaohm	5 Megaohm
50 °C	2.5 Megaohm	14 Megaohm	5 Megaohm

It can be seen from the chart that if temperature compensation is not performed, the reported (actual) resistance to ground changes with temperature. When temperature compensation is performed, the reported resistance does not change when the test temperature changes. In order to compare results, all measurements MUST be compensated to the same temperature.

Test Voltage and Charge Time

The ground wall insulation in a asset has a conductor on either side. On one side of the insulation is the stator windings, the conductors that make up the individual coils in each pole group for each phase. On the other side is the stator core, formed by the stator laminations connected to the frame/casing of the asset. This design has the fundamental components which make up a capacitor. When a DC potential is applied, the insulation "charges" the way a capacitor does. This is important because if the resistance to ground reading is recorded as soon as the test potential is applied, it is lower than if it is recorded after the insulation is "charged."

A rule of thumb for performing RTG measurements is to *apply the test potential for 1 minute or until the reading has stabilized*. This allows for different technicians to obtain values from test to test which can be compared. However, this is not very accurate. On the MCE, the duration of time the voltage is applied to the insulation system is selectable.

Test voltage potential can be from 250 to 5000 volts, based on asset nameplate voltage. Charge time can be set between 15 and 600 seconds, at 15 second intervals. Defaults are set at 500 volts and 60 seconds. Again, using the same values every time makes comparison and trending a valuable tool.

Data Interpretation

If the RTG value is low, isolate the problem to either the power circuit or the asset. Assuming the first test was made at the MCC, perform another test at the asset connection box. Disconnect the asset leads and test the asset. If the RTG value is higher testing the asset, the fault is in the cables between the MCC and the asset. Check the connections in the asset connection box, look for moisture in the conduit, and examine the cables. The cables may require cleaning, drying, or replacement.

If the RTG value at the asset connection box is still low, the fault is in the asset. If the value is in caution, the asset may need to be dried, cleaned in place, or removed for a clean, dip, and bake. If the value is in alarm, the asset may need to be rewound. If the RTG value is less than the IEEE minimum, look for a ground fault and clear this condition before starting the asset.

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Examples

A conveyor asset was tested and had <.1 Megohm RTG. When the technician removed the terminal box cover, he found that one of the taped connections had arced to ground. The leads were repaired and the asset was retested. RTG increased to 263 Megohms.

A compressor asset was tested and had <.1 Megohm RTG. When the technician removed the terminal box cover, he saw that the box was half full of water. The leads were dried and the asset was retested. RTG increased to 21.5 Megohms

Capacitance-to-Ground

What Does it Tell You?

The capacitance-to-ground (CTG) measurement is indicative of the cleanliness of the windings and cables. As dirt and contaminants build up on windings and cables, CTG values increase. An increasing trend showing rising CTG values indicates that the asset needs to be cleaned.

Why is This Important?

A capacitor is formed by any two conducting materials, called plates, separated from each other by a dielectric material. Dielectric material is anything that is “unable to conduct direct electric current.” A cable or winding surrounded by insulation provides one conductor and the dielectric material. The second plate is formed by the stator core and casing iron.

Normally, when the outside of the insulation is clean and dry, it is not a good conductor. When dirt, moisture, and other contaminates begin to cover the stator windings inside the asset, they cause the outer insulation surface areas to become conductive. Since this surface is in contact with the ground, it allows an AC current path to ground. Cables in the power circuit are also subjected to the same affect, when moisture penetrates the outer casing. The cleanliness of the windings and cables can be determined by looking at the CTG value.

With a buildup of material on them, dirty windings and cables produce higher capacitance values than clean ones do. Over time, CTG values steadily increasing indicate an accumulation of dirt and that cleaning is necessary. This can be correlated with decreasing RTG values.

Dirt and contamination also reduce a asset’s ability to dissipate the heat generated by its operation, resulting in premature aging. A general rule of thumb is that insulation life decreases by 50% for every 10 °C (50 °F) increase in operating temperature above the design temperature of the insulation system. This holds true with the asset operating at or above a 75% load. Heat raises the resistance of conductor materials and breaks down the insulation. These factors accelerate the development of cracks in the insulation, providing paths for unwanted current to flow to ground. If capacitance is higher than normal, a low RTG reading is an indication that such a path already exists.

Setting Warning Levels

Preset warning levels for CTG values in MCEGold are based on a percent change from the baseline measurement. This is merely a comparison warning. A 100% increase from baseline produces a caution (yellow on the computer display or underlined on the printed copy). A 200% increase from baseline produces an alarm (red on the computer display or bold on the printed copy). These values are guidelines. As you gather data on a single

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asset or on similar assets operating in the same environment, reset the warning levels to reflect your specific conditions.

Data Interpretation

Capacitance-to-ground is a function of many factors. Therefore, comparison of CTG values is more revealing of a asset's condition than is the analysis of a single snapshot CTG value. For example, capacitance to ground is influenced by the design of each individual asset, the length of the cable between the MCE and asset, the type of insulation on the cables and asset windings, and the number and type of connectors in the circuit.

A new or recently refurbished asset may have a very low CTG reading. A "normal" capacitance value can vary from asset to asset and is NOT an absolute value. CTG must be analyzed by trending readings on the same asset or by comparing values taken on similar assets, with similar histories, operating under the same conditions. If CTG increases over time, dirt, moisture, and/or contaminants are building up on the windings, cables, or both.

Surge capacitors are used in some circuits and will affect CTG readings. Whenever possible, CTG tests should be performed with the capacitors in the circuit as well as disconnected, to indicate the health of the capacitors. This allows for trending the condition of the capacitors as well as the CTG of the asset.

Examples

Capacitors and surge caps were left in the circuit for tests of two chillers used to cool vital computers. Table 5-10 shows how several values were affected. Notice the difference in the readings when the power factor capacitors were removed.

Table 5-10: Effects of Power Correction Capacitors

	With Power Factor Capacitors Installed		With Power Factor Capacitors Removed	
	Chiller #1	Chiller #2	Chiller #1	Chiller #2
Balance of Resistance	1.74%	2.164%	0.050%	2.000%
Balance of Inductance	16.0%	0.520%	2.560%	0.500%
CTG	999,999 pF	999,999 pF	38,750 pF	37,250 pF
RTG	0 Megohms	0 Megohms	>2,000 Megohms	> 2,000 Megohms

A conveyor asset was tested and had <.1 Megohm RTG and 999,999 pF CTG. When the technician removed the terminal box cover, he found that one of the taped connections had arced to ground. The leads were repaired and the asset was retested. RTG increased to 263 Megohms and CTG decreased to 67,750 pF.

A compressor asset was tested and had <.1 Megohm RTG and 83,000 pF. When the technician removed the terminal box cover, he saw that the box was half full of water. The leads were dried and the asset was retested. RTG increased to 21.5 Megohms and CTG decreased to 8,000 pF.

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Phase-To-Phase Resistance

What Does it Tell You?

Phase-to-phase resistance is the measured DC resistance between phases of the stator in an AC asset and between polarities of the armature and field coils in a DC asset.

In AC induction assets, use the phase-to-phase resistance values and resistive imbalances for trending, troubleshooting, and quality control. In DC assets, use trending and relative comparison to determine the condition of the phases in the asset and power circuits. This includes comparing readings taken from identical assets operating in similar conditions and comparing current readings against past readings for the same asset.

An increasing resistive imbalance or a changing resistance over time can indicate one or more of the following:

- High resistance connections
- Coil-to-coil, phase-to-phase, or turn-to-turn current leakage paths
- Corroded terminals or connections
- Loose cable terminals or bus bar connections
- Open windings
- Poor crimps or bad solder joints
- Loose, dirty, or corroded fuse clips or manual disconnect switches
- Loose, pitted, worn, or poorly adjusted contacts in asset controllers or circuit breakers
- Mismatched components (incompatible materials, wrong sizes, etc.)
- Undersized conductors (misassembled or improperly engineered)

Why is This Important?

Circuit resistance is determined by the length, size, width, composition, condition, type and temperature of the conductors and connectors. When two different conductors are connected, dirt, corrosion, or an improper connection increases the circuit resistance. Also, inadequate connections cause heating of the conductor, which increases resistance even more. This could be caused if only a few strands of a conductor or portions of a soldered joint are improperly connected to a terminal or if undersized connectors are used.

In a three-phase asset circuit, the resistance in the conductor paths should be balanced. A “resistive imbalance” occurs when the phases have unequal resistances. The formula below shows that a very small resistive imbalance results in a high voltage imbalance. This produces uneven current flow and excessive heat.

$$Vimb = \frac{\frac{2}{3} \times (Rmax - Rmin) \times FLA}{Vl - \left(\left(\frac{2}{3}\right) \times (Rmax - Rmin) \times FLA\right)} x100$$

In the formula:

Vimb = voltage imbalance
Rmax = maximum winding resistance value
Rmin = minimum winding resistance value

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FLA = full load amp rating of asset
Vl = line voltage
100 = converts number to percentage

When voltage applied across three-phase asset leads is unbalanced, circulating currents, called “negative sequence currents”, are induced. When these negative sequence currents are present, they cause heating in the windings. EPRI’s (the Electric Power Research Institute) Handbook to Assess the Insulation Condition of Large Rotating Machines states “a 3.5% voltage imbalance can raise winding temperature 25% in the winding(s) affected by such currents.” EASA (the Electrical Apparatus Service Association) says a 1% voltage imbalance results in a 6-7% current imbalance.

The most extreme case of resistive imbalance occurs when a asset “single phases.” This “single phasing” quickly causes the asset to fail because the remaining two phases compensate by increasing current by 200% to 300% of normal. Rapid heating of the windings which are still connected destroys the insulation surrounding them.

Resistance to the flow of current in a circuit is of concern from the standpoints of safety, energy conservation, and insulation life. High resistance points in conductors generate heat both at the point where the resistance is located and in the three-phase assets being supplied.

Regardless of the source, some of the effects of increased heat production in the asset include:

- Higher resistance due to heat in conductor materials adjacent to the fault
- Deterioration (accelerated aging) of the surrounding and supporting insulating materials
- Imbalance in multi-phase circuits, which adversely affects equipment performance and life
- Increased power consumption in all cases
- Fire or failure in extreme situations

Setting Warning Levels

The preset warning levels in MCEGold are based on both actual values and on a % change from the baseline value.

Data Interpretation

Resistive imbalance above the setpoint indicates that a problem exists in either the power circuit or in the stator windings. First, isolate the problem to the asset or the circuit. Looking at individual resistance readings can help isolate the problem to a phase. Also, look for the following characteristics which indicate faulty connections.

- Aluminum cables connected to lugs marked for copper wire only
- Discoloration of insulation or contacts
- Damaged insulation having small cracks, bare conductors, or metal components
- Mismatched cables in common circuits
- Poor lug crimps on T-Leads
- Oxidation of conductor metals
- Presence of contaminants such as dirt

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Example

The following information is from a 7,000 HP vertical reactor coolant pump asset at a nuclear power plant. A high resistance solder joint between phases 1 and 3 produced a resistive imbalance of 37.15%. The cost associated with the power loss was calculated to be $58,517.84 per year. Multiple tests, shown in Table 5-11, were performed to verify the problem.

Table 5-11: MCE Tests Used in Troubleshooting Efforts

Test Date	5/31/96	5/31/96	5/31/96
Test ID:	331	332	333
Frequency	1200	1200	1200
	BASELINE		
Mohm Ph 1 to Gnd			
Charge Time	30	30	30
Voltage	1000	1000	1000
Motor Temp	40	40	40
Measured Mohm	>2000	>2000	>2000
Corrected Mohm	OVR	OVR	OVR
pF Ph 1 to Gnd	116250	116250	116250
ohm Ph 1 to 2	0.27450	0.26800	0.27400
ohm Ph 1 to 3	0.43750	0.43700	0.44100
ohm Ph 2 to 3	0.24500	0.24300	0.24200
mH Ph 1 to 2	6.750	6.750	6.750
mH Ph 1 to 3	6.755	6.750	6.750
mH Ph 2 to 3	6.745	6.745	6.745
% Res. Imbalance	37.15	38.29	38.24
% Ind. Imbalance	0.07	0.05	0.05
$ Power Loss	58517.84	58973.83	60493.78

Phase-to-Phase Inductance

What Does it Tell You?

In AC assets, phase-to-phase inductance readings can:

- Indicate the condition of the stator windings
- Detect phase-to-phase and coil-to-coil current leakage paths
- Reveal poor or incorrect rework

These readings can also be used to detect faults in power cables. A Rotor Influence Check (RIC) can be performed to further troubleshoot the asset to reveal faults such as:

- Broken/cracked rotor bars or end rings
- Porosity and lamination damage
- Eccentricity problems

In DC assets, inductance changes within the field or armature can indicate current leakage paths in the windings.

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Inductance changes when leakage paths develop. These paths can be either within the winding coils, or directly to ground. Leakage paths result from mechanical, thermal, environmental, or electrical damage to the insulation system of the windings. Additionally phase-to-phase and turn-to-turn shorts can occur. In either case, current flow bypasses some coils, thereby reducing inductive reactance and increasing current in other phases of the stator. Temperature rises in the remaining conductors and in the surrounding insulation. This accelerates the deterioration, which can cause an avalanche effect, as heat produces more insulation failures, resulting in more leakage paths and more coils removed from the circuit, further increasing temperature.

As there are fewer winding turns in a given phase actively creating the magnetic field upon which the asset is functioning, the windings in the other phases compensate to meet the requirements of the load on the asset. These windings in turn draw more current than is normally supplied by a balanced asset.

Why is This Important?

A large inductive imbalance causes torque-induced vibration at two-times line frequency ($2F_L$). This vibration can be linked to mechanical degradation. Also, inductive imbalance can contribute to other problems, among which are:

- Bearing damage
- Coupling damage
- Loosened rotor bars
- Insulation failure at winding end turns or at exit of stator slots

Setting Warning Levels

The preset warning levels in MCEGold are based on both actual values and on a change from the baseline value.

Data Interpretation

Many factors affect inductance readings, including asset winding coils, the stator iron, the rotor, and the number of rotor bars. The power circuit has little or no effect on the inductance readings unless there are power factor or surge capacitors in the circuit.

Power correction and surge capacitors are used in some circuits and will affect phase-to-phase inductance readings. Whenever possible, phase-to-phase inductance tests should be performed with the capacitors in the circuit as well as disconnected, to indicate the health of the capacitors. This allows for trending the condition of the capacitors as well as the phase-to-phase inductance of the asset.

If both inductive and resistive imbalance are high, look for a leakage path in a coil or an open coil. If resistive imbalance is low, the fault may be in the rotor.

A rotor bar/cage anomaly may not produce a large inductive imbalance on one single test. If inductive imbalance has increased or is high, perform a RIC to further define the problem. Excessive vibration can also be an indicator of inductive imbalance. If you notice high vibration readings, perform a RIC to collaborate the data.

Example

A new asset with a cast aluminum rotor was load-tested prior to installation. The asset failed to reach rated HP. A RIC was conducted and indicated the presence of broken rotor bars.

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When the rotor bars were cast, high resistance connections were formed. Operating the asset during the load-test produced excessive heat at those points. The melted paint on the rotor identified the high resistance connections beneath them.

Test Lead Check

The MCE verifies the resistance of the test leads before and after each test. This ensures test lead continuity and proper connection prior to running the test. If any test lead resistance exceeds a predetermined value, the MCE stops the test. That lead must then be reconnected and retested successfully to continue. This ensures maximum accuracy and repeatability of the collected data.

Resistive Imbalance

Resistive imbalance is calculated from the three individual phase-to-phase resistance readings taken during the standard test. It is displayed as a percentage and will be put into a caution or alarm state if it exceeds a specific limit. This limit can be changed in the MCEGold software. Because this value is calculated from *three* phase-to-phase readings, there is no resistive imbalance value for DC assets.

In AC assets, resistive imbalance is an indication of one or more high-resistance connections in the circuit or shorted turns. Assuming the original test was performed at the MCC, isolate the problem to the asset or to the power circuit by retesting the asset at the connection box. If the resistive imbalance remains, the problem is in the asset. If the resistive imbalance goes away, the problem is in the cables or power circuit. Look at the individual resistance readings to determine the faulty phase.

Inductive Imbalance

Inductive imbalance is calculated from the three individual phase-to-phase inductance readings taken during the standard test. It is displayed as a percentage and will be put into a caution or alarm state if it exceeds a specific limit. This limit can be changed in the MCEGold software. Due to the fact that this value is calculated from *three* phase-to-phase readings, there is no inductive imbalance value for DC assets.

In AC assets, this calculated value can indicate the condition of the stator and rotor/stator relationship. Turn-to-turn or phase-to-phase shorts in the stator causes a high inductive imbalance. Rotor/stator eccentricity causes a varying value of inductive imbalance, as seen on subsequent standard tests. To isolate a problem to the rotor or the stator, perform a Rotor Influence Check.

Power factor capacitors, line reactors, and other power correction devices can impact inductance values. Separation of these devices from the circuit may be required when troubleshooting the asset.

Average Inductance

Average inductance is calculated from the three individual phase-to-phase inductance readings taken during the standard test. Due to the fact that this value is calculated from *three* phase-to-phase readings, there is no inductance imbalance value for DC assets. In AC assets, this calculated value can indicate the condition of the rotor and rotor/stator relationship. Rotor defects will cause an increase in the average inductance. To isolate a problem to the rotor or the stator, perform a Rotor Influence Check.

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Polarization Index Test

What Does it Tell You?

The Polarization Index (PI) and Dielectric Absorption (DA) ratios indicate the condition of the insulation system of the asset and power circuit. Both of these tests use ratios of measurements of insulation resistance taken at two different times. The PI is the ratio of the reading taken at 10 minutes and divided by the reading taken at 1 minute. The DA is the ratio of the reading taken at 60 seconds divided by the reading taken at 30 seconds.

There are three different currents that flow through an insulator when a voltage potential is applied. Since the RTG test measures the voltage and current to calculate insulation resistance, all of these currents must be taken into account.

- First, the “capacitive current” starts out high and drops to nearly zero after the insulation has been charged to full test voltage. This is normally negligible after the first few seconds of the test.
- Second, the “absorption current” also starts out high and drops off. The majority of this current dissipates after one minute, but continues to decay for up to 5 to 10 minutes.
- Finally, the “conduction” or “leakage current” is a small, mostly steady current which becomes a factor after the absorption current drops to a negligible value. This current should remain steady for the remainder of the test.

The relationship between all these currents is shown in Figure 5-59.

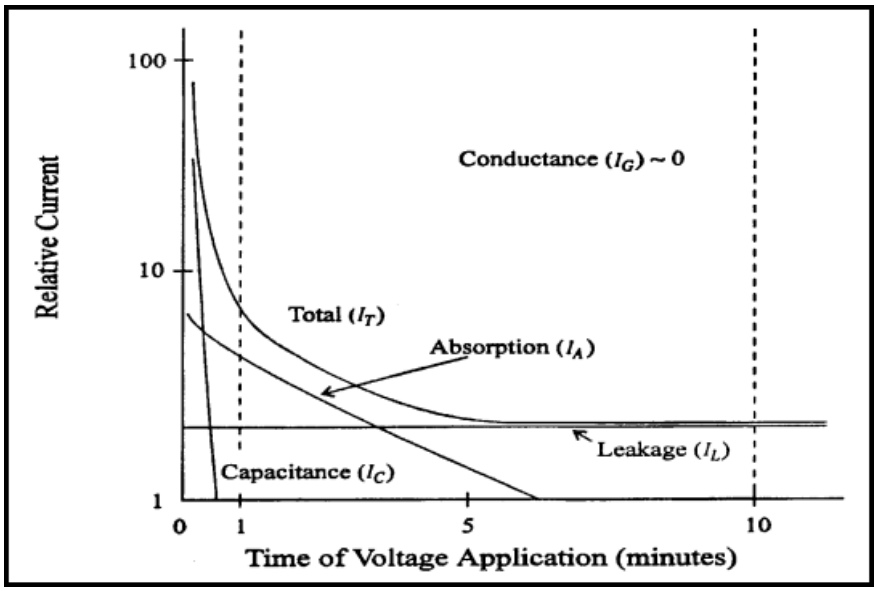


Figure 5-59: Current Relationships

As the asset accumulates dirt and as the insulation ages and cracks, the PI and DA ratios decrease. Dirt accumulates based on the operation and environment of the asset. The insulation cracks as a function of heat and aging of the asset.

Because of the effects of each of these varying currents, the resistance to ground measured by any insulation tester varies with the amount of time the voltage is applied to the insulation. In order to trend or compare insulation RTG values, the charge time for all tests

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MUST be the same. If the charge time is not the same, the trend or comparison may not be valid.

Finally, the charging developed by these three different currents does not dissipate immediately when the voltage is removed at the end of the test. The insulation system must be allowed to discharge sufficiently between resistance to ground tests in order to obtain accurate results. A rule of thumb states that insulation takes four times the amount of charge time to discharge.

Why Is This Important?

Resistance-to-ground readings involve three different current components: capacitive, absorption, and leakage. The PI test allows the charging and absorption currents to decay so that only actual leakage current is measured. As a voltage is continuously applied, healthy insulation slowly polarizes and the absorption current diminishes. This causes a steady rise in resistance until the majority of the current is from the small amount leaking to ground. In poor insulation, leakage current is high enough to overshadow the lowering absorption current and provide little increase in the resistance over time.

Setting Warning Levels

In Managing Motors, Richard Nailen, P.E., offers the following guidelines for interpreting PI and DA ratios. If the PI ratio is less than 2 or the DA ratio is less than 1.5, look for insulation degradation.

	Unacceptable	Acceptable
PI	1 to 1.5	2 to 4
DA	≤1.25	>1.50

IEEE recommends the following values for PI. Machines rated at 10,000 kVA and less should have values at least as large as the acceptable values listed below before operation or hi-pot testing.

	PI
Class A	1.5
Class B, F, H	2.0

Data Interpretation

Because the PI and DA values are ratios, temperature correction is unnecessary. PI and DA can be used for both on-the-spot, one-time checks and for trending over time. Individual readings can be compared to the recommended setpoints.

A good PI Profile (PIP) shows a sharp rise followed by a steady, but slowly increasing trend. A downward trend suggests deteriorating conditions. A flat or ragged trace indicates short-term current transients. Such traces indicate insulation breakdown, possibly due to contamination or moisture in the power circuit or asset. Observing the readings over time permits scheduling of cleaning or reconditioning before failure occurs.

If the PI or DA ratio is low, isolate the problem to the circuit or the asset. Assuming the first test was made at the MCC, run another test from the MCC with the “T” leads disconnected.

If the low value is gone, the problem is in the power circuit. If the low value still exists, test the asset at the asset connection box with the leads to the MCC disconnected. If the

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low value is gone, the problem is in the cables between the asset and the MCC. If the low value still exists, the problem is in the asset.

Examine the cables in the asset connection box. They could require cleaning, drying, or replacement. Also, check for water in the conduit.

If the PI or DA ratio is < 1.0, look for a ground fault. Clear this fault before starting the asset.

Some exceptions to be aware of include:

- Moisture or contamination on the windings decreases the PI
- The PI can be lowered by certain semiconducting materials which are used for corona elimination on the end windings of some high-potential AC machines
- Performing PI testing in ambient temperatures less than the dew point may significantly impact the PI values

Examples

The following pictures show the response of the insulation in both a good (Figure 5-60) and a bad (Figure 5-61) asset, with a constant voltage applied for a 10 minute period. The increase in the RTG value is due to the decrease in current through the insulation.

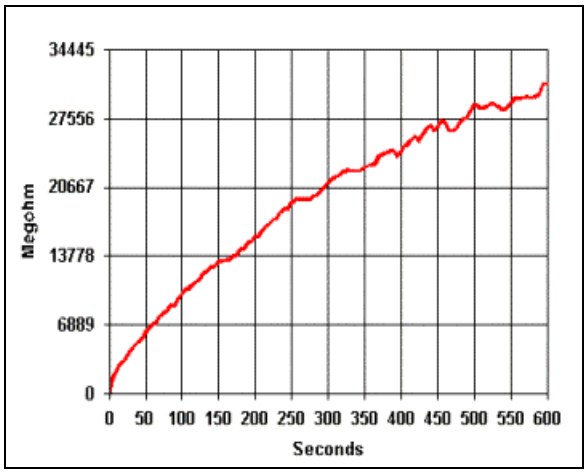


Figure 5-60: Asset with a Good PI

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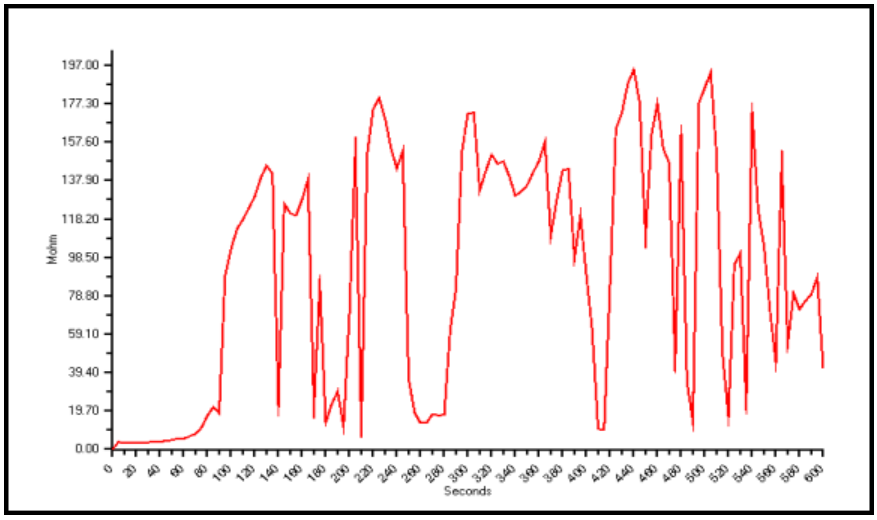


Figure 5-61: Asset With a Bad PI

The unstable RTG readings in the bad PI are a result of low level discharges occurring in faults in the insulation.

ROTOR INFLUENCE CHECK (RIC)

What Does It Tell You?

The Rotor Influence Check (RIC) is a graphical representation of the rotor/stator relationship. By analyzing variations in the magnetic flux while rotating the rotor, eccentricity and rotor defects are identified. The RIC can also be used to confirm stator faults. Figure 5-62 shows a RIC graph for a motor with no defects.

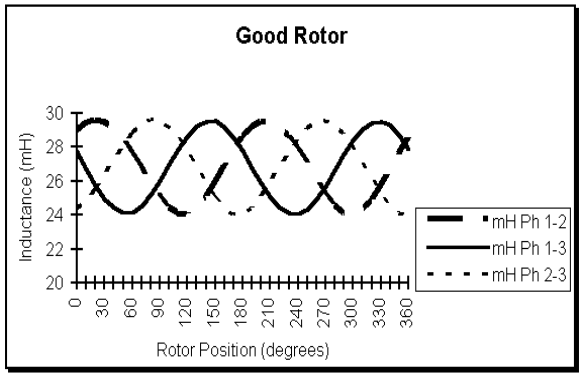


Figure 5-62: RIC from a Good Asset

A motor acts similar to an electromagnet. The rotor acts like the “core” and the stator acts like the windings of the electromagnet. A RIC shows how the rotor’s residual magnetism influences the stator inductance in different positions. As the magnetic field of the rotor interacts with more of the coils in each stator winding, the inductance of that winding changes. This influence causes repeatable patterns of change in the graph of the stator inductance, shown above as sinusoidal waveforms.

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Why Is This Important?

Broken rotor bars can cause extreme heat and vibration, which can result in winding failure, bearing failure, and loss of torque in a motor. Eccentricity, a non-uniformity of the air gap between the rotor and stator, can cause excessive vibration, which can result in winding and bearing failure.

Rotor Position And Aliasing

Each RIC consists of a series of inductance measurements taken at predetermined positions of the rotor. The amount by which the rotor is moved for each measurement and the total rotation of the rotor for the test are determined by the number of poles in the asset. The increment and total rotation are calculated to show the RIC pattern for one complete pole group. If additional readings are taken beyond the total and at the same increments, the pattern should repeat itself. Table 5-12 shows the recommended increments and total rotation to cover one pole face for a asset with a given number of poles.

Table 5-12: RIC Degree Increments vs. Number of Poles

Poles	Increment	Total
2	10.0°	180°
4	5.0°	90°
6	3.3°	60°
8+	2.5°	45°

The number of increments and total rotation are automatically calculated by MCEGold, based on the entered nameplate data. You may reduce the increment and perform more tests to cover the recommended total rotation. Increasing the increments and performing fewer measurements than the default values is not recommended because doing this results in “aliasing.” Because not enough points are taken to reveal a true picture of the curve, aliasing produces an inaccurate and incomplete graph.

The following example shows how to determine the number of poles a asset has, the number of total degrees to turn the rotor, and the increments by which to turn it. Start with the basic equation:

$$F = \frac{NP}{120}$$

In the formula:

F = line frequency (60 Hertz in the US)
N = synchronous asset speed
P = number of poles in the asset
120 = 120 degrees of electrical spacing between poles

For a asset whose synchronous speed is 1800 rpm, use a variation of this equation to find the number of poles:

P = 120F/N
P = (120)x(60)/1800
P = 4 poles

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Next, determine the number of degrees per pole face. To find this, divide 360 by the number of poles.

360/4 = 90 degrees per pole face.

Next, determine the increments, in degrees, by which to position the rotor to generate an accurate RIC pattern. To find this, divide the number of degrees per pole face by 18.

90/18 = 5 degrees.

Thus, the following would apply for a asset whose synchronous speed is 1800 rpm:

4 poles
90 degrees per pole face
5 degree increments per rotation to develop an accurate RIC

The increments were chosen since the RIC pattern typically repeats itself by the same number of poles in the asset through a complete 360° rotation of the rotor. Using these increments is recommended to increase consistency and reduce aliasing. Also, use the same increments and total rotation each time you perform a RIC. This ensures that the RIC is started and run the same way for each test. Doing this enables you to reliably compare the data and graph to subsequent tests for trending.

When the RIC is started, the MCE measures the resistance of each phase winding. At each increment the inductance of each winding pair is measured and recorded. Between measurements you are prompted to move the rotor to the next position.

Data Interpretation

Aliasing

Aliasing occurs when too few measurements are taken too far apart to show the true shape of the curve. The following figures show RICs which exhibit aliasing.

Figure 5-63 shows two waveforms of a good rotor in a 6-pole asset. The waveform with the connected circles was generated with measurements taken at the recommended interval of 3.3°. The waveform with the dashed lines was generated with measurements taken at 15° intervals. The waveform from measurements taken at 15° intervals shows a lack of definition.

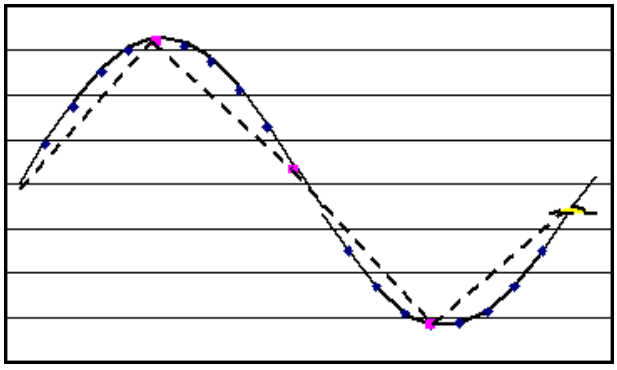


Figure 5-63: Aliasing

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Figure 5-64 shows two waveforms taken on a asset which has known rotor faults. The presence of the fault is hidden when the measurements are taken at 15° increments (dashed waveform). When they were made at the recommended 3.3° increments (circles), the presence of the rotor fault is indicated by the flattened peaks. Note that the dashed waveforms shown in Figure 5-63 and 5-64 appear identical masking the true rotor conditions.

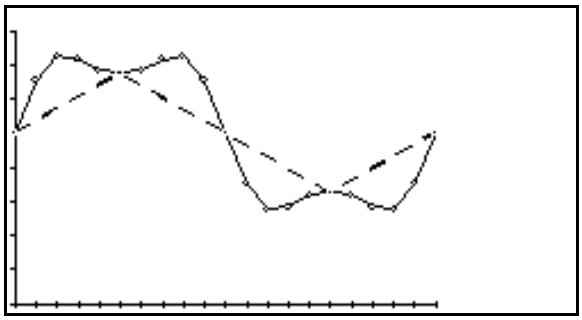


Figure 5-64: Aliasing

Good Asset

Figure 5-65 shows a RIC test for a typical AC induction asset with a good rotor. The three graphs resemble sine waves which are 120° out of phase with each other. The sinusoidal pattern is smooth and repeatable. The amplitude of the sine waves varies from asset to asset, due to factors specific to each asset, such as winding configuration, air gap, core steel quality, and rotor construction and design.

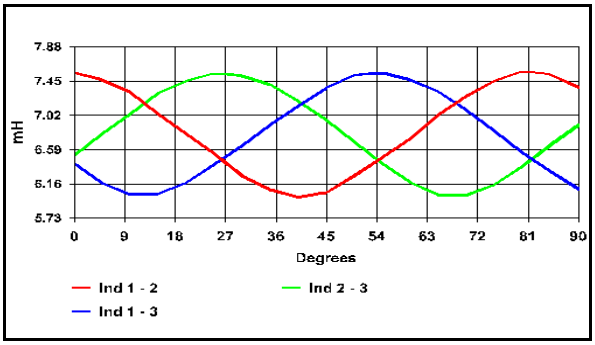


Figure 5-65: RIC from Good Asset

In some assets, the amplitude changes of the graphs are very small and may appear erratic. This erratic appearance may be due to measurement resolution steps, and not due to actual changes in inductance. This condition may indicate a low influence rotor with no rotor defects. One such low influence rotor is shown in the RIC graph in Figure 5-66.

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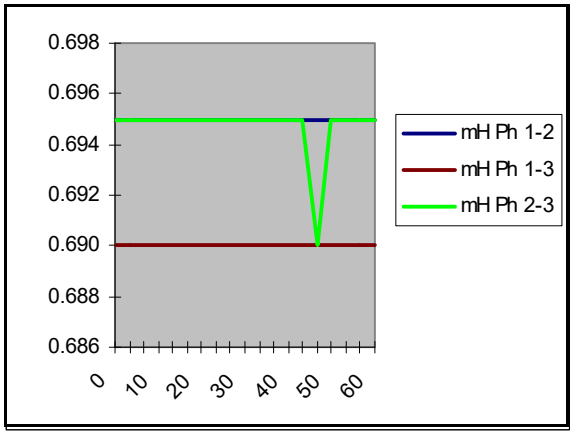


Figure 5-66: RIC from Asset with Low Influence Rotor

Eccentricity

Eccentricity is defined as the condition of the air gap between the rotor and stator, all the way around 360° of the asset. This gap should be the same width all the way around. If the rotor is bowed, the bearing clearances improperly set, or the end bell not aligned properly, the air gap will not be equal. An unequal air gap produces a phase-to-phase inductance graph that is markedly higher at one end of the graph than at the other. This is shown in Figure 5-67.

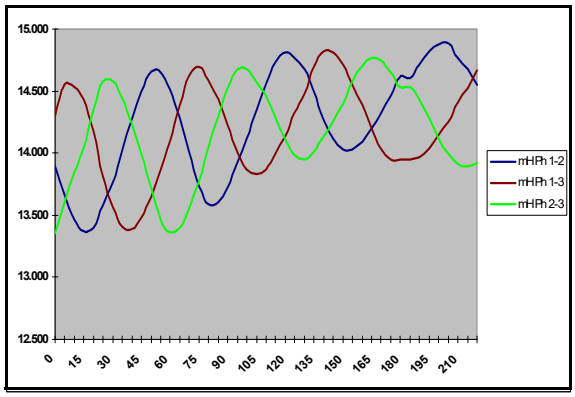


Figure 5-67: RIC from Asset with Eccentricity

If an eccentricity problem is suspected, continue performing the RIC to include at least two pole faces beyond the default increment setting. An exception to be aware of is when sleeve bearings are used in the asset. Due to their oil film, they can falsely indicate eccentricity problems since the rotor "settles" when the asset is not running.

Broken Rotor Bars

A rotor with broken bars produces graphs with anomalies in their wave shapes, such as flattened and staggered peaks.

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Figure 5-68 shows a motor with ten broken rotor bars. These were found following a RIC. The flattening of the peaks in the phase-to-phase inductance graphs results from the influence of the broken bars. The irregularities in these traces are repeatable in each phase.

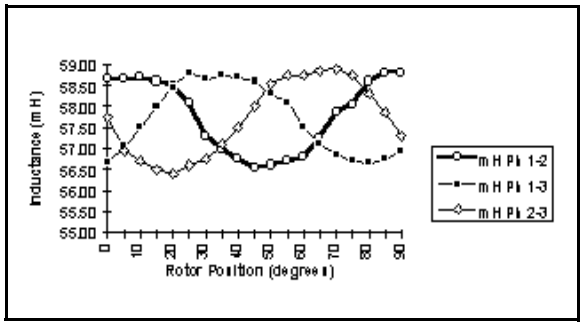


Figure 5-68: RIC from Motor with Broken Rotor Bars

Figure 5-69 shows a motor with cracked welded joints at the shorting rings. The cracked welded joints were found in 14 out of 122 rotor bars after a RIC was taken. The erratic pattern of flattened and staggered peaks points to the presence of the broken bars.

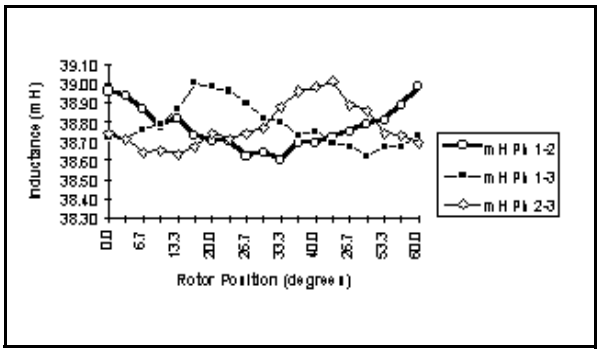


Figure 5-69: RIC from Motor with Broken Rotor Bars

Figure 5-70 shows the RIC test of a 480 volt 60 HP AC induction motor with broken rotor bars and a slight air gap problem. Note the flattened peaks in each phase-to-phase graph.

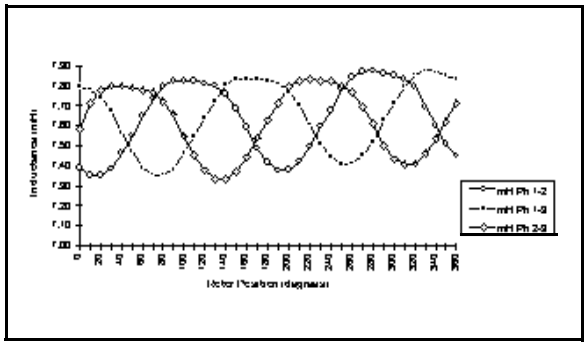


Figure 5-70: RIC from Motor with Broken Rotor Bars

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Figure 5-71 shows the staggered peaks in a RIC for a 480 volt 5 HP motor. A rotor anomaly was determined to be the cause for these peaks. This was the result of a maintenance supervisor drilling a hole in one rotor bar as a demonstration.

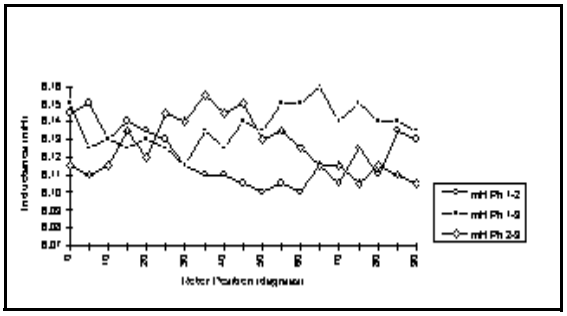


Figure 5-71: RIC from Motor with Broken Rotor Bars

One-Up/Two-Down and Two-Up/One-Down

Phase-to-phase or turn-to-turn stator winding shorts can result in either a one-up/two-down or two-up/one-down RIC pattern. This is shown in the graphs in Figure 5-72.

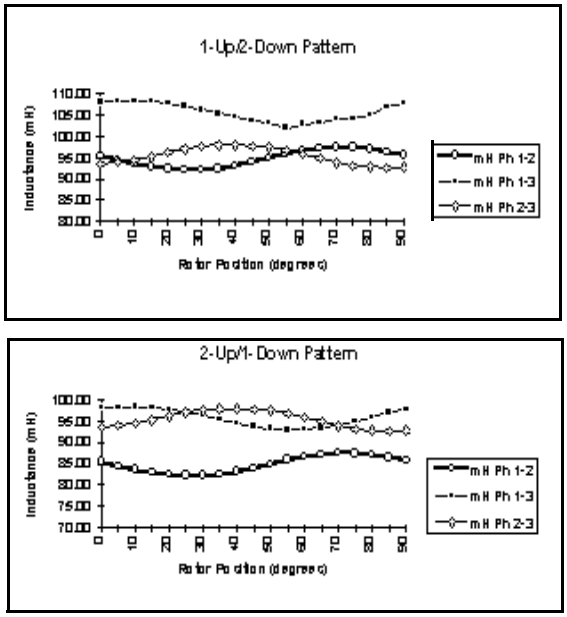


Figure 5-72: RIC from Motor with Phase-to-Phase or Turn-to-Turn Shorts

To assist in the analysis, compare the RIC with the phase-to-phase resistance readings on the standard test. If the same phases are affected resistively and inductively, this further confirms a winding defect. If resistance readings do not confirm this condition, evaluate the asset for eccentricity/air gap problems.

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DC Bar-to-Bar Test

What Does It Tell You?

Testing the resistance between commutator bars gives an indication of the comparative value of resistance that exists between all like electrical circuits in an armature.

Why Is This Important?

The commutator consists of insulated segments assembled into a cylinder and held together by insulated rings. Electric current is transferred to the armature windings by "brushes" made mainly of carbon and graphite. Brush wear creates carbon dust, a conductive contaminant, which penetrates into crevices, cracks and openings of the armature. Copper particles add to the contaminant accumulation when the wrong brushes are installed or the brushes are improperly installed, or when maintenance is inadequate. If the insulating material on the commutator bars or their risers has cracked, these contaminants can short entire windings.

Also, high resistance connections can develop at the risers causing open or high-resistance armature coils. Equalizing connections can break and cause an imbalance due to the loss of equalization.

Data Interpretation

The resistance readings between bars are in the microhm range for medium to large machines. Most DC assets of this size have armatures constructed with equalizing jumpers or compensating shorting connections. The effect of these connections on the Bar-to-Bar test results shows as a regular pattern of change from bar to bar. Good bars have 1 or 2 different values. If a bar differs greatly from either of these 2 values then look for faults.

Armatures with 50% compensation have every other bar equalized; with 33% compensation have every 3rd bar equalized; with 25% compensation have every 4th bar equalized.

MCE ANALYSIS

AC Induction Assets

Rotor Influence Check (RIC)

- Normal - smooth three-phase sinusoidal waveforms
- Rotor Defect - repeatable erratic inductance throughout the peaks of the waveforms
- Eccentricity - inconsistent variations in the amplitude of the waveforms. Static eccentricity sometimes causes a consistent separation in the three sine waves, coupled with a low inductive imbalance.

One method of analyzing a RIC is done by following four steps, outlined by the acronym SAME.

- S - look at the *scale*; verify correct resolution
- A - check the *alignment* of the peaks; check for eccentricity
- M - check the *max-to-min* values of the peaks; all three waveforms should be the same; check for stator problems
- E - *evaluate* the characteristics of the waveforms

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Standard Test

- In the Fault Zone Report, check for Caution and Alarm indications. Click the value highlighted in yellow or red to see the recommended actions.
- Low Resistance-to-Ground - RTG in Caution or Alarm indicates a possible breakdown in the insulation system.
- High Capacitance-to-Ground - CTG in Caution or Alarm indicates an increase in the contamination on the surface of the insulation.
- High Resistive Imbalance - Resistive Imbalance in Caution or Alarm indicates high resistance connection in the switchgear, disconnect, or asset connection box. Refer to the individual phase-to-phase resistance readings to assist in locating the fault.
- High Inductive Imbalance - Inductive Imbalance in Caution or Alarm indicates a winding defect (turn-to-turn or phase-to-phase) or severe eccentricity. Refer to the individual phase-to-phase inductance readings to assist in locating the fault. If a RIC has not been performed, perform a RIC to obtain additional information.

Polarization Index/Dielectric Absorption

- Low PI or DA ratio - PI or DA in Caution or Alarm indicates changing or excessive surface contamination.
- Breakdown of insulation system.

At this point, a Condition Code may be assigned and Notes completed to explain the following:

- Asset condition/status; basis for the asset condition assigned.
- Anomalies that had to be overcome during the performance of the test.
- If multiple tests were performed during troubleshooting, explain where test leads were connected for each test.

AC Synchronous Assets

Stator

Rotor Influence Check (RIC)

- Normal - smooth three-phase sinusoidal waveforms
- Rotor Defect - appears like a normal sine wave but has a larger than normal inductive imbalance
- Eccentricity - inconsistent variations in the amplitude of the waveforms. Static eccentricity can sometimes cause a consistent separation in the three sine waves.

One method of analyzing a RIC is done by following four steps, outlined by the acronym SAME.

- S - look at the *scale*; verify correct resolution
- A - check the *alignment* of the peaks; check for eccentricity
- M - check the *max-to-min* values of the peaks; all three waveforms should be the same; check for stator problems
- E - *evaluate* the characteristics of the waveforms

Standard Test

- In the Fault Zone Report, check for Caution and Alarm indications. Click the value highlighted in yellow or red to see the recommended actions.

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- Low Resistance-to-Ground - RTG in Caution or Alarm indicates a possible breakdown in the insulation system.
- High Capacitance-to-Ground - CTG in Caution or Alarm indicates an increase in the contamination on the surface of the insulation.
- High Resistive Imbalance - Resistive Imbalance in Caution or Alarm indicates high resistance connection in the switchgear, disconnect, or asset connection box. Refer to the individual phase-to-phase resistance readings to assist in locating the fault.
- High Inductive Imbalance - Inductive Imbalance in Caution or Alarm indicates a winding defect (turn-to-turn or phase-to-phase), circuit defect (cable short or power factor correction capacitor failure), or severe eccentricity. Refer to the individual phase-to-phase inductance readings to assist in locating the fault. If a RIC has not been performed, perform a RIC to obtain additional information on the rotor condition.

Polarization Index/Dielectric Absorption

- Low PI or DA ratio- PI or DA ratio in Caution or Alarm indicates changing or excessive surface contamination.

Step Voltage

- If the plot of the curve of current versus voltage deviates from near linear, impending breakdown is suggested.

Field Circuit

Synchronous Test

- In the Fault Zone Report, check for Caution and Alarm indications. Click the value highlighted in yellow or red to see the recommended actions.
- Low Resistance-to-Ground - RTG in Caution or Alarm indicates a breakdown in the insulation system.
- High Capacitance-to-Ground - CTG in Caution or Alarm indicates an increase in the contamination on the surface of the insulation.
- High/Low Resistance - Resistance in Caution or Alarm indicates a high or low resistance of the field windings.

  NOTE: The Caution and Alarm limits are set based on nameplate field voltage and current values at normal operating temperature of the asset. Testing on a cold asset may indicate values outside the Caution and Alarm settings.

- Low Inductance - Low Inductance in Caution or Alarm indicates turn-to-turn faults in the field coils.

Polarization Index/Dielectric Absorption

- Low PI or DA ratio - PI or DA ratio in Caution or Alarm indicates changing or excessive surface contamination.

At this point, a Condition Code may be assigned and Notes completed to explain the following:

- Asset condition/status; basis for the asset condition assigned.
- Anomalies that had to be overcome during the performance of the test.
- If multiple tests were performed during troubleshooting, explain where test leads were connected for each test.

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Step Voltage

- If the plot of the curve of current versus voltage deviates from near linear, impending breakdown is suggested.

AC Wound Rotor Assets

Stator

Rotor Influence Check (RIC)

- Normal - smooth three-phase sinusoidal waveforms
- Rotor Defect - appears like a normal sine wave but has a larger than normal inductive imbalance
- Eccentricity - inconsistent variations in the amplitude of the waveforms. Static eccentricity can sometimes cause a consistent separation in the three sine waves, coupled with a low inductive imbalance.

One method of analyzing a RIC is done by following four steps, outlined by the acronym SAME.

- S - look at the *scale*; verify correct resolution
- A - check the *alignment* of the peaks; check for eccentricity
- M - check the *max-to-min* values of the peaks; all three waveforms should be the same; check for stator problems
- E - *evaluate* the characteristics of the waveforms

Standard Test

- In the Fault Zone Report, check for Caution and Alarm indications. Click the value highlighted in yellow or red to see the recommended actions.
- Low Resistance-to-Ground - RTG in Caution or Alarm indicates a breakdown in the insulation system.
- High Capacitance-to-Ground - CTG in Caution or Alarm indicates an increase in the contamination on the surface of the insulation.
- High Resistive Imbalance - Resistive Imbalance in Caution or Alarm indicates high resistance connection in the switchgear, disconnect, or asset connection box. Refer to the individual phase-to-phase resistance readings to assist in locating the fault.
- High Inductive Imbalance - Inductive Imbalance in Caution or Alarm indicates a winding defect (turn-to-turn or phase-to-phase) or severe eccentricity. Refer to the individual phase-to-phase inductance readings to assist in locating the fault. If a RIC has not been performed, perform a RIC to obtain additional information.

Polarization Index/Dielectric Absorption

- Low PI or DA ratio - PI or DA ratio in Caution or Alarm indicates changing or excessive surface contamination.

Step Voltage

- If the plot of the curve of current versus voltage deviates from near linear, impending breakdown is suggested.

Rotor

Standard Test

- In the Fault Zone Report, check for Caution and Alarm indications. Click the value highlighted in yellow or red for recommended actions.

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- Low Resistance-to-Ground - RTG in Caution or Alarm indicates a breakdown in the insulation system.
- High Capacitance-to-Ground - CTG in Caution or Alarm indicates an increase in the contamination on the surface of the insulation.
- High Resistive Imbalance - Resistive Imbalance in Caution or Alarm indicates high resistance connection on the slip ring or winding connections. Refer to the individual phase-to-phase resistance readings to assist in locating the fault.
- High Inductive Imbalance - Inductive Imbalance in Caution or Alarm indicates a winding defect (turn-to-turn or phase-to-phase). Refer to the individual phase-to-phase inductance readings to assist in locating the fault.

Polarization Index/Dielectric Absorption

- Low PI or DA ratio - PI or DA ratio in Caution or Alarm indicates changing or excessive surface contamination.

Step Voltage

- If the plot of the curve of current versus voltage deviates from near linear, impending breakdown is suggested.

Resistor Bank

Resistor Bank

- In the Fault Zone Report, check for Caution and Alarm indications. Click the value highlighted in yellow or red to see the recommended actions.
- Low Resistance-to-Ground - RTG in Caution or Alarm indicates a breakdown in the insulation system.
- High Capacitance-to-Ground - CTG in Caution or Alarm indicates an increase in the contamination on the surface of the insulation.
- High Resistive Imbalance - Resistive Imbalance in Caution or Alarm indicates high resistance connection between the resistors or a faulty resistor. Refer to the individual phase-to-phase resistance readings to assist in locating the fault.

Polarization Index/Dielectric Absorption

- Low PI or DA ratio - PI or DA ratio in Caution or Alarm indicates changing or excessive surface contamination.

At this point, a Condition Code may be assigned and Notes completed to explain the following:

- Asset condition/status; basis for the asset condition assigned.
- Anomalies that had to be overcome during the performance of the test.
- If multiple tests were performed during troubleshooting, explain where test leads were connected for each test.

Step Voltage

- If the plot of the curve of current versus voltage deviates from near linear, impending breakdown is suggested.

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DC Assets

Armature Circuit

Standard Test

- In the Fault Zone Report, check for Caution and Alarm indications. Click the value highlighted in yellow or red to see the recommended actions.
- Low Resistance-to-Ground - RTG in Caution or Alarm indicates a possible breakdown in the insulation system.
- High Capacitance-to-Ground - CTG in Caution or Alarm indicates an increase in the contamination on the surface of the insulation.
- High/Low Resistance - values in Caution or Alarm indicate high resistance connection in the switchgear, disconnect, or asset connection box. This can also indicate improper brush wear/seating or a poor commutator film.
- High/Low Inductance - values in Caution or Alarm indicate a winding defect (turn-to-turn or coil-to-coil).

Polarization Index/Dielectric Absorption

- Low PI or DA ratio - PI or DA ratio in Caution or Alarm indicates changing or excessive surface contamination.

Bar-to-Bar

- High/Low Resistance - values significantly above or below the average resistance reading indicate an open or a short in the armature winding or commutator segments.

Field Circuit

Standard Test

- In the Fault Zone Report, check for Caution and Alarm indications. Click the value highlighted in yellow or red to see the recommended actions.
- Low Resistance-to-Ground - RTG in Caution or Alarm indicates a possible breakdown in the insulation system.
- High Capacitance-to-Ground - CTG in Caution or Alarm indicates an increase in the contamination on the surface of the insulation.
- High/Low Resistance - values in Caution or Alarm indicate a high resistance connection in the switchgear, disconnect, or asset connection box.
- High/Low Inductance - values in Caution or Alarm indicate a winding defect (turn-to-turn or coil-to-coil).

Polarization Index/Dielectric Absorption

- Low PI or DA Ratio - PI or DA Ratio in Caution or Alarm indicates changing or excessive surface contamination.

At this point, a Condition Code may be assigned and Notes completed to explain the following:

- Asset condition/status; basis for the asset condition assigned.
- Anomalies that had to be overcome during the performance of the test.
- If multiple tests were performed during troubleshooting, explain where test leads were connected for each test.

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CHAPTER 5: MCE

TESTING QUICK START

MCE testing may be started by selecting either the Test Selection  or the MCE Auto  icons on the toolbar.

Selecting the MCE Auto icon automatically runs the Standard Test followed by the Polarization Index test. It uses the existing testing setup values. MCE Auto is discussed in detail on page 5-7.

Selecting the Test Selection icon allows you to verify and/or change the testing setup values and select which test you want to run. Test Selection is discussed in detail on page 5-3.

1. Start MCEGold.
2. On the Site Navigator or WatchList highlight the asset to be tested.
3. Select the Test Selection icon  on the tool bar to open the Test Selection window.
4. In the Test Selection window the default is set to MCE testing. For EMAX testing click the EMAX tab at the top and see Chapters 6 & 7. The asset section tabs along the left side will vary depending on the type of asset being tested. Nameplate Information is automatically filled in by MCEGold from the nameplate data.
5. Select the asset section tab along the left side corresponding to the section to be tested.
6. Select the test to be performed from the list of tests. The available selections are driven by the type of asset and the asset section selected for testing. The Notes section provides instructions that are relevant for the selected test.
7. Select the asset test location by using the drop-down list or using the search button to open the Test Location Selection window.
8. Select the Test Frequency from the drop-down list. The Test Frequency default is driven by the type of asset selected for testing.
9. Select the Resistance-to-Ground by entering in the Mohms if they are different from the default. Check the Low Limit check box if you want the unit to shut down automatically upon measuring a specified low resistance to ground value.
10. Select the Voltage from the drop-down list box. The choices are: 250, 500, 1000, 2500, and 5000.
11. Set the asset Temperature if different from the default value of 40.

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12. Select the charge time from the drop-down list box. The choices are in 15 second increments, beginning at 15 and ending at 600 seconds.

13. Click **Save** to save the MCE Test Setup values selected for this particular asset or click **Reset** to restore the original values. Note: Original values may only be reset if new values have not been saved. If you have clicked the Save button it will be necessary to manually change them back to the originals and save them.

14. Click **Test** to go the test window.

15. Click **Test** on the Test window. From this point the process will differ depending on the test being performed. Each test is covered in detail later in this chapter.

INTRODUCTION

The MCE tester measures natural characteristics of a deenergized asset and its circuit to determine its condition. These characteristics are resistance-to-ground, capacitance-to-ground, winding resistance, and winding inductance. MCE testing can identify faults in the power circuit, insulation, stator, rotor, and the air gap between the rotor and stator.

The tests that can be run on a asset vary, depending on the asset type. For AC assets (Induction, Synchronous, and Wound Rotor) the tests are AC Standard Test, Polarization Index (PI) which includes a Dielectric Absorption Ratio, Rotor Influence Check (RIC), and Step Voltage. For DC assets the tests are DC Standard Test, Polarization Index (PI) which includes a Dielectric Absorption Ratio, Bar-to-Bar (Armature Circuit only), and Step Voltage.

Both AC and DC assets have an MCE Auto test which runs the Standard test followed by the Polarization Index test, automatically saves the test results, and displays the Fault Zone Report at the end of testing.

The frequency and type of asset testing you perform is based on your experience with the tester, the condition of each individual asset, and the criticality/application of each asset. Since it may be impossible to test each and every asset in your facility, ask yourself the following questions when deciding which assets to test.

- Is the asset easily replaceable and if so, is a replacement readily available?
- Would buying a new asset cost less than repairing the old asset?
- Is the asset redundant or non-critical?

If you answered yes to all three of these questions, you may not want to consider this asset for your monitoring program.

If you are unfamiliar with an asset, review its maintenance history of test results, problems, and repairs before testing it. Talk with the operators who run it and anyone who may have information about its repair history. This will give you a more complete picture of the condition of the asset.

MCE test results give you a comprehensive picture of the electrical condition of the asset. MCE results can be utilized, along with results obtained from other technologies, to get a complete picture of the health of the asset. Some examples of other technologies include vibration, oil analysis, and infrared thermography.

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Some of the MCE tests give you enough information to call an asset good or bad, based on results from one test. Other MCE tests give you data which is best used for trending and comparison.

Trending means comparing sequential test results for the same asset over time. This tracks what the particular asset is doing, how it is holding up, when it may need to be cleaned, when it needs more detailed maintenance, or when a fault develops.

Test frequency depends on the asset's criticality and the condition of the asset when it is first tested. As the asset ages, you may decide to test it more frequently to better track its condition.

When you first start testing with the MCE, the initial test is automatically designated as the baseline test. After maintenance is performed on an asset and it is returned to optimal condition, measure subsequent tests against that condition by designating the first test after the maintenance as the new baseline.

Comparison means comparing individual test results on one asset with test results from an identical asset operating in a similar environment. By identical asset we mean the same manufacturer, voltage and horsepower rating, cable length for MCC, etc. For example, if there are four like assets operating side by side performing the same task, all running at approximately the same load, each running about the same amount of time, the test data should be very close for all of them. If all four assets are tested, and three are basically the same, but the fourth is very different from the other three, look for potential problems with the fourth asset.

MCE testing is performed on a deenergized asset. However, there may be energized circuitry in the same cabinet in which you connect the tester.



FOLLOW ALL ELECTRICAL SAFETY PRECAUTIONS AND PROCEDURES FOR WORKING IN THE VICINITY OF ENERGIZED EQUIPMENT. READ THE ELECTRICAL SAFETY PRECAUTIONS IN CHAPTER ONE BEFORE PERFORMING ANY TESTS.

For AC assets, test lead colors of black, blue, and red connect to phases 1, 2, and 3 (left to right, top to bottom); green connects to ground. For DC assets, test lead colors of black and blue connect to F1/A1 and F2/A2; the red lead is not used; green connects to ground. The DC Bar-to-Bar pistol grip or pencil probe test leads connect to commutator bars.

Some asset circuits may have surge capacitors and/or power factor correction capacitors installed. It is important to know about them since these components affect the values of the collected data and increase the time and number of steps involved in troubleshooting. Testing can be performed with the power or surge capacitors installed, however, surge capacitors must be removed for the accurate measurement of the asset's insulation resistance-to-ground. If an asset appears faulty with the power factor capacitors installed, disconnect them and perform the testing again to isolate the fault.

TEST SELECTION WINDOW

In this chapter, the MCE aspects of asset testing are discussed. EMAX testing is discussed in the Power and Current Analysis chapters. The Test Selection window discussion is followed by the Step-by-step testing procedures, Test Data Analysis on page 5-53, and finally MCE Analysis on page 5-74.

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Note: Selecting the MCE Auto test icon on the tool bar bypasses the Test Selection window and automatically runs the Standard Test followed by the Polarization Index test using either the default or previously saved test settings, at the end of testing the test results are saved, and the Fault Zone Report opens.

To open the Test Selection Window click the Test Selection icon on the tool bar.

The Test Selection window is shown in Figure 5-1. The asset name is located on the title bar to the right of the window name. The Test Selection window is used for both MCE and EMAX testing by selecting the desired test type tab.

The asset section tabs are found along the left side of the test selection area and are dependent on the asset type. Possible sections are Armature Circuit, Field Circuit, Resistor Bank, Rotor, and Stator.

- For AC Induction assets, the only option is Stator.
- For AC Synchronous assets, options are Field Circuit and Stator.
- For Wound Rotor assets, options are Stator, Rotor, and Resistor Bank.
- For DC assets, options are Armature and Field Circuit.

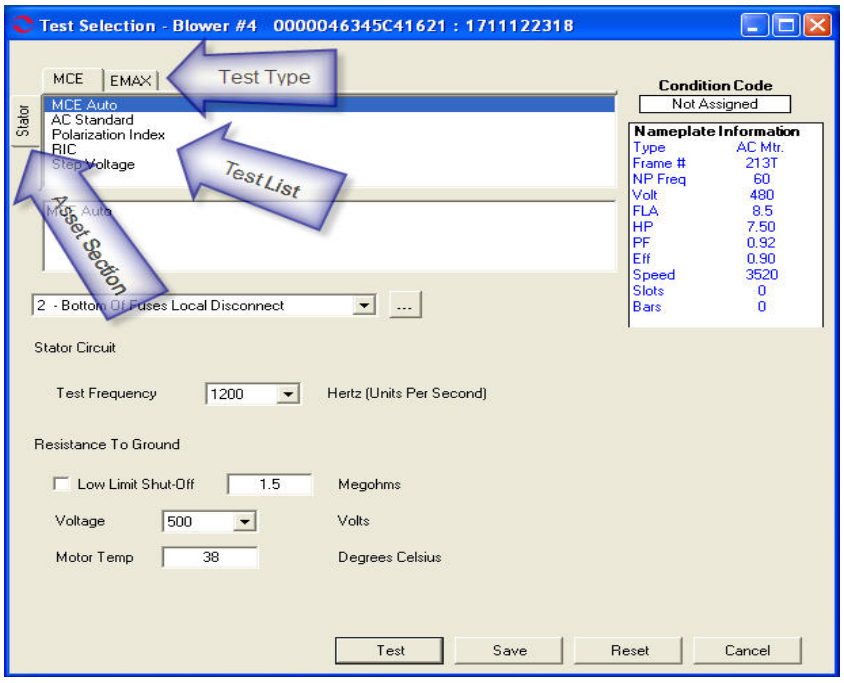


Figure 5-1: Test Selection Window

Test List

The top left section of the window contains a list of test selections for either MCE or EMAX, depending on asset type, test type and asset section tabs selected. The test lists section displays the various tests which may be performed based on the asset type and asset section chosen. When a test is selected, the name of the test is highlighted blue and

the test set up area changes to values appropriate for the test selected. The test list possibilities for MCE testing are:

- MCE Auto
- Standard (AC asset)
- Standard (DC asset)
- Polarization Index
- Rotor Influence Check (RIC)
- Step Voltage
- Synchronous (Synchronous, Field section)
- Resistor Bank (Wound Rotor, Resistor Bank section)
- Commutator Bar-to-Bar (DC asset)

Asset Information

Asset Information is located on the right side. This area displays the Condition Code and nameplate information of the asset being tested. The information comes from the nameplate data that was entered when the asset was set up and cannot be edited on this window. Information displayed, depending on asset type, may include: Type, Frame #, NP Frequency, Voltage, FLA, HP, PF, Eff, Speed, Slots, and Bars. Also, Field Volts and Field Current are listed for DC assets.

MCE Test Setup

The lower half of the Test Selection window is devoted to test set-up selections. The set-up options depend on the asset type and test selected.

Asset Test Location

The Asset Test Location default is Not Assigned. To assign a test location, click the down arrow and select from the list. If the location is not known, click the browse button ... . The Test Location Selection window opens displaying a test location graph for the type of asset selected. See Figure 5-2. Use the graph to determine the location, then click the down arrow in the Test Location text box, select the location from the list, and click **OK.**

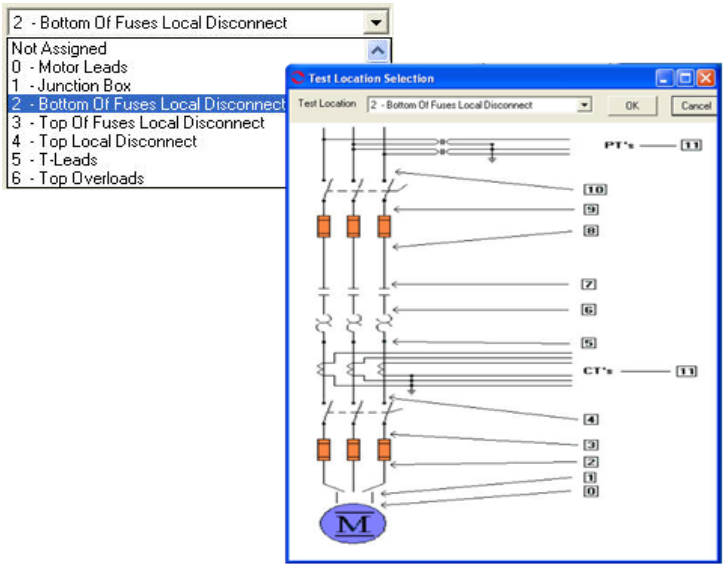


Figure 5-2: AC Asset Test Location

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Test Frequency

Test Frequency is selected from a drop-down box. Click the down arrow and select from the list to change the frequency. The choices are 300 or 1200 Hz depending on the section being tested. Test Frequency is not available for the resistor bank section of a wound rotor asset.

Resistance-to-Ground

Resistance-to-Ground provides the option to check (turn on) the Low Limit Shut Off and enter a shut off voltage.

Voltage

Voltage is selected from a drop-down list. Click the down arrow and select from the list to change the voltage. The voltage choices are from 250, 500, 1,000, 2,500, and 5,000.

Select a voltage of 500 or 1000 volts, based on the asset's voltage. EASA (Electrical Apparatus Service Association), in their booklet How to Get the Most From Your Electric Motors, suggests 500 volts for assets rated ≤2400 volts and 1000 volts for assets rated at >2400 volts.

Asset Temperature

The default value is 40° C. The value may be changed by typing in a new value.

Span

Span selection is only available for Bar-to-Bar testing of the armature section of DC assets.

Charge Time

Charge time is available for the Standard test of an AC Induction, Wound Rotor, Synchronous, and DC assets. The default value is 60 seconds. To change the charge time, click the down arrow and select from the list of between 15 and 600 seconds.

Test Button

Click **Test** to advance to the test window.

Save Button

Click **Save** when the test set-up selections are complete. This saves the settings as default values for that asset for subsequent tests, but is not required. If you forget to save and click Test, you will be asked if you want to save your changes.

Reset Button

Click **Reset** to set values back to the pre-changed value. Note: If you have clicked the Save button they will not reset and it will be necessary to manually change them back.

Cancel Button

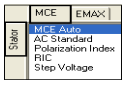
Click **Cancel** to close the Test Selection window without saving setup changes or proceeding to the test window. You will be asked if you want to save test setup settings.

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TEST WINDOW

Once the asset section and setup parameters are selected, you are ready to run the test. This section explains each test by asset type and asset section. The test window is discussed followed by step-by-step testing procedures. Test analysis information begins on page 5-53.

AC Induction Assets



The MCE tests for an AC Induction asset are MCE Auto, AC Standard, Polarization Index, RIC, and Step Voltage. They are discussed in detail in this section.

Note: To minimize the influence of stored energy on test results, perform the tests in the following order. If a test is not to be performed, skip to the next test.

- Rotor Influence Check (RIC)
- Standard Test
- Polarization Index (PI)/Dielectric Absorption (DA) If a PI is performed, it is not necessary to perform a separate DA.

Some circuits may have surge capacitors and power factor correction capacitors installed. This is important since these components affect the values of the collected data and increase the time and number of steps involved in troubleshooting. Testing can be performed with the power factor capacitors installed. However, a test should be taken with surge capacitors removed for future comparison. If an asset appears faulty with the power factor capacitors installed, disconnect them and perform the testing again to isolate the fault.

MCE Auto Test

MCE Auto test performs a standard test followed by a Polarization Index test, then saves the data and produces a Fault Zone Report.

MCE Auto test can be started by clicking the MCE Auto icon 

on the toolbar or selecting MCE Auto from the test list in the Test Selection Window. If you select the MCE Auto icon, the MCE Auto test window opens bypassing the Test Selection window.

If you need to change the test setup settings, select the Test Selection icon 

. The Test Selection window opens, make your changes, and then select MCE Auto from the test list and click **Test**. The MCE Auto Test window, Figure 5-3, opens. The MCE Auto Test window menu consist of three options: File, View, and Options.

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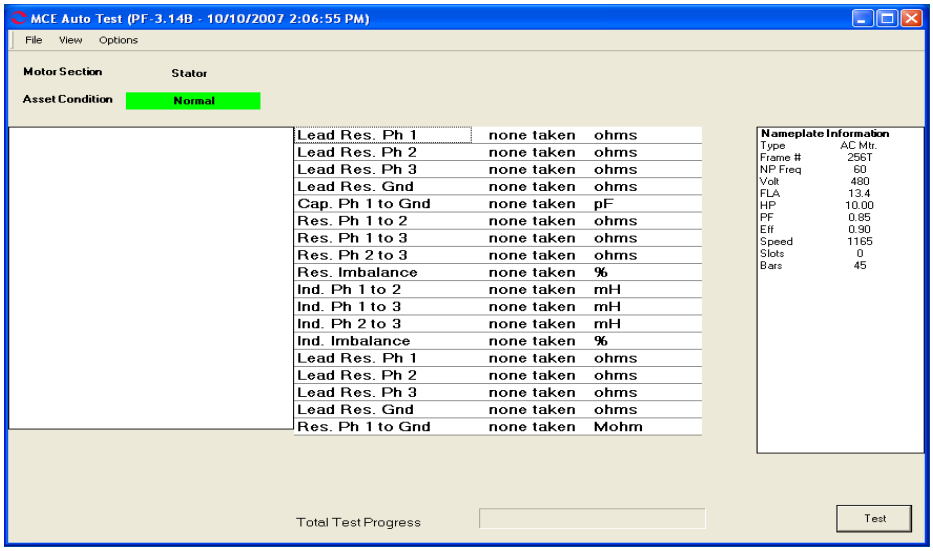


Figure 5-3: MCE Auto Test Window

File Menu

Save. Save (Ctrl+S) is not active, it appears dimmed, until after testing is complete.

Exit. Exit (Ctrl+X) closes the MCE Auto Test and Test Selection windows and returns you to the Home window.

View Menu

Create Message . Create Message opens the Compose Asset Message window (Figure 5-4). Messages created here are viewed in the Message Center. For more information on the Message Center, see Chapter 3, page 3-41.

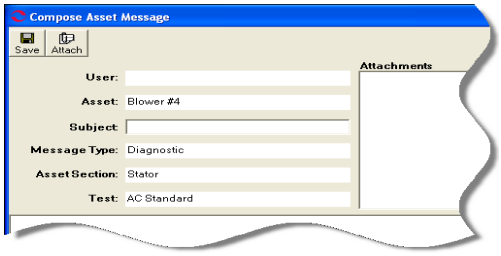


Figure 5-4: Compose Asset Message Window

Options Menu

Set Condition Code. Change the condition code, by selecting the option button corresponding to the condition (Figure 5-5). The Asset Condition box on the MCE Auto Test window changes and a note is automatically generated by the software. The note is viewed in the Message Center. For more information on the Message Center, see Chapter 3, page 3-43.

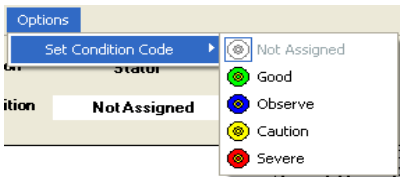


Figure 5-5: Set Condition Code Window

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Test Button

To begin testing click **Test**. During testing the menu items are dimmed (not available) and the Test button changes to Stop. The test takes approximately 11 minutes.

The tester automatically proceeds from the Standard test to the Polarization Index (PI) test. A status bar displays the testing progress. During the Standard test there is one Total Test Progress bar. When the PI test is performed there is a PI progress bar, a Total Progress bar, and a graph in the lower left displaying the test results. See Figure 5-6.

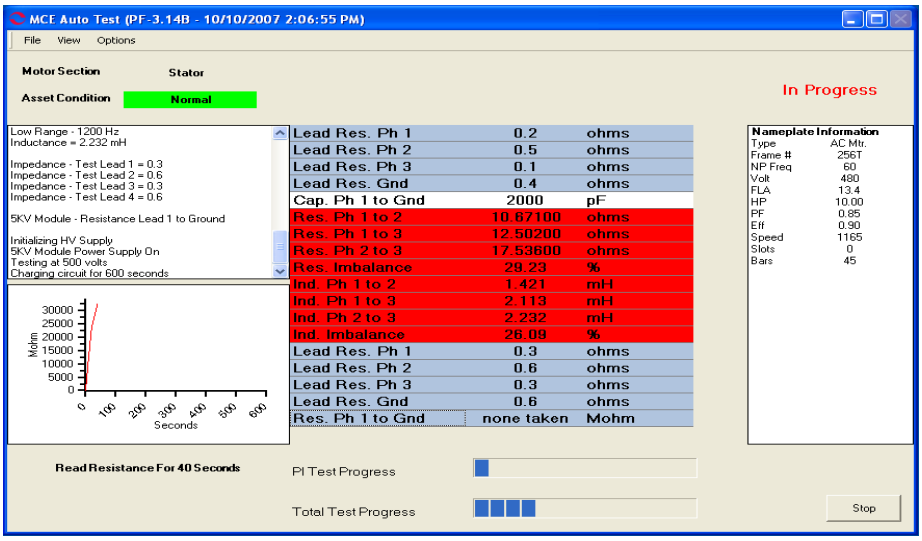


Figure 5-6: MCE Auto Test Window - PI Test

At the end of the PI test, the test results are automatically saved and the Fault Zone Report is generated and displayed. See Figure 5-7.

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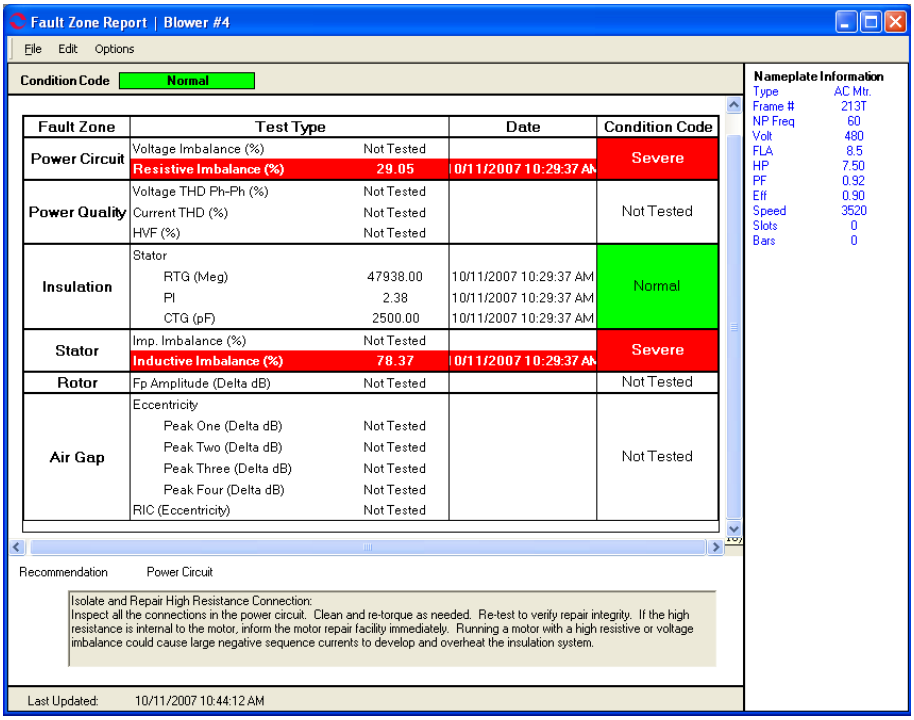


Figure 5-7: MCE Auto Test Fault Zone Report

Fault Zone Report

NOTE: The information for the Fault Zone Report, beginning with File Menu and ending with To View Test History on page 5-12, has been replaced with a new and improved ocular format. A description of the ocular fault zone can be found on page 3-52 in Chapter 3-MCEGold3.

File Menu

Print Preview. Print Preview, shown in Figure 5-8, displays the Fault Zone Report as it will be printed. Using the File menu on the Print Preview window, you can export the report to PDF or HTML or add comments before printing.

To *create a PDF file*, select File, Export to PDF, select the location you wish to save the file in, enter a file name, and click **Save**.

To *create a HTML file*, select File, Export to HTML, select the location you wish to save the file in, enter a file name and click **Save**.

To *add comments*, select File, Add Comments. In the Add Remarks window type your comments and click **Add**. The comments appear in the Comments section at the bottom of the report. They will appear on the printed report, but are not saved for the future. Permanent comments should be entered in the Message Center using Edit, Create Message, which is discussed on page 5-11.

To *print the report* click the **Print** icon on the Print Preview toolbar.

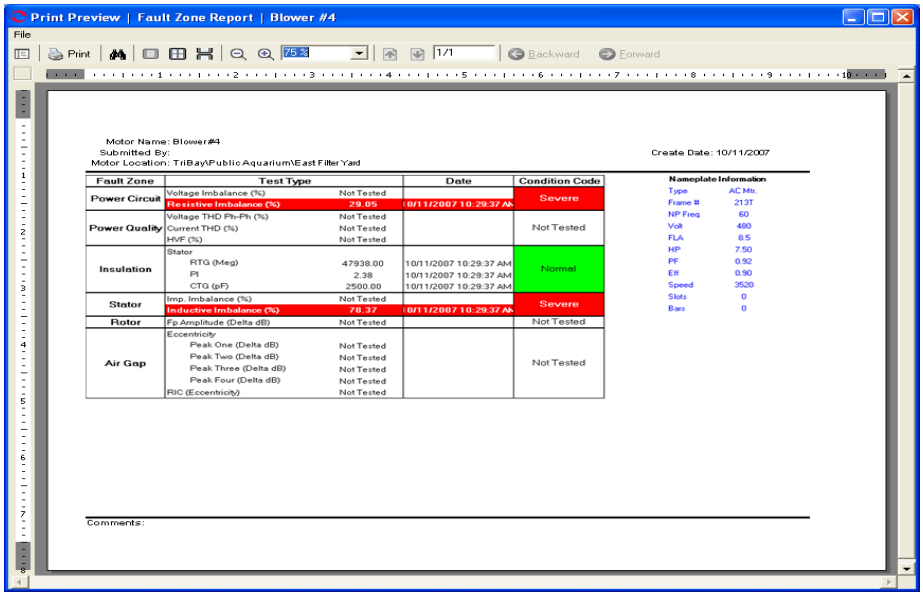


Figure 5-8: Print Preview

Print. Print prints the report to your default printer.

Exit (Ctrl+Q). Exit the report by using File, Exit (Ctrl+Q) or clicking the Close button (red X in the upper right corner).

Edit Menu

Create Message (Ctrl+M). You may enter permanent notes by selecting Create Message (Ctrl+M). This opens the Compose Asset Message window shown in Figure 5-4 on page 5-8. The note is viewed from the Message Center. See the section on Message Center in Chapter 3, page 3-41.

Options Menu

Refresh (Ctrl+R). The Refresh function is used to update the Fault Zone Report when changes have been made to the warning settings.

Set Condition Code. Change the condition code, by selecting an option button, the Condition Code box changes, and a note is automatically generated by the software. The note is viewed from the Message Center. See the section on Message Center, in Chapter 3, page 3-43.

Description/Recommendation

The blank area at the bottom of the report is designed to provide additional information, such as descriptions of the Fault Zones and Test Types or recommended actions for the Condition Code. It is for on screen viewing only and does not appear on the printed report.

To **view a description** of the Fault Zone or Test Type, click on the name in the Fault Zone report. The description will appear in the text box at the bottom of the window.

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To **view the recommended course of action** for a condition code, click the condition code name. The recommended course of action will appear in the text box at the bottom of the window. Figure 5-7 shows how the window would appear if severe condition code of the power circuit was selected.

To View Test History

To **open the Test History** click on the test type result value or the date. The Test History window opens.

AC Standard Test

The AC Standard test is reach by selecting AC Standard from the test list on the Test Selection window. See page 5-3, Test Selection Window for more information. Verify that the test set-up settings are correct and click **Test**. The AC Standard Test Window (Figure 5-9) opens.

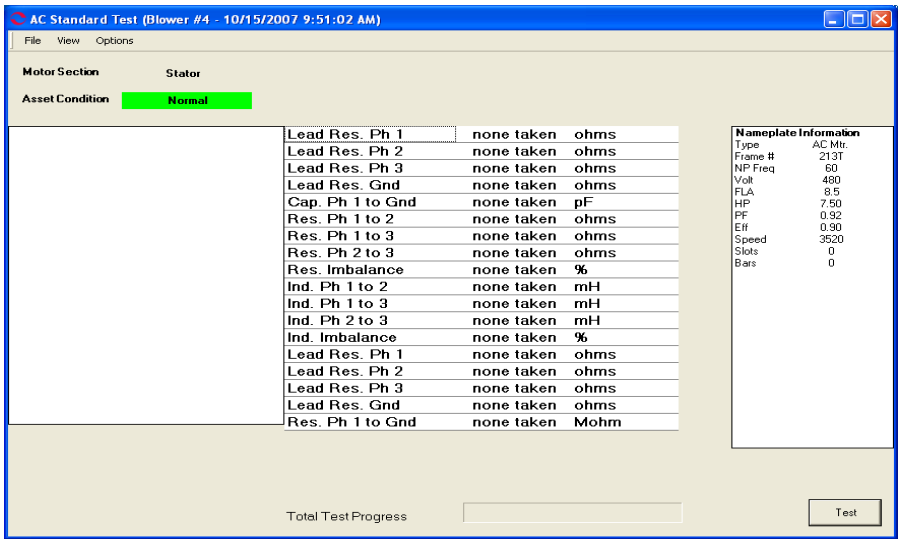


Figure 5-9: AC Standard Test Window

The AC Standard Test window menu consist of three options: File, View, and Options.

File Menu

Save. Save (Ctrl+S) is not active, it appears dimmed, until after testing is complete.

Exit. Exit (Ctrl+X) closes the AC Standard test window and returns you to the MCEGold Home window.

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View Menu

Create Message. Create Message opens the Compose Asset Message window (Figure 5-10). Messages created here are viewed in the Message Center. For more information on the Message Center, see Chapter 3, page 3-41.

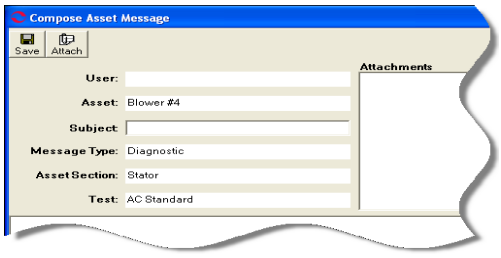


Figure 5-10: Compose Asset Message Window

Options Menu

Set Condition Code. Change the condition code, by selecting an option button (Figure 5-11). The Asset Condition box on the AC Standard Test window changes and a note is automatically generated by the software. The note is viewed in the Message Center. For more information on the Message Center, see Chapter 3, page 3-43

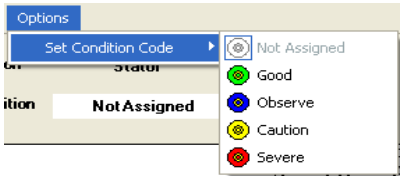


Figure 5-11: Options, Set Condition Code Menu

Step-by-Step AC Standard Testing

1. Deenergize and lock out the starter and the asset.

2. Check for low level induced voltages using a Fluke multimeter or equivalent.

   Verify that the values do not exceed 0.5 VAC phase-to-phase and 15 VAC phase-to-ground. Check for low level stored voltage by verifying less than 15 VDC phase-to-ground.

3. Connect the MCE to the circuit, in the same manner each time, as referenced in Table 5-1. This ensures that the test data is trendable/repeatable.

Table 5-1: Test Lead Connections

MCE test leads	Black	White	Red	Green
motor phase	A	B	C	gnd
“T” lead	T1	T2	T3	gnd
vertical	top	mid	bot	gnd
horizontal	left	mid	right	gnd

4. Highlight the asset to be tested on the Site Navigator.

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5. Select the Test Selection icon on the toolbar. The Test Selection window opens, Figure 5-12.

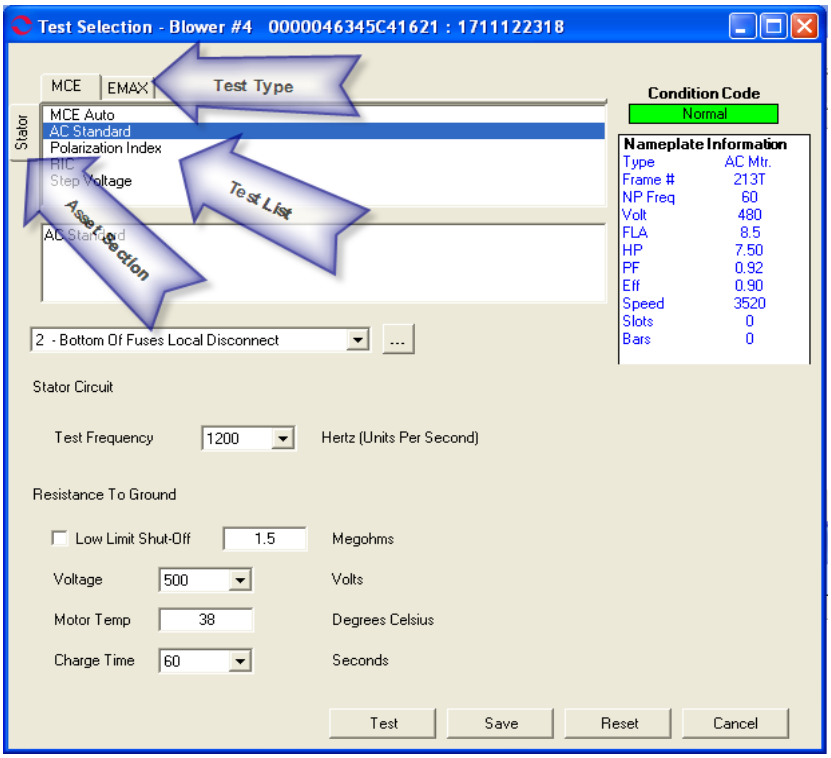


Figure 5-12: Test Selection Window

6. Verify that the MCE (Test Type) and Stator (Asset Section) tabs are selected. The type of asset determines which asset sections are available.

7. Click AC Standard from the Test List.

   If all of the settings in the MCE Test Setup are correct, click **Test** to go directly to the test. Go to step 16.

8. Verify the Test Location in the Test Setup section.

   To insure consistent trending and assist in trouble shooting, the actual test location should be stored for each test.

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The Test Location default is Not Assigned. To assign a test location, click the down arrow and select from the list. If the location is not known, click the browse button . The Test Location Selection window opens displaying a test location graph for the type of asset selected. Use the graph to determine the location, then click the down arrow, select from the list, and click **OK**. See Figure 5-13.

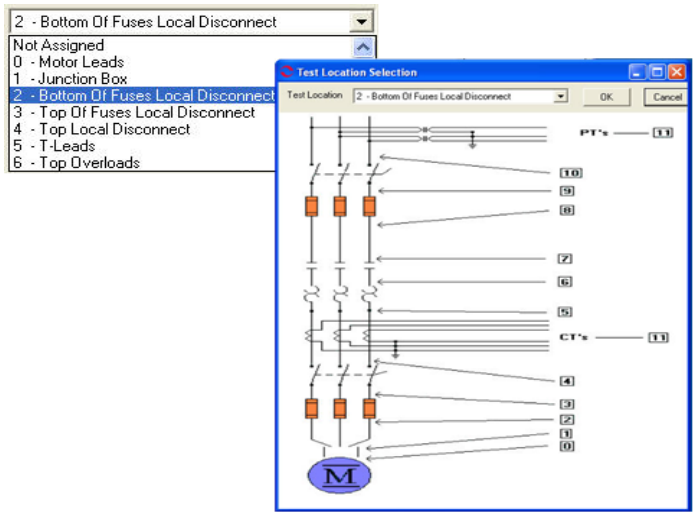


Figure 5-13: Asset Test Location

9. Verify the Test Frequency.

   Click the down arrow and select the frequency from the drop-down list. The values are 300 or 1200.

10. Verify the Low Limit Shut Off condition.

    Check the box to activate the low limit shut off and enter the desired Mohms.

11. Verify the Voltage.

    Click the down arrow and select the voltage from the drop-down list. Select test voltage based on asset nameplate voltage.

12. Enter the temperature.

    Adjust the Temperature ° C to stator core temperature at the time of testing.

13. Select the Charge Time Seconds.

    Click the down arrow and select the seconds from the drop-down list. The choices are from 30 to 180 seconds at 15 second increments.

14. Click **Save** to save the settings for this asset for future testing. Or click **Reset** to return the original settings. This can only be done if the new settings have not been saved.

15. Click **Test** to go to the testing window.

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16. Click **Test** in the AC Standard Test Window.

17. Verify that you are about to apply "X" volts to the circuit by clicking **Yes**.

18. Testing begins, progress bars are displayed for Total Test Progress and Discharge Progress at various times. The test values are filled in as testing proceeds. At the end of testing Test Completed appears above the Nameplate Information area. See Figure 5-14.

    To stop the test at any time, click **Stop**. Click **Exit** to close the AC Standard test window and return to the Home window.

19. Click **OK** when the test is complete.

20. Re-test any individual point, if needed. If not go to step 21.

    If any portion of the test needs to be re-tested, double click the tab which appears to the right of the individual test point. This rechecks only that test point in "manual mode." See Figure 5-14.

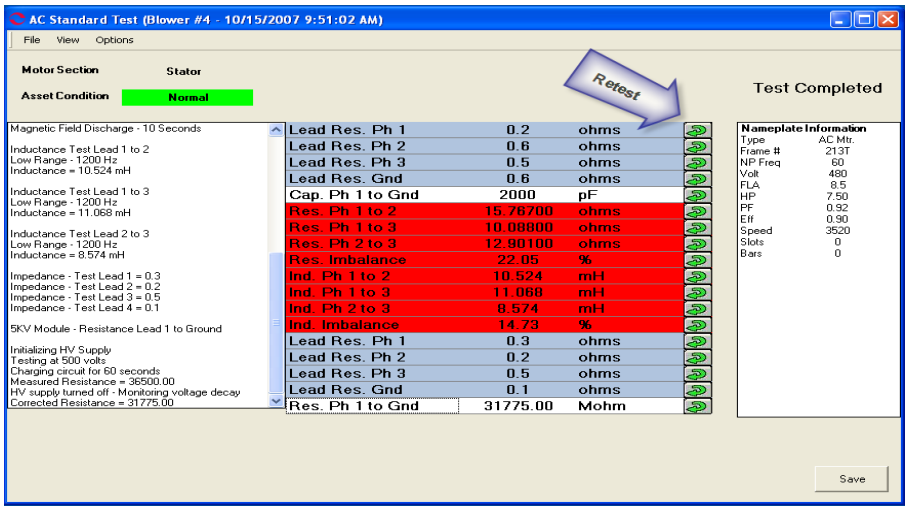


Figure 5-14: AC Standard Test Window

21. When retesting is complete or if no re-testing is needed, click **Save** or select File, Exit, or Ctrl+X, or use the close button (X in the upper right corner).

22. Click **OK** in the Save Complete window.

23. Click **Exit** in the AC Standard Test Window.

Polarization Index

The Polarization Index (PI) test is reached by selecting Polarization Index from the test list on the Test Selection window. See page 5-3, Test Selection Window for more information.

Verify that the test set-up settings are correct and click **Test**. The PI test window opens. See Figure 5-15.

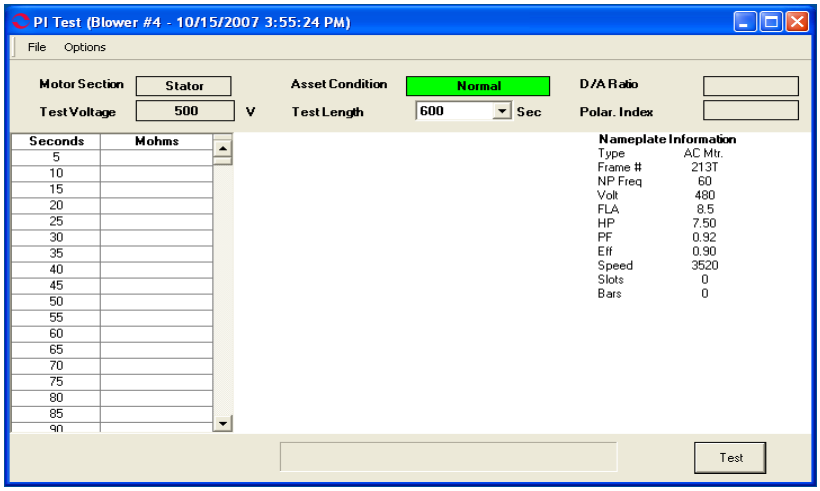


Figure 5-15: PI Test Window

File Menu

Save. Save (Ctrl+S) is not active, it appears dimmed, until after testing is complete.

Exit. Exit (Ctrl+X) closes the PI Test window and returns you to the Home window.

Options Menu

Set Condition Code. Change the condition code, by selecting the option button corresponding to the condition (Figure 5-16). The Asset Condition box on the PI Test window changes and a note is automatically generated by the software. The note is viewed in the Message Center. For more information on the Message Center, see Chapter 3, page 3-41.

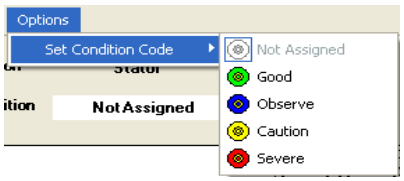


Figure 5-16: Set Condition Code Window

Step-by-Step Polarization Index Testing

The PI test takes ten minutes. During the test the menu items are dimmed (not available) and the **Test** button changes to **Stop**.

1. Deenergize and lock out the starter and the asset.

2. Check for low level induced voltages using a Fluke multimeter or equivalent.

   Verify that the values do not exceed 0.5 VAC phase-to-phase and 15 VAC phase-to-ground. Check for low level stored voltage by verifying less than 15 VDC phase-to-ground.

3. Connect the MCE to the circuit, in the same manner each time, as referenced in Table 5-2. This ensures that the test data is trendable/repeatable.

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Table 5-2: : Test Lead Connections

MCE test leads	Black	White	Red	Green
motor phase	A	B	C	gnd
“T” lead	T1	T2	T3	gnd
vertical	top	mid	bot	gnd
horizontal	left	mid	right	gnd

4. Highlight the asset to be tested in the Site Navigator.

5. Select the Test Selection icon on the toolbar. The Test Selection window opens, Figure 5-17.

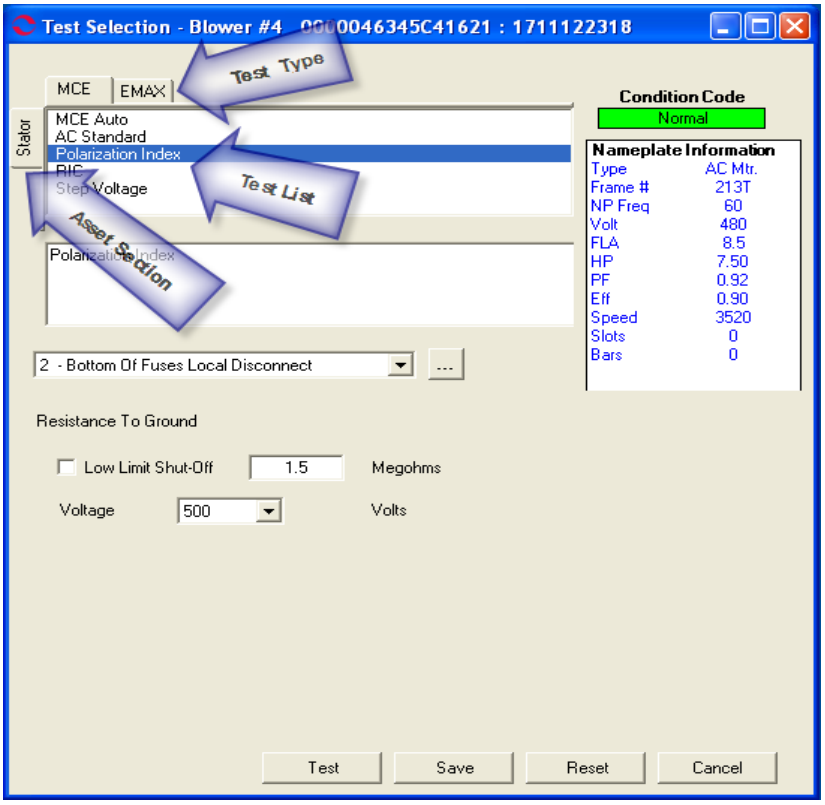


Figure 5-17: Test Selection Window

6. Verify that the MCE (Test Type) and Stator (Asset Section) tabs are selected. The type of asset determines which asset sections are available.

7. Verify the Test Location in the Test Setup section.

   To insure consistent trending and assist in trouble shooting, the actual test location should be stored for each test.

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The Test Location default is Not Assigned. To assign a test location, click the down arrow and select from the list. If the location is not known, click the browse button . The Test Location Selection window opens displaying a test location graph for the type of asset selected. Use the graph to determine the location, then click the down arrow, select from the list, and click **OK**. See Figure 5-18.

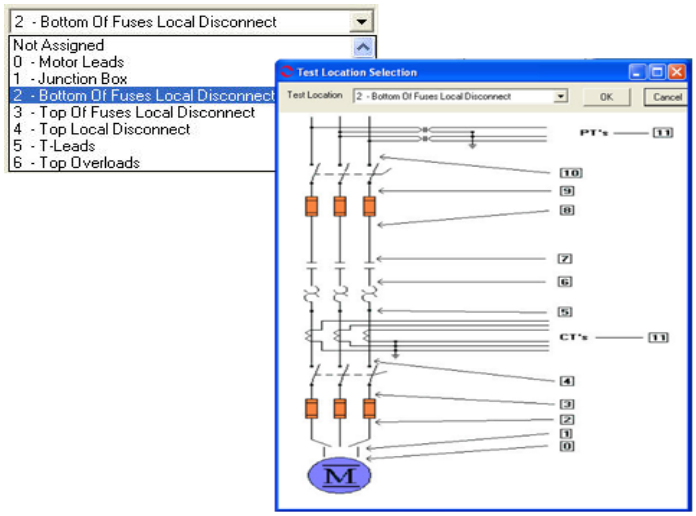


Figure 5-18: Asset Test Location

8. Verify the Low Limit Shut Off condition.

   Check the box to activate the low limit shut off and enter the desired Mohms.

9. Verify the Voltage.

   Click the down arrow and select the voltage from the drop-down list. Select the test voltage based on asset nameplate voltage.

10. Click **Save** to save the settings for this asset for future testing. Or click **Reset** to return the original settings. This can only be done if the new settings have not been saved.

11. Click **Test** to go to the testing window.

12. Click **Test** in the PI Test window.

13. Verify that you are about to apply "X" volts to the circuit by clicking **Yes**.

14. As the test proceeds, the test result values are displayed in the table and plotted on the graph. At the end of one minute the D/A ratio is computed and displayed in the D/A Ratio text box. The progress bar displays the progress of the testing.

    Note: To stop the test, click **Stop.**

15. Click **OK** in the Test Completed window. The menu item become active and the **Stop** button is inactive.

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16. Exit the PI Test window by selecting File, Exit, or Ctrl+X, or the close button (Red X in the upper right corner).

17. You will be asked if you want to save test data. Click **Yes** or **No**.

    If you select **Yes**, click **OK** in the Save Completed widow. The PI Test window closes

    If you select **No**, the PI Test window closes. No test data is saved.

RIC

The RIC test is reached by selecting RIC from the test list on the Test Selection window. See page 5-3, Test Selection Window for more information. Verify that the test set-up settings are correct and click **Test**. The RIC test window opens. See Figure 5-19.

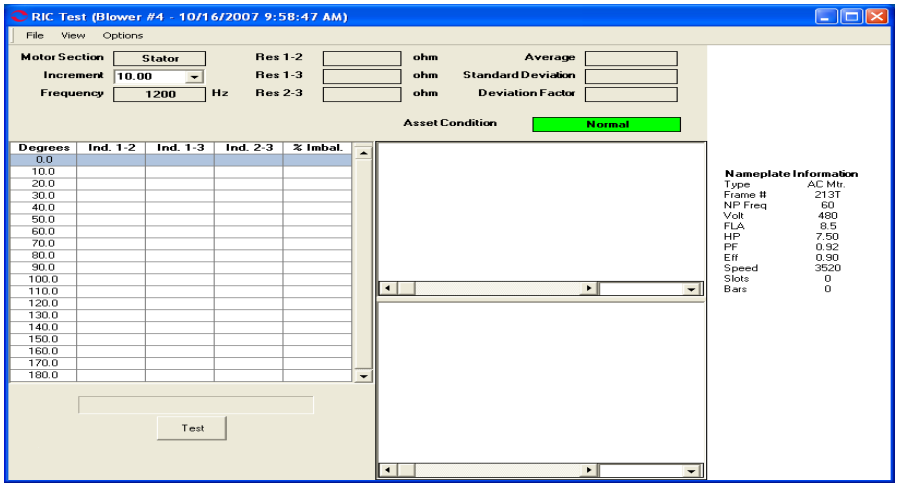


Figure 5-19: RIC Test Window

File Menu

Save. Save (Ctrl+S) is not active, it appears dimmed, until after testing is complete.

Exit. Exit (Ctrl+X) closes the RIC Test window and returns you to the Home window.

View Menu

Create Message . Create Message opens the Compose Asset Message window (Figure 5-20). Messages created here are viewed in the Message Center. For more information on the Message Center, see Chapter 3, page 3-41.

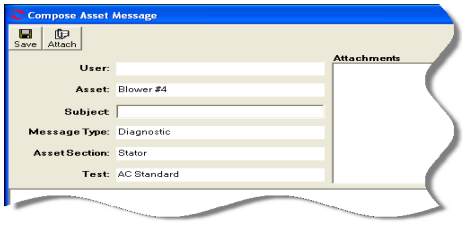


Figure 5-20: Compose Asset Message Window

Options Menu

Set Condition Code. Change the condition code, by selecting the option button corresponding to the condition (Figure 5-21). The Asset Condition box on the RIC Test window changes and a note is automatically generated by the software. The note is viewed in the Message Center. For more information on the Message Center, see Chapter 3, page 3-41.

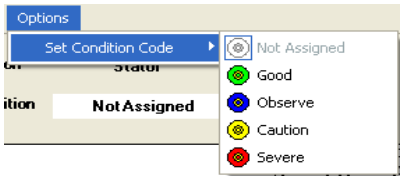


Figure 5-21: Set Condition Code Window

Step-by-Step RIC Testing

During the test the menu items are dimmed (not available). To stop testing, use File, Exit which becomes active after each test point.

1. Deenergize and lock out the starter, disconnect, and the asset. Follow your company's electrical safety procedures for tagouts.

2. Check for low level induced voltages using a Fluke multimeter or equivalent.

   Verify that the voltage does not exceed 0.5 VAC phase-to-phase and 15 VAC phase-to-ground. Check for low level stored voltage by verifying less than 15 VDC phase-to-ground.

3. Place the shaft key way in the up position. This ensures a common starting point for all subsequent tests.

4. Ensure that the field is disconnected from the control circuit.

   This is accomplished by isolating/removing the brushes from the slip rings or by disconnecting the field leads from the diode pack in a self-exited asset. This allows the natural magnetic field on the rotor to expand, enhancing the detection of rotor problems.

5. Connect the MCE test leads to the circuit/asset, in the same manner each time, as referenced in Table 5-3. This ensures that the test data is trendable/repeatable.

Table 5-3: Test Lead Connections

MCE test leads	Black	White	Red	Green
motor phase	A	B	C	gnd
"T" lead	T1	T2	T3	gnd
vertical	top	mid	bot	gnd
horizontal	left	mid	right	gnd

6. Highlight the asset to be tested in the Site Navigator.

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7. Select the Test Selection icon on the toolbar. The Test Selection window opens, Figure 5-22.

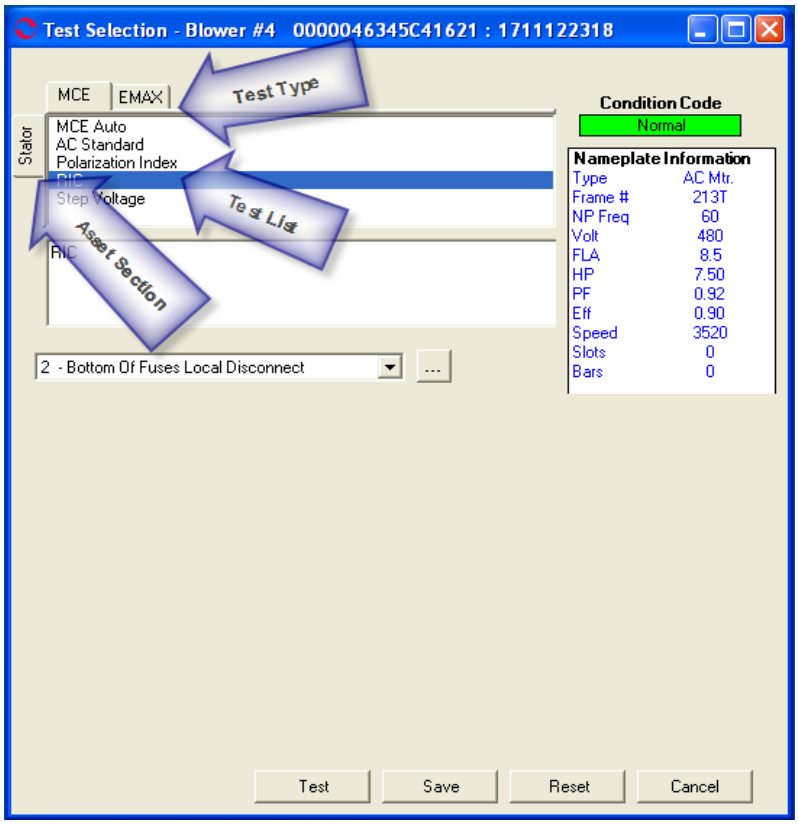


Figure 5-22: Test Selection Window

8. Verify that the MCE (Test Type) and Stator (Asset Section) tabs are selected. The type of asset determines which asset section is available.

9. Select RIC from the Test List box.

10. Verify the Test Location in the Test Setup section.

    To insure consistent trending and assist in trouble shooting, the actual test location should be stored for each test.

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The Test Location default is Not Assigned. To assign a test location, click the down arrow and select from the list. If the location is not known, click the browse button . The Test Location Selection window opens displaying a test location graph for the type of asset selected. Use the graph to determine the location, then click the down arrow, select from the list, and click **OK**. See Figure 5-23.

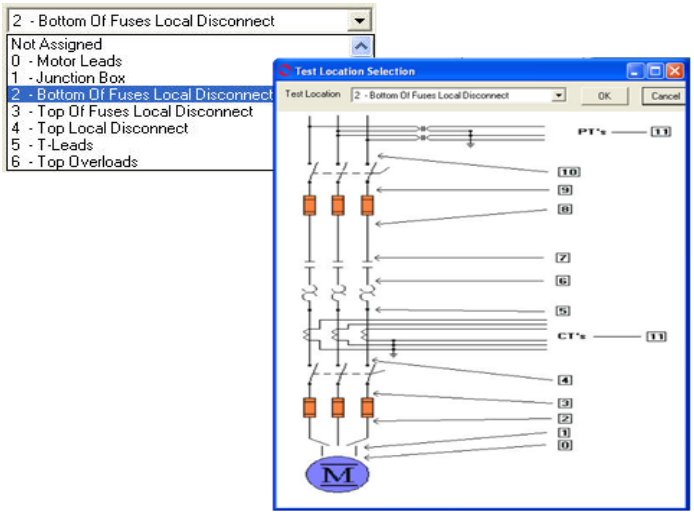


Figure 5-23: Test Locations

11. Click **Save** to save the settings for this asset for future testing. Or click **Reset** to return the original settings. This can only be done if the new settings have not been saved.

12. Click **Test** to go to the test. The RIC test window, Figure 5-24, opens.

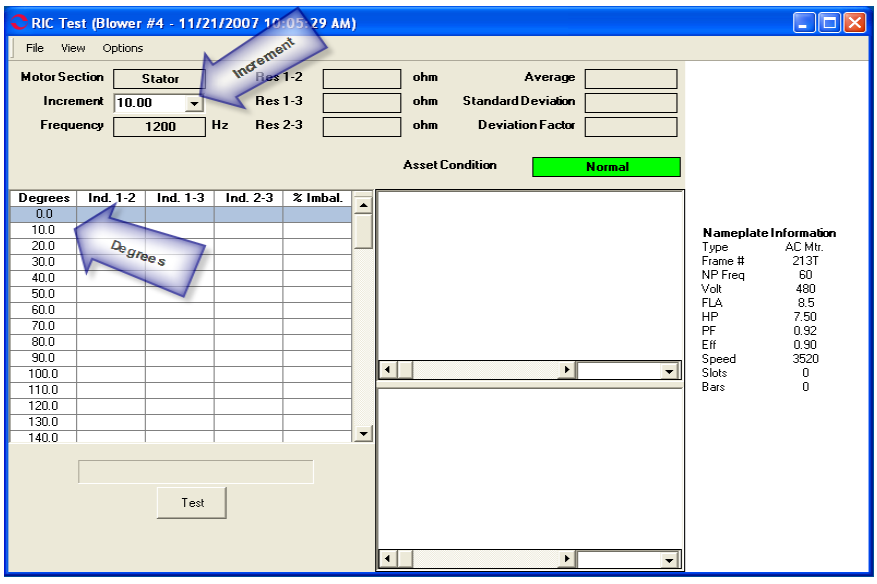


Figure 5-24: RIC Test Window

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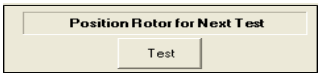
13. Verify that increments to be used during testing are correct. This information is located at the top of the RIC Test window.

    To change the Increments, which automatically computes the appropriate Degrees, click the down arrow and select the increment from the drop-down list.

    The new increments are displayed and the degrees on the test data table is updated.

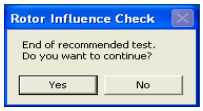
14. Position the rotor to the first position and click **Test** to begin testing.

15. At the end of each test point, you will be reminded to position the rotor for the next test point. Move the rotor and click **Test**. Repeat until the end of the recommended test.



    As the test progresses, the values will be inserted into the table and displayed in the graph areas. The magnification of the graphs can be changed by using the down arrows below each graph area and selecting a new value from the drop down list. The default is Full.

16. At the end of the recommended test you will be asked if you want to continue. Select **Yes** to continue testing or **No** to end testing.



17. Exit the RIC Test window by selecting File, Exit, or Ctrl+X, or the close button (X in the upper right corner).

18. You will be asked if you want to save test data. Click **Yes** or **No**.

    If you select **Yes**, click **OK** in the Save Completed widow. The RIC Test window closes.



    If you select **No**, the RIC Test window closes. No test data is saved.

Step Voltage

The Step Voltage test is reached by selecting Step Voltage from the test list on the Test Selection window. See page 5-3, Test Selection Window for more information. Verify that the test set-up settings are correct and click **Test**. The Step Voltage Test window opens. Figure 5-25.

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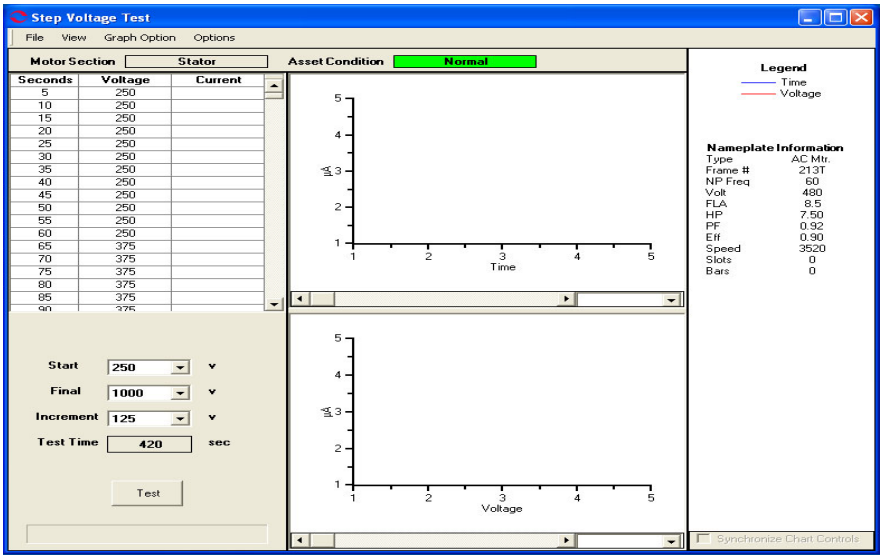


Figure 5-25: Step Voltage Test

File Menu

Save. Save Data is not active, it appears dimmed, until after testing is complete.

Exit. Exit (Ctrl+X) closes the Step Voltage window and returns you to the Home window.

View Menu

Create Message. Create Message (Ctrl+S) opens the Compose Asset Message window (Figure 5-26). Messages created here are viewed in the Message Center. For more information on the Message Center, see Chapter 3, page 3-41.

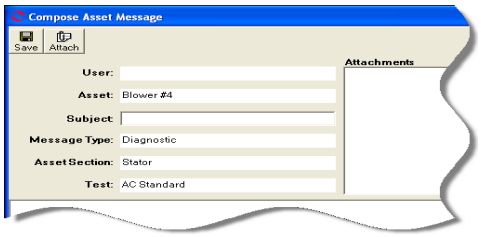


Figure 5-26: Compose Asset Message

Graph Option Menu

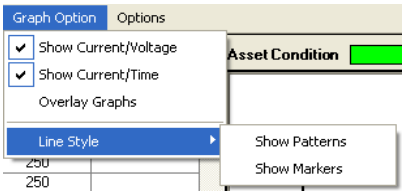
Show Current/Voltage. Show Current/Voltage controls the graph display area. If just Current/Voltage is selected one graph displays on the window. If Show Current/Voltage and Show Current/Time are both selected then two graphs will display.

Show Current/Time. Show Current/Time controls the graph display area. If just Current/Time is selected one graph displays on the window. If Show Current/Time and Show Current/Voltage are both selected then two graphs will display.

Overlay Graphs. Overlay Graphs controls the graph display area. When Overlay Graphs is selected test results are graphed on one graph.

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Line Style. Line Style controls the appearance of the line on the graph.



Show Patterns changes the graph line style from a solid to a pattern. When a change is made to the line style it is reflected in the Legend area of the window, which is located just above the Nameplate Information.

Show Markers inserts markers on the graph line. When a change is made to the line style it is reflected in the Legend area of the window, which is located just above the Nameplate Information.

Options Menu

Set Condition Code. Change the condition code, by selecting an option button (Figure 5-27). The Asset Condition box on the Step Voltage Test window changes and a note is automatically generated by the software. The note is viewed in the Message Center. For more information on the Message Center, see Chapter 3, page 3-41.

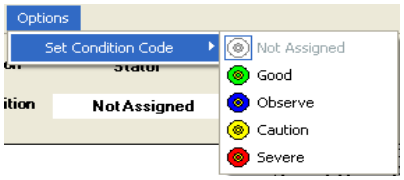


Figure 5-27: Set Condition Code Window

Step-by-Step Step Voltage Testing

During the test the menu items are dimmed (not available).

1. Deenergize and lock out the starter, disconnect, and the asset. Follow your company's electrical safety procedures for tagouts.

2. Check for low level induced voltages using a Fluke multimeter or equivalent.

   Verify that the voltage does not exceed 0.5 VAC phase-to-phase and 15 VAC phase-to-ground. Check for low level stored voltage by verifying less than 15 VDC phase-to-ground.

3. Connect the MCE test leads to the circuit/asset, in the same manner each time, as referenced in Table 5-4. This ensures that the test data is trendable/repeatable.

Table 5-4: Test Lead Connections

MCE test leads	Black	White	Red	Green
motor phase	A	B	C	gnd
"T" lead	T1	T2	T3	gnd
vertical	top	mid	bot	gnd
horizontal	left	mid	right	gnd

4. Highlight the asset to be tested in the Site Navigator.

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5. Select the Test Selection icon on the toolbar. The Test Selection window opens, Figure 5-28.

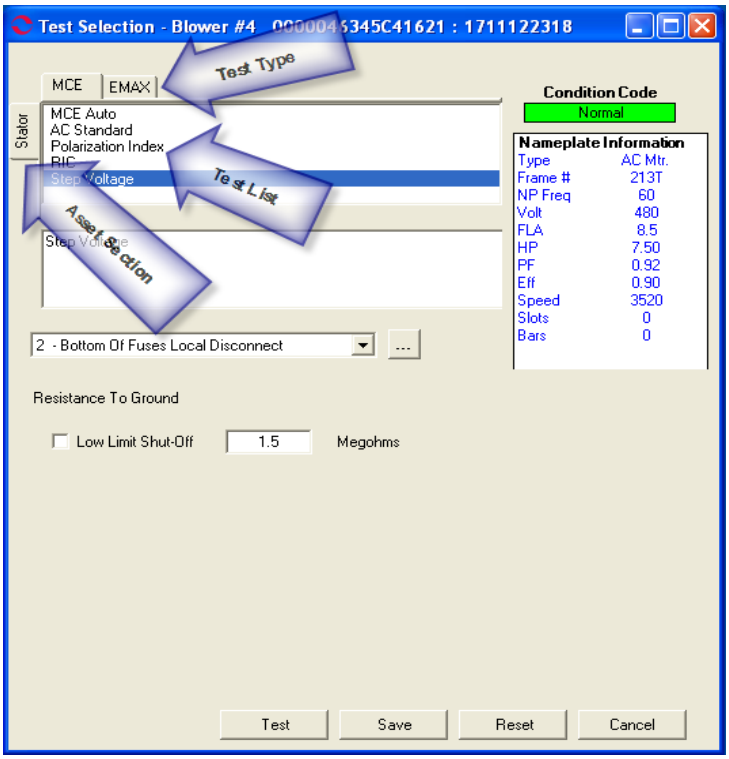


Figure 5-28: Test Selection Window

6. Verify that the MCE (Test Type) and Stator (Asset Section) tabs are selected. The type of asset determines which asset sections are available.

7. Select Step Voltage from the Test List box.

8. Verify the Test Location in the Test Setup section.

   To insure consistent trending and assist in trouble shooting, the actual test location should be stored for each test.

   The Test Location default is Not Assigned. To assign a test location, click the down arrow and select from the list. If the location is not known, click the browse button . The Test Location Selection window opens displaying a test location graph for the type of asset selected. Use the graph to determine the location, then click the down arrow, select from the list, and click **OK**. See Figure 5-29.

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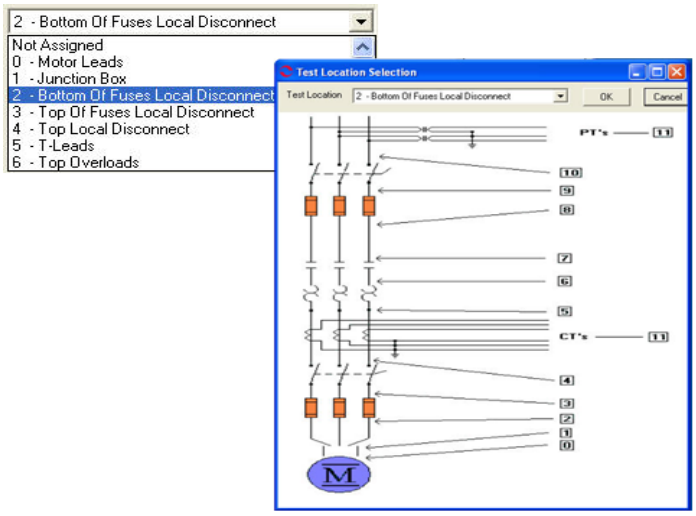


Figure 5-29: Test Locations

9. Verify the Low Limit Shut Off condition.

   Check the box to activate the low limit shut off and enter the desired Mohms.

10. Click **Save** to save the settings for this asset for future testing. Or click **Reset** to return the original settings. This can only be done if the new settings have not been saved.

11. Click **Test** to go to the Step Voltage test window. See Figure 5-30.

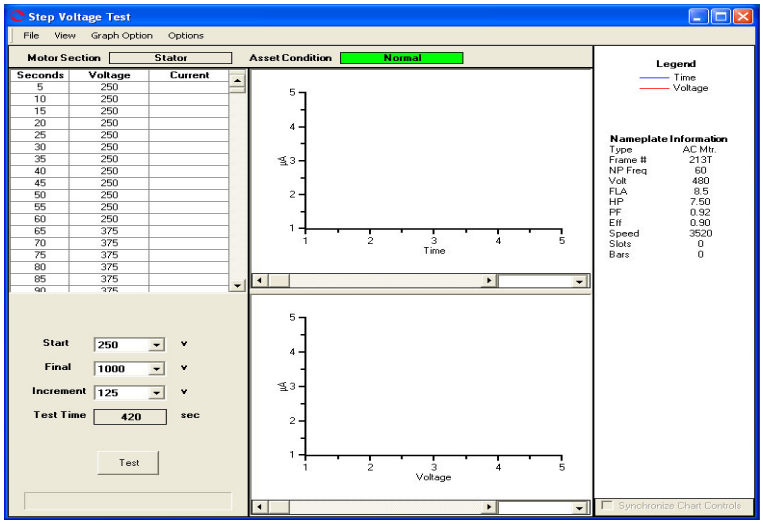


Figure 5-30: Step Voltage Test Window

12. To begin the test click **Test**.

13. Verify that you are about to apply "X" volts to the circuit by clicking **Yes**.

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14. Test values are entered in the table on the left and are displayed in graph format on the right side of the window. The magnification of the graphs can be changed by using the down arrows below each graph area and selecting a new value from the drop down list. The default is Full. A progress bar at the bottom of the screen tracks the testing progress.

    Note: During the test the **Test** button changes to **Stop**, which allows you to interrupt the testing.

15. At the end of testing click **OK** in the Test Completed window.



16. Exit the Step Voltage Window by selecting File, Exit, or Ctrl+X, or the close button (X in the upper right corner).

17. You will be asked if you want to save test data. Click **Yes** or **No**.

    If you select **Yes**, click **OK** in the Save Completed widow. The Step Voltage Test window closes.



    If you select **No**, the Step Voltage Test window closes. No test data is saved.

AC Synchronous Assets

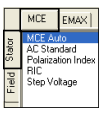
The MCE tests for an AC Synchronous asset are MCE Auto, AC Standard, Polarization Index, RIC, and Step Voltage for the *Stator* section and MCE Auto, Synchronous, Polarization Index, and Step Voltage for the *Field* section.

Note: To minimize the influence of stored energy on test results, perform the tests in the following order. If a test is not to be performed, skip to the next test.

- Rotor Influence Check (RIC)
- Standard Test
- Polarization Index (PI)/ Dielectric Absorption (DA). If a PI is performed, it is not necessary to perform a separate DA.

Synchronous assets are divided into two separate sections (Stator and Field Circuit). The asset Section of the Test Selection window defaults to Stator.

Some asset circuits may have surge capacitors and/or power factor correction capacitors installed. This is important since these components affect the values of the collected data, and increase the time and number of steps involved in troubleshooting. Testing can be performed with the power factor or surge capacitors installed. However, a test should be taken with the surge capacitors removed for future comparison. If a asset appears faulty with the power factor capacitors installed, disconnect them and perform the testing again to isolate the fault.



Stator Section Test

MCE Auto

MCE Auto is the same as for an AC Induction asset. See MCE Auto on page 5-7.

AC Standard

AC Standard is the same as for an AC Induction asset. See AC Standard on page 5-12.

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Polarization Index

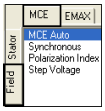
Polarization Index test is the same as for an AC Induction asset. See Polarization Index on page 5-16.

RIC

RIC test is the same as for an AC Induction asset. See RIC on page 5-20.

Step Voltage

Step Voltage test is the same as for an AC Induction asset. See Step Voltage on page 5-24.



Field Section Tests

MCE Auto

MCE Auto is the same as for an AC Induction asset. See MCE Auto on page 5-7.

Polarization Index

Polarization Index test is the same as for an AC Induction asset. See Polarization Index on page 5-16.

Step Voltage

Step Voltage test is the same as for an AC Induction asset. See Step Voltage on page 5-24.

Synchronous

The Synchronous test is reached by selecting the Field Tab and Synchronous from the test list on the Test Selection window. See page 5-3, Test Selection Window for more information. Verify that the test set-up settings are correct and click **Test**. The Synchronous Test window opens. Figure 5-31.

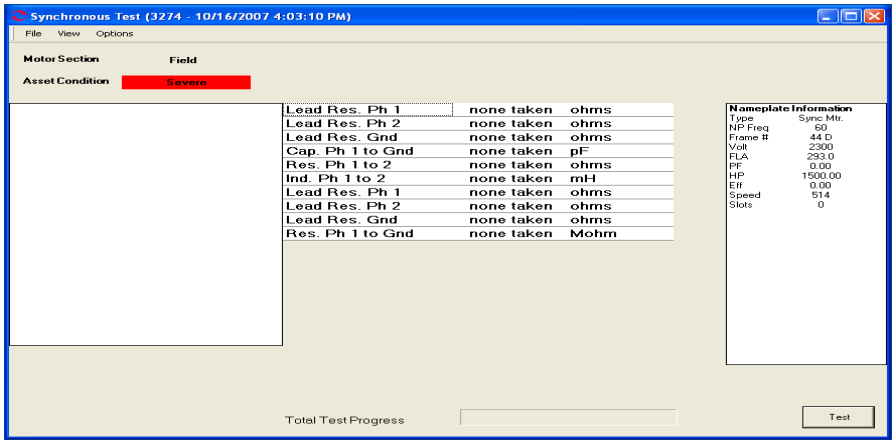


Figure 5-31: Synchronous Test Window

File Menu

Save. Save Data is not active, it appears dimmed, until after testing is complete.

Exit. Exit (Ctrl+X) closes the Synchronous Test window and returns you to the Home window.

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View Menu

Create Message. Create Message (Ctrl+S) opens the Compose Asset Message window (Figure 5-32). The note is viewed in the Message Center. For more information on the Message Center, see Chapter 3, page 3-43.

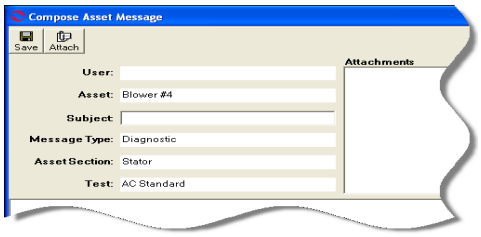


Figure 5-32: Compose Asset Message

Options Menu

Set Condition Code. Change the condition code, by selecting an option button, the Asset Condition box on the Synchronous Test window changes and a note is automatically generated by the software. The note is viewed in the Message Center. For more information on the Message Center, see Chapter 3, page 3-41.

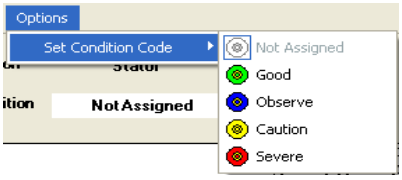


Figure 5-33: Set Condition Code Window

Step-by-Step Synchronous Testing

During the test the menu items are dimmed (not available).

1. Deenergize and lock out the starter, disconnect, and the asset. Follow your company's electrical safety procedures for tagouts.

2. Check for low level induced voltages using a Fluke multimeter or equivalent.

   Verify that the voltage does not exceed 0.5 VAC phase-to-phase and 15 VAC phase-to-ground. Check for low level stored voltage by verifying less than 15 VDC phase-to-ground.

3. Connect the MCE test leads to the circuit/asset, in the same manner each time, as referenced in Table 5-5. This ensures that the test data is trendable/repeatable.

Table 5-5: Test Lead Connections

MCE test leads	Black	White	Red	Green
motor phase	A	B	C	gnd
"T" lead	T1	T2	T3	gnd
vertical	top	mid	bot	gnd
horizontal	left	mid	right	gnd

4. Highlight the asset to be tested in the Site Navigator.

5. Select the Test Selection icon on the toolbar. The Test Selection window opens, Figure 5-34.

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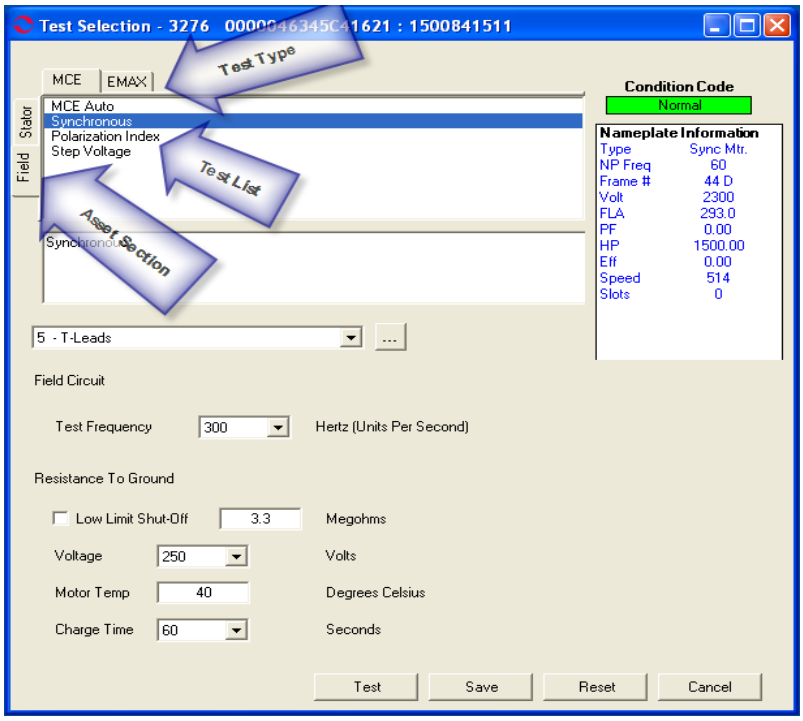


Figure 5-34: Test Selection Window

6. Verify that the MCE (Test Type) and Field (Asset Section) tabs are selected. The type of asset determines which asset sections are available.

7. Select Synchronous from the Test List box.

8. Verify the Test Location in the Test Setup section.

   To insure consistent trending and assist in trouble shooting, the actual test location should be stored for each test.

   The Test Location default is Not Assigned. To assign a test location, click the down arrow and select from the list. If the location is not known, click the browse button . The Test Location Selection window opens displaying a test location graph for the type of asset selected. Use the graph to determine the location, then click the down arrow, select from the list, and click **OK**. See Figure 5-35.

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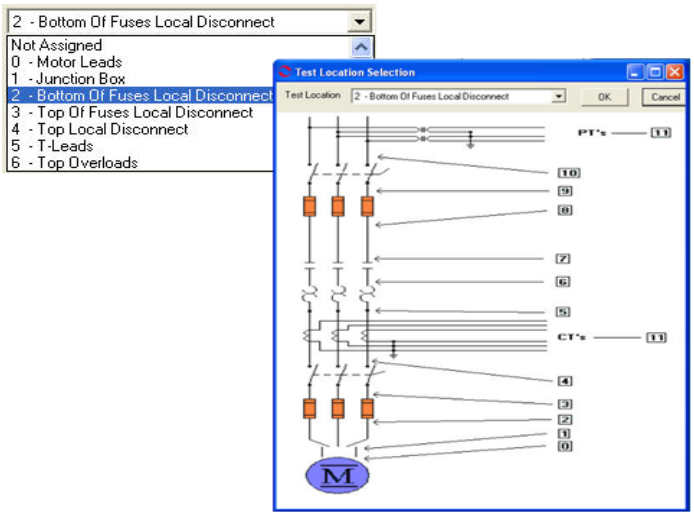


Figure 5-35: Test Locations

9. Verify the Test Frequency.

   Click the down arrow and select the frequency from the drop-down list. The values are 300 or 1200.

10. Verify the Low Limit Shut Off condition.

    Check the box to activate the low limit shut off and enter the desired Mohms.

11. Verify the Voltage.

    Click the down arrow and select the voltage from the drop-down list. Select test voltage based on asset nameplate voltage.

12. Enter the temperature.

    Adjust the Temperature ° C to stator core temperature at the time of testing.

13. Select the Charge Time Seconds.

    Click the down arrow and select the seconds from the drop-down list. The choices are from 30 to 180 seconds at 15 second increments.

14. Click **Save** to save the settings for this asset for future testing. Or click **Reset** to return the original settings. This can only be done if the new settings have not been saved.

15. Click **Test** to go to the Synchronous test window.

16. Verify that you are about to apply “X” volts to the circuit and click **Yes**.

17. Testing begins, progress bars are displayed for Total Test Progress and Discharge Progress at various times. The test values are filled in as testing proceeds.

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18. At the end of testing the **Test** button changes to **Save,** Test Completed appears above the Nameplate Information section, and the progress bars disappear.

19. Re-test any individual point, if needed. If not go to step 20.

    If any portion of the test needs to be re-tested, click the tab which appears to the right of the individual test point. This retests only that test point in “manual mode.” (Figure 5-36)

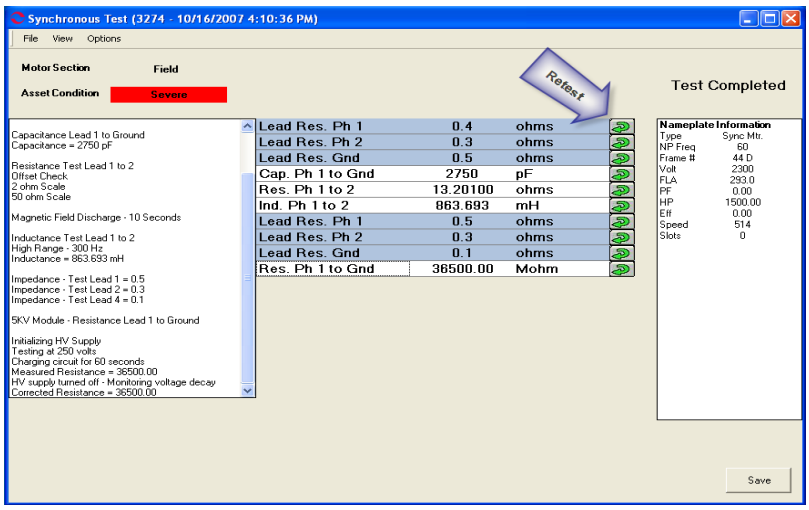


Figure 5-36: Completed Synchronous Test Window

20. When retesting is complete or if no re-testing is needed, click **Save** or File, Exit, or Ctrl+X, or use the close button (X in the upper right corner).

21. Click **OK** in the Save Completed window.

22. Click **Exit** to close the window.

AC Wound Rotor Assets

Wound rotor assets (WRMs) are divided into three separate sections (Stator, Rotor, and Resistor Bank). The asset Section box of the Test Selection window defaults to Stator.

The MCE tests for an AC Wound Rotor asset are MCE Auto, AC Standard, Polarization Index, RIC, and Step Voltage for the Stator section. MCE Auto, AC Standard, Polarization Index, and Step Voltage for the Rotor section. MCE Auto, Resistor Bank, Polarization Index, and Step Voltage for the Resistor Bank section.

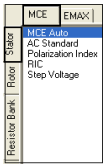
Note: To minimize the influence of stored energy on test results, perform the tests in the following order. If a test is not to be performed, skip to the next test.

- Rotor Influence Check (RIC)
- Standard Test

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- Polarization Index (PI)/ Dielectric Absorption (DA). If a PI is performed, it is not necessary to perform a separate DA.

Some circuits may have surge capacitors and power factor correction capacitors installed. This is important since these components affect the values of the collected data, and increase the time and number of steps involved in troubleshooting. Testing can be performed with the power factor capacitors installed. However, surge capacitors must be removed to ensure valid test data. If a asset appears faulty with the power factor capacitors installed, disconnect them and perform the testing again to isolate the fault.



Stator Section Tests

MCE Auto

MCE Auto is the same as for an AC Induction asset. See MCE Auto on page 5-7.

AC Standard

AC Standard is the same as for an AC Induction asset. See AC Standard on page 5-12.

Polarization Index

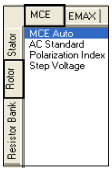
Polarization Index test is the same as for an AC Induction asset. See Polarization Index on page 5-16.

RIC

RIC test is the same as for an AC Induction asset. See RIC on page 5-20.

Step Voltage

Step Voltage test is the same as for an AC Induction asset. See Step Voltage on page 5- 24.



Rotor Section Tests

MCE Auto

MCE Auto is the same as for an AC Induction asset. See MCE Auto on page 5-7.

AC Standard

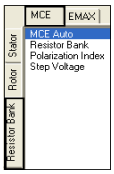
AC Standard is the same as for an AC Induction asset. See AC Standard on page 5-12.

Polarization Index

Polarization Index test is the same as for an AC Induction asset. See Polarization Index on page 5-16.

Step Voltage

Step Voltage test is the same as for an AC Induction asset. See Step Voltage on page 5- 24.



Resistor Bank Section Tests

MCE Auto

MCE Auto is the same as for an AC Induction asset. See MCE Auto on page 5-7.

Polarization Index

Polarization Index test is the same as for an AC Induction asset. See Polarization Index on page 5-16.

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Step Voltage

Step Voltage test is the same as for an AC Induction asset. See Step Voltage on page 5-24.

Resistor Bank Test

The Resistor Bank test is reached by selecting the Resistor Bank tab and Resistor Bank from the test list on the Test Selection window. See page 1-3, Test Selection Window for more information. Verify that the test set-up settings are correct and click **Test**. The Resistor Bank Test window opens. Figure 5-37.

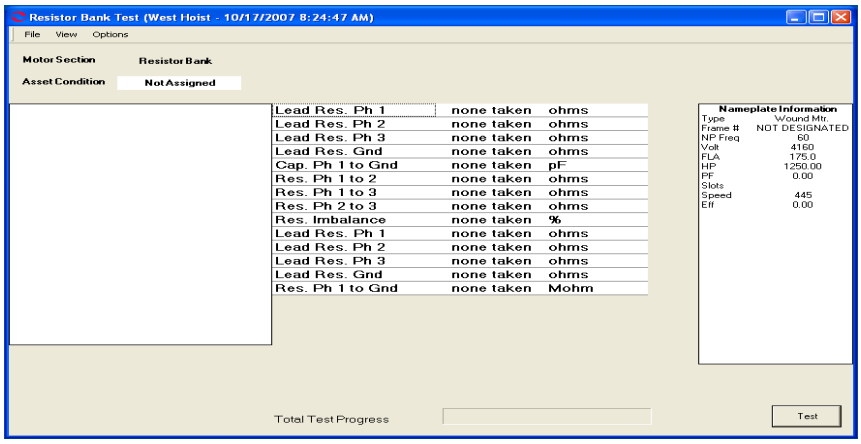


Figure 5-37: Resistor Bank Test Window

File Menu

Save. Save Data is not active, it appears dimmed, until after testing is complete.

Exit. Exit (Ctrl+X) closes the Resistor Bank Test window and returns you to the Home window.

View Menu

Create Message. Create Message (Ctrl+S) opens the Compose Asset Message window (Figure 5-38). The note is viewed in the Message Center. For more information on the Message Center, see Chapter 3, page 3-41.

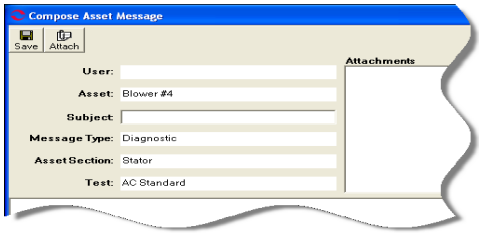


Figure 5-38: Compose Asset Message Window

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Options Menu

Set Condition Code. Change the condition code by selecting an option button (Figure 5-39). The Asset Condition box on the Resistor Bank Test window changes and a note is automatically generated by the software.

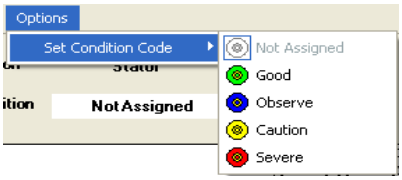


Figure 5-39: Set Condition Code Window

Step-by-Step Resistor Bank Testing

1. Deenergize and lock out the starter, disconnect, and the asset. Follow your company's electrical safety procedures for tagouts.

2. Check for low level induced voltages using a Fluke multimeter or equivalent.

   Verify that the voltage does not exceed 0.5 VAC phase-to-phase and 15 VAC phase-to-ground. Check for low level stored voltage by verifying less than 15 VDC phase-to-ground.

3. Lift the brushes to isolate the resistor bank from the rotor field.

4. Connect the MCE test leads to the circuit/asset, in the same manner each time, as referenced in Table 5-6. This ensures that the test data is trendable/repeatable.

Table 5-6: Test Lead Connections

MCE test leads	Black	White	Red	Green
brushes	brushes over slip ring 1	brushes over slip ring 2	brushes over slip ring 3	gnd

5. Highlight the asset to be tested in the Site Navigator.

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6. Select the Test Selection icon on the toolbar. The Test Selection window opens, Figure 5-40.

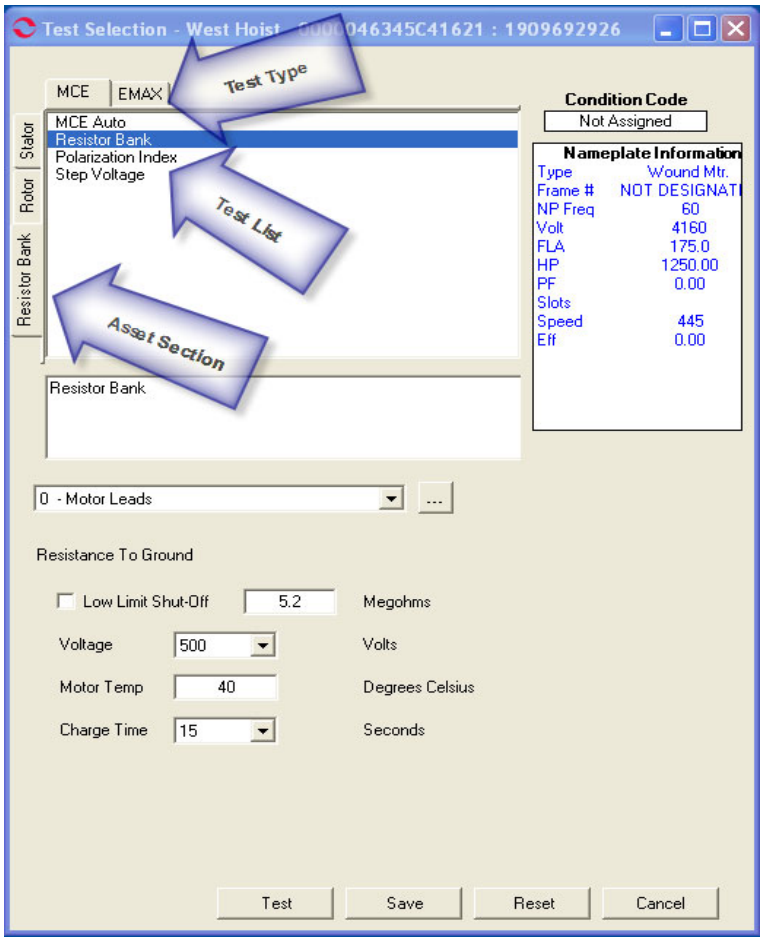


Figure 5-40: Test Selection Window

7. Verify that the MCE (Test Type) and Resistor Bank (Asset Section) tabs are selected. The type of asset determines which asset sections are available.

8. Select Resistor Bank from the Test List box.

9. Verify the Test Location in the Test Setup section.

   To insure consistent trending and assist in trouble shooting, the actual test location should be stored for each test.

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The Test Location default is Not Assigned. To assign a test location, click the down arrow and select from the list. If the location is not known, click the browse button . The Test Location Selection window opens displaying a test location graph for the type of asset selected. Use the graph to determine the location, then click the down arrow, select from the list, and click **OK**. See Figure 5-41.

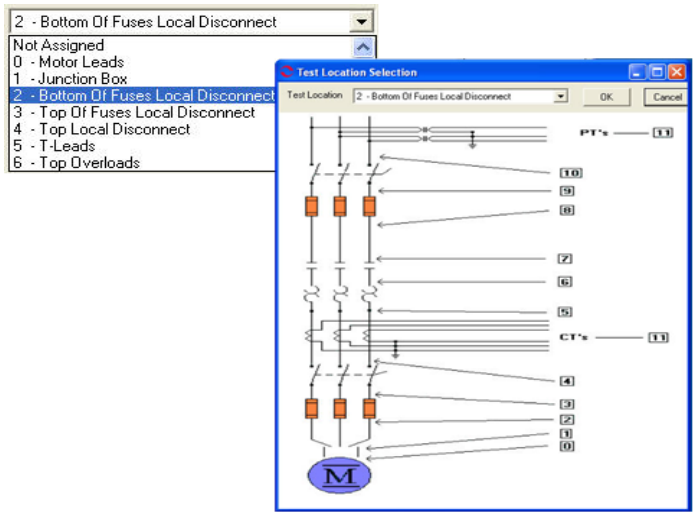


Figure 5-41: Test Locations

10. Verify the Low Limit Shut Off condition.

    Check the box to activate the low limit shut off and enter the desired Mohms.

11. Verify the Voltage.

    Click the down arrow and select the voltage from the drop-down list. Select test voltage based on asset nameplate voltage.

12. Enter the temperature.

    Adjust the Temperature ° C to stator core temperature at the time of testing.

13. Click **Save** to save the settings for this asset for future testing. Or click **Reset** to return the original settings. This can only be done if the new settings have not been saved.

14. Click **Test** to go to the Resistor Bank Test window.

15. To begin the Resistor Bank Test, click **Test**.

16. Verify that you are about to apply "X" volts to the circuit and click **Yes**.

17. Testing begins, progress bars are displayed for Total Test Progress and Discharge Progress at various times. The test values are filled in as testing proceeds. At the end of testing Test Completed appears above the Nameplate Information area.

18. Re-test any individual point, if needed. If not go to step 19.

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If any portion of the test needs to be re-tested, click the green arrow to the right of the point. This rechecks only that test point in “manual mode.” See Figure 5-42.

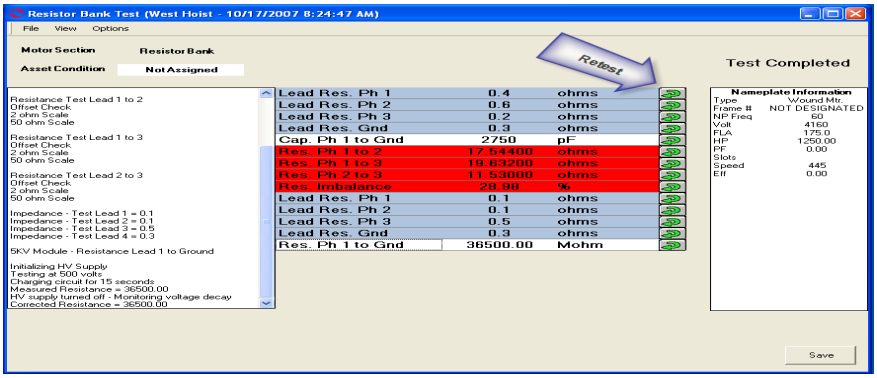


Figure 5-42: Resistor Bank Test Window - Retest Points

19. When retesting is complete or if no re-testing is needed, click **Save,** or File, Exit, or Ctrl+X, or the close button (X in the upper right corner).

20. Click **OK** in the Save Completed window and the Resistor Bank Test window closes.

DC Assets

The MCE tests for a DC asset are MCE Auto, DC Standard, Polarization Index, Bar-to-Bar, and Step Voltage for the *Armature* section. MCE Auto, DC Standard, Polarization Index, and Step Voltage for the *Field* section.

Note: To minimize the influence of stored energy on test results, perform the tests in the following order. If a test is not to be performed, skip to the next test.

- Standard Test
- Polarization Index (PI). If a PI is performed, it is not necessary to perform a separate DA.

DC assets are divided into two separate sections (Armature Circuit and Field Circuit). The Asset Section of the Test Selection window defaults to Armature Circuit.

Armature Section Tests

MCE Auto

MCE Auto is the same as for an AC Induction asset. See MCE Auto on page 5-7.

DC Standard Test

The DC Standard Test is reached by selecting DC Standard from the test list on the Test Selection window. See page 5-3, Test Selection Window for more information. Verify that the test set-up settings are correct and click **Test**. The DC Standard Test Window (Figure 5-43) opens.

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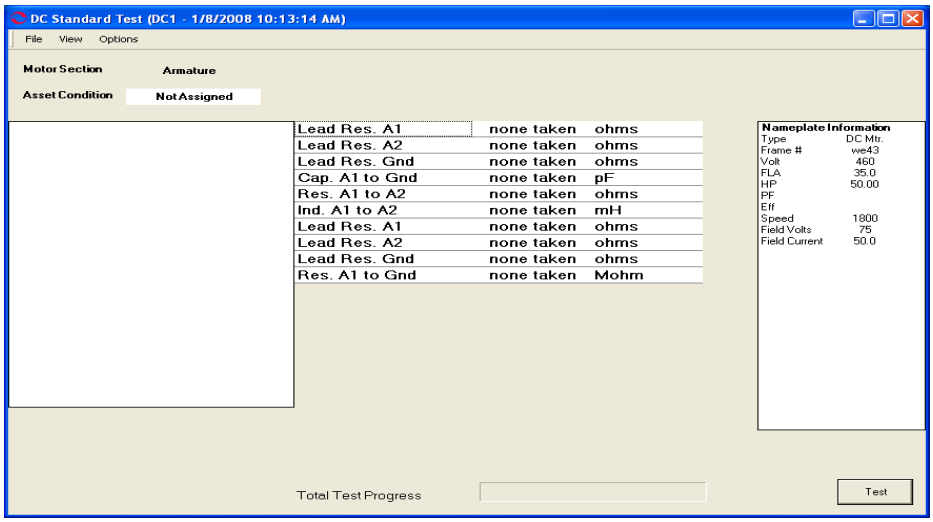


Figure 5-43: DC Standard Test Window

The DC Standard Test window menu consist of three options: File, View, and Options.

File Menu

Save. Save (Ctrl+S) is not active, it appears dimmed, until after testing is complete.

Exit. Exit (Ctrl+X) closes the AC Standard test window and returns you to the MCEGold Home window.

View Menu

Create Message. Create Message opens the Compose Asset Message window (Figure 5-44). The note is viewed in the Message Center. For more information on the Message Center, see Chapter 3, page 3-41.

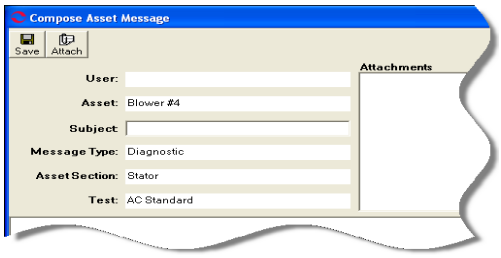


Figure 5-44: Compose Asset Message Window

Options Menu

Set Condition Code. Change the condition code by selecting an option button (Figure 5-45). The Asset Condition box on the AC Standard Test window changes and a note is automatically generated by the software. The note is viewed in the Message Center. For more information on the Message Center, see Chapter 3, page 3-43

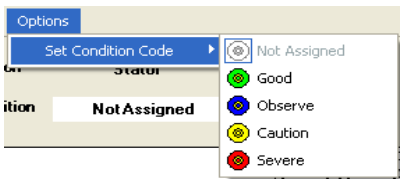


Figure 5-45: Options, Set Condition Code Menu

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Step-by-Step DC Standard Testing

1. Deenergize and lock out the starter and asset.

2. Check for low level induced voltage using a Fluke multimeter or equivalent.

   Verify that the values do not exceed 0.5 VAC phase-to-phase and 15 VAC phase-to-ground. Check for low level stored voltage by verifying less than 15 VDC phase-to-ground.

3. Connect the MCE test leads to the circuit, in the same manner each time, as referenced in Table 5-7 and shown in Figure 5-46. This ensures that the test data is trendable/repeatable.

Table 5-7: Test Lead Connections

MCE test leads	Black	White	Green
motor leads	A1; A1 or S1	A2; S2 or A2	ground

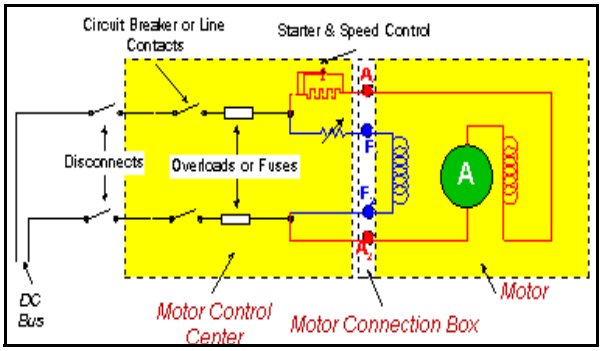


Figure 5-46: DC Asset Circuit Connections

4. Highlight the asset to be tested in the Site Navigator.

5. Select the Test Selection icon on the tool bar to open the Test Selection window.

6. Verify that Armature Circuit is selected in the asset Section box.

7. Select DC Standard Test in the Test List box.

8. Verify the Test Location in the Test Setup section.

   To insure consistent trending and assist in trouble shooting, the actual test location should be stored for each test.

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The Test Location default is Not Assigned. To assign a test location, click the down arrow and select from the list. If the location is not known, click the browse button . The Test Location Selection window opens displaying a test location graph for the type of asset selected. Use the graph to determine the location, then click the down arrow, select from the list, and click **OK**. See Figure 5-47.

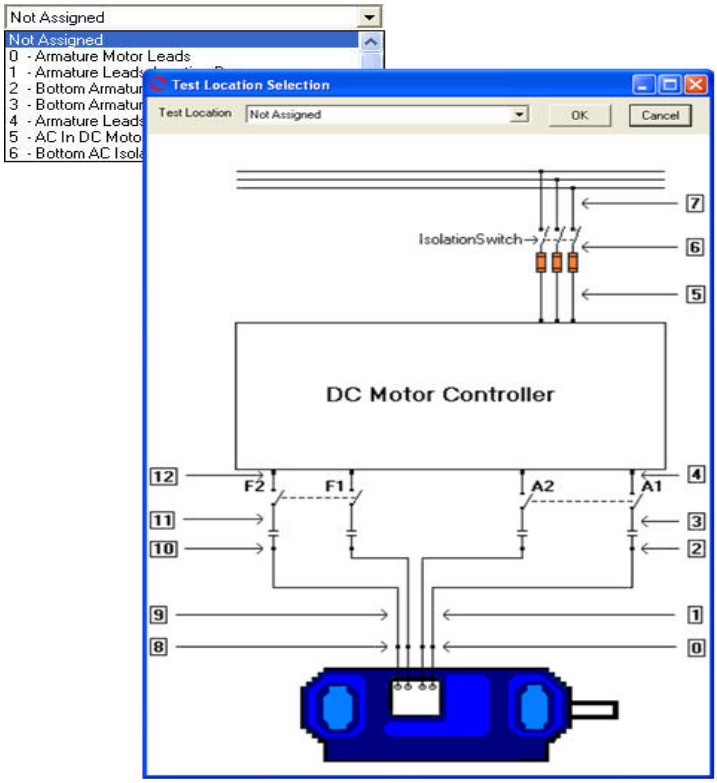


Figure 5-47: DC Asset Test Location

9. Select Test frequency for the Armature Circuit from the drop-down box.

   Click the down arrow and select the frequency from the drop-down list. The values are 300 or 1200.

10. Check the Low Limit Shut Off box and enter Mohms.

11. Select the test voltage for the resistance to ground measurement (500 for ≤ 2400 volts or 1000 for >2400 volts) based on asset nameplate voltage.

    Click the down arrow and select the voltage from the drop-down list.

12. Adjust the Temperature ° C to stator core temperature at the time of testing.

13. Select Charge Time seconds.

    Click the down arrow and select the charge time from the drop-down list. The choices are from 15 to 600 seconds.

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14. Click **Save**, to save the settings for this asset for future testing. Or click **Reset** to return the original settings. This can only be done if the new settings have not been saved.

15. Click **Test** to go to the DC Standard Test Window.

16. Click **Test** to begin testing.

17. Verify that you are about to apply "X" volts to the circuit by clicking **Yes**.

18. Testing begins, progress bars are displayed for Total Test Progress and Discharge Progress at various times. The test values are filled in as testing proceeds. At the end of testing Test Completed appears above the Nameplate Information area. See Figure 5-48.

    To stop the test at any time, click **Stop**. Click **Exit** to close the DC Standard test window and return to the Home window.

19. Re-test any individual point, if needed. If not go to step 20.

    If any portion of the test needs to be re-tested, double click the tab which appears to the right of the individual test point. This rechecks only that test point in "manual mode." See Figure 5-48.

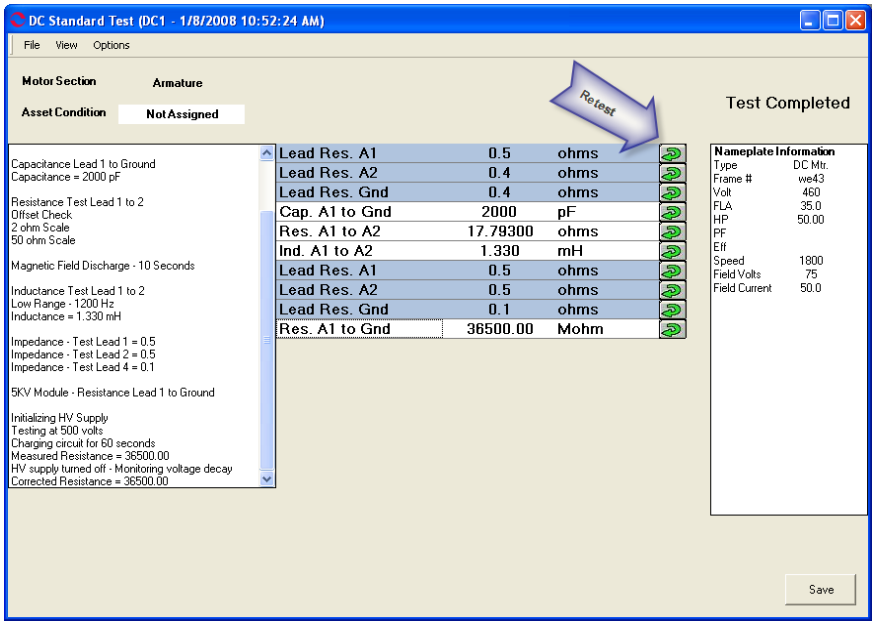


Figure 5-48: DC Standard Test Window

20. When retesting is complete or if no re-testing is needed, click **Save** or select File, Exit, or Ctrl+X, or use the close button (X in the upper right corner).

21. Click **OK** in the Save Complete window.

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22. Click **Exit** in the DC Standard Test Window.

Step-by-Step Polarization Index Testing

1. Deenergize and lock out the starter asset.

2. Check for low level induced voltage using a Fluke multimeter or equivalent.

   Verify that the values do not exceed 0.5 VAC phase-to-phase and 15 VAC phase-to-ground. Check for low level stored voltage by verifying less than 15 VDC phase-to-ground

3. Connect the MCE test leads to the circuit, in the same manner each time, as referenced in Table 5-8 and shown in Figure 5-49. This ensures that the test data is trendable/repeatable.

Table 5-8: Test Lead Connections

MCE test leads	Black	White	Green
motor leads	A1; A1 or S1	A2; S2 or A2	ground

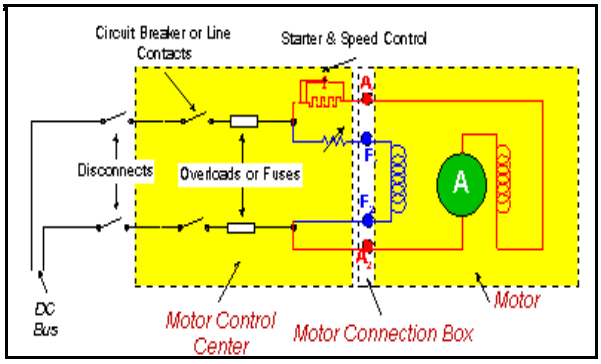


Figure 5-49: Asset Circuit Connections

4. Highlight the asset to be tested in the Site Navigator.

5. Select the Test Selection icon  on the tool bar to open the Test Selection window.

6. Verify that Armature is selected.

7. Select Polarization Index in the Test List Box.

8. Verify the Test Location in the Test Setup section.

   To insure consistent trending and assist in trouble shooting, the actual test location should be stored for each test.

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The Test Location default is Not Assigned. To assign a test location, click the down arrow and select from the list. If the location is not known, click the browse button . The Test Location Selection window opens displaying a test location graph for the type of asset selected. Use the graph to determine the location, then click the down arrow, select from the list, and click **OK**. See Figure 5-50.

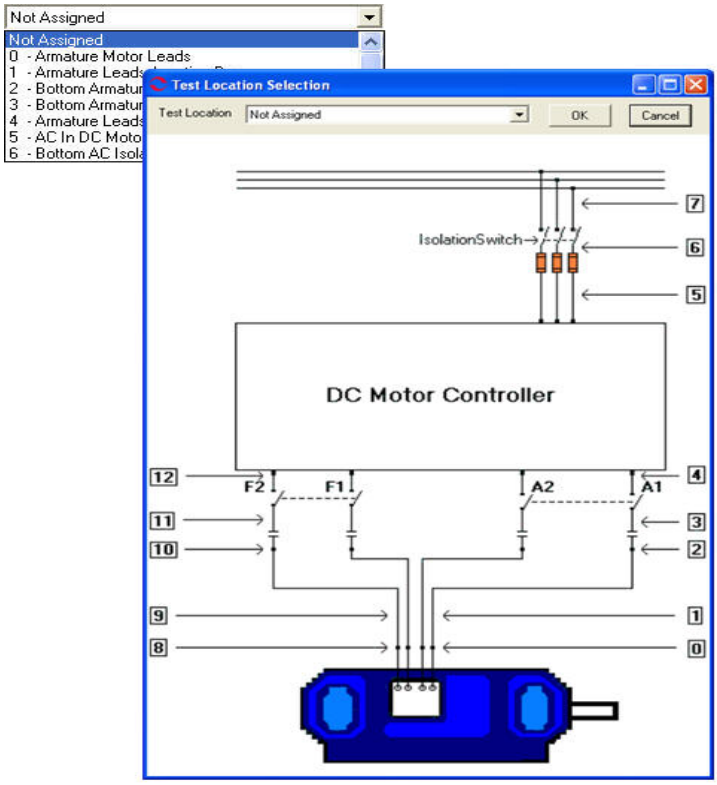


Figure 5-50: DC Asset Test Location

9. Check the Low Limit Shut Off box and enter Mohms.

10. Enter the test voltage for the resistance to ground measurement (500 for ≤ 2400 volts or 1000 for >2400 volts) based on asset nameplate voltage.

    Click the down arrow and select the voltage from the drop-down list.

11. Click **Save**, to save the settings for this asset for future testing. Or click **Reset** to return the original settings. This can only be done if the new settings have not been saved.

12. Click **Test** to go to the PI Test Window. See Figure 5-51.

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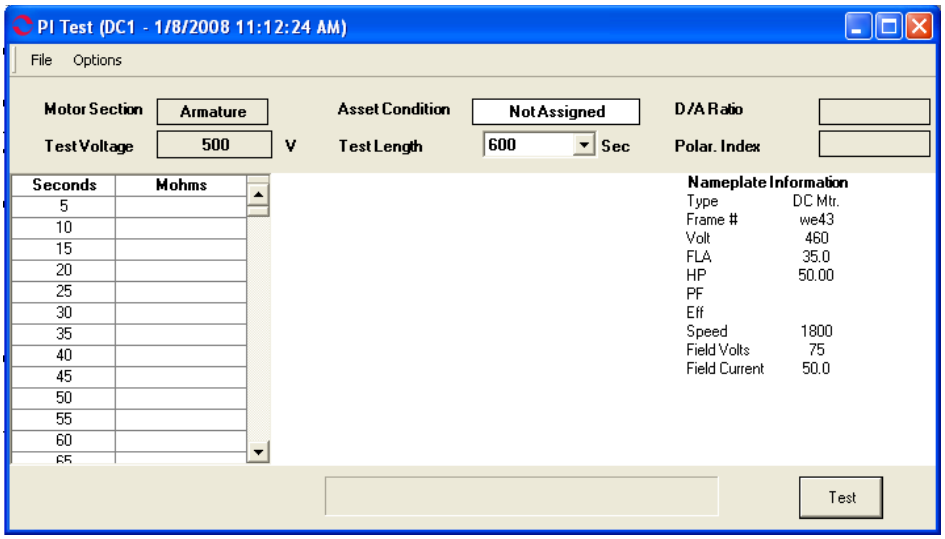


Figure 5-51: PI Test Window

13. Select the test length in seconds from the drop down list.

14. Click **Test** to begin testing.

    To stop the test at any time, click **Stop**. Click **Exit** to return to the Test Selection window.

15. Verify that you are about to apply "X" volts to the circuit by clicking **Yes**.

16. During the testing the D/A ratio and the Polarization Index will be computed and entered in the appropriate text boxes on the window.

17. Click **OK** at the end of testing in the Test Complete window.

18. Close the PI Test window by selecting File, Exit, or Ctrl+X, or the close button (red X in the upper right corner).

19. Click **Yes** to save test data, in the Save Test Data window. Or **No** to exit without saving test data.

20. Click **OK** in the Save Completed window.

Step Voltage

Step Voltage test is the same as for an AC Induction asset. See Step Voltage on page 5-24.

Bar-to-Bar

The Bar-to-Bar test is reached by selecting the Armature tab and Bar-to-Bar from the test list on the Test Selection window. See page 5-3, Test Selection Window for more information. Verify that the test set-up settings are correct and click **Test**. The Bar-to-Bar Test window opens. Figure 5-52.

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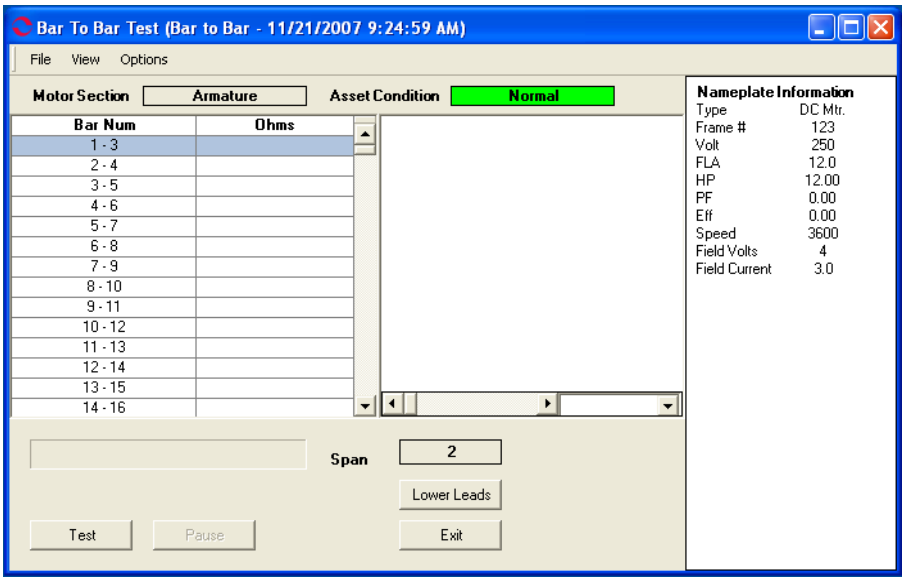


Figure 5-52: Bar-to-Bar Test Window

File Menu

Exit. Exit (Ctrl+X) closes the Bar-To-Bar Test window and returns you to the Home window.

View Menu

Create Message. Create Message (Ctrl+S) opens the Compose Asset Message window (Figure 5-53). The note is viewed in the Message Center. For more information on the Message Center, see Chapter 3, page 3-41.

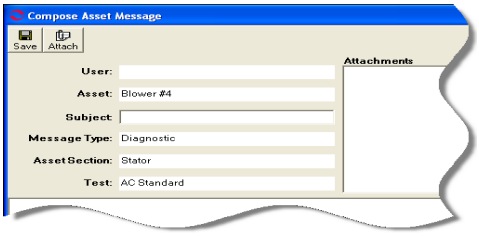


Figure 5-53: Compose Asset Message Window

Options Menu

Set Condition Code. Change the condition code by selecting the desired condition code option button (Figure 5-54). The Asset Condition box on the Bar-To-Bar Test window changes and a note is automatically generated by the software. The note is viewed in the Message Center. For more information on the Message Center, see Chapter 3, page 3-43.

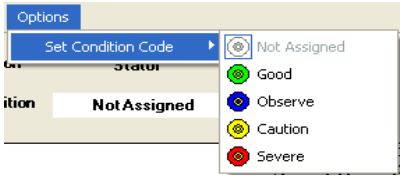


Figure 5-54: Set Condition Code Window

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Raise Leads/Lower Leads Button

The Raise Leads/Lower Leads button toggles to signify the action to be taken with the test leads during testing.

Exit Button

The Exit Button is inactive (dimmed) during testing, but is active between moving the leads.

Pause Button

The Pause Button is inactive (dimmed) during testing, but is active between moving the leads.

Test

The lower left area of the Bar-to-Bar test window, Figure 5-55, informs you what action is required. The Test Dialog box displays the testing progress. The software checks for the leads and if no leads are found displays, “Waiting for Leads” in the text box. When the leads are in position, testing begins automatically. During testing the text box displays Read Resistance, Checking Leads, Test Completed, Waiting for Leads.

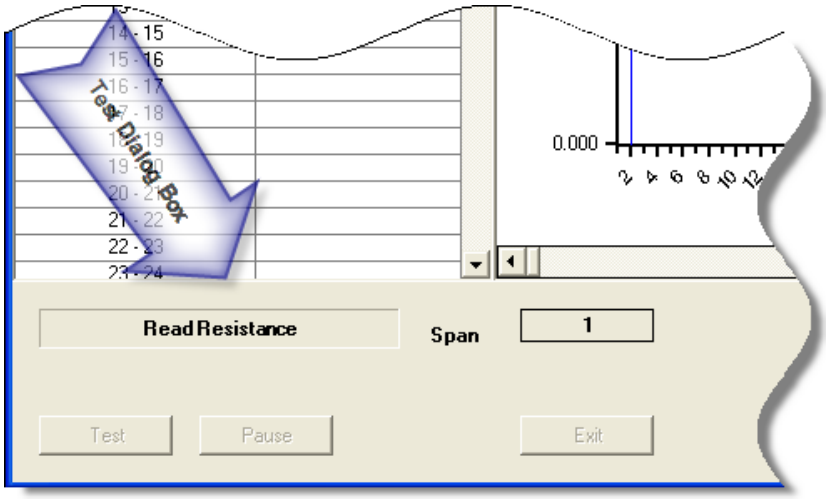


Figure 5-55:

Step-by-Step Bar-to-Bar Testing

1. Deenergize and lock out the starter and the asset.

2. Check for low level induced voltages using a Fluke multimeter or equivalent.

   Verify that the values do not exceed 0.5 VAC phase-to-phase and 15 VAC phase-to-ground. Check for low level stored voltage by verifying less than 15 VDC phase-to-ground.

3. Connect the bar-to-bar test leads to the MCE and to the laptop parallel port.

4. Highlight the asset to be tested on the Site Navigator.

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5. Select the Test Selection icon on the toolbar. The Test Selection window opens, Figure 5-56.

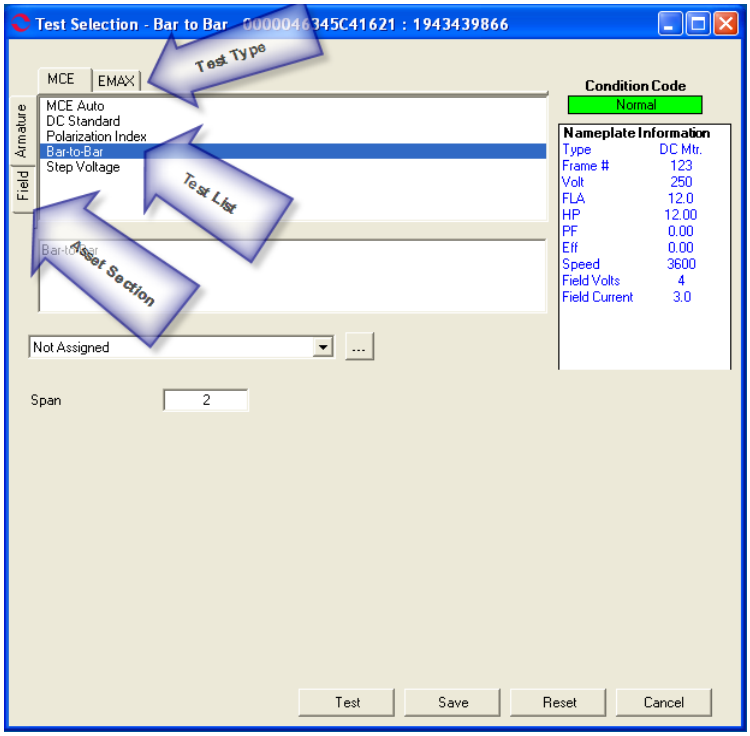


Figure 5-56: Test Selection Window

6. Verify that the MCE (Test Type) and Armature (Asset Section) tabs are selected. The type of asset determines which asset sections are available.

7. Click Bar-To-Bar from the Test List.

8. Verify the Test Location in the Test Setup section.

   To insure consistent trending and assist in trouble shooting, the actual test location should be stored for each test.

   The Test Location default is Not Assigned. To assign a test location, click the down arrow and select from the list. If the location is not known, click the browse button ... . The Test Location Selection window opens displaying a test location graph for the type of asset selected. Use the graph to determine the location, then click the down arrow, select from the list, and click **OK**. See Figure 5-57.

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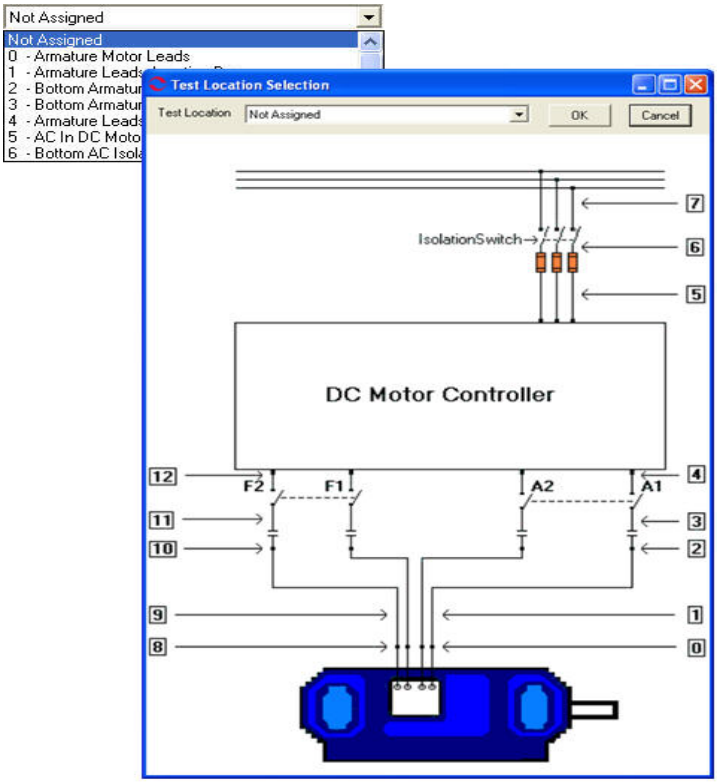


Figure 5-57: DC Asset Test Location

9. Verify the Span is correct.

10. Click **Save** to save the settings for this asset for future testing. Or click **Reset** to return the original settings. This can only be done if the new settings have not been saved.

11. Click **Test** to go to the testing window

12. To begin the Bar-to-Bar Test, click **Test.**

13. When "Waiting for Leads" appears in the Test Dialog Box, position the leads. Testing will begin automatically. The dialog box will inform you of the testing progress beginning with Read Resistance, Checking Leads, and finally Test Complete. See Figure 5-58.

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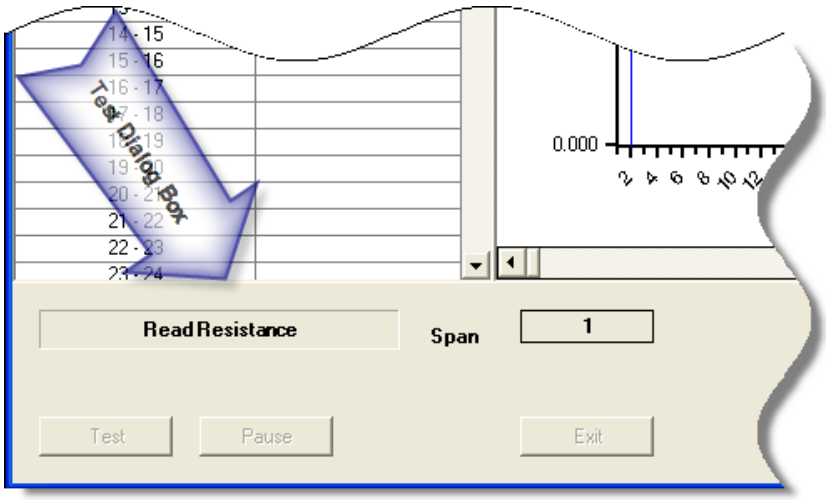


Figure 5-58: Test Dialog Box

14. During testing the test values are entered in the table on the left and are displayed in graph format in the center of the window. The magnification of the graph can be changed by using the down arrows below the graph area and selecting a new value from the drop down list. The default is Full.

15. When Test Complete appears in the Test Dialog box, reposition the leads. Testing will begin automatically.

16. Repeat Step 14 until all bars have been tested.

17. At the end of testing, you will be asked if you want to continue testing. Click **Yes** to continue or **No** to end testing.

18. Click **Exit**. You will be asked if you want to save test data.

    Click **Yes** to save the test data. Click **OK** in the Save Completed window. The Bar-to-Bar test window closes.

    Or click **No** to exit the window without saving.



Field Section Tests

MCE Auto

MCE Auto is the same as for an AC Induction asset. See MCE Auto on page 5-7.

DC Standard

DC Standard test for the Field section is the same as for the Armature section. See DC Standard on page 5-40.

Polarization Index

The Polarization Index test for the Field section is the same as for the Armature section. See Polarization Index on page 5-45.

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Step Voltage

Step Voltage test is the same as for an AC Induction asset. See Step Voltage on page 5-24.

TEST DATA ANALYSIS INFORMATION

Standard Test

The standard test is similar for both AC and DC assets. In an AC asset, the following are either measured or calculated during a standard test:

Resistance-to-ground
Capacitance-to-ground
Resistance phase-to-phase
Inductance phase-to-phase
Resistive imbalance (calculated)
Inductive imbalance (calculated)
Power loss

In a DC asset, the following are either measured or calculated during the standard test:

Resistance-to-ground
Capacitance-to-ground
Armature and/or field resistance
Armature and/or field inductance

Resistance-to-Ground

What Does it Tell You?

The resistance-to-ground (RTG) measurement indicates the cleanliness and health of the insulation system. As the insulation ages, cracks and small holes develop. It also becomes brittle over time, as the wiring expands due to heating and contracts when it cools off. Aging and temperature variations also break down the molecular structure of the insulation.

These factors allow contaminants and moisture, which collect on the surface of the insulation, to penetrate to the conductor. Since current follows the path of least resistance, some of the total current is diverted from the circuit to these alternate paths, and ultimately to ground. As the RTG value decreases over time, capacitance-to-ground often increases, indicating the presence of many current leakage paths to ground and the accumulation of contaminants.

Why is This Important?

A low RTG value indicates that the insulation needs to be cleaned. If the condition causing the low RTG is not corrected and the RTG value continues to drop, the insulation could completely fail and the asset windings could be damaged. This could require a complete rewind of the stator. If the condition causing the low RTG is corrected, a less expensive clean, dip, and bake may suffice.

Setting Warning Levels

Minimum Value. IEEE (the Institute of Electrical and Electronics Engineers, Inc.) has established a standard for the minimum value of insulation resistance which can be applied to most AC windings, DC armature windings, and AC and DC field windings. The

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standard is IEEE Std 43-2001. The equation for most windings made circa 1970 or before, all field windings, and others not noted in the exceptions listed below is IR_{1min}=kV+1.

In the formula:

IR_{1min} is the recommended minimum insulation resistance-to-ground, in megohms, at 40°C (104 °F) at the asset windings

kV is the rated terminal-to-terminal potential, in RMS kilovolts

Examples

A 480 volt asset has a minimum RTG value of 1.48 megohms (480 volts = .480 kilovolts; .48 + 1 = 1.48 megohms)

A 4160 volt asset has a minimum RTG value of 5.160 megohms (4160 volts = 4.160 kilovolts; 4.160 + 1 = 5.160 megohms)

MCEGold computes the minimum acceptable RTG value using this equation. This value is corrected to 40 °C. MCEGold provides both the temperature corrected RTG reading along with the actual measured RTG value. To make comparisons and trending valid, always enter actual asset winding temperature and trend the corrected measurement.

Exceptions to the equation are:

- Most DC armature and AC windings built circa or after 1970 (form wound coils). That standard is $IR_{1\ min}$ = 100.
- Most machines with random-wound stator coils and form-wound coils rated below 1 kV. That standard is IR_{1min}= 5.

Stator of AC Induction, Synchronous, and Wound Rotor Assets; Field and Armature of DC Assets

If the corrected RTG is between R_m and 2 times R_m, then the value is set at caution. The reading appears in yellow on the tester display or underlined on a printed copy of the Test History. If the reading is less than R_m, the value is set at alarm. The reading appears in red on the tester display or bolded on a printed copy.

Wound Rotors, Resistor Banks

Voltages in wound rotors and their three-phase resistor banks are typically too low to use the minimum resistance equation to figure minimum values. The warning levels should be set based on your experience. Establish a baseline test for new assets and assets tested for the first time, and watch the trends. Compare values on similar assets operating under similar conditions.

Exceptions

Some assets may show insulation resistance readings which are lower than the IEEE recommended minimum value and still have “good” insulation. These include:

- Windings with an extremely large surface area
- Large or slow-speed assets
- Assets with commutators

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A DC armature with a low RTG value typically has multiple paths for leakage current, not just one. Because of this, finding the exact location of ground faults is almost impossible and repair is very difficult. This problem is much more complex than in AC assets. Therefore, lower minimum acceptable RTG values are generally tolerated. In these cases, the IEEE standard of IR_{1min}= kV + 1 is typically relaxed to IR_{1min}= kV.

Out-of-service assets, without installed heaters operating, may absorb enough moisture to lower insulation resistance to less than the recommended limits.

Interpreting Readings

There are two factors, which require user input, which affect the value of RTG measurements. They are temperature and charge time. In order to compare temperature-corrected RTG readings for similar assets operating under similar conditions, these factors MUST be taken into account.

Temperature

The Test Selection window uses the IEEE standard reference value of 40°C as the default value for the winding temperature. This can be changed. The corrected RTG reading shown at the end of the test and in the Test History is the value that would be expected at 40°C regardless of the *actual* temperature of the asset winding insulation when the test was performed. In other words, if the reading is always corrected to the same temperature, then temperature is removed as an influencing factor. This allows you to use the corrected RTG value from test to test as a valuable trending tool.

Temperature correction is necessary since the resistance of an insulation material decreases significantly as its temperature increases. The materials which make up insulation have a negative temperature coefficient (inversely proportional). In other words, as the temperature increases their ability to stop current flow decreases. This means it is necessary to know the temperature of the asset when determining the condition of the insulation system.

Therefore, as the temperature of the asset increases, the measured insulation resistance decreases. To compare the reading you got today with a reading you got last month, it is important that you compare like results. The way to do this is to calculate the corrected resistance to a given temperature. MCE resistance values are corrected to a standard temperature of 40°C. This temperature is selected because the normal operating temperature for an asset is typically approximately 40°C (104°F). When comparing the results of different tests note the temperature input for possible variations.

Table 5-9 shows the report results for the same insulation with resistance to ground measurements taken at a variety of temperatures and compensated to different temperatures.

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Table 5-9: Temperature Compensation

Temperature	Actual Resistance	25 °C Compensated	40 °C Compensated
20 °C	20 Megaohm	14 Megaohm	5 Megaohm
25 °C	14 Megaohm	14 Megaohm	5 Megaohm
30 °C	10 Megaohm	14 Megaohm	5 Megaohm
35 °C	7 Megaohm	14 Megaohm	5 Megaohm
40 °C	5 Megaohm	14 Megaohm	5 Megaohm
45 °C	3.5 Megaohm	14 Megaohm	5 Megaohm
50 °C	2.5 Megaohm	14 Megaohm	5 Megaohm

It can be seen from the chart that if temperature compensation is not performed, the reported (actual) resistance to ground changes with temperature. When temperature compensation is performed, the reported resistance does not change when the test temperature changes. In order to compare results, all measurements MUST be compensated to the same temperature.

Test Voltage and Charge Time

The ground wall insulation in a asset has a conductor on either side. On one side of the insulation is the stator windings, the conductors that make up the individual coils in each pole group for each phase. On the other side is the stator core, formed by the stator laminations connected to the frame/casing of the asset. This design has the fundamental components which make up a capacitor. When a DC potential is applied, the insulation "charges" the way a capacitor does. This is important because if the resistance to ground reading is recorded as soon as the test potential is applied, it is lower than if it is recorded after the insulation is "charged."

A rule of thumb for performing RTG measurements is to *apply the test potential for 1 minute or until the reading has stabilized*. This allows for different technicians to obtain values from test to test which can be compared. However, this is not very accurate. On the MCE, the duration of time the voltage is applied to the insulation system is selectable.

Test voltage potential can be from 250 to 5000 volts, based on asset nameplate voltage. Charge time can be set between 15 and 600 seconds, at 15 second intervals. Defaults are set at 500 volts and 60 seconds. Again, using the same values every time makes comparison and trending a valuable tool.

Data Interpretation

If the RTG value is low, isolate the problem to either the power circuit or the asset. Assuming the first test was made at the MCC, perform another test at the asset connection box. Disconnect the asset leads and test the asset. If the RTG value is higher testing the asset, the fault is in the cables between the MCC and the asset. Check the connections in the asset connection box, look for moisture in the conduit, and examine the cables. The cables may require cleaning, drying, or replacement.

If the RTG value at the asset connection box is still low, the fault is in the asset. If the value is in caution, the asset may need to be dried, cleaned in place, or removed for a clean, dip, and bake. If the value is in alarm, the asset may need to be rewound. If the RTG value is less than the IEEE minimum, look for a ground fault and clear this condition before starting the asset.

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Examples

A conveyor asset was tested and had <.1 Megohm RTG. When the technician removed the terminal box cover, he found that one of the taped connections had arced to ground. The leads were repaired and the asset was retested. RTG increased to 263 Megohms.

A compressor asset was tested and had <.1 Megohm RTG. When the technician removed the terminal box cover, he saw that the box was half full of water. The leads were dried and the asset was retested. RTG increased to 21.5 Megohms

Capacitance-to-Ground

What Does it Tell You?

The capacitance-to-ground (CTG) measurement is indicative of the cleanliness of the windings and cables. As dirt and contaminants build up on windings and cables, CTG values increase. An increasing trend showing rising CTG values indicates that the asset needs to be cleaned.

Why is This Important?

A capacitor is formed by any two conducting materials, called plates, separated from each other by a dielectric material. Dielectric material is anything that is “unable to conduct direct electric current.” A cable or winding surrounded by insulation provides one conductor and the dielectric material. The second plate is formed by the stator core and casing iron.

Normally, when the outside of the insulation is clean and dry, it is not a good conductor. When dirt, moisture, and other contaminates begin to cover the stator windings inside the asset, they cause the outer insulation surface areas to become conductive. Since this surface is in contact with the ground, it allows an AC current path to ground. Cables in the power circuit are also subjected to the same affect, when moisture penetrates the outer casing. The cleanliness of the windings and cables can be determined by looking at the CTG value.

With a buildup of material on them, dirty windings and cables produce higher capacitance values than clean ones do. Over time, CTG values steadily increasing indicate an accumulation of dirt and that cleaning is necessary. This can be correlated with decreasing RTG values.

Dirt and contamination also reduce a asset’s ability to dissipate the heat generated by its operation, resulting in premature aging. A general rule of thumb is that insulation life decreases by 50% for every 10 °C (50 °F) increase in operating temperature above the design temperature of the insulation system. This holds true with the asset operating at or above a 75% load. Heat raises the resistance of conductor materials and breaks down the insulation. These factors accelerate the development of cracks in the insulation, providing paths for unwanted current to flow to ground. If capacitance is higher than normal, a low RTG reading is an indication that such a path already exists.

Setting Warning Levels

Preset warning levels for CTG values in MCEGold are based on a percent change from the baseline measurement. This is merely a comparison warning. A 100% increase from baseline produces a caution (yellow on the computer display or underlined on the printed copy). A 200% increase from baseline produces an alarm (red on the computer display or bold on the printed copy). These values are guidelines. As you gather data on a single

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asset or on similar assets operating in the same environment, reset the warning levels to reflect your specific conditions.

Data Interpretation

Capacitance-to-ground is a function of many factors. Therefore, comparison of CTG values is more revealing of a asset's condition than is the analysis of a single snapshot CTG value. For example, capacitance to ground is influenced by the design of each individual asset, the length of the cable between the MCE and asset, the type of insulation on the cables and asset windings, and the number and type of connectors in the circuit.

A new or recently refurbished asset may have a very low CTG reading. A "normal" capacitance value can vary from asset to asset and is NOT an absolute value. CTG must be analyzed by trending readings on the same asset or by comparing values taken on similar assets, with similar histories, operating under the same conditions. If CTG increases over time, dirt, moisture, and/or contaminants are building up on the windings, cables, or both.

Surge capacitors are used in some circuits and will affect CTG readings. Whenever possible, CTG tests should be performed with the capacitors in the circuit as well as disconnected, to indicate the health of the capacitors. This allows for trending the condition of the capacitors as well as the CTG of the asset.

Examples

Capacitors and surge caps were left in the circuit for tests of two chillers used to cool vital computers. Table 5-10 shows how several values were affected. Notice the difference in the readings when the power factor capacitors were removed.

Table 5-10: Effects of Power Correction Capacitors

	With Power Factor Capacitors Installed		With Power Factor Capacitors Removed	
	Chiller #1	Chiller #2	Chiller #1	Chiller #2
Balance of Resistance	1.74%	2.164%	0.050%	2.000%
Balance of Inductance	16.0%	0.520%	2.560%	0.500%
CTG	999,999 pF	999,999 pF	38,750 pF	37,250 pF
RTG	0 Megohms	0 Megohms	>2,000 Megohms	> 2,000 Megohms

A conveyor asset was tested and had <.1 Megohm RTG and 999,999 pF CTG. When the technician removed the terminal box cover, he found that one of the taped connections had arced to ground. The leads were repaired and the asset was retested. RTG increased to 263 Megohms and CTG decreased to 67,750 pF.

A compressor asset was tested and had <.1 Megohm RTG and 83,000 pF. When the technician removed the terminal box cover, he saw that the box was half full of water. The leads were dried and the asset was retested. RTG increased to 21.5 Megohms and CTG decreased to 8,000 pF.

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Phase-To-Phase Resistance

What Does it Tell You?

Phase-to-phase resistance is the measured DC resistance between phases of the stator in an AC asset and between polarities of the armature and field coils in a DC asset.

In AC induction assets, use the phase-to-phase resistance values and resistive imbalances for trending, troubleshooting, and quality control. In DC assets, use trending and relative comparison to determine the condition of the phases in the asset and power circuits. This includes comparing readings taken from identical assets operating in similar conditions and comparing current readings against past readings for the same asset.

An increasing resistive imbalance or a changing resistance over time can indicate one or more of the following:

- High resistance connections
- Coil-to-coil, phase-to-phase, or turn-to-turn current leakage paths
- Corroded terminals or connections
- Loose cable terminals or bus bar connections
- Open windings
- Poor crimps or bad solder joints
- Loose, dirty, or corroded fuse clips or manual disconnect switches
- Loose, pitted, worn, or poorly adjusted contacts in asset controllers or circuit breakers
- Mismatched components (incompatible materials, wrong sizes, etc.)
- Undersized conductors (misassembled or improperly engineered)

Why is This Important?

Circuit resistance is determined by the length, size, width, composition, condition, type and temperature of the conductors and connectors. When two different conductors are connected, dirt, corrosion, or an improper connection increases the circuit resistance. Also, inadequate connections cause heating of the conductor, which increases resistance even more. This could be caused if only a few strands of a conductor or portions of a soldered joint are improperly connected to a terminal or if undersized connectors are used.

In a three-phase asset circuit, the resistance in the conductor paths should be balanced. A “resistive imbalance” occurs when the phases have unequal resistances. The formula below shows that a very small resistive imbalance results in a high voltage imbalance. This produces uneven current flow and excessive heat.

$$Vimb = \frac{\frac{2}{3} \times (Rmax - Rmin) \times FLA}{Vl - \left(\left(\frac{2}{3}\right) \times (Rmax - Rmin) \times FLA\right)} x100$$

In the formula:

Vimb = voltage imbalance
Rmax = maximum winding resistance value
Rmin = minimum winding resistance value

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FLA = full load amp rating of asset
Vl = line voltage
100 = converts number to percentage

When voltage applied across three-phase asset leads is unbalanced, circulating currents, called “negative sequence currents”, are induced. When these negative sequence currents are present, they cause heating in the windings. EPRI’s (the Electric Power Research Institute) Handbook to Assess the Insulation Condition of Large Rotating Machines states “a 3.5% voltage imbalance can raise winding temperature 25% in the winding(s) affected by such currents.” EASA (the Electrical Apparatus Service Association) says a 1% voltage imbalance results in a 6-7% current imbalance.

The most extreme case of resistive imbalance occurs when a asset “single phases.” This “single phasing” quickly causes the asset to fail because the remaining two phases compensate by increasing current by 200% to 300% of normal. Rapid heating of the windings which are still connected destroys the insulation surrounding them.

Resistance to the flow of current in a circuit is of concern from the standpoints of safety, energy conservation, and insulation life. High resistance points in conductors generate heat both at the point where the resistance is located and in the three-phase assets being supplied.

Regardless of the source, some of the effects of increased heat production in the asset include:

- Higher resistance due to heat in conductor materials adjacent to the fault
- Deterioration (accelerated aging) of the surrounding and supporting insulating materials
- Imbalance in multi-phase circuits, which adversely affects equipment performance and life
- Increased power consumption in all cases
- Fire or failure in extreme situations

Setting Warning Levels

The preset warning levels in MCEGold are based on both actual values and on a % change from the baseline value.

Data Interpretation

Resistive imbalance above the setpoint indicates that a problem exists in either the power circuit or in the stator windings. First, isolate the problem to the asset or the circuit. Looking at individual resistance readings can help isolate the problem to a phase. Also, look for the following characteristics which indicate faulty connections.

- Aluminum cables connected to lugs marked for copper wire only
- Discoloration of insulation or contacts
- Damaged insulation having small cracks, bare conductors, or metal components
- Mismatched cables in common circuits
- Poor lug crimps on T-Leads
- Oxidation of conductor metals
- Presence of contaminants such as dirt

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Example

The following information is from a 7,000 HP vertical reactor coolant pump asset at a nuclear power plant. A high resistance solder joint between phases 1 and 3 produced a resistive imbalance of 37.15%. The cost associated with the power loss was calculated to be $58,517.84 per year. Multiple tests, shown in Table 5-11, were performed to verify the problem.

Table 5-11: MCE Tests Used in Troubleshooting Efforts

Test Date	5/31/96	5/31/96	5/31/96
Test ID:	331	332	333
Frequency	1200	1200	1200
	BASELINE		
Mohm Ph 1 to Gnd			
Charge Time	30	30	30
Voltage	1000	1000	1000
Motor Temp	40	40	40
Measured Mohm	>2000	>2000	>2000
Corrected Mohm	OVR	OVR	OVR
pF Ph 1 to Gnd	116250	116250	116250
ohm Ph 1 to 2	0.27450	0.26800	0.27400
ohm Ph 1 to 3	0.43750	0.43700	0.44100
ohm Ph 2 to 3	0.24500	0.24300	0.24200
mH Ph 1 to 2	6.750	6.750	6.750
mH Ph 1 to 3	6.755	6.750	6.750
mH Ph 2 to 3	6.745	6.745	6.745
% Res. Imbalance	37.15	38.29	38.24
% Ind. Imbalance	0.07	0.05	0.05
$ Power Loss	58517.84	58973.83	60493.78

Phase-to-Phase Inductance

What Does it Tell You?

In AC assets, phase-to-phase inductance readings can:

- Indicate the condition of the stator windings
- Detect phase-to-phase and coil-to-coil current leakage paths
- Reveal poor or incorrect rework

These readings can also be used to detect faults in power cables. A Rotor Influence Check (RIC) can be performed to further troubleshoot the asset to reveal faults such as:

- Broken/cracked rotor bars or end rings
- Porosity and lamination damage
- Eccentricity problems

In DC assets, inductance changes within the field or armature can indicate current leakage paths in the windings.

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Inductance changes when leakage paths develop. These paths can be either within the winding coils, or directly to ground. Leakage paths result from mechanical, thermal, environmental, or electrical damage to the insulation system of the windings. Additionally phase-to-phase and turn-to-turn shorts can occur. In either case, current flow bypasses some coils, thereby reducing inductive reactance and increasing current in other phases of the stator. Temperature rises in the remaining conductors and in the surrounding insulation. This accelerates the deterioration, which can cause an avalanche effect, as heat produces more insulation failures, resulting in more leakage paths and more coils removed from the circuit, further increasing temperature.

As there are fewer winding turns in a given phase actively creating the magnetic field upon which the asset is functioning, the windings in the other phases compensate to meet the requirements of the load on the asset. These windings in turn draw more current than is normally supplied by a balanced asset.

Why is This Important?

A large inductive imbalance causes torque-induced vibration at two-times line frequency ($2F_L$). This vibration can be linked to mechanical degradation. Also, inductive imbalance can contribute to other problems, among which are:

- Bearing damage
- Coupling damage
- Loosened rotor bars
- Insulation failure at winding end turns or at exit of stator slots

Setting Warning Levels

The preset warning levels in MCEGold are based on both actual values and on a change from the baseline value.

Data Interpretation

Many factors affect inductance readings, including asset winding coils, the stator iron, the rotor, and the number of rotor bars. The power circuit has little or no effect on the inductance readings unless there are power factor or surge capacitors in the circuit.

Power correction and surge capacitors are used in some circuits and will affect phase-to-phase inductance readings. Whenever possible, phase-to-phase inductance tests should be performed with the capacitors in the circuit as well as disconnected, to indicate the health of the capacitors. This allows for trending the condition of the capacitors as well as the phase-to-phase inductance of the asset.

If both inductive and resistive imbalance are high, look for a leakage path in a coil or an open coil. If resistive imbalance is low, the fault may be in the rotor.

A rotor bar/cage anomaly may not produce a large inductive imbalance on one single test. If inductive imbalance has increased or is high, perform a RIC to further define the problem. Excessive vibration can also be an indicator of inductive imbalance. If you notice high vibration readings, perform a RIC to collaborate the data.

Example

A new asset with a cast aluminum rotor was load-tested prior to installation. The asset failed to reach rated HP. A RIC was conducted and indicated the presence of broken rotor bars.

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When the rotor bars were cast, high resistance connections were formed. Operating the asset during the load-test produced excessive heat at those points. The melted paint on the rotor identified the high resistance connections beneath them.

Test Lead Check

The MCE verifies the resistance of the test leads before and after each test. This ensures test lead continuity and proper connection prior to running the test. If any test lead resistance exceeds a predetermined value, the MCE stops the test. That lead must then be reconnected and retested successfully to continue. This ensures maximum accuracy and repeatability of the collected data.

Resistive Imbalance

Resistive imbalance is calculated from the three individual phase-to-phase resistance readings taken during the standard test. It is displayed as a percentage and will be put into a caution or alarm state if it exceeds a specific limit. This limit can be changed in the MCEGold software. Because this value is calculated from *three* phase-to-phase readings, there is no resistive imbalance value for DC assets.

In AC assets, resistive imbalance is an indication of one or more high-resistance connections in the circuit or shorted turns. Assuming the original test was performed at the MCC, isolate the problem to the asset or to the power circuit by retesting the asset at the connection box. If the resistive imbalance remains, the problem is in the asset. If the resistive imbalance goes away, the problem is in the cables or power circuit. Look at the individual resistance readings to determine the faulty phase.

Inductive Imbalance

Inductive imbalance is calculated from the three individual phase-to-phase inductance readings taken during the standard test. It is displayed as a percentage and will be put into a caution or alarm state if it exceeds a specific limit. This limit can be changed in the MCEGold software. Due to the fact that this value is calculated from *three* phase-to-phase readings, there is no inductive imbalance value for DC assets.

In AC assets, this calculated value can indicate the condition of the stator and rotor/stator relationship. Turn-to-turn or phase-to-phase shorts in the stator causes a high inductive imbalance. Rotor/stator eccentricity causes a varying value of inductive imbalance, as seen on subsequent standard tests. To isolate a problem to the rotor or the stator, perform a Rotor Influence Check.

Power factor capacitors, line reactors, and other power correction devices can impact inductance values. Separation of these devices from the circuit may be required when troubleshooting the asset.

Average Inductance

Average inductance is calculated from the three individual phase-to-phase inductance readings taken during the standard test. Due to the fact that this value is calculated from *three* phase-to-phase readings, there is no inductance imbalance value for DC assets. In AC assets, this calculated value can indicate the condition of the rotor and rotor/stator relationship. Rotor defects will cause an increase in the average inductance. To isolate a problem to the rotor or the stator, perform a Rotor Influence Check.

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Polarization Index Test

What Does it Tell You?

The Polarization Index (PI) and Dielectric Absorption (DA) ratios indicate the condition of the insulation system of the asset and power circuit. Both of these tests use ratios of measurements of insulation resistance taken at two different times. The PI is the ratio of the reading taken at 10 minutes and divided by the reading taken at 1 minute. The DA is the ratio of the reading taken at 60 seconds divided by the reading taken at 30 seconds.

There are three different currents that flow through an insulator when a voltage potential is applied. Since the RTG test measures the voltage and current to calculate insulation resistance, all of these currents must be taken into account.

- First, the “capacitive current” starts out high and drops to nearly zero after the insulation has been charged to full test voltage. This is normally negligible after the first few seconds of the test.
- Second, the “absorption current” also starts out high and drops off. The majority of this current dissipates after one minute, but continues to decay for up to 5 to 10 minutes.
- Finally, the “conduction” or “leakage current” is a small, mostly steady current which becomes a factor after the absorption current drops to a negligible value. This current should remain steady for the remainder of the test.

The relationship between all these currents is shown in Figure 5-59.

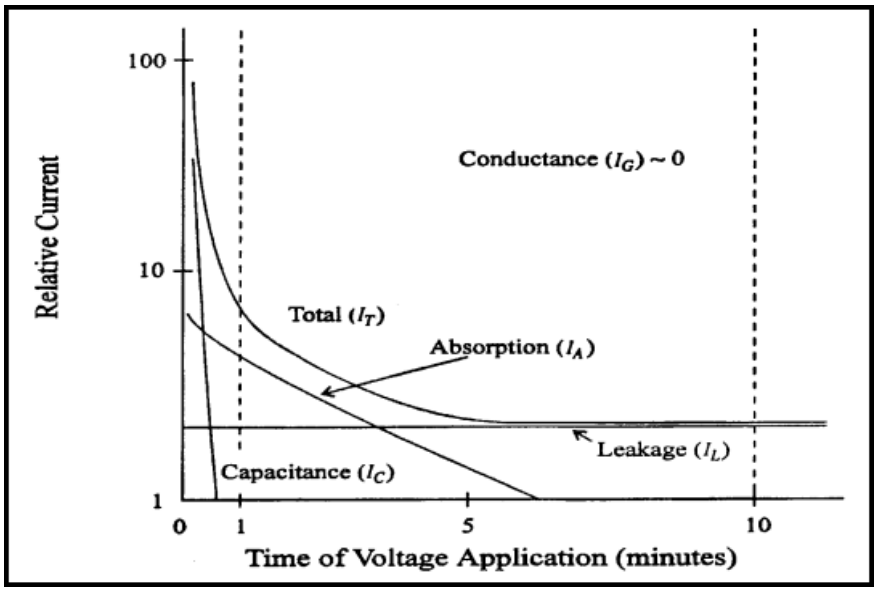


Figure 5-59: Current Relationships

As the asset accumulates dirt and as the insulation ages and cracks, the PI and DA ratios decrease. Dirt accumulates based on the operation and environment of the asset. The insulation cracks as a function of heat and aging of the asset.

Because of the effects of each of these varying currents, the resistance to ground measured by any insulation tester varies with the amount of time the voltage is applied to the insulation. In order to trend or compare insulation RTG values, the charge time for all tests

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MUST be the same. If the charge time is not the same, the trend or comparison may not be valid.

Finally, the charging developed by these three different currents does not dissipate immediately when the voltage is removed at the end of the test. The insulation system must be allowed to discharge sufficiently between resistance to ground tests in order to obtain accurate results. A rule of thumb states that insulation takes four times the amount of charge time to discharge.

Why Is This Important?

Resistance-to-ground readings involve three different current components: capacitive, absorption, and leakage. The PI test allows the charging and absorption currents to decay so that only actual leakage current is measured. As a voltage is continuously applied, healthy insulation slowly polarizes and the absorption current diminishes. This causes a steady rise in resistance until the majority of the current is from the small amount leaking to ground. In poor insulation, leakage current is high enough to overshadow the lowering absorption current and provide little increase in the resistance over time.

Setting Warning Levels

In Managing Motors, Richard Nailen, P.E., offers the following guidelines for interpreting PI and DA ratios. If the PI ratio is less than 2 or the DA ratio is less than 1.5, look for insulation degradation.

	Unacceptable	Acceptable
PI	1 to 1.5	2 to 4
DA	≤1.25	>1.50

IEEE recommends the following values for PI. Machines rated at 10,000 kVA and less should have values at least as large as the acceptable values listed below before operation or hi-pot testing.

	PI
Class A	1.5
Class B, F, H	2.0

Data Interpretation

Because the PI and DA values are ratios, temperature correction is unnecessary. PI and DA can be used for both on-the-spot, one-time checks and for trending over time. Individual readings can be compared to the recommended setpoints.

A good PI Profile (PIP) shows a sharp rise followed by a steady, but slowly increasing trend. A downward trend suggests deteriorating conditions. A flat or ragged trace indicates short-term current transients. Such traces indicate insulation breakdown, possibly due to contamination or moisture in the power circuit or asset. Observing the readings over time permits scheduling of cleaning or reconditioning before failure occurs.

If the PI or DA ratio is low, isolate the problem to the circuit or the asset. Assuming the first test was made at the MCC, run another test from the MCC with the “T” leads disconnected.

If the low value is gone, the problem is in the power circuit. If the low value still exists, test the asset at the asset connection box with the leads to the MCC disconnected. If the

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low value is gone, the problem is in the cables between the asset and the MCC. If the low value still exists, the problem is in the asset.

Examine the cables in the asset connection box. They could require cleaning, drying, or replacement. Also, check for water in the conduit.

If the PI or DA ratio is < 1.0, look for a ground fault. Clear this fault before starting the asset.

Some exceptions to be aware of include:

- Moisture or contamination on the windings decreases the PI
- The PI can be lowered by certain semiconducting materials which are used for corona elimination on the end windings of some high-potential AC machines
- Performing PI testing in ambient temperatures less than the dew point may significantly impact the PI values

Examples

The following pictures show the response of the insulation in both a good (Figure 5-60) and a bad (Figure 5-61) asset, with a constant voltage applied for a 10 minute period. The increase in the RTG value is due to the decrease in current through the insulation.

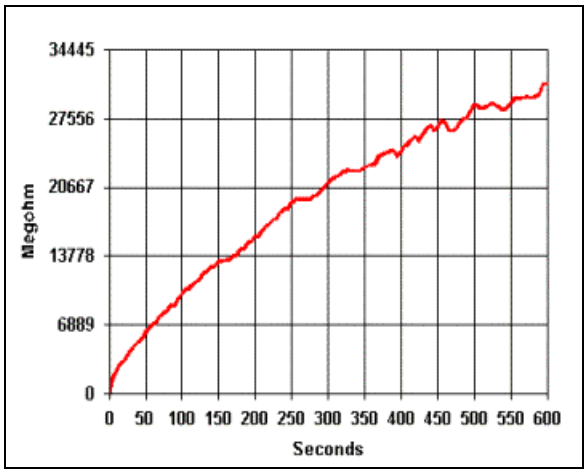


Figure 5-60: Asset with a Good PI

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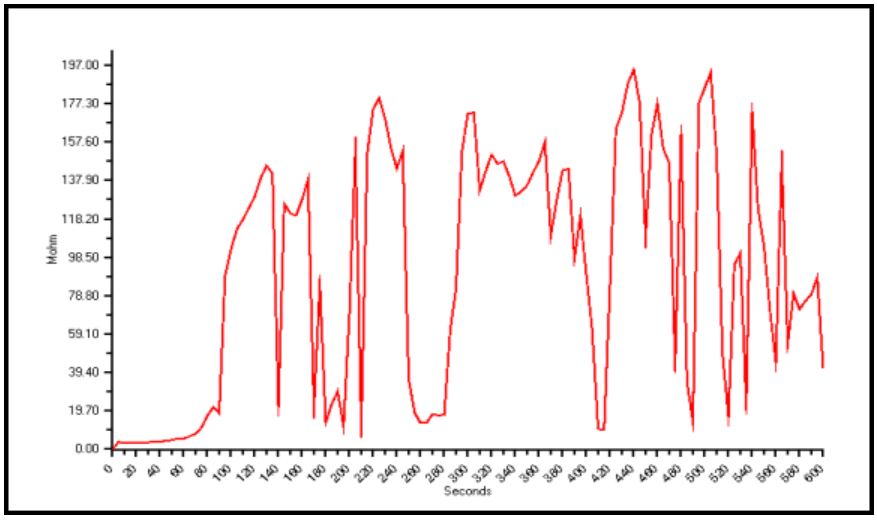


Figure 5-61: Asset With a Bad PI

The unstable RTG readings in the bad PI are a result of low level discharges occurring in faults in the insulation.

ROTOR INFLUENCE CHECK (RIC)

What Does It Tell You?

The Rotor Influence Check (RIC) is a graphical representation of the rotor/stator relationship. By analyzing variations in the magnetic flux while rotating the rotor, eccentricity and rotor defects are identified. The RIC can also be used to confirm stator faults. Figure 5-62 shows a RIC graph for a motor with no defects.

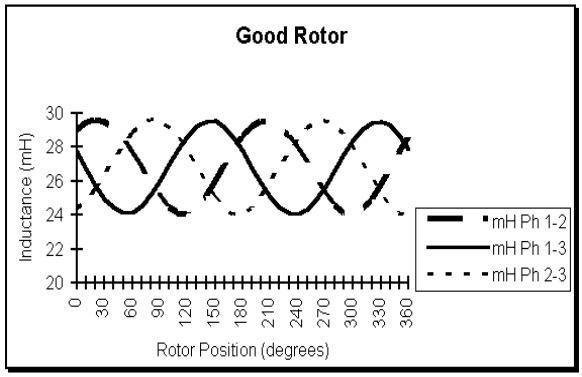


Figure 5-62: RIC from a Good Asset

A motor acts similar to an electromagnet. The rotor acts like the “core” and the stator acts like the windings of the electromagnet. A RIC shows how the rotor’s residual magnetism influences the stator inductance in different positions. As the magnetic field of the rotor interacts with more of the coils in each stator winding, the inductance of that winding changes. This influence causes repeatable patterns of change in the graph of the stator inductance, shown above as sinusoidal waveforms.

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Why Is This Important?

Broken rotor bars can cause extreme heat and vibration, which can result in winding failure, bearing failure, and loss of torque in a motor. Eccentricity, a non-uniformity of the air gap between the rotor and stator, can cause excessive vibration, which can result in winding and bearing failure.

Rotor Position And Aliasing

Each RIC consists of a series of inductance measurements taken at predetermined positions of the rotor. The amount by which the rotor is moved for each measurement and the total rotation of the rotor for the test are determined by the number of poles in the asset. The increment and total rotation are calculated to show the RIC pattern for one complete pole group. If additional readings are taken beyond the total and at the same increments, the pattern should repeat itself. Table 5-12 shows the recommended increments and total rotation to cover one pole face for a asset with a given number of poles.

Table 5-12: RIC Degree Increments vs. Number of Poles

Poles	Increment	Total
2	10.0°	180°
4	5.0°	90°
6	3.3°	60°
8+	2.5°	45°

The number of increments and total rotation are automatically calculated by MCEGold, based on the entered nameplate data. You may reduce the increment and perform more tests to cover the recommended total rotation. Increasing the increments and performing fewer measurements than the default values is not recommended because doing this results in “aliasing.” Because not enough points are taken to reveal a true picture of the curve, aliasing produces an inaccurate and incomplete graph.

The following example shows how to determine the number of poles a asset has, the number of total degrees to turn the rotor, and the increments by which to turn it. Start with the basic equation:

$$F = \frac{NP}{120}$$

In the formula:

F = line frequency (60 Hertz in the US)
N = synchronous asset speed
P = number of poles in the asset
120 = 120 degrees of electrical spacing between poles

For a asset whose synchronous speed is 1800 rpm, use a variation of this equation to find the number of poles:

P = 120F/N
P = (120)x(60)/1800
P = 4 poles

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Next, determine the number of degrees per pole face. To find this, divide 360 by the number of poles.

360/4 = 90 degrees per pole face.

Next, determine the increments, in degrees, by which to position the rotor to generate an accurate RIC pattern. To find this, divide the number of degrees per pole face by 18.

90/18 = 5 degrees.

Thus, the following would apply for a asset whose synchronous speed is 1800 rpm:

4 poles
90 degrees per pole face
5 degree increments per rotation to develop an accurate RIC

The increments were chosen since the RIC pattern typically repeats itself by the same number of poles in the asset through a complete 360° rotation of the rotor. Using these increments is recommended to increase consistency and reduce aliasing. Also, use the same increments and total rotation each time you perform a RIC. This ensures that the RIC is started and run the same way for each test. Doing this enables you to reliably compare the data and graph to subsequent tests for trending.

When the RIC is started, the MCE measures the resistance of each phase winding. At each increment the inductance of each winding pair is measured and recorded. Between measurements you are prompted to move the rotor to the next position.

Data Interpretation

Aliasing

Aliasing occurs when too few measurements are taken too far apart to show the true shape of the curve. The following figures show RICs which exhibit aliasing.

Figure 5-63 shows two waveforms of a good rotor in a 6-pole asset. The waveform with the connected circles was generated with measurements taken at the recommended interval of 3.3°. The waveform with the dashed lines was generated with measurements taken at 15° intervals. The waveform from measurements taken at 15° intervals shows a lack of definition.

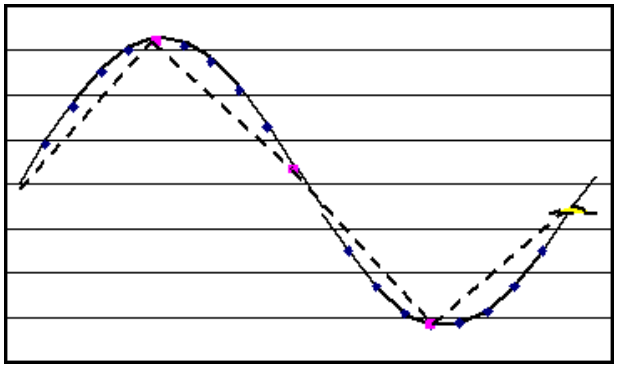


Figure 5-63: Aliasing

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Figure 5-64 shows two waveforms taken on a asset which has known rotor faults. The presence of the fault is hidden when the measurements are taken at 15° increments (dashed waveform). When they were made at the recommended 3.3° increments (circles), the presence of the rotor fault is indicated by the flattened peaks. Note that the dashed waveforms shown in Figure 5-63 and 5-64 appear identical masking the true rotor conditions.

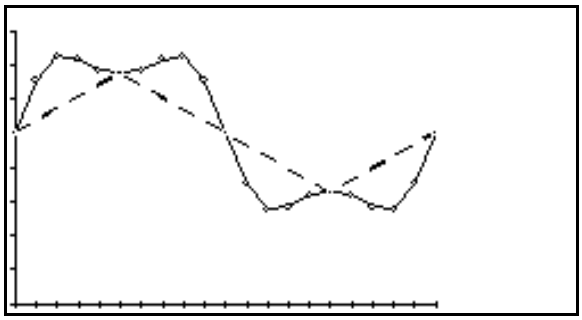


Figure 5-64: Aliasing

Good Asset

Figure 5-65 shows a RIC test for a typical AC induction asset with a good rotor. The three graphs resemble sine waves which are 120° out of phase with each other. The sinusoidal pattern is smooth and repeatable. The amplitude of the sine waves varies from asset to asset, due to factors specific to each asset, such as winding configuration, air gap, core steel quality, and rotor construction and design.

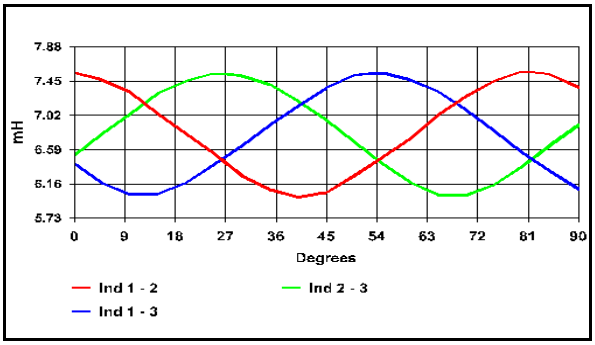


Figure 5-65: RIC from Good Asset

In some assets, the amplitude changes of the graphs are very small and may appear erratic. This erratic appearance may be due to measurement resolution steps, and not due to actual changes in inductance. This condition may indicate a low influence rotor with no rotor defects. One such low influence rotor is shown in the RIC graph in Figure 5-66.

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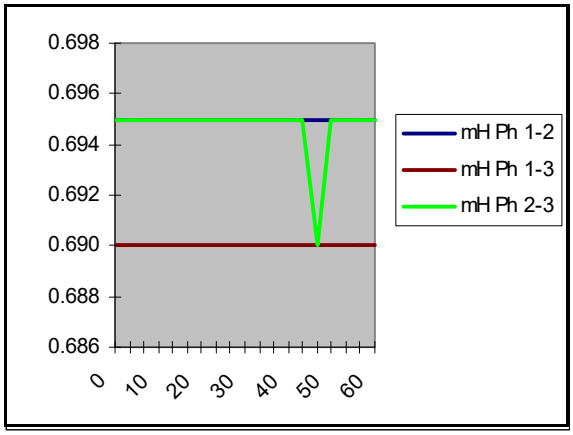


Figure 5-66: RIC from Asset with Low Influence Rotor

Eccentricity

Eccentricity is defined as the condition of the air gap between the rotor and stator, all the way around 360° of the asset. This gap should be the same width all the way around. If the rotor is bowed, the bearing clearances improperly set, or the end bell not aligned properly, the air gap will not be equal. An unequal air gap produces a phase-to-phase inductance graph that is markedly higher at one end of the graph than at the other. This is shown in Figure 5-67.

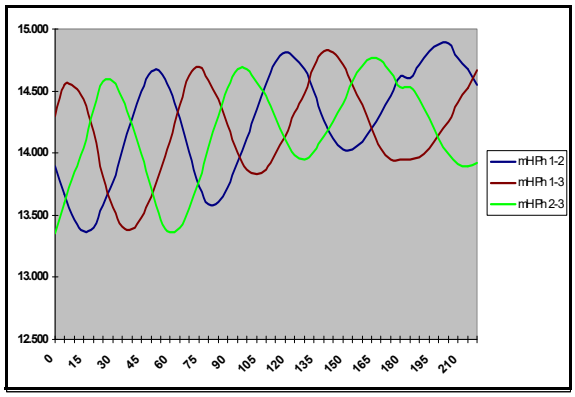


Figure 5-67: RIC from Asset with Eccentricity

If an eccentricity problem is suspected, continue performing the RIC to include at least two pole faces beyond the default increment setting. An exception to be aware of is when sleeve bearings are used in the asset. Due to their oil film, they can falsely indicate eccentricity problems since the rotor "settles" when the asset is not running.

Broken Rotor Bars

A rotor with broken bars produces graphs with anomalies in their wave shapes, such as flattened and staggered peaks.

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Figure 5-68 shows a motor with ten broken rotor bars. These were found following a RIC. The flattening of the peaks in the phase-to-phase inductance graphs results from the influence of the broken bars. The irregularities in these traces are repeatable in each phase.

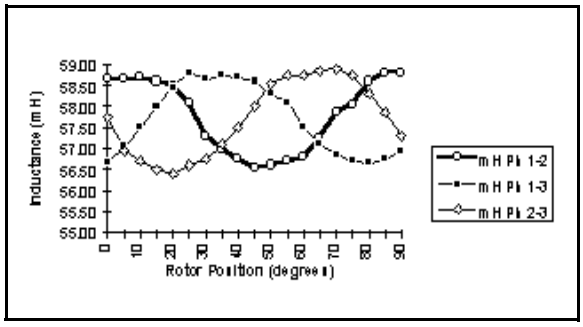


Figure 5-68: RIC from Motor with Broken Rotor Bars

Figure 5-69 shows a motor with cracked welded joints at the shorting rings. The cracked welded joints were found in 14 out of 122 rotor bars after a RIC was taken. The erratic pattern of flattened and staggered peaks points to the presence of the broken bars.

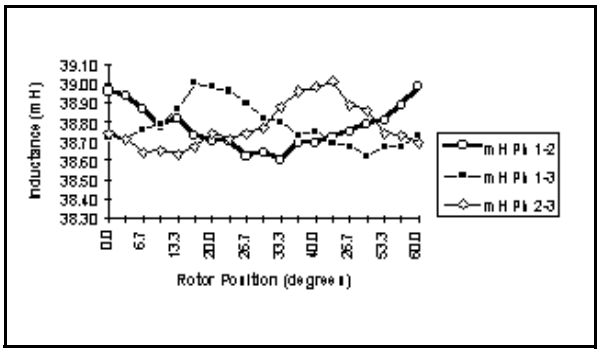


Figure 5-69: RIC from Motor with Broken Rotor Bars

Figure 5-70 shows the RIC test of a 480 volt 60 HP AC induction motor with broken rotor bars and a slight air gap problem. Note the flattened peaks in each phase-to-phase graph.

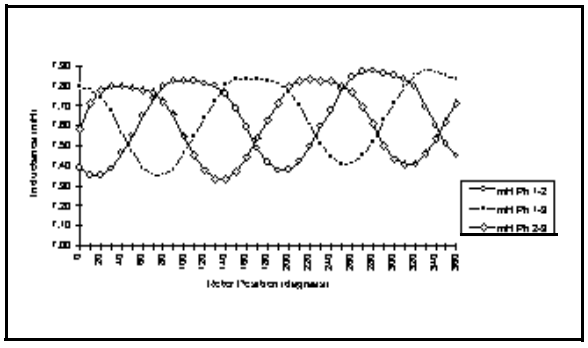


Figure 5-70: RIC from Motor with Broken Rotor Bars

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Figure 5-71 shows the staggered peaks in a RIC for a 480 volt 5 HP motor. A rotor anomaly was determined to be the cause for these peaks. This was the result of a maintenance supervisor drilling a hole in one rotor bar as a demonstration.

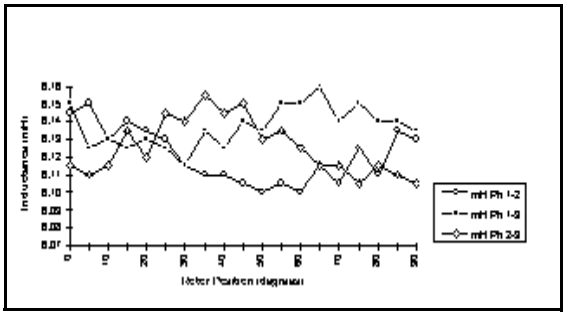


Figure 5-71: RIC from Motor with Broken Rotor Bars

One-Up/Two-Down and Two-Up/One-Down

Phase-to-phase or turn-to-turn stator winding shorts can result in either a one-up/two-down or two-up/one-down RIC pattern. This is shown in the graphs in Figure 5-72.

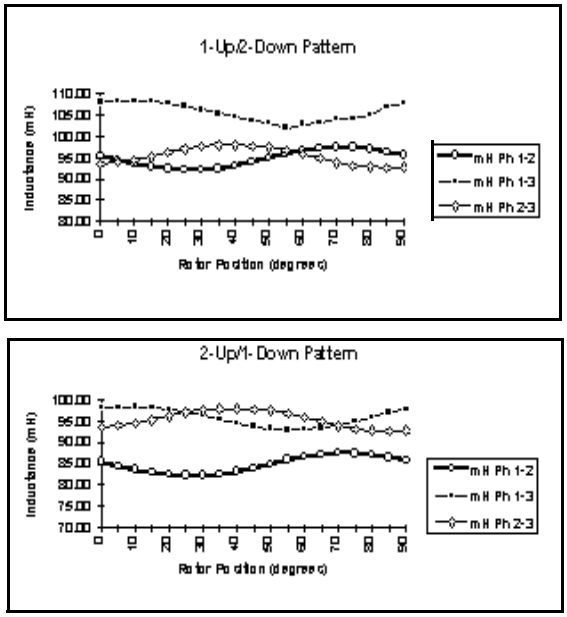


Figure 5-72: RIC from Motor with Phase-to-Phase or Turn-to-Turn Shorts

To assist in the analysis, compare the RIC with the phase-to-phase resistance readings on the standard test. If the same phases are affected resistively and inductively, this further confirms a winding defect. If resistance readings do not confirm this condition, evaluate the asset for eccentricity/air gap problems.

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DC Bar-to-Bar Test

What Does It Tell You?

Testing the resistance between commutator bars gives an indication of the comparative value of resistance that exists between all like electrical circuits in an armature.

Why Is This Important?

The commutator consists of insulated segments assembled into a cylinder and held together by insulated rings. Electric current is transferred to the armature windings by "brushes" made mainly of carbon and graphite. Brush wear creates carbon dust, a conductive contaminant, which penetrates into crevices, cracks and openings of the armature. Copper particles add to the contaminant accumulation when the wrong brushes are installed or the brushes are improperly installed, or when maintenance is inadequate. If the insulating material on the commutator bars or their risers has cracked, these contaminants can short entire windings.

Also, high resistance connections can develop at the risers causing open or high-resistance armature coils. Equalizing connections can break and cause an imbalance due to the loss of equalization.

Data Interpretation

The resistance readings between bars are in the microhm range for medium to large machines. Most DC assets of this size have armatures constructed with equalizing jumpers or compensating shorting connections. The effect of these connections on the Bar-to-Bar test results shows as a regular pattern of change from bar to bar. Good bars have 1 or 2 different values. If a bar differs greatly from either of these 2 values then look for faults.

Armatures with 50% compensation have every other bar equalized; with 33% compensation have every 3rd bar equalized; with 25% compensation have every 4th bar equalized.

MCE ANALYSIS

AC Induction Assets

Rotor Influence Check (RIC)

- Normal - smooth three-phase sinusoidal waveforms
- Rotor Defect - repeatable erratic inductance throughout the peaks of the waveforms
- Eccentricity - inconsistent variations in the amplitude of the waveforms. Static eccentricity sometimes causes a consistent separation in the three sine waves, coupled with a low inductive imbalance.

One method of analyzing a RIC is done by following four steps, outlined by the acronym SAME.

- S - look at the *scale*; verify correct resolution
- A - check the *alignment* of the peaks; check for eccentricity
- M - check the *max-to-min* values of the peaks; all three waveforms should be the same; check for stator problems
- E - *evaluate* the characteristics of the waveforms

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Standard Test

- In the Fault Zone Report, check for Caution and Alarm indications. Click the value highlighted in yellow or red to see the recommended actions.
- Low Resistance-to-Ground - RTG in Caution or Alarm indicates a possible breakdown in the insulation system.
- High Capacitance-to-Ground - CTG in Caution or Alarm indicates an increase in the contamination on the surface of the insulation.
- High Resistive Imbalance - Resistive Imbalance in Caution or Alarm indicates high resistance connection in the switchgear, disconnect, or asset connection box. Refer to the individual phase-to-phase resistance readings to assist in locating the fault.
- High Inductive Imbalance - Inductive Imbalance in Caution or Alarm indicates a winding defect (turn-to-turn or phase-to-phase) or severe eccentricity. Refer to the individual phase-to-phase inductance readings to assist in locating the fault. If a RIC has not been performed, perform a RIC to obtain additional information.

Polarization Index/Dielectric Absorption

- Low PI or DA ratio - PI or DA in Caution or Alarm indicates changing or excessive surface contamination.
- Breakdown of insulation system.

At this point, a Condition Code may be assigned and Notes completed to explain the following:

- Asset condition/status; basis for the asset condition assigned.
- Anomalies that had to be overcome during the performance of the test.
- If multiple tests were performed during troubleshooting, explain where test leads were connected for each test.

AC Synchronous Assets

Stator

Rotor Influence Check (RIC)

- Normal - smooth three-phase sinusoidal waveforms
- Rotor Defect - appears like a normal sine wave but has a larger than normal inductive imbalance
- Eccentricity - inconsistent variations in the amplitude of the waveforms. Static eccentricity can sometimes cause a consistent separation in the three sine waves.

One method of analyzing a RIC is done by following four steps, outlined by the acronym SAME.

- S - look at the *scale*; verify correct resolution
- A - check the *alignment* of the peaks; check for eccentricity
- M - check the *max-to-min* values of the peaks; all three waveforms should be the same; check for stator problems
- E - *evaluate* the characteristics of the waveforms

Standard Test

- In the Fault Zone Report, check for Caution and Alarm indications. Click the value highlighted in yellow or red to see the recommended actions.

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- Low Resistance-to-Ground - RTG in Caution or Alarm indicates a possible breakdown in the insulation system.
- High Capacitance-to-Ground - CTG in Caution or Alarm indicates an increase in the contamination on the surface of the insulation.
- High Resistive Imbalance - Resistive Imbalance in Caution or Alarm indicates high resistance connection in the switchgear, disconnect, or asset connection box. Refer to the individual phase-to-phase resistance readings to assist in locating the fault.
- High Inductive Imbalance - Inductive Imbalance in Caution or Alarm indicates a winding defect (turn-to-turn or phase-to-phase), circuit defect (cable short or power factor correction capacitor failure), or severe eccentricity. Refer to the individual phase-to-phase inductance readings to assist in locating the fault. If a RIC has not been performed, perform a RIC to obtain additional information on the rotor condition.

Polarization Index/Dielectric Absorption

- Low PI or DA ratio- PI or DA ratio in Caution or Alarm indicates changing or excessive surface contamination.

Step Voltage

- If the plot of the curve of current versus voltage deviates from near linear, impending breakdown is suggested.

Field Circuit

Synchronous Test

- In the Fault Zone Report, check for Caution and Alarm indications. Click the value highlighted in yellow or red to see the recommended actions.
- Low Resistance-to-Ground - RTG in Caution or Alarm indicates a breakdown in the insulation system.
- High Capacitance-to-Ground - CTG in Caution or Alarm indicates an increase in the contamination on the surface of the insulation.
- High/Low Resistance - Resistance in Caution or Alarm indicates a high or low resistance of the field windings.

  NOTE: The Caution and Alarm limits are set based on nameplate field voltage and current values at normal operating temperature of the asset. Testing on a cold asset may indicate values outside the Caution and Alarm settings.

- Low Inductance - Low Inductance in Caution or Alarm indicates turn-to-turn faults in the field coils.

Polarization Index/Dielectric Absorption

- Low PI or DA ratio - PI or DA ratio in Caution or Alarm indicates changing or excessive surface contamination.

At this point, a Condition Code may be assigned and Notes completed to explain the following:

- Asset condition/status; basis for the asset condition assigned.
- Anomalies that had to be overcome during the performance of the test.
- If multiple tests were performed during troubleshooting, explain where test leads were connected for each test.

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Step Voltage

- If the plot of the curve of current versus voltage deviates from near linear, impending breakdown is suggested.

AC Wound Rotor Assets

Stator

Rotor Influence Check (RIC)

- Normal - smooth three-phase sinusoidal waveforms
- Rotor Defect - appears like a normal sine wave but has a larger than normal inductive imbalance
- Eccentricity - inconsistent variations in the amplitude of the waveforms. Static eccentricity can sometimes cause a consistent separation in the three sine waves, coupled with a low inductive imbalance.

One method of analyzing a RIC is done by following four steps, outlined by the acronym SAME.

- S - look at the *scale*; verify correct resolution
- A - check the *alignment* of the peaks; check for eccentricity
- M - check the *max-to-min* values of the peaks; all three waveforms should be the same; check for stator problems
- E - *evaluate* the characteristics of the waveforms

Standard Test

- In the Fault Zone Report, check for Caution and Alarm indications. Click the value highlighted in yellow or red to see the recommended actions.
- Low Resistance-to-Ground - RTG in Caution or Alarm indicates a breakdown in the insulation system.
- High Capacitance-to-Ground - CTG in Caution or Alarm indicates an increase in the contamination on the surface of the insulation.
- High Resistive Imbalance - Resistive Imbalance in Caution or Alarm indicates high resistance connection in the switchgear, disconnect, or asset connection box. Refer to the individual phase-to-phase resistance readings to assist in locating the fault.
- High Inductive Imbalance - Inductive Imbalance in Caution or Alarm indicates a winding defect (turn-to-turn or phase-to-phase) or severe eccentricity. Refer to the individual phase-to-phase inductance readings to assist in locating the fault. If a RIC has not been performed, perform a RIC to obtain additional information.

Polarization Index/Dielectric Absorption

- Low PI or DA ratio - PI or DA ratio in Caution or Alarm indicates changing or excessive surface contamination.

Step Voltage

- If the plot of the curve of current versus voltage deviates from near linear, impending breakdown is suggested.

Rotor

Standard Test

- In the Fault Zone Report, check for Caution and Alarm indications. Click the value highlighted in yellow or red for recommended actions.

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- Low Resistance-to-Ground - RTG in Caution or Alarm indicates a breakdown in the insulation system.
- High Capacitance-to-Ground - CTG in Caution or Alarm indicates an increase in the contamination on the surface of the insulation.
- High Resistive Imbalance - Resistive Imbalance in Caution or Alarm indicates high resistance connection on the slip ring or winding connections. Refer to the individual phase-to-phase resistance readings to assist in locating the fault.
- High Inductive Imbalance - Inductive Imbalance in Caution or Alarm indicates a winding defect (turn-to-turn or phase-to-phase). Refer to the individual phase-to-phase inductance readings to assist in locating the fault.

Polarization Index/Dielectric Absorption

- Low PI or DA ratio - PI or DA ratio in Caution or Alarm indicates changing or excessive surface contamination.

Step Voltage

- If the plot of the curve of current versus voltage deviates from near linear, impending breakdown is suggested.

Resistor Bank

Resistor Bank

- In the Fault Zone Report, check for Caution and Alarm indications. Click the value highlighted in yellow or red to see the recommended actions.
- Low Resistance-to-Ground - RTG in Caution or Alarm indicates a breakdown in the insulation system.
- High Capacitance-to-Ground - CTG in Caution or Alarm indicates an increase in the contamination on the surface of the insulation.
- High Resistive Imbalance - Resistive Imbalance in Caution or Alarm indicates high resistance connection between the resistors or a faulty resistor. Refer to the individual phase-to-phase resistance readings to assist in locating the fault.

Polarization Index/Dielectric Absorption

- Low PI or DA ratio - PI or DA ratio in Caution or Alarm indicates changing or excessive surface contamination.

At this point, a Condition Code may be assigned and Notes completed to explain the following:

- Asset condition/status; basis for the asset condition assigned.
- Anomalies that had to be overcome during the performance of the test.
- If multiple tests were performed during troubleshooting, explain where test leads were connected for each test.

Step Voltage

- If the plot of the curve of current versus voltage deviates from near linear, impending breakdown is suggested.

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DC Assets

Armature Circuit

Standard Test

- In the Fault Zone Report, check for Caution and Alarm indications. Click the value highlighted in yellow or red to see the recommended actions.
- Low Resistance-to-Ground - RTG in Caution or Alarm indicates a possible breakdown in the insulation system.
- High Capacitance-to-Ground - CTG in Caution or Alarm indicates an increase in the contamination on the surface of the insulation.
- High/Low Resistance - values in Caution or Alarm indicate high resistance connection in the switchgear, disconnect, or asset connection box. This can also indicate improper brush wear/seating or a poor commutator film.
- High/Low Inductance - values in Caution or Alarm indicate a winding defect (turn-to-turn or coil-to-coil).

Polarization Index/Dielectric Absorption

- Low PI or DA ratio - PI or DA ratio in Caution or Alarm indicates changing or excessive surface contamination.

Bar-to-Bar

- High/Low Resistance - values significantly above or below the average resistance reading indicate an open or a short in the armature winding or commutator segments.

Field Circuit

Standard Test

- In the Fault Zone Report, check for Caution and Alarm indications. Click the value highlighted in yellow or red to see the recommended actions.
- Low Resistance-to-Ground - RTG in Caution or Alarm indicates a possible breakdown in the insulation system.
- High Capacitance-to-Ground - CTG in Caution or Alarm indicates an increase in the contamination on the surface of the insulation.
- High/Low Resistance - values in Caution or Alarm indicate a high resistance connection in the switchgear, disconnect, or asset connection box.
- High/Low Inductance - values in Caution or Alarm indicate a winding defect (turn-to-turn or coil-to-coil).

Polarization Index/Dielectric Absorption

- Low PI or DA Ratio - PI or DA Ratio in Caution or Alarm indicates changing or excessive surface contamination.

At this point, a Condition Code may be assigned and Notes completed to explain the following:

- Asset condition/status; basis for the asset condition assigned.
- Anomalies that had to be overcome during the performance of the test.
- If multiple tests were performed during troubleshooting, explain where test leads were connected for each test.

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CHAPTER 5: MCE

TESTING QUICK START

MCE testing may be started by selecting either the Test Selection  or the MCE Auto  icons on the toolbar.

Selecting the MCE Auto icon automatically runs the Standard Test followed by the Polarization Index test. It uses the existing testing setup values. MCE Auto is discussed in detail on page 5-7.

Selecting the Test Selection icon allows you to verify and/or change the testing setup values and select which test you want to run. Test Selection is discussed in detail on page 5-3.

1. Start MCEGold.
2. On the Site Navigator or WatchList highlight the asset to be tested.
3. Select the Test Selection icon  on the tool bar to open the Test Selection window.
4. In the Test Selection window the default is set to MCE testing. For EMAX testing click the EMAX tab at the top and see Chapters 6 & 7. The asset section tabs along the left side will vary depending on the type of asset being tested. Nameplate Information is automatically filled in by MCEGold from the nameplate data.
5. Select the asset section tab along the left side corresponding to the section to be tested.
6. Select the test to be performed from the list of tests. The available selections are driven by the type of asset and the asset section selected for testing. The Notes section provides instructions that are relevant for the selected test.
7. Select the asset test location by using the drop-down list or using the search button to open the Test Location Selection window.
8. Select the Test Frequency from the drop-down list. The Test Frequency default is driven by the type of asset selected for testing.
9. Select the Resistance-to-Ground by entering in the Mohms if they are different from the default. Check the Low Limit check box if you want the unit to shut down automatically upon measuring a specified low resistance to ground value.
10. Select the Voltage from the drop-down list box. The choices are: 250, 500, 1000, 2500, and 5000.
11. Set the asset Temperature if different from the default value of 40.

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12. Select the charge time from the drop-down list box. The choices are in 15 second increments, beginning at 15 and ending at 600 seconds.

13. Click **Save** to save the MCE Test Setup values selected for this particular asset or click **Reset** to restore the original values. Note: Original values may only be reset if new values have not been saved. If you have clicked the Save button it will be necessary to manually change them back to the originals and save them.

14. Click **Test** to go the test window.

15. Click **Test** on the Test window. From this point the process will differ depending on the test being performed. Each test is covered in detail later in this chapter.

INTRODUCTION

The MCE tester measures natural characteristics of a deenergized asset and its circuit to determine its condition. These characteristics are resistance-to-ground, capacitance-to-ground, winding resistance, and winding inductance. MCE testing can identify faults in the power circuit, insulation, stator, rotor, and the air gap between the rotor and stator.

The tests that can be run on a asset vary, depending on the asset type. For AC assets (Induction, Synchronous, and Wound Rotor) the tests are AC Standard Test, Polarization Index (PI) which includes a Dielectric Absorption Ratio, Rotor Influence Check (RIC), and Step Voltage. For DC assets the tests are DC Standard Test, Polarization Index (PI) which includes a Dielectric Absorption Ratio, Bar-to-Bar (Armature Circuit only), and Step Voltage.

Both AC and DC assets have an MCE Auto test which runs the Standard test followed by the Polarization Index test, automatically saves the test results, and displays the Fault Zone Report at the end of testing.

The frequency and type of asset testing you perform is based on your experience with the tester, the condition of each individual asset, and the criticality/application of each asset. Since it may be impossible to test each and every asset in your facility, ask yourself the following questions when deciding which assets to test.

- Is the asset easily replaceable and if so, is a replacement readily available?
- Would buying a new asset cost less than repairing the old asset?
- Is the asset redundant or non-critical?

If you answered yes to all three of these questions, you may not want to consider this asset for your monitoring program.

If you are unfamiliar with an asset, review its maintenance history of test results, problems, and repairs before testing it. Talk with the operators who run it and anyone who may have information about its repair history. This will give you a more complete picture of the condition of the asset.

MCE test results give you a comprehensive picture of the electrical condition of the asset. MCE results can be utilized, along with results obtained from other technologies, to get a complete picture of the health of the asset. Some examples of other technologies include vibration, oil analysis, and infrared thermography.

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Some of the MCE tests give you enough information to call an asset good or bad, based on results from one test. Other MCE tests give you data which is best used for trending and comparison.

Trending means comparing sequential test results for the same asset over time. This tracks what the particular asset is doing, how it is holding up, when it may need to be cleaned, when it needs more detailed maintenance, or when a fault develops.

Test frequency depends on the asset's criticality and the condition of the asset when it is first tested. As the asset ages, you may decide to test it more frequently to better track its condition.

When you first start testing with the MCE, the initial test is automatically designated as the baseline test. After maintenance is performed on an asset and it is returned to optimal condition, measure subsequent tests against that condition by designating the first test after the maintenance as the new baseline.

Comparison means comparing individual test results on one asset with test results from an identical asset operating in a similar environment. By identical asset we mean the same manufacturer, voltage and horsepower rating, cable length for MCC, etc. For example, if there are four like assets operating side by side performing the same task, all running at approximately the same load, each running about the same amount of time, the test data should be very close for all of them. If all four assets are tested, and three are basically the same, but the fourth is very different from the other three, look for potential problems with the fourth asset.

MCE testing is performed on a deenergized asset. However, there may be energized circuitry in the same cabinet in which you connect the tester.



FOLLOW ALL ELECTRICAL SAFETY PRECAUTIONS AND PROCEDURES FOR WORKING IN THE VICINITY OF ENERGIZED EQUIPMENT. READ THE ELECTRICAL SAFETY PRECAUTIONS IN CHAPTER ONE BEFORE PERFORMING ANY TESTS.

For AC assets, test lead colors of black, blue, and red connect to phases 1, 2, and 3 (left to right, top to bottom); green connects to ground. For DC assets, test lead colors of black and blue connect to F1/A1 and F2/A2; the red lead is not used; green connects to ground. The DC Bar-to-Bar pistol grip or pencil probe test leads connect to commutator bars.

Some asset circuits may have surge capacitors and/or power factor correction capacitors installed. It is important to know about them since these components affect the values of the collected data and increase the time and number of steps involved in troubleshooting. Testing can be performed with the power or surge capacitors installed, however, surge capacitors must be removed for the accurate measurement of the asset's insulation resistance-to-ground. If an asset appears faulty with the power factor capacitors installed, disconnect them and perform the testing again to isolate the fault.

TEST SELECTION WINDOW

In this chapter, the MCE aspects of asset testing are discussed. EMAX testing is discussed in the Power and Current Analysis chapters. The Test Selection window discussion is followed by the Step-by-step testing procedures, Test Data Analysis on page 5-53, and finally MCE Analysis on page 5-74.

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Note: Selecting the MCE Auto test icon on the tool bar bypasses the Test Selection window and automatically runs the Standard Test followed by the Polarization Index test using either the default or previously saved test settings, at the end of testing the test results are saved, and the Fault Zone Report opens.

To open the Test Selection Window click the Test Selection icon on the tool bar.

The Test Selection window is shown in Figure 5-1. The asset name is located on the title bar to the right of the window name. The Test Selection window is used for both MCE and EMAX testing by selecting the desired test type tab.

The asset section tabs are found along the left side of the test selection area and are dependent on the asset type. Possible sections are Armature Circuit, Field Circuit, Resistor Bank, Rotor, and Stator.

- For AC Induction assets, the only option is Stator.
- For AC Synchronous assets, options are Field Circuit and Stator.
- For Wound Rotor assets, options are Stator, Rotor, and Resistor Bank.
- For DC assets, options are Armature and Field Circuit.

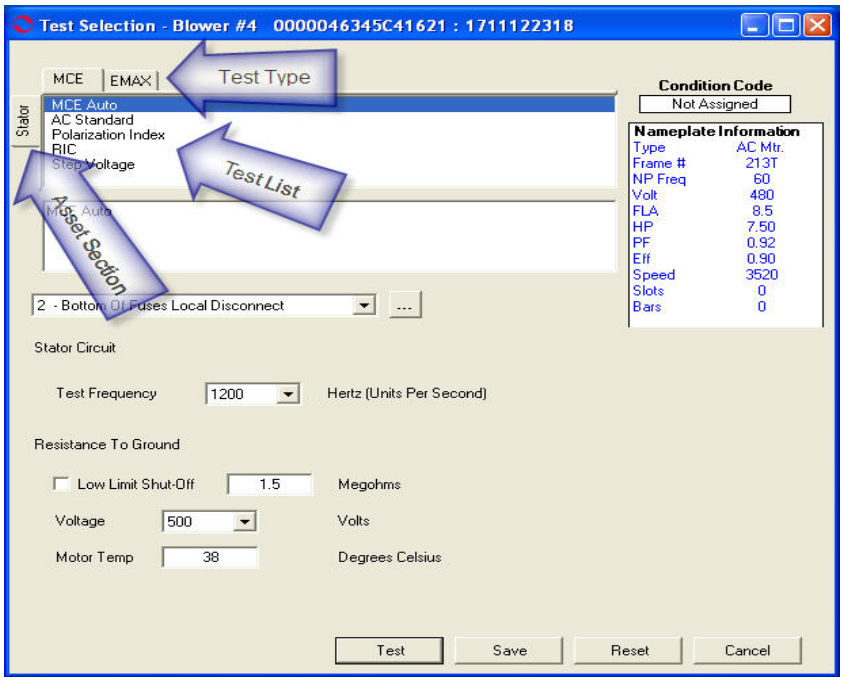


Figure 5-1: Test Selection Window

Test List

The top left section of the window contains a list of test selections for either MCE or EMAX, depending on asset type, test type and asset section tabs selected. The test lists section displays the various tests which may be performed based on the asset type and asset section chosen. When a test is selected, the name of the test is highlighted blue and

the test set up area changes to values appropriate for the test selected. The test list possibilities for MCE testing are:

- MCE Auto
- Standard (AC asset)
- Standard (DC asset)
- Polarization Index
- Rotor Influence Check (RIC)
- Step Voltage
- Synchronous (Synchronous, Field section)
- Resistor Bank (Wound Rotor, Resistor Bank section)
- Commutator Bar-to-Bar (DC asset)

Asset Information

Asset Information is located on the right side. This area displays the Condition Code and nameplate information of the asset being tested. The information comes from the nameplate data that was entered when the asset was set up and cannot be edited on this window. Information displayed, depending on asset type, may include: Type, Frame #, NP Frequency, Voltage, FLA, HP, PF, Eff, Speed, Slots, and Bars. Also, Field Volts and Field Current are listed for DC assets.

MCE Test Setup

The lower half of the Test Selection window is devoted to test set-up selections. The set-up options depend on the asset type and test selected.

Asset Test Location

The Asset Test Location default is Not Assigned. To assign a test location, click the down arrow and select from the list. If the location is not known, click the browse button ... . The Test Location Selection window opens displaying a test location graph for the type of asset selected. See Figure 5-2. Use the graph to determine the location, then click the down arrow in the Test Location text box, select the location from the list, and click **OK.**

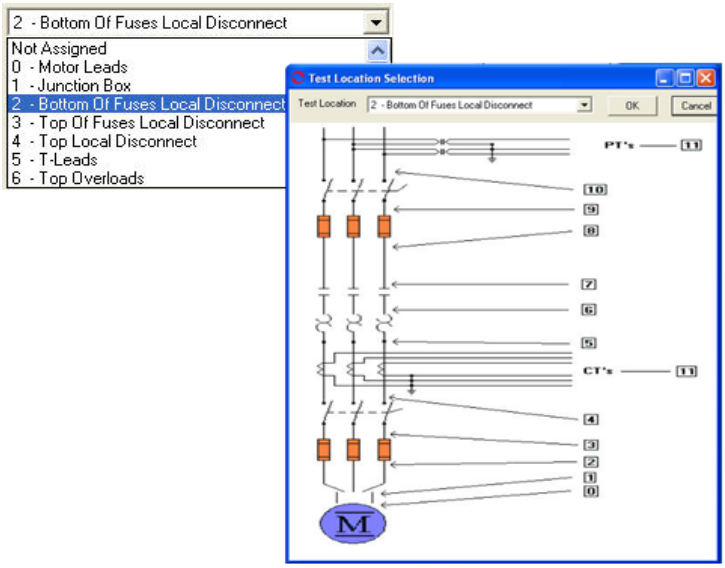


Figure 5-2: AC Asset Test Location

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Test Frequency

Test Frequency is selected from a drop-down box. Click the down arrow and select from the list to change the frequency. The choices are 300 or 1200 Hz depending on the section being tested. Test Frequency is not available for the resistor bank section of a wound rotor asset.

Resistance-to-Ground

Resistance-to-Ground provides the option to check (turn on) the Low Limit Shut Off and enter a shut off voltage.

Voltage

Voltage is selected from a drop-down list. Click the down arrow and select from the list to change the voltage. The voltage choices are from 250, 500, 1,000, 2,500, and 5,000.

Select a voltage of 500 or 1000 volts, based on the asset's voltage. EASA (Electrical Apparatus Service Association), in their booklet How to Get the Most From Your Electric Motors, suggests 500 volts for assets rated ≤2400 volts and 1000 volts for assets rated at >2400 volts.

Asset Temperature

The default value is 40° C. The value may be changed by typing in a new value.

Span

Span selection is only available for Bar-to-Bar testing of the armature section of DC assets.

Charge Time

Charge time is available for the Standard test of an AC Induction, Wound Rotor, Synchronous, and DC assets. The default value is 60 seconds. To change the charge time, click the down arrow and select from the list of between 15 and 600 seconds.

Test Button

Click **Test** to advance to the test window.

Save Button

Click **Save** when the test set-up selections are complete. This saves the settings as default values for that asset for subsequent tests, but is not required. If you forget to save and click Test, you will be asked if you want to save your changes.

Reset Button

Click **Reset** to set values back to the pre-changed value. Note: If you have clicked the Save button they will not reset and it will be necessary to manually change them back.

Cancel Button

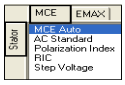
Click **Cancel** to close the Test Selection window without saving setup changes or proceeding to the test window. You will be asked if you want to save test setup settings.

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TEST WINDOW

Once the asset section and setup parameters are selected, you are ready to run the test. This section explains each test by asset type and asset section. The test window is discussed followed by step-by-step testing procedures. Test analysis information begins on page 5-53.

AC Induction Assets



The MCE tests for an AC Induction asset are MCE Auto, AC Standard, Polarization Index, RIC, and Step Voltage. They are discussed in detail in this section.

Note: To minimize the influence of stored energy on test results, perform the tests in the following order. If a test is not to be performed, skip to the next test.

- Rotor Influence Check (RIC)
- Standard Test
- Polarization Index (PI)/Dielectric Absorption (DA) If a PI is performed, it is not necessary to perform a separate DA.

Some circuits may have surge capacitors and power factor correction capacitors installed. This is important since these components affect the values of the collected data and increase the time and number of steps involved in troubleshooting. Testing can be performed with the power factor capacitors installed. However, a test should be taken with surge capacitors removed for future comparison. If an asset appears faulty with the power factor capacitors installed, disconnect them and perform the testing again to isolate the fault.

MCE Auto Test

MCE Auto test performs a standard test followed by a Polarization Index test, then saves the data and produces a Fault Zone Report.

MCE Auto test can be started by clicking the MCE Auto icon 

on the toolbar or selecting MCE Auto from the test list in the Test Selection Window. If you select the MCE Auto icon, the MCE Auto test window opens bypassing the Test Selection window.

If you need to change the test setup settings, select the Test Selection icon 

. The Test Selection window opens, make your changes, and then select MCE Auto from the test list and click **Test**. The MCE Auto Test window, Figure 5-3, opens. The MCE Auto Test window menu consist of three options: File, View, and Options.

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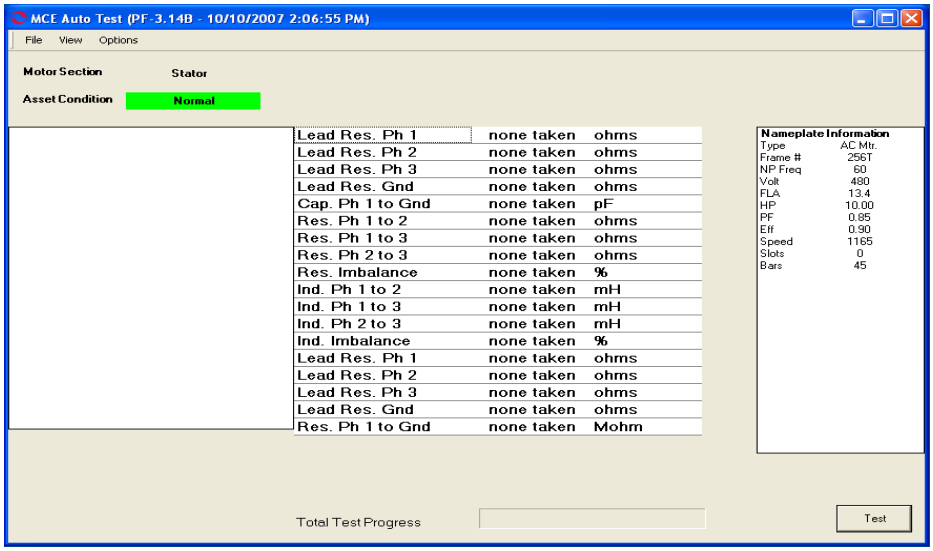


Figure 5-3: MCE Auto Test Window

File Menu

Save. Save (Ctrl+S) is not active, it appears dimmed, until after testing is complete.

Exit. Exit (Ctrl+X) closes the MCE Auto Test and Test Selection windows and returns you to the Home window.

View Menu

Create Message . Create Message opens the Compose Asset Message window (Figure 5-4). Messages created here are viewed in the Message Center. For more information on the Message Center, see Chapter 3, page 3-41.

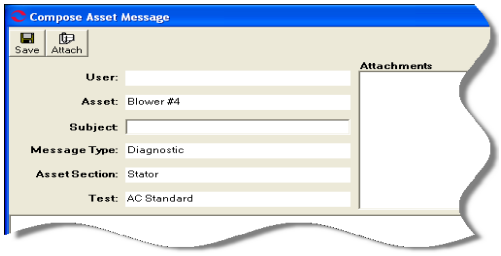


Figure 5-4: Compose Asset Message Window

Options Menu

Set Condition Code. Change the condition code, by selecting the option button corresponding to the condition (Figure 5-5). The Asset Condition box on the MCE Auto Test window changes and a note is automatically generated by the software. The note is viewed in the Message Center. For more information on the Message Center, see Chapter 3, page 3-43.

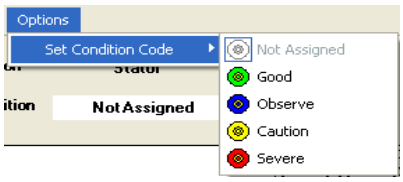


Figure 5-5: Set Condition Code Window

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Test Button

To begin testing click **Test**. During testing the menu items are dimmed (not available) and the Test button changes to Stop. The test takes approximately 11 minutes.

The tester automatically proceeds from the Standard test to the Polarization Index (PI) test. A status bar displays the testing progress. During the Standard test there is one Total Test Progress bar. When the PI test is performed there is a PI progress bar, a Total Progress bar, and a graph in the lower left displaying the test results. See Figure 5-6.

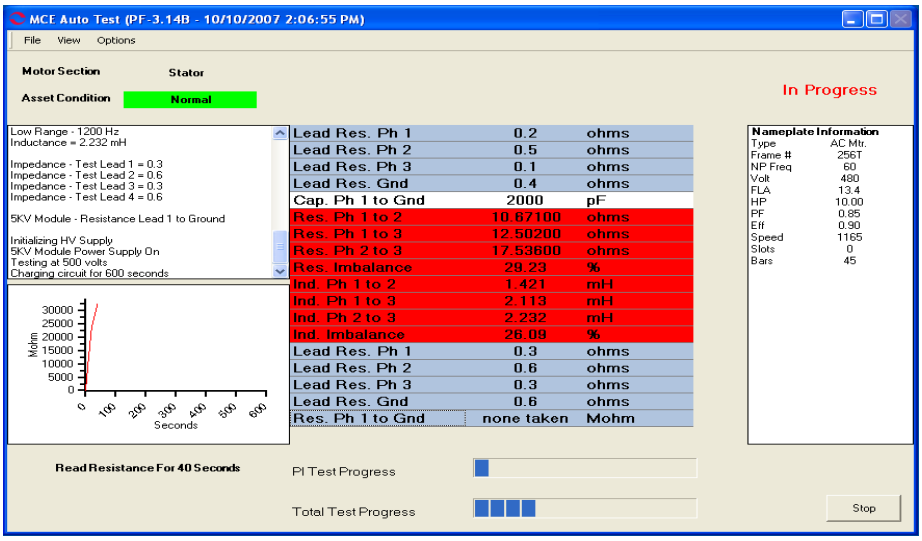


Figure 5-6: MCE Auto Test Window - PI Test

At the end of the PI test, the test results are automatically saved and the Fault Zone Report is generated and displayed. See Figure 5-7.

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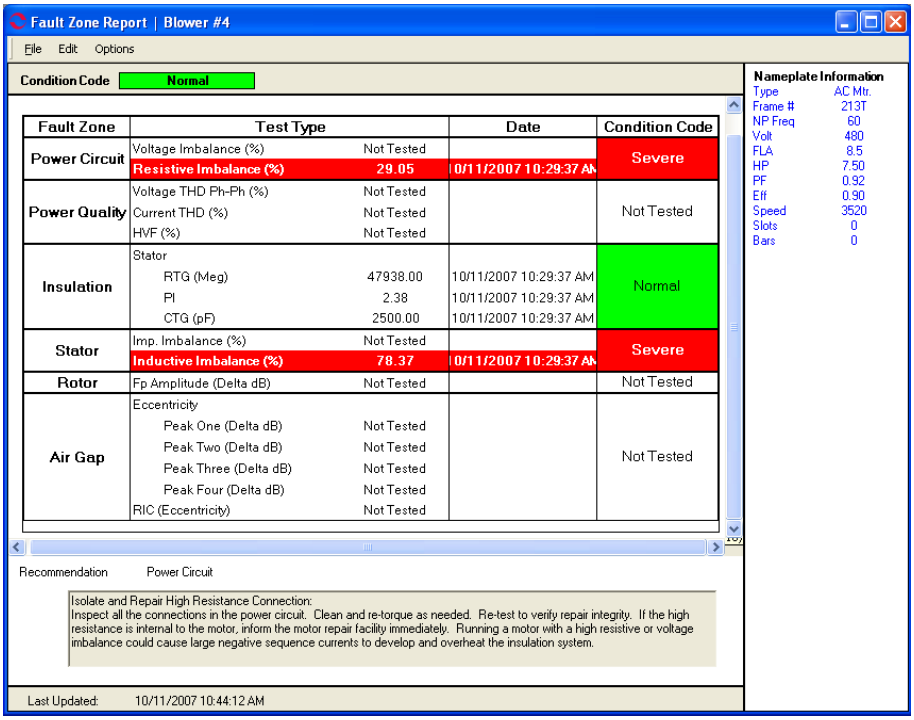


Figure 5-7: MCE Auto Test Fault Zone Report

Fault Zone Report

NOTE: The information for the Fault Zone Report, beginning with File Menu and ending with To View Test History on page 5-12, has been replaced with a new and improved ocular format. A description of the ocular fault zone can be found on page 3-52 in Chapter 3-MCEGold3.

File Menu

Print Preview. Print Preview, shown in Figure 5-8, displays the Fault Zone Report as it will be printed. Using the File menu on the Print Preview window, you can export the report to PDF or HTML or add comments before printing.

To *create a PDF file*, select File, Export to PDF, select the location you wish to save the file in, enter a file name, and click **Save**.

To *create a HTML file*, select File, Export to HTML, select the location you wish to save the file in, enter a file name and click **Save**.

To *add comments*, select File, Add Comments. In the Add Remarks window type your comments and click **Add**. The comments appear in the Comments section at the bottom of the report. They will appear on the printed report, but are not saved for the future. Permanent comments should be entered in the Message Center using Edit, Create Message, which is discussed on page 5-11.

To *print the report* click the **Print** icon on the Print Preview toolbar.

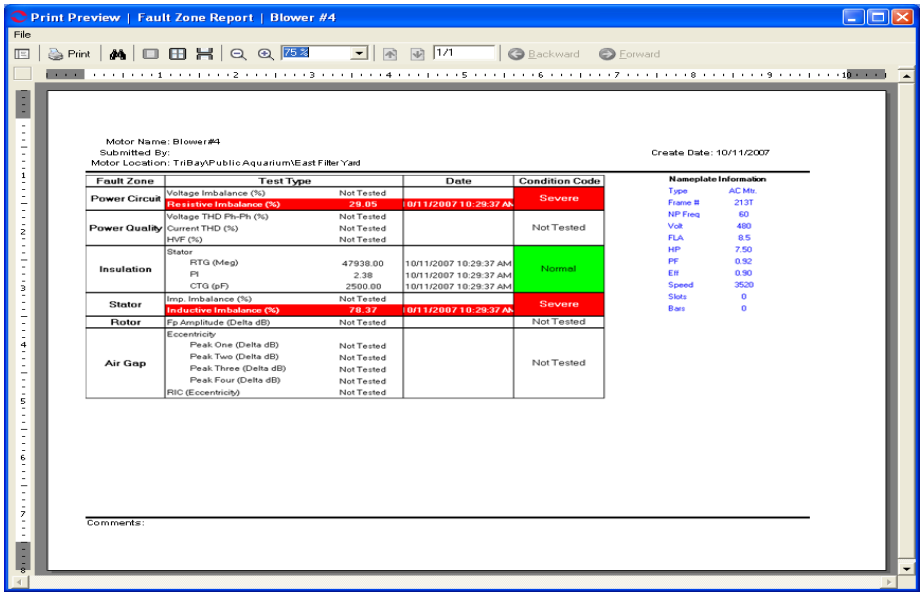


Figure 5-8: Print Preview

Print. Print prints the report to your default printer.

Exit (Ctrl+Q). Exit the report by using File, Exit (Ctrl+Q) or clicking the Close button (red X in the upper right corner).

Edit Menu

Create Message (Ctrl+M). You may enter permanent notes by selecting Create Message (Ctrl+M). This opens the Compose Asset Message window shown in Figure 5-4 on page 5-8. The note is viewed from the Message Center. See the section on Message Center in Chapter 3, page 3-41.

Options Menu

Refresh (Ctrl+R). The Refresh function is used to update the Fault Zone Report when changes have been made to the warning settings.

Set Condition Code. Change the condition code, by selecting an option button, the Condition Code box changes, and a note is automatically generated by the software. The note is viewed from the Message Center. See the section on Message Center, in Chapter 3, page 3-43.

Description/Recommendation

The blank area at the bottom of the report is designed to provide additional information, such as descriptions of the Fault Zones and Test Types or recommended actions for the Condition Code. It is for on screen viewing only and does not appear on the printed report.

To **view a description** of the Fault Zone or Test Type, click on the name in the Fault Zone report. The description will appear in the text box at the bottom of the window.

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To **view the recommended course of action** for a condition code, click the condition code name. The recommended course of action will appear in the text box at the bottom of the window. Figure 5-7 shows how the window would appear if severe condition code of the power circuit was selected.

To View Test History

To **open the Test History** click on the test type result value or the date. The Test History window opens.

AC Standard Test

The AC Standard test is reach by selecting AC Standard from the test list on the Test Selection window. See page 5-3, Test Selection Window for more information. Verify that the test set-up settings are correct and click **Test**. The AC Standard Test Window (Figure 5-9) opens.

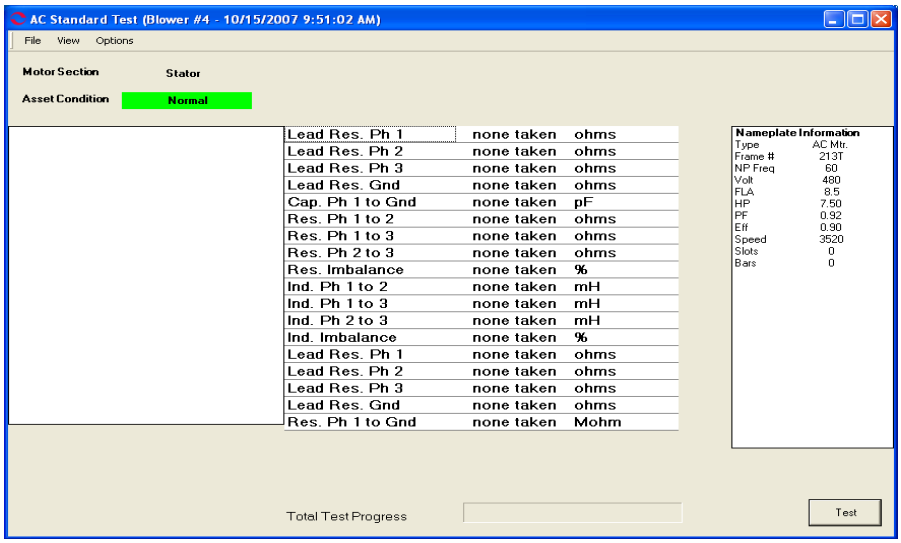


Figure 5-9: AC Standard Test Window

The AC Standard Test window menu consist of three options: File, View, and Options.

File Menu

Save. Save (Ctrl+S) is not active, it appears dimmed, until after testing is complete.

Exit. Exit (Ctrl+X) closes the AC Standard test window and returns you to the MCEGold Home window.

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View Menu

Create Message. Create Message opens the Compose Asset Message window (Figure 5-10). Messages created here are viewed in the Message Center. For more information on the Message Center, see Chapter 3, page 3-41.

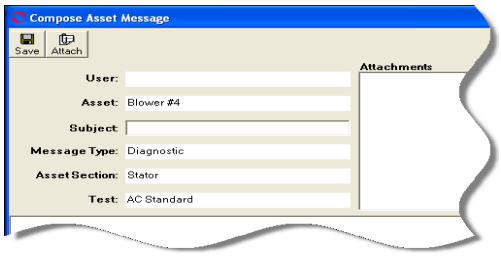


Figure 5-10: Compose Asset Message Window

Options Menu

Set Condition Code. Change the condition code, by selecting an option button (Figure 5-11). The Asset Condition box on the AC Standard Test window changes and a note is automatically generated by the software. The note is viewed in the Message Center. For more information on the Message Center, see Chapter 3, page 3-43

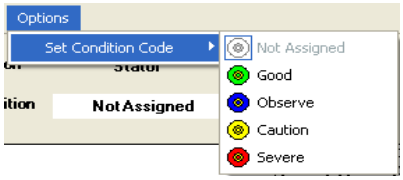


Figure 5-11: Options, Set Condition Code Menu

Step-by-Step AC Standard Testing

1. Deenergize and lock out the starter and the asset.

2. Check for low level induced voltages using a Fluke multimeter or equivalent.

   Verify that the values do not exceed 0.5 VAC phase-to-phase and 15 VAC phase-to-ground. Check for low level stored voltage by verifying less than 15 VDC phase-to-ground.

3. Connect the MCE to the circuit, in the same manner each time, as referenced in Table 5-1. This ensures that the test data is trendable/repeatable.

Table 5-1: Test Lead Connections

MCE test leads	Black	White	Red	Green
motor phase	A	B	C	gnd
“T” lead	T1	T2	T3	gnd
vertical	top	mid	bot	gnd
horizontal	left	mid	right	gnd

4. Highlight the asset to be tested on the Site Navigator.

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5. Select the Test Selection icon on the toolbar. The Test Selection window opens, Figure 5-12.

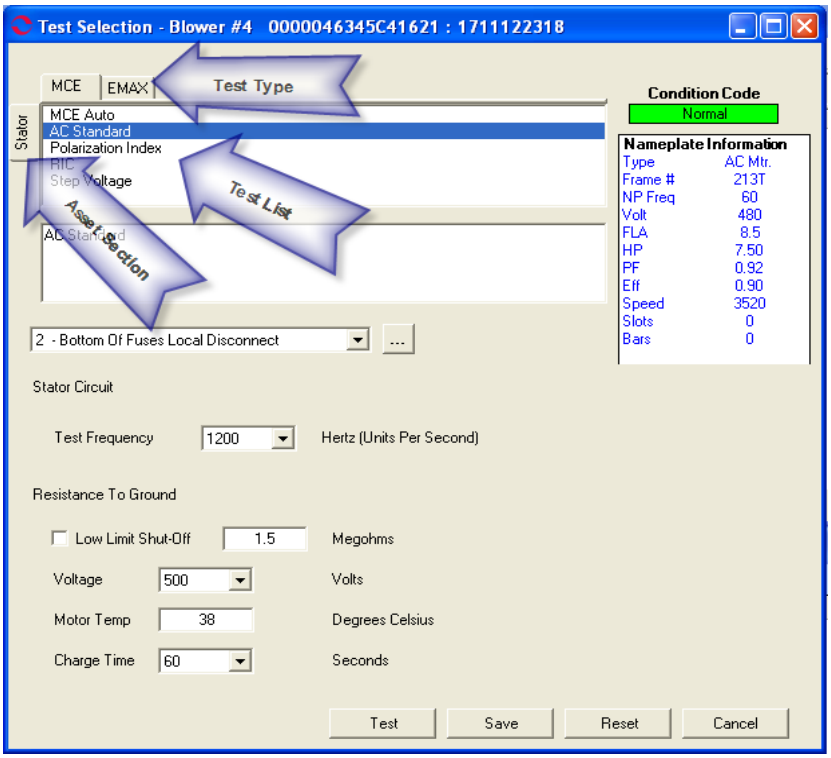


Figure 5-12: Test Selection Window

6. Verify that the MCE (Test Type) and Stator (Asset Section) tabs are selected. The type of asset determines which asset sections are available.

7. Click AC Standard from the Test List.

   If all of the settings in the MCE Test Setup are correct, click **Test** to go directly to the test. Go to step 16.

8. Verify the Test Location in the Test Setup section.

   To insure consistent trending and assist in trouble shooting, the actual test location should be stored for each test.

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The Test Location default is Not Assigned. To assign a test location, click the down arrow and select from the list. If the location is not known, click the browse button . The Test Location Selection window opens displaying a test location graph for the type of asset selected. Use the graph to determine the location, then click the down arrow, select from the list, and click **OK**. See Figure 5-13.

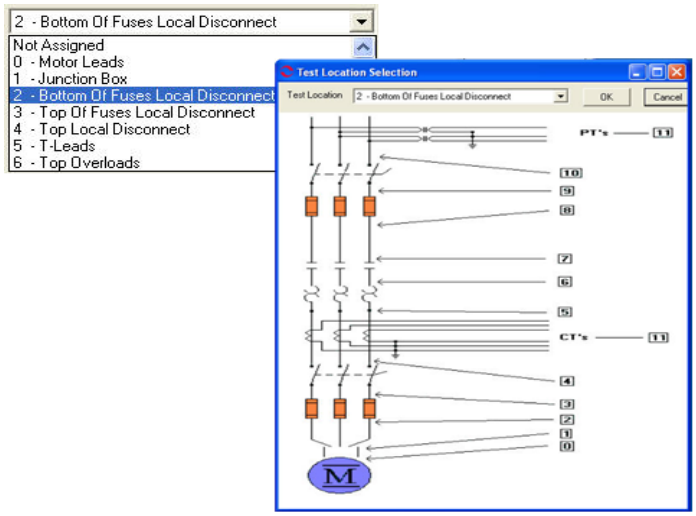


Figure 5-13: Asset Test Location

9. Verify the Test Frequency.

   Click the down arrow and select the frequency from the drop-down list. The values are 300 or 1200.

10. Verify the Low Limit Shut Off condition.

    Check the box to activate the low limit shut off and enter the desired Mohms.

11. Verify the Voltage.

    Click the down arrow and select the voltage from the drop-down list. Select test voltage based on asset nameplate voltage.

12. Enter the temperature.

    Adjust the Temperature ° C to stator core temperature at the time of testing.

13. Select the Charge Time Seconds.

    Click the down arrow and select the seconds from the drop-down list. The choices are from 30 to 180 seconds at 15 second increments.

14. Click **Save** to save the settings for this asset for future testing. Or click **Reset** to return the original settings. This can only be done if the new settings have not been saved.

15. Click **Test** to go to the testing window.

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16. Click **Test** in the AC Standard Test Window.

17. Verify that you are about to apply "X" volts to the circuit by clicking **Yes**.

18. Testing begins, progress bars are displayed for Total Test Progress and Discharge Progress at various times. The test values are filled in as testing proceeds. At the end of testing Test Completed appears above the Nameplate Information area. See Figure 5-14.

    To stop the test at any time, click **Stop**. Click **Exit** to close the AC Standard test window and return to the Home window.

19. Click **OK** when the test is complete.

20. Re-test any individual point, if needed. If not go to step 21.

    If any portion of the test needs to be re-tested, double click the tab which appears to the right of the individual test point. This rechecks only that test point in "manual mode." See Figure 5-14.

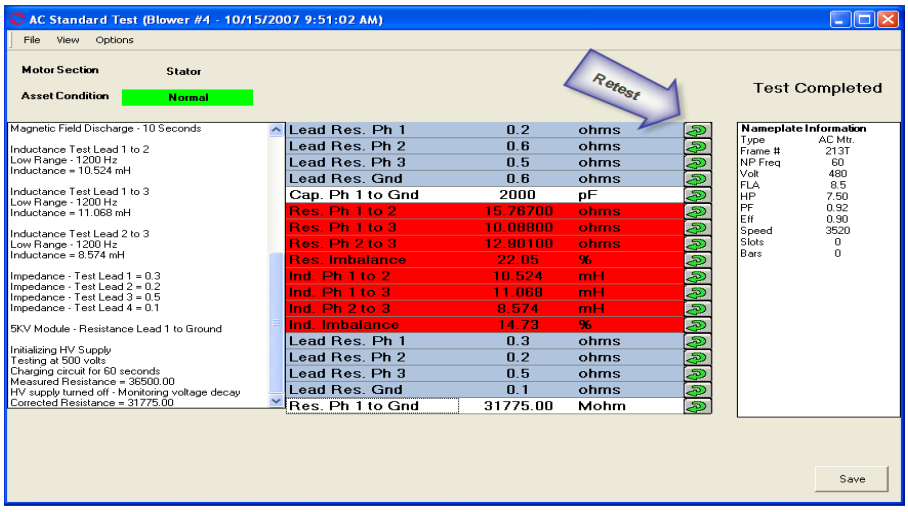


Figure 5-14: AC Standard Test Window

21. When retesting is complete or if no re-testing is needed, click **Save** or select File, Exit, or Ctrl+X, or use the close button (X in the upper right corner).

22. Click **OK** in the Save Complete window.

23. Click **Exit** in the AC Standard Test Window.

Polarization Index

The Polarization Index (PI) test is reached by selecting Polarization Index from the test list on the Test Selection window. See page 5-3, Test Selection Window for more information.

Verify that the test set-up settings are correct and click **Test**. The PI test window opens. See Figure 5-15.

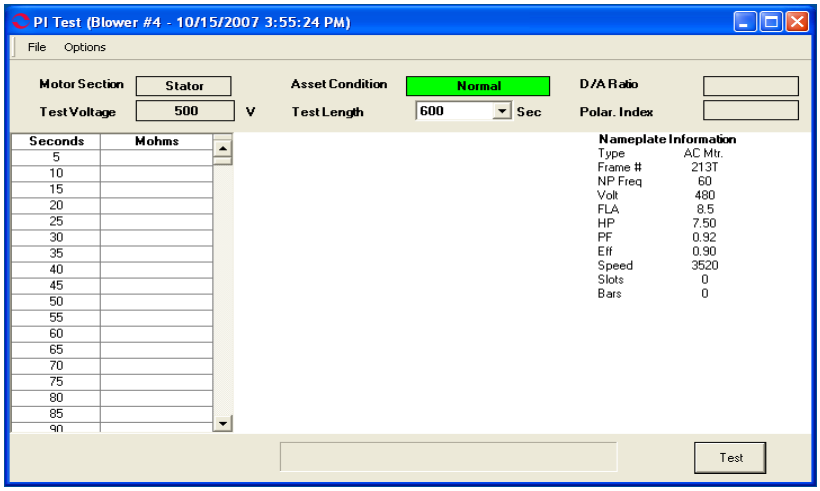


Figure 5-15: PI Test Window

File Menu

Save. Save (Ctrl+S) is not active, it appears dimmed, until after testing is complete.

Exit. Exit (Ctrl+X) closes the PI Test window and returns you to the Home window.

Options Menu

Set Condition Code. Change the condition code, by selecting the option button corresponding to the condition (Figure 5-16). The Asset Condition box on the PI Test window changes and a note is automatically generated by the software. The note is viewed in the Message Center. For more information on the Message Center, see Chapter 3, page 3-41.

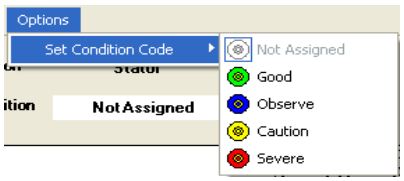


Figure 5-16: Set Condition Code Window

Step-by-Step Polarization Index Testing

The PI test takes ten minutes. During the test the menu items are dimmed (not available) and the **Test** button changes to **Stop**.

1. Deenergize and lock out the starter and the asset.

2. Check for low level induced voltages using a Fluke multimeter or equivalent.

   Verify that the values do not exceed 0.5 VAC phase-to-phase and 15 VAC phase-to-ground. Check for low level stored voltage by verifying less than 15 VDC phase-to-ground.

3. Connect the MCE to the circuit, in the same manner each time, as referenced in Table 5-2. This ensures that the test data is trendable/repeatable.

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Table 5-2: : Test Lead Connections

MCE test leads	Black	White	Red	Green
motor phase	A	B	C	gnd
“T” lead	T1	T2	T3	gnd
vertical	top	mid	bot	gnd
horizontal	left	mid	right	gnd

4. Highlight the asset to be tested in the Site Navigator.

5. Select the Test Selection icon on the toolbar. The Test Selection window opens, Figure 5-17.

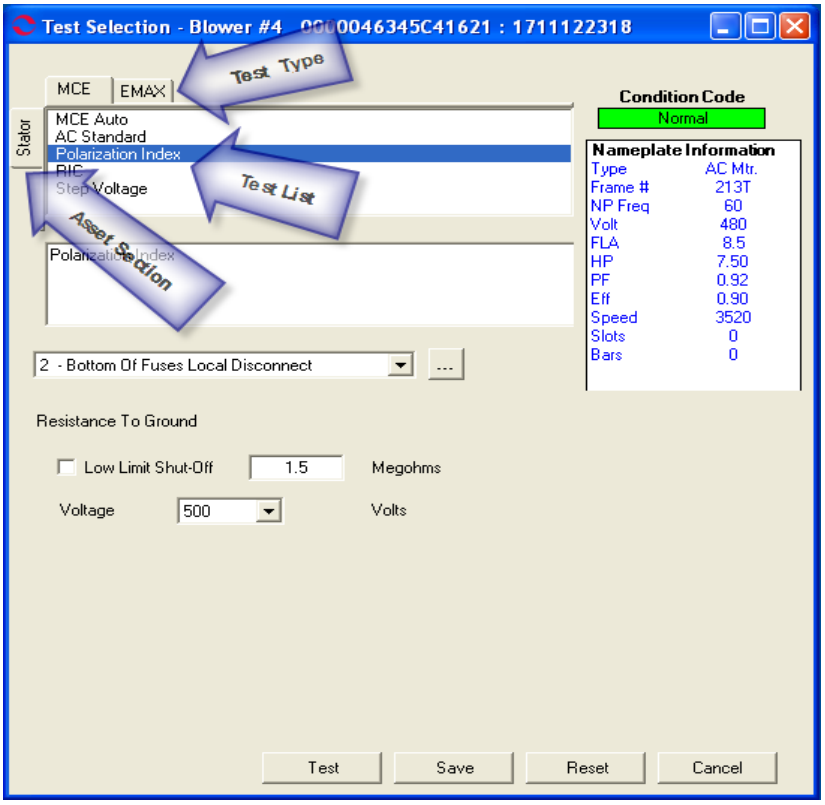


Figure 5-17: Test Selection Window

6. Verify that the MCE (Test Type) and Stator (Asset Section) tabs are selected. The type of asset determines which asset sections are available.

7. Verify the Test Location in the Test Setup section.

   To insure consistent trending and assist in trouble shooting, the actual test location should be stored for each test.

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The Test Location default is Not Assigned. To assign a test location, click the down arrow and select from the list. If the location is not known, click the browse button . The Test Location Selection window opens displaying a test location graph for the type of asset selected. Use the graph to determine the location, then click the down arrow, select from the list, and click **OK**. See Figure 5-18.

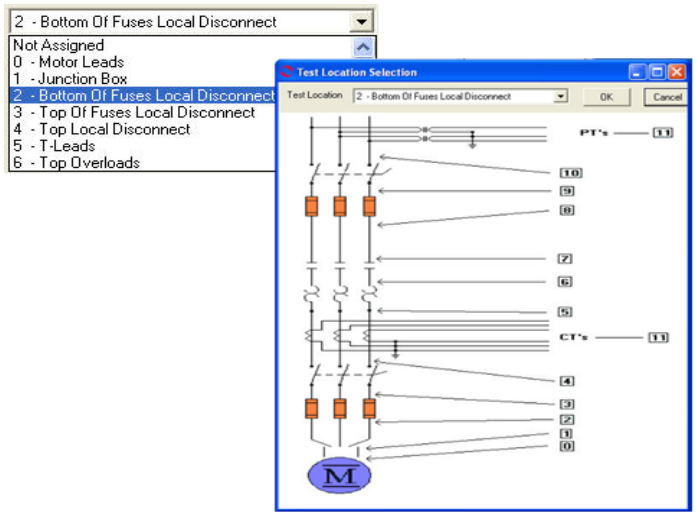


Figure 5-18: Asset Test Location

8. Verify the Low Limit Shut Off condition.

   Check the box to activate the low limit shut off and enter the desired Mohms.

9. Verify the Voltage.

   Click the down arrow and select the voltage from the drop-down list. Select the test voltage based on asset nameplate voltage.

10. Click **Save** to save the settings for this asset for future testing. Or click **Reset** to return the original settings. This can only be done if the new settings have not been saved.

11. Click **Test** to go to the testing window.

12. Click **Test** in the PI Test window.

13. Verify that you are about to apply "X" volts to the circuit by clicking **Yes**.

14. As the test proceeds, the test result values are displayed in the table and plotted on the graph. At the end of one minute the D/A ratio is computed and displayed in the D/A Ratio text box. The progress bar displays the progress of the testing.

    Note: To stop the test, click **Stop.**

15. Click **OK** in the Test Completed window. The menu item become active and the **Stop** button is inactive.

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16. Exit the PI Test window by selecting File, Exit, or Ctrl+X, or the close button (Red X in the upper right corner).

17. You will be asked if you want to save test data. Click **Yes** or **No**.

    If you select **Yes**, click **OK** in the Save Completed widow. The PI Test window closes

    If you select **No**, the PI Test window closes. No test data is saved.

RIC

The RIC test is reached by selecting RIC from the test list on the Test Selection window. See page 5-3, Test Selection Window for more information. Verify that the test set-up settings are correct and click **Test**. The RIC test window opens. See Figure 5-19.

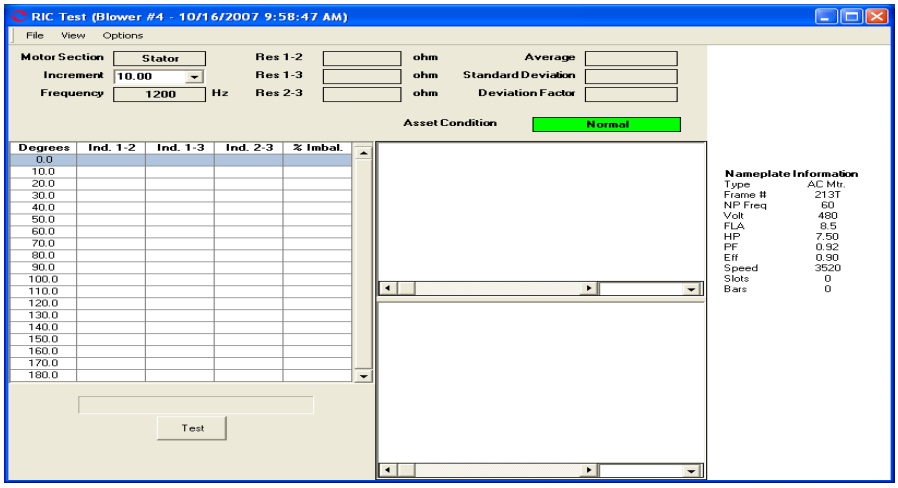


Figure 5-19: RIC Test Window

File Menu

Save. Save (Ctrl+S) is not active, it appears dimmed, until after testing is complete.

Exit. Exit (Ctrl+X) closes the RIC Test window and returns you to the Home window.

View Menu

Create Message . Create Message opens the Compose Asset Message window (Figure 5-20). Messages created here are viewed in the Message Center. For more information on the Message Center, see Chapter 3, page 3-41.

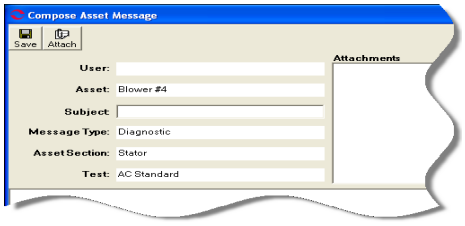


Figure 5-20: Compose Asset Message Window

Options Menu

Set Condition Code. Change the condition code, by selecting the option button corresponding to the condition (Figure 5-21). The Asset Condition box on the RIC Test window changes and a note is automatically generated by the software. The note is viewed in the Message Center. For more information on the Message Center, see Chapter 3, page 3-41.

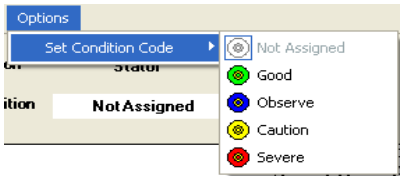


Figure 5-21: Set Condition Code Window

Step-by-Step RIC Testing

During the test the menu items are dimmed (not available). To stop testing, use File, Exit which becomes active after each test point.

1. Deenergize and lock out the starter, disconnect, and the asset. Follow your company's electrical safety procedures for tagouts.

2. Check for low level induced voltages using a Fluke multimeter or equivalent.

   Verify that the voltage does not exceed 0.5 VAC phase-to-phase and 15 VAC phase-to-ground. Check for low level stored voltage by verifying less than 15 VDC phase-to-ground.

3. Place the shaft key way in the up position. This ensures a common starting point for all subsequent tests.

4. Ensure that the field is disconnected from the control circuit.

   This is accomplished by isolating/removing the brushes from the slip rings or by disconnecting the field leads from the diode pack in a self-exited asset. This allows the natural magnetic field on the rotor to expand, enhancing the detection of rotor problems.

5. Connect the MCE test leads to the circuit/asset, in the same manner each time, as referenced in Table 5-3. This ensures that the test data is trendable/repeatable.

Table 5-3: Test Lead Connections

MCE test leads	Black	White	Red	Green
motor phase	A	B	C	gnd
"T" lead	T1	T2	T3	gnd
vertical	top	mid	bot	gnd
horizontal	left	mid	right	gnd

6. Highlight the asset to be tested in the Site Navigator.

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7. Select the Test Selection icon on the toolbar. The Test Selection window opens, Figure 5-22.

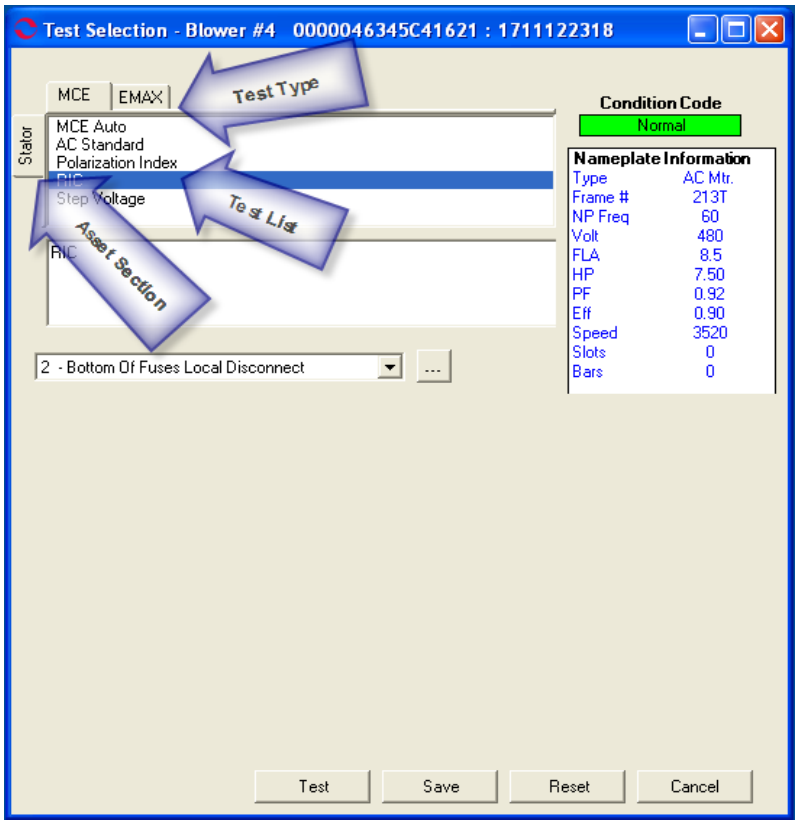


Figure 5-22: Test Selection Window

8. Verify that the MCE (Test Type) and Stator (Asset Section) tabs are selected. The type of asset determines which asset section is available.

9. Select RIC from the Test List box.

10. Verify the Test Location in the Test Setup section.

    To insure consistent trending and assist in trouble shooting, the actual test location should be stored for each test.

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The Test Location default is Not Assigned. To assign a test location, click the down arrow and select from the list. If the location is not known, click the browse button . The Test Location Selection window opens displaying a test location graph for the type of asset selected. Use the graph to determine the location, then click the down arrow, select from the list, and click **OK**. See Figure 5-23.

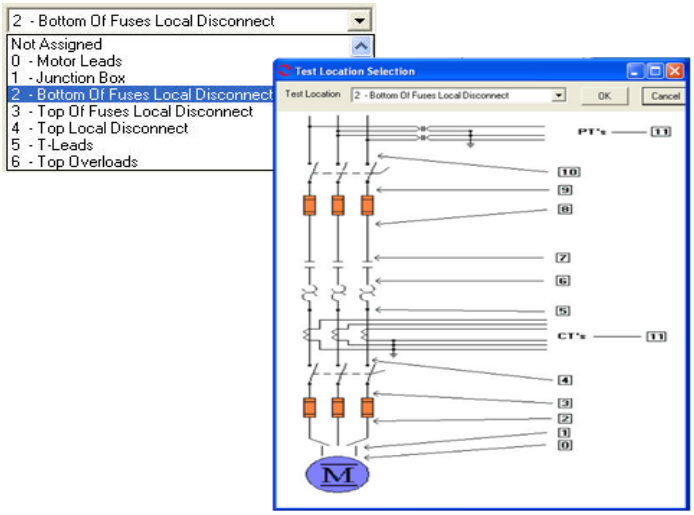


Figure 5-23: Test Locations

11. Click **Save** to save the settings for this asset for future testing. Or click **Reset** to return the original settings. This can only be done if the new settings have not been saved.

12. Click **Test** to go to the test. The RIC test window, Figure 5-24, opens.

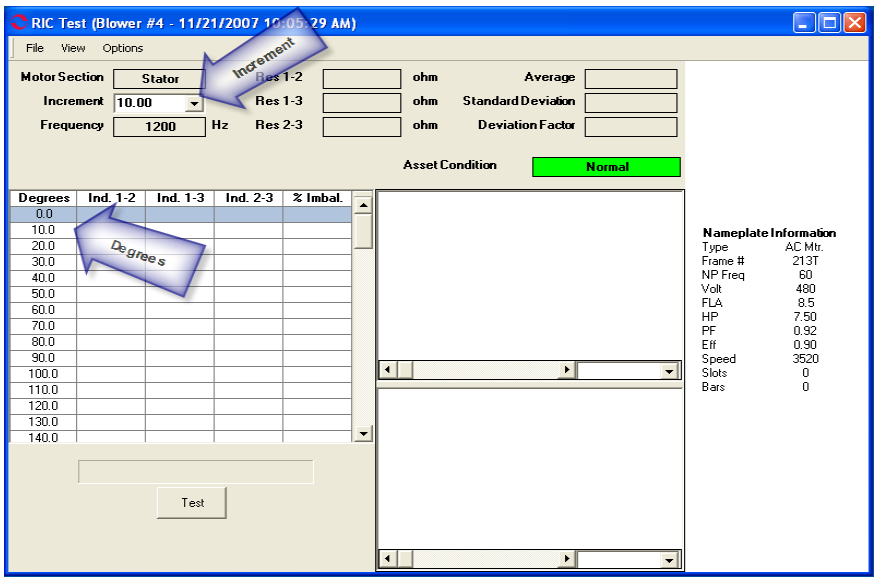


Figure 5-24: RIC Test Window

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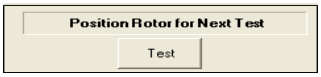
13. Verify that increments to be used during testing are correct. This information is located at the top of the RIC Test window.

    To change the Increments, which automatically computes the appropriate Degrees, click the down arrow and select the increment from the drop-down list.

    The new increments are displayed and the degrees on the test data table is updated.

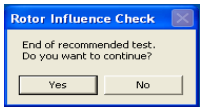
14. Position the rotor to the first position and click **Test** to begin testing.

15. At the end of each test point, you will be reminded to position the rotor for the next test point. Move the rotor and click **Test**. Repeat until the end of the recommended test.



    As the test progresses, the values will be inserted into the table and displayed in the graph areas. The magnification of the graphs can be changed by using the down arrows below each graph area and selecting a new value from the drop down list. The default is Full.

16. At the end of the recommended test you will be asked if you want to continue. Select **Yes** to continue testing or **No** to end testing.



17. Exit the RIC Test window by selecting File, Exit, or Ctrl+X, or the close button (X in the upper right corner).

18. You will be asked if you want to save test data. Click **Yes** or **No**.

    If you select **Yes**, click **OK** in the Save Completed widow. The RIC Test window closes.



    If you select **No**, the RIC Test window closes. No test data is saved.

Step Voltage

The Step Voltage test is reached by selecting Step Voltage from the test list on the Test Selection window. See page 5-3, Test Selection Window for more information. Verify that the test set-up settings are correct and click **Test**. The Step Voltage Test window opens. Figure 5-25.

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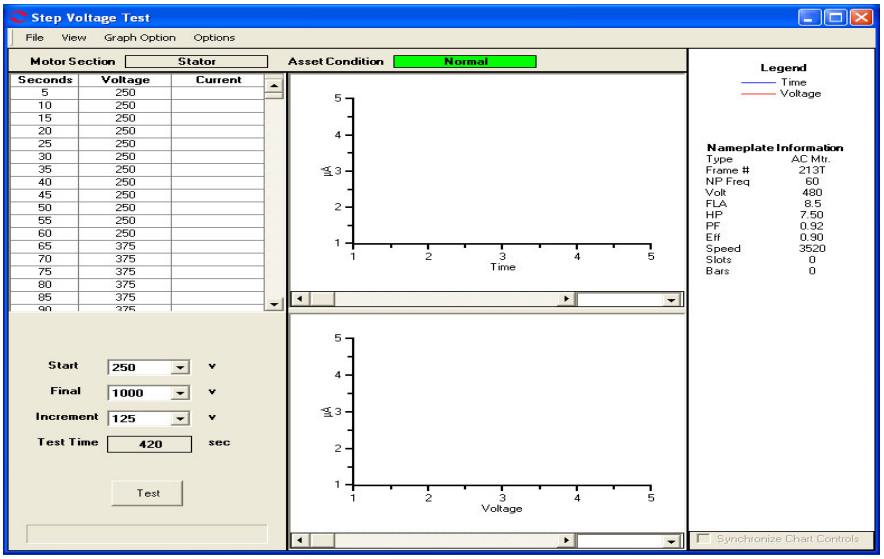


Figure 5-25: Step Voltage Test

File Menu

Save. Save Data is not active, it appears dimmed, until after testing is complete.

Exit. Exit (Ctrl+X) closes the Step Voltage window and returns you to the Home window.

View Menu

Create Message. Create Message (Ctrl+S) opens the Compose Asset Message window (Figure 5-26). Messages created here are viewed in the Message Center. For more information on the Message Center, see Chapter 3, page 3-41.

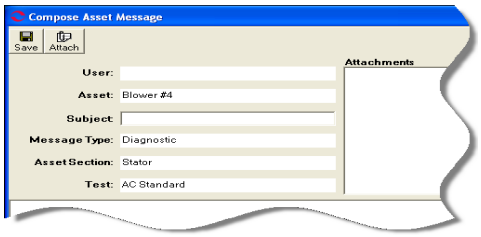


Figure 5-26: Compose Asset Message

Graph Option Menu

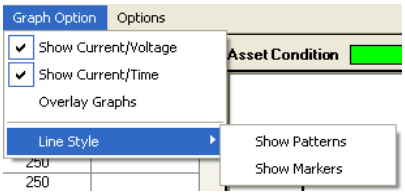
Show Current/Voltage. Show Current/Voltage controls the graph display area. If just Current/Voltage is selected one graph displays on the window. If Show Current/Voltage and Show Current/Time are both selected then two graphs will display.

Show Current/Time. Show Current/Time controls the graph display area. If just Current/Time is selected one graph displays on the window. If Show Current/Time and Show Current/Voltage are both selected then two graphs will display.

Overlay Graphs. Overlay Graphs controls the graph display area. When Overlay Graphs is selected test results are graphed on one graph.

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Line Style. Line Style controls the appearance of the line on the graph.



Show Patterns changes the graph line style from a solid to a pattern. When a change is made to the line style it is reflected in the Legend area of the window, which is located just above the Nameplate Information.

Show Markers inserts markers on the graph line. When a change is made to the line style it is reflected in the Legend area of the window, which is located just above the Nameplate Information.

Options Menu

Set Condition Code. Change the condition code, by selecting an option button (Figure 5-27). The Asset Condition box on the Step Voltage Test window changes and a note is automatically generated by the software. The note is viewed in the Message Center. For more information on the Message Center, see Chapter 3, page 3-41.

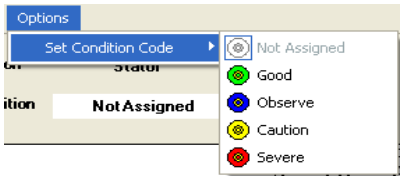


Figure 5-27: Set Condition Code Window

Step-by-Step Step Voltage Testing

During the test the menu items are dimmed (not available).

1. Deenergize and lock out the starter, disconnect, and the asset. Follow your company's electrical safety procedures for tagouts.

2. Check for low level induced voltages using a Fluke multimeter or equivalent.

   Verify that the voltage does not exceed 0.5 VAC phase-to-phase and 15 VAC phase-to-ground. Check for low level stored voltage by verifying less than 15 VDC phase-to-ground.

3. Connect the MCE test leads to the circuit/asset, in the same manner each time, as referenced in Table 5-4. This ensures that the test data is trendable/repeatable.

Table 5-4: Test Lead Connections

MCE test leads	Black	White	Red	Green
motor phase	A	B	C	gnd
"T" lead	T1	T2	T3	gnd
vertical	top	mid	bot	gnd
horizontal	left	mid	right	gnd

4. Highlight the asset to be tested in the Site Navigator.

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5. Select the Test Selection icon on the toolbar. The Test Selection window opens, Figure 5-28.

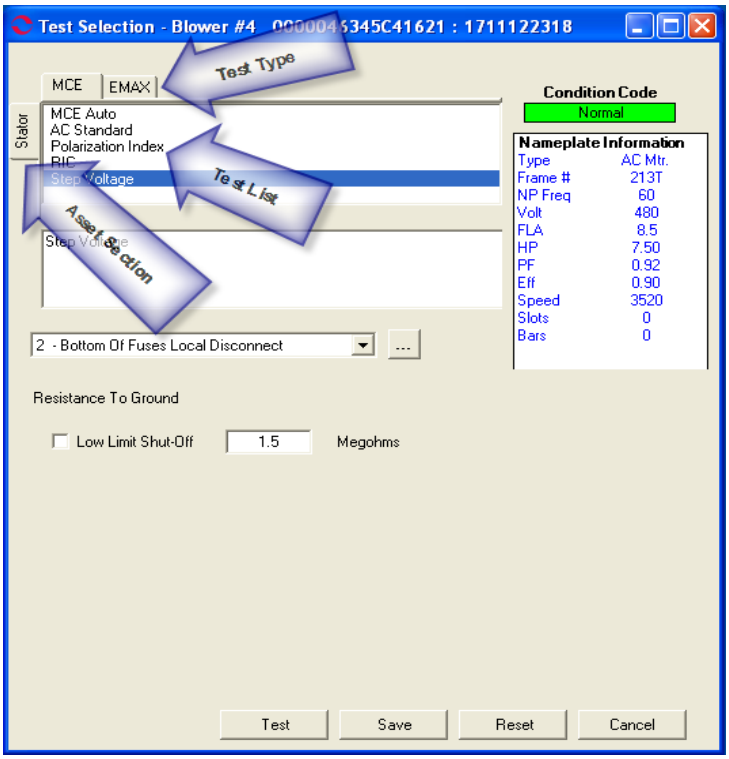


Figure 5-28: Test Selection Window

6. Verify that the MCE (Test Type) and Stator (Asset Section) tabs are selected. The type of asset determines which asset sections are available.

7. Select Step Voltage from the Test List box.

8. Verify the Test Location in the Test Setup section.

   To insure consistent trending and assist in trouble shooting, the actual test location should be stored for each test.

   The Test Location default is Not Assigned. To assign a test location, click the down arrow and select from the list. If the location is not known, click the browse button . The Test Location Selection window opens displaying a test location graph for the type of asset selected. Use the graph to determine the location, then click the down arrow, select from the list, and click **OK**. See Figure 5-29.

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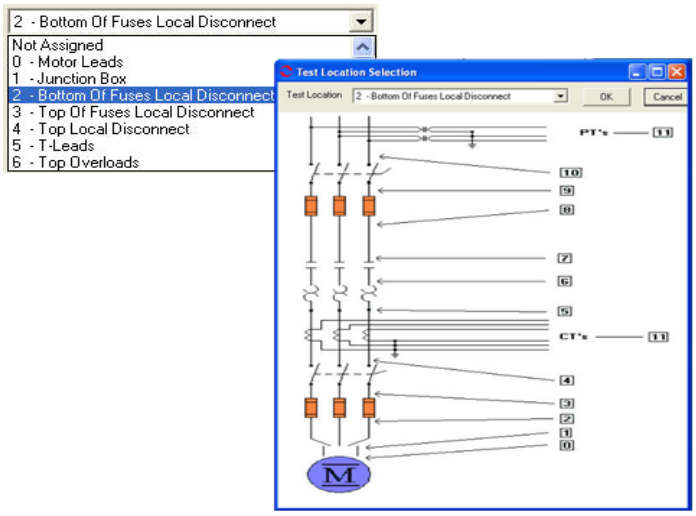


Figure 5-29: Test Locations

9. Verify the Low Limit Shut Off condition.

   Check the box to activate the low limit shut off and enter the desired Mohms.

10. Click **Save** to save the settings for this asset for future testing. Or click **Reset** to return the original settings. This can only be done if the new settings have not been saved.

11. Click **Test** to go to the Step Voltage test window. See Figure 5-30.

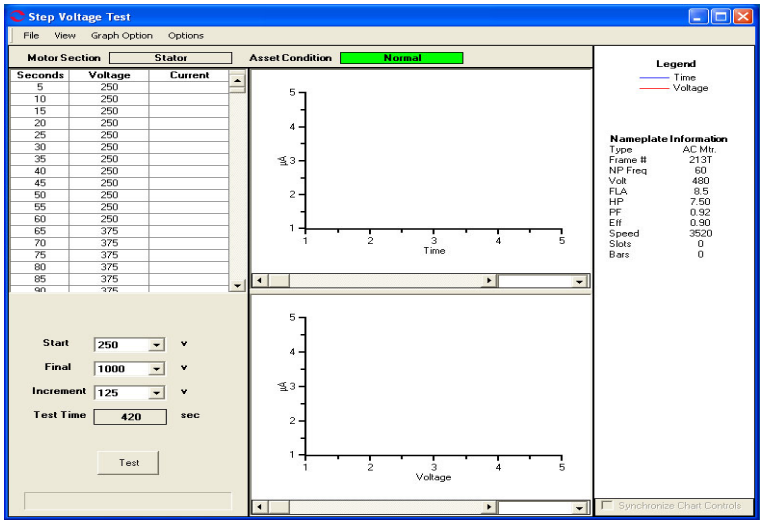


Figure 5-30: Step Voltage Test Window

12. To begin the test click **Test**.

13. Verify that you are about to apply "X" volts to the circuit by clicking **Yes**.

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14. Test values are entered in the table on the left and are displayed in graph format on the right side of the window. The magnification of the graphs can be changed by using the down arrows below each graph area and selecting a new value from the drop down list. The default is Full. A progress bar at the bottom of the screen tracks the testing progress.

    Note: During the test the **Test** button changes to **Stop**, which allows you to interrupt the testing.

15. At the end of testing click **OK** in the Test Completed window.



16. Exit the Step Voltage Window by selecting File, Exit, or Ctrl+X, or the close button (X in the upper right corner).

17. You will be asked if you want to save test data. Click **Yes** or **No**.

    If you select **Yes**, click **OK** in the Save Completed widow. The Step Voltage Test window closes.



    If you select **No**, the Step Voltage Test window closes. No test data is saved.

AC Synchronous Assets

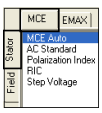
The MCE tests for an AC Synchronous asset are MCE Auto, AC Standard, Polarization Index, RIC, and Step Voltage for the *Stator* section and MCE Auto, Synchronous, Polarization Index, and Step Voltage for the *Field* section.

Note: To minimize the influence of stored energy on test results, perform the tests in the following order. If a test is not to be performed, skip to the next test.

- Rotor Influence Check (RIC)
- Standard Test
- Polarization Index (PI)/ Dielectric Absorption (DA). If a PI is performed, it is not necessary to perform a separate DA.

Synchronous assets are divided into two separate sections (Stator and Field Circuit). The asset Section of the Test Selection window defaults to Stator.

Some asset circuits may have surge capacitors and/or power factor correction capacitors installed. This is important since these components affect the values of the collected data, and increase the time and number of steps involved in troubleshooting. Testing can be performed with the power factor or surge capacitors installed. However, a test should be taken with the surge capacitors removed for future comparison. If a asset appears faulty with the power factor capacitors installed, disconnect them and perform the testing again to isolate the fault.



Stator Section Test

MCE Auto

MCE Auto is the same as for an AC Induction asset. See MCE Auto on page 5-7.

AC Standard

AC Standard is the same as for an AC Induction asset. See AC Standard on page 5-12.

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Polarization Index

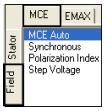
Polarization Index test is the same as for an AC Induction asset. See Polarization Index on page 5-16.

RIC

RIC test is the same as for an AC Induction asset. See RIC on page 5-20.

Step Voltage

Step Voltage test is the same as for an AC Induction asset. See Step Voltage on page 5-24.



Field Section Tests

MCE Auto

MCE Auto is the same as for an AC Induction asset. See MCE Auto on page 5-7.

Polarization Index

Polarization Index test is the same as for an AC Induction asset. See Polarization Index on page 5-16.

Step Voltage

Step Voltage test is the same as for an AC Induction asset. See Step Voltage on page 5-24.

Synchronous

The Synchronous test is reached by selecting the Field Tab and Synchronous from the test list on the Test Selection window. See page 5-3, Test Selection Window for more information. Verify that the test set-up settings are correct and click **Test**. The Synchronous Test window opens. Figure 5-31.

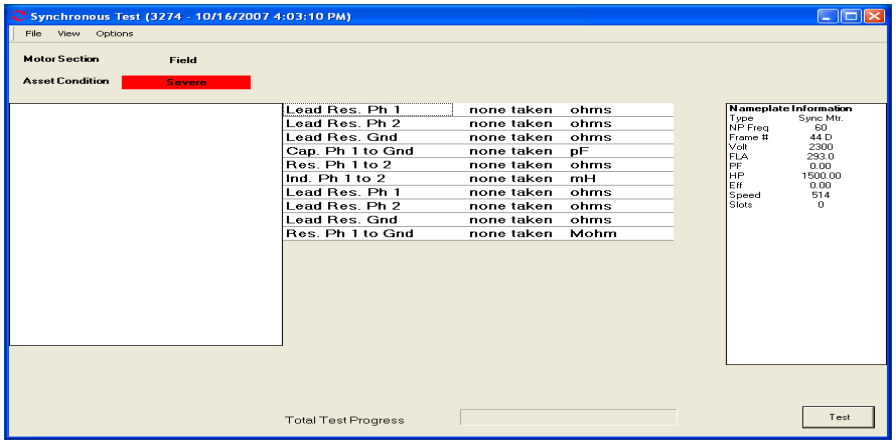


Figure 5-31: Synchronous Test Window

File Menu

Save. Save Data is not active, it appears dimmed, until after testing is complete.

Exit. Exit (Ctrl+X) closes the Synchronous Test window and returns you to the Home window.

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View Menu

Create Message. Create Message (Ctrl+S) opens the Compose Asset Message window (Figure 5-32). The note is viewed in the Message Center. For more information on the Message Center, see Chapter 3, page 3-43.

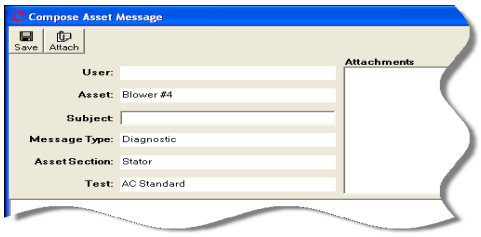


Figure 5-32: Compose Asset Message

Options Menu

Set Condition Code. Change the condition code, by selecting an option button, the Asset Condition box on the Synchronous Test window changes and a note is automatically generated by the software. The note is viewed in the Message Center. For more information on the Message Center, see Chapter 3, page 3-41.

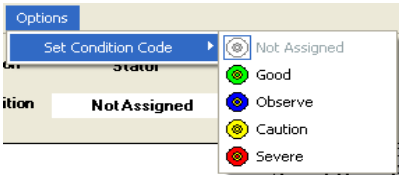


Figure 5-33: Set Condition Code Window

Step-by-Step Synchronous Testing

During the test the menu items are dimmed (not available).

1. Deenergize and lock out the starter, disconnect, and the asset. Follow your company's electrical safety procedures for tagouts.

2. Check for low level induced voltages using a Fluke multimeter or equivalent.

   Verify that the voltage does not exceed 0.5 VAC phase-to-phase and 15 VAC phase-to-ground. Check for low level stored voltage by verifying less than 15 VDC phase-to-ground.

3. Connect the MCE test leads to the circuit/asset, in the same manner each time, as referenced in Table 5-5. This ensures that the test data is trendable/repeatable.

Table 5-5: Test Lead Connections

MCE test leads	Black	White	Red	Green
motor phase	A	B	C	gnd
"T" lead	T1	T2	T3	gnd
vertical	top	mid	bot	gnd
horizontal	left	mid	right	gnd

4. Highlight the asset to be tested in the Site Navigator.

5. Select the Test Selection icon on the toolbar. The Test Selection window opens, Figure 5-34.

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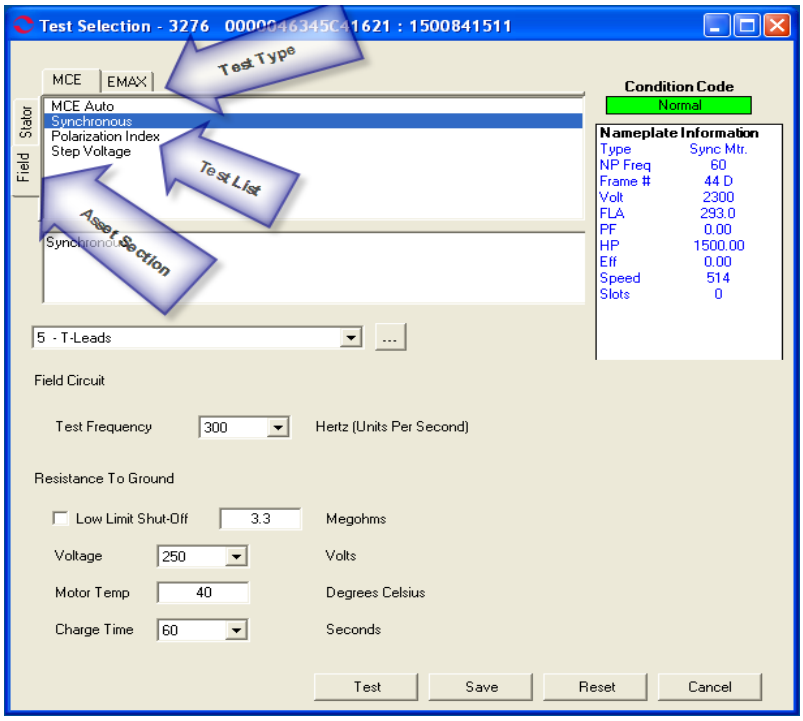


Figure 5-34: Test Selection Window

6. Verify that the MCE (Test Type) and Field (Asset Section) tabs are selected. The type of asset determines which asset sections are available.

7. Select Synchronous from the Test List box.

8. Verify the Test Location in the Test Setup section.

   To insure consistent trending and assist in trouble shooting, the actual test location should be stored for each test.

   The Test Location default is Not Assigned. To assign a test location, click the down arrow and select from the list. If the location is not known, click the browse button . The Test Location Selection window opens displaying a test location graph for the type of asset selected. Use the graph to determine the location, then click the down arrow, select from the list, and click **OK**. See Figure 5-35.

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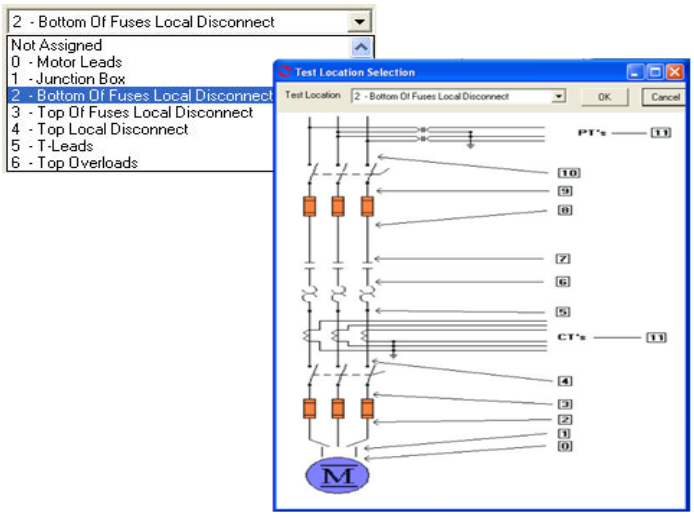


Figure 5-35: Test Locations

9. Verify the Test Frequency.

   Click the down arrow and select the frequency from the drop-down list. The values are 300 or 1200.

10. Verify the Low Limit Shut Off condition.

    Check the box to activate the low limit shut off and enter the desired Mohms.

11. Verify the Voltage.

    Click the down arrow and select the voltage from the drop-down list. Select test voltage based on asset nameplate voltage.

12. Enter the temperature.

    Adjust the Temperature ° C to stator core temperature at the time of testing.

13. Select the Charge Time Seconds.

    Click the down arrow and select the seconds from the drop-down list. The choices are from 30 to 180 seconds at 15 second increments.

14. Click **Save** to save the settings for this asset for future testing. Or click **Reset** to return the original settings. This can only be done if the new settings have not been saved.

15. Click **Test** to go to the Synchronous test window.

16. Verify that you are about to apply “X” volts to the circuit and click **Yes**.

17. Testing begins, progress bars are displayed for Total Test Progress and Discharge Progress at various times. The test values are filled in as testing proceeds.

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18. At the end of testing the **Test** button changes to **Save,** Test Completed appears above the Nameplate Information section, and the progress bars disappear.

19. Re-test any individual point, if needed. If not go to step 20.

    If any portion of the test needs to be re-tested, click the tab which appears to the right of the individual test point. This retests only that test point in “manual mode.” (Figure 5-36)

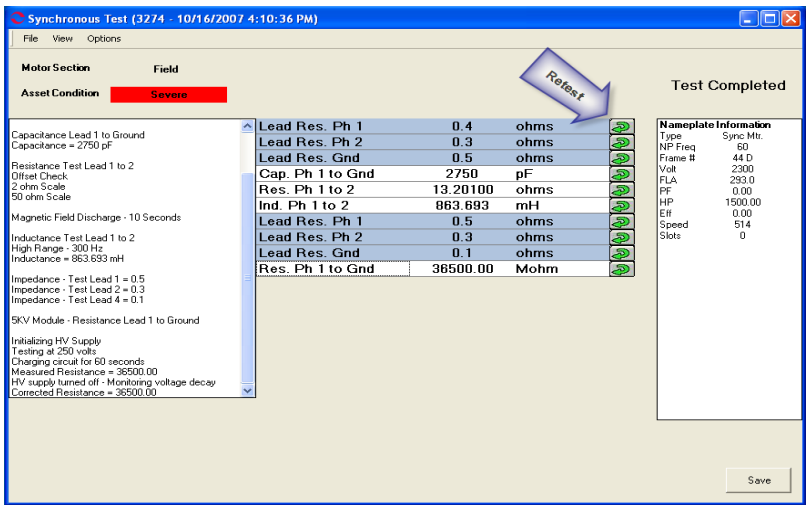


Figure 5-36: Completed Synchronous Test Window

20. When retesting is complete or if no re-testing is needed, click **Save** or File, Exit, or Ctrl+X, or use the close button (X in the upper right corner).

21. Click **OK** in the Save Completed window.

22. Click **Exit** to close the window.

AC Wound Rotor Assets

Wound rotor assets (WRMs) are divided into three separate sections (Stator, Rotor, and Resistor Bank). The asset Section box of the Test Selection window defaults to Stator.

The MCE tests for an AC Wound Rotor asset are MCE Auto, AC Standard, Polarization Index, RIC, and Step Voltage for the Stator section. MCE Auto, AC Standard, Polarization Index, and Step Voltage for the Rotor section. MCE Auto, Resistor Bank, Polarization Index, and Step Voltage for the Resistor Bank section.

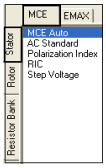
Note: To minimize the influence of stored energy on test results, perform the tests in the following order. If a test is not to be performed, skip to the next test.

- Rotor Influence Check (RIC)
- Standard Test

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- Polarization Index (PI)/ Dielectric Absorption (DA). If a PI is performed, it is not necessary to perform a separate DA.

Some circuits may have surge capacitors and power factor correction capacitors installed. This is important since these components affect the values of the collected data, and increase the time and number of steps involved in troubleshooting. Testing can be performed with the power factor capacitors installed. However, surge capacitors must be removed to ensure valid test data. If a asset appears faulty with the power factor capacitors installed, disconnect them and perform the testing again to isolate the fault.



Stator Section Tests

MCE Auto

MCE Auto is the same as for an AC Induction asset. See MCE Auto on page 5-7.

AC Standard

AC Standard is the same as for an AC Induction asset. See AC Standard on page 5-12.

Polarization Index

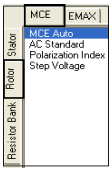
Polarization Index test is the same as for an AC Induction asset. See Polarization Index on page 5-16.

RIC

RIC test is the same as for an AC Induction asset. See RIC on page 5-20.

Step Voltage

Step Voltage test is the same as for an AC Induction asset. See Step Voltage on page 5- 24.



Rotor Section Tests

MCE Auto

MCE Auto is the same as for an AC Induction asset. See MCE Auto on page 5-7.

AC Standard

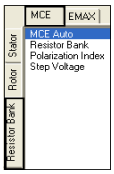
AC Standard is the same as for an AC Induction asset. See AC Standard on page 5-12.

Polarization Index

Polarization Index test is the same as for an AC Induction asset. See Polarization Index on page 5-16.

Step Voltage

Step Voltage test is the same as for an AC Induction asset. See Step Voltage on page 5- 24.



Resistor Bank Section Tests

MCE Auto

MCE Auto is the same as for an AC Induction asset. See MCE Auto on page 5-7.

Polarization Index

Polarization Index test is the same as for an AC Induction asset. See Polarization Index on page 5-16.

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Step Voltage

Step Voltage test is the same as for an AC Induction asset. See Step Voltage on page 5-24.

Resistor Bank Test

The Resistor Bank test is reached by selecting the Resistor Bank tab and Resistor Bank from the test list on the Test Selection window. See page 1-3, Test Selection Window for more information. Verify that the test set-up settings are correct and click **Test**. The Resistor Bank Test window opens. Figure 5-37.

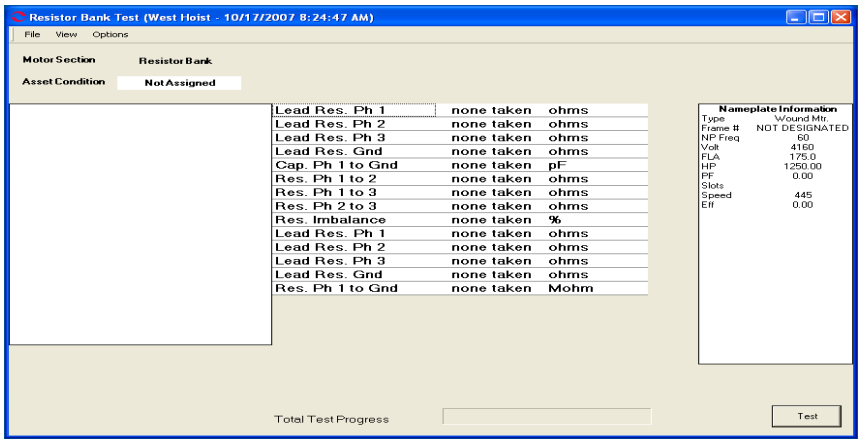


Figure 5-37: Resistor Bank Test Window

File Menu

Save. Save Data is not active, it appears dimmed, until after testing is complete.

Exit. Exit (Ctrl+X) closes the Resistor Bank Test window and returns you to the Home window.

View Menu

Create Message. Create Message (Ctrl+S) opens the Compose Asset Message window (Figure 5-38). The note is viewed in the Message Center. For more information on the Message Center, see Chapter 3, page 3-41.

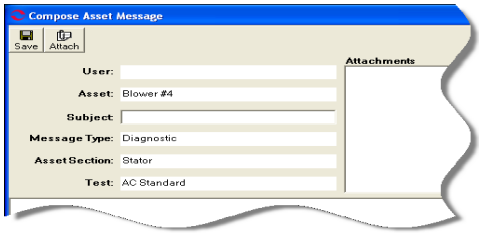


Figure 5-38: Compose Asset Message Window

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Options Menu

Set Condition Code. Change the condition code by selecting an option button (Figure 5-39). The Asset Condition box on the Resistor Bank Test window changes and a note is automatically generated by the software.

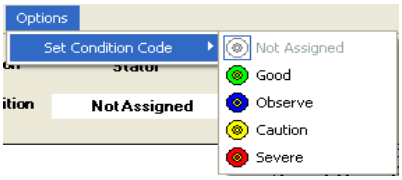


Figure 5-39: Set Condition Code Window

Step-by-Step Resistor Bank Testing

1. Deenergize and lock out the starter, disconnect, and the asset. Follow your company's electrical safety procedures for tagouts.

2. Check for low level induced voltages using a Fluke multimeter or equivalent.

   Verify that the voltage does not exceed 0.5 VAC phase-to-phase and 15 VAC phase-to-ground. Check for low level stored voltage by verifying less than 15 VDC phase-to-ground.

3. Lift the brushes to isolate the resistor bank from the rotor field.

4. Connect the MCE test leads to the circuit/asset, in the same manner each time, as referenced in Table 5-6. This ensures that the test data is trendable/repeatable.

Table 5-6: Test Lead Connections

MCE test leads	Black	White	Red	Green
brushes	brushes over slip ring 1	brushes over slip ring 2	brushes over slip ring 3	gnd

5. Highlight the asset to be tested in the Site Navigator.

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6. Select the Test Selection icon on the toolbar. The Test Selection window opens, Figure 5-40.

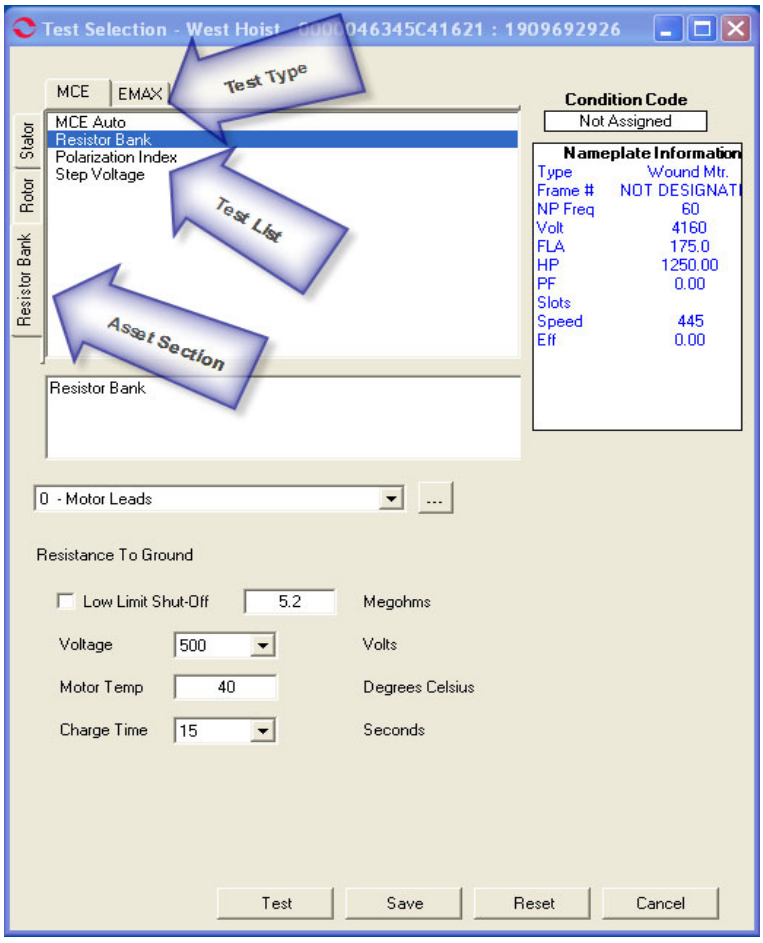


Figure 5-40: Test Selection Window

7. Verify that the MCE (Test Type) and Resistor Bank (Asset Section) tabs are selected. The type of asset determines which asset sections are available.

8. Select Resistor Bank from the Test List box.

9. Verify the Test Location in the Test Setup section.

   To insure consistent trending and assist in trouble shooting, the actual test location should be stored for each test.

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The Test Location default is Not Assigned. To assign a test location, click the down arrow and select from the list. If the location is not known, click the browse button . The Test Location Selection window opens displaying a test location graph for the type of asset selected. Use the graph to determine the location, then click the down arrow, select from the list, and click **OK**. See Figure 5-41.

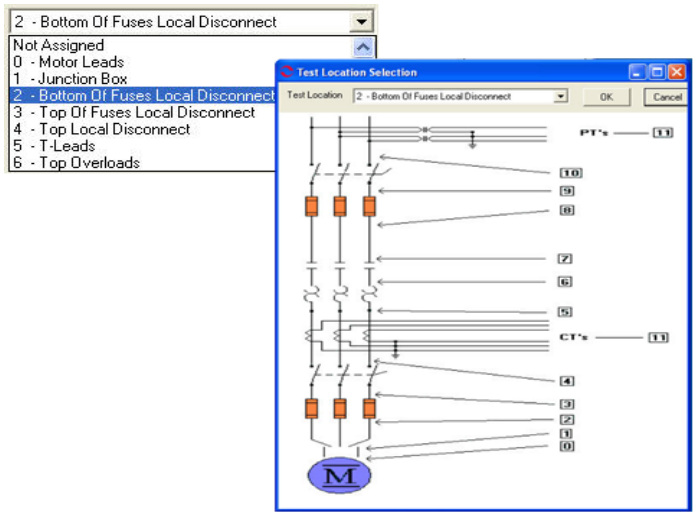


Figure 5-41: Test Locations

10. Verify the Low Limit Shut Off condition.

    Check the box to activate the low limit shut off and enter the desired Mohms.

11. Verify the Voltage.

    Click the down arrow and select the voltage from the drop-down list. Select test voltage based on asset nameplate voltage.

12. Enter the temperature.

    Adjust the Temperature ° C to stator core temperature at the time of testing.

13. Click **Save** to save the settings for this asset for future testing. Or click **Reset** to return the original settings. This can only be done if the new settings have not been saved.

14. Click **Test** to go to the Resistor Bank Test window.

15. To begin the Resistor Bank Test, click **Test**.

16. Verify that you are about to apply "X" volts to the circuit and click **Yes**.

17. Testing begins, progress bars are displayed for Total Test Progress and Discharge Progress at various times. The test values are filled in as testing proceeds. At the end of testing Test Completed appears above the Nameplate Information area.

18. Re-test any individual point, if needed. If not go to step 19.

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If any portion of the test needs to be re-tested, click the green arrow to the right of the point. This rechecks only that test point in “manual mode.” See Figure 5-42.

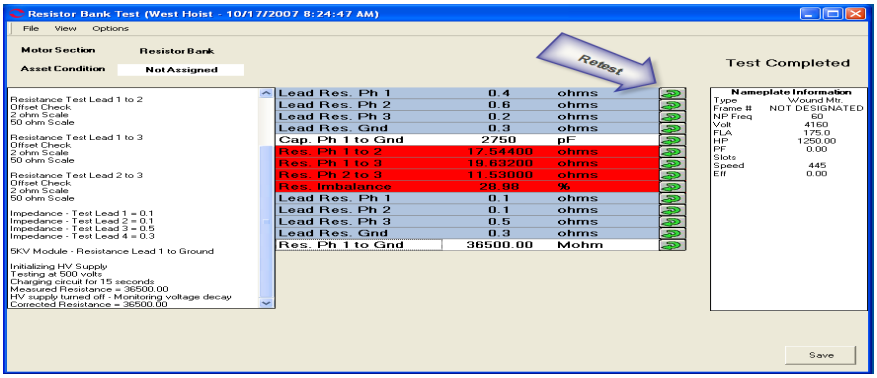


Figure 5-42: Resistor Bank Test Window - Retest Points

19. When retesting is complete or if no re-testing is needed, click **Save,** or File, Exit, or Ctrl+X, or the close button (X in the upper right corner).

20. Click **OK** in the Save Completed window and the Resistor Bank Test window closes.

DC Assets

The MCE tests for a DC asset are MCE Auto, DC Standard, Polarization Index, Bar-to-Bar, and Step Voltage for the *Armature* section. MCE Auto, DC Standard, Polarization Index, and Step Voltage for the *Field* section.

Note: To minimize the influence of stored energy on test results, perform the tests in the following order. If a test is not to be performed, skip to the next test.

- Standard Test
- Polarization Index (PI). If a PI is performed, it is not necessary to perform a separate DA.

DC assets are divided into two separate sections (Armature Circuit and Field Circuit). The Asset Section of the Test Selection window defaults to Armature Circuit.

Armature Section Tests

MCE Auto

MCE Auto is the same as for an AC Induction asset. See MCE Auto on page 5-7.

DC Standard Test

The DC Standard Test is reached by selecting DC Standard from the test list on the Test Selection window. See page 5-3, Test Selection Window for more information. Verify that the test set-up settings are correct and click **Test**. The DC Standard Test Window (Figure 5-43) opens.

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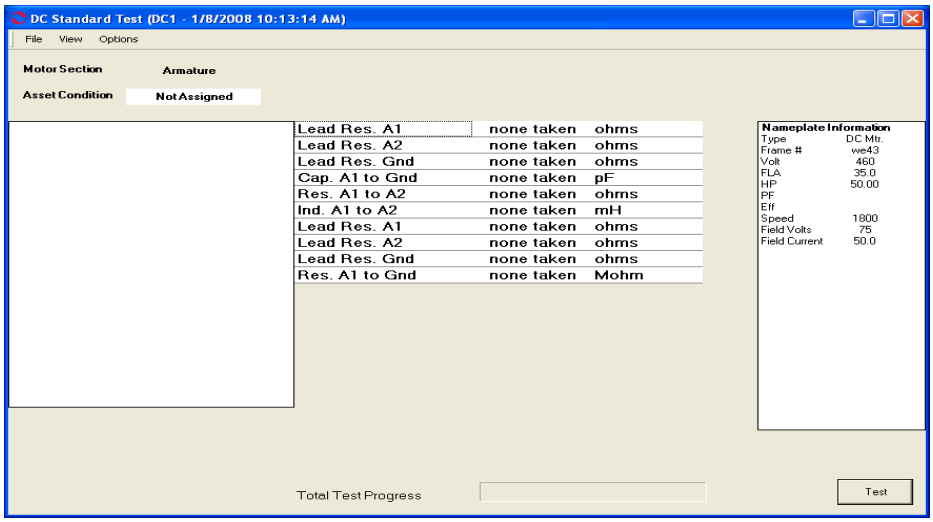


Figure 5-43: DC Standard Test Window

The DC Standard Test window menu consist of three options: File, View, and Options.

File Menu

Save. Save (Ctrl+S) is not active, it appears dimmed, until after testing is complete.

Exit. Exit (Ctrl+X) closes the AC Standard test window and returns you to the MCEGold Home window.

View Menu

Create Message. Create Message opens the Compose Asset Message window (Figure 5-44). The note is viewed in the Message Center. For more information on the Message Center, see Chapter 3, page 3-41.

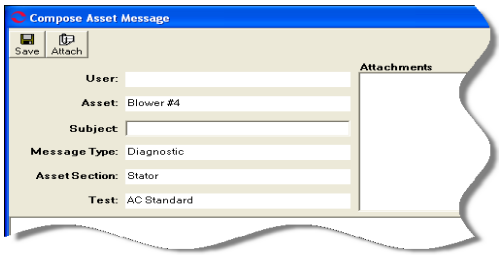


Figure 5-44: Compose Asset Message Window

Options Menu

Set Condition Code. Change the condition code by selecting an option button (Figure 5-45). The Asset Condition box on the AC Standard Test window changes and a note is automatically generated by the software. The note is viewed in the Message Center. For more information on the Message Center, see Chapter 3, page 3-43

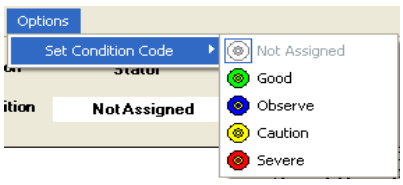


Figure 5-45: Options, Set Condition Code Menu

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Step-by-Step DC Standard Testing

1. Deenergize and lock out the starter and asset.

2. Check for low level induced voltage using a Fluke multimeter or equivalent.

   Verify that the values do not exceed 0.5 VAC phase-to-phase and 15 VAC phase-to-ground. Check for low level stored voltage by verifying less than 15 VDC phase-to-ground.

3. Connect the MCE test leads to the circuit, in the same manner each time, as referenced in Table 5-7 and shown in Figure 5-46. This ensures that the test data is trendable/repeatable.

Table 5-7: Test Lead Connections

MCE test leads	Black	White	Green
motor leads	A1; A1 or S1	A2; S2 or A2	ground

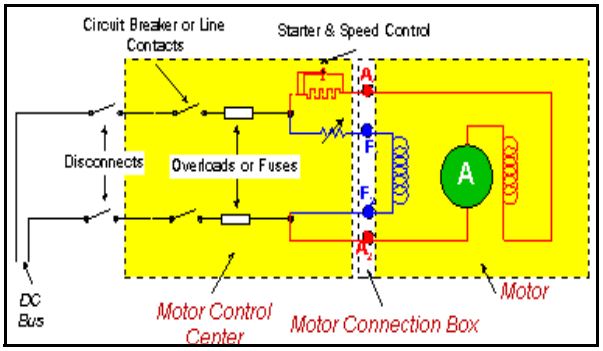


Figure 5-46: DC Asset Circuit Connections

4. Highlight the asset to be tested in the Site Navigator.

5. Select the Test Selection icon on the tool bar to open the Test Selection window.

6. Verify that Armature Circuit is selected in the asset Section box.

7. Select DC Standard Test in the Test List box.

8. Verify the Test Location in the Test Setup section.

   To insure consistent trending and assist in trouble shooting, the actual test location should be stored for each test.

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The Test Location default is Not Assigned. To assign a test location, click the down arrow and select from the list. If the location is not known, click the browse button . The Test Location Selection window opens displaying a test location graph for the type of asset selected. Use the graph to determine the location, then click the down arrow, select from the list, and click **OK**. See Figure 5-47.

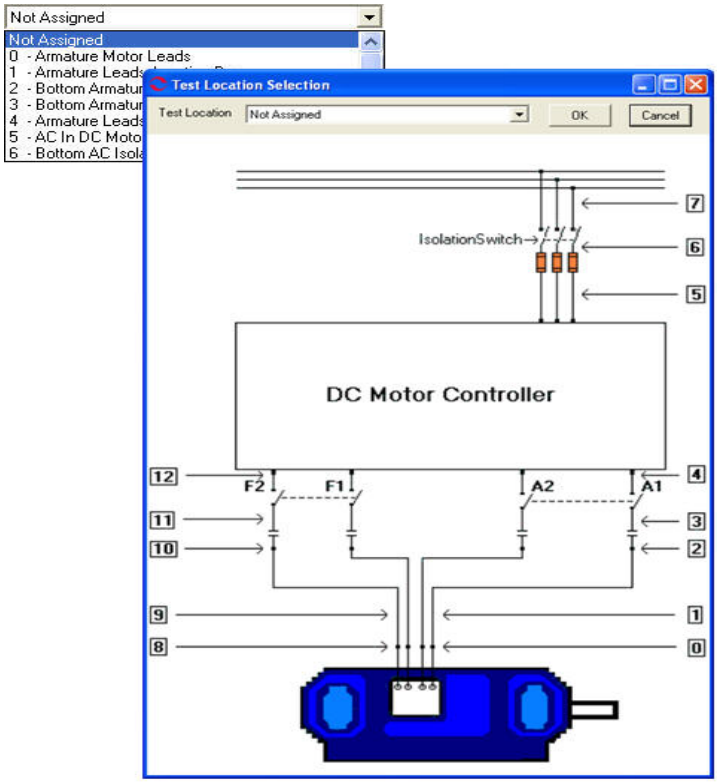


Figure 5-47: DC Asset Test Location

9. Select Test frequency for the Armature Circuit from the drop-down box.

   Click the down arrow and select the frequency from the drop-down list. The values are 300 or 1200.

10. Check the Low Limit Shut Off box and enter Mohms.

11. Select the test voltage for the resistance to ground measurement (500 for ≤ 2400 volts or 1000 for >2400 volts) based on asset nameplate voltage.

    Click the down arrow and select the voltage from the drop-down list.

12. Adjust the Temperature ° C to stator core temperature at the time of testing.

13. Select Charge Time seconds.

    Click the down arrow and select the charge time from the drop-down list. The choices are from 15 to 600 seconds.

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14. Click **Save**, to save the settings for this asset for future testing. Or click **Reset** to return the original settings. This can only be done if the new settings have not been saved.

15. Click **Test** to go to the DC Standard Test Window.

16. Click **Test** to begin testing.

17. Verify that you are about to apply "X" volts to the circuit by clicking **Yes**.

18. Testing begins, progress bars are displayed for Total Test Progress and Discharge Progress at various times. The test values are filled in as testing proceeds. At the end of testing Test Completed appears above the Nameplate Information area. See Figure 5-48.

    To stop the test at any time, click **Stop**. Click **Exit** to close the DC Standard test window and return to the Home window.

19. Re-test any individual point, if needed. If not go to step 20.

    If any portion of the test needs to be re-tested, double click the tab which appears to the right of the individual test point. This rechecks only that test point in "manual mode." See Figure 5-48.

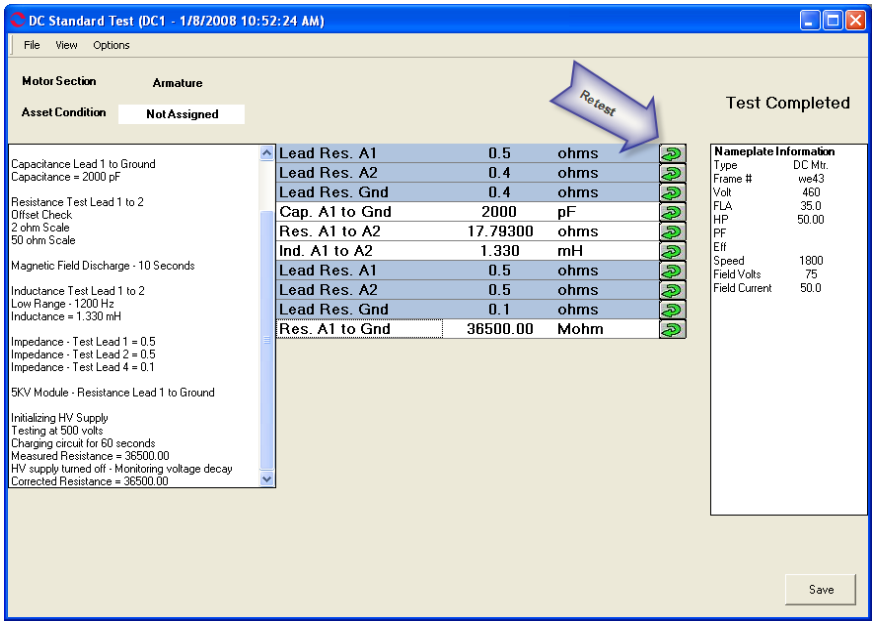


Figure 5-48: DC Standard Test Window

20. When retesting is complete or if no re-testing is needed, click **Save** or select File, Exit, or Ctrl+X, or use the close button (X in the upper right corner).

21. Click **OK** in the Save Complete window.

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22. Click **Exit** in the DC Standard Test Window.

Step-by-Step Polarization Index Testing

1. Deenergize and lock out the starter asset.

2. Check for low level induced voltage using a Fluke multimeter or equivalent.

   Verify that the values do not exceed 0.5 VAC phase-to-phase and 15 VAC phase-to-ground. Check for low level stored voltage by verifying less than 15 VDC phase-to-ground

3. Connect the MCE test leads to the circuit, in the same manner each time, as referenced in Table 5-8 and shown in Figure 5-49. This ensures that the test data is trendable/repeatable.

Table 5-8: Test Lead Connections

MCE test leads	Black	White	Green
motor leads	A1; A1 or S1	A2; S2 or A2	ground

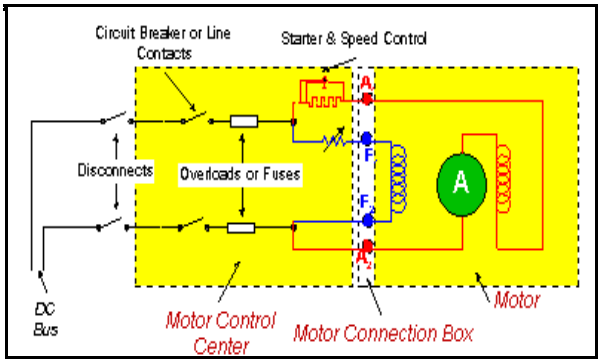


Figure 5-49: Asset Circuit Connections

4. Highlight the asset to be tested in the Site Navigator.

5. Select the Test Selection icon  on the tool bar to open the Test Selection window.

6. Verify that Armature is selected.

7. Select Polarization Index in the Test List Box.

8. Verify the Test Location in the Test Setup section.

   To insure consistent trending and assist in trouble shooting, the actual test location should be stored for each test.

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The Test Location default is Not Assigned. To assign a test location, click the down arrow and select from the list. If the location is not known, click the browse button . The Test Location Selection window opens displaying a test location graph for the type of asset selected. Use the graph to determine the location, then click the down arrow, select from the list, and click **OK**. See Figure 5-50.

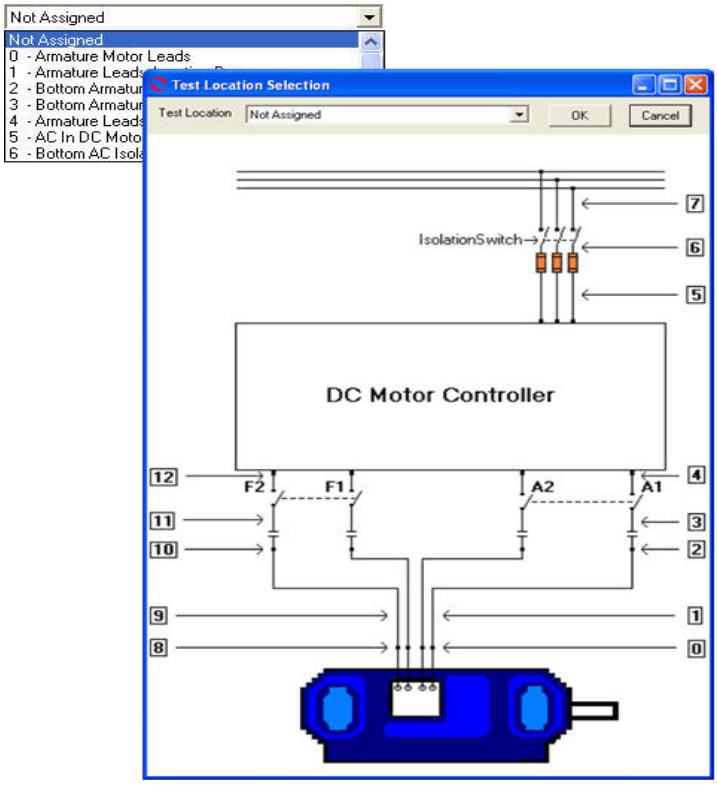


Figure 5-50: DC Asset Test Location

9. Check the Low Limit Shut Off box and enter Mohms.

10. Enter the test voltage for the resistance to ground measurement (500 for ≤ 2400 volts or 1000 for >2400 volts) based on asset nameplate voltage.

    Click the down arrow and select the voltage from the drop-down list.

11. Click **Save**, to save the settings for this asset for future testing. Or click **Reset** to return the original settings. This can only be done if the new settings have not been saved.

12. Click **Test** to go to the PI Test Window. See Figure 5-51.

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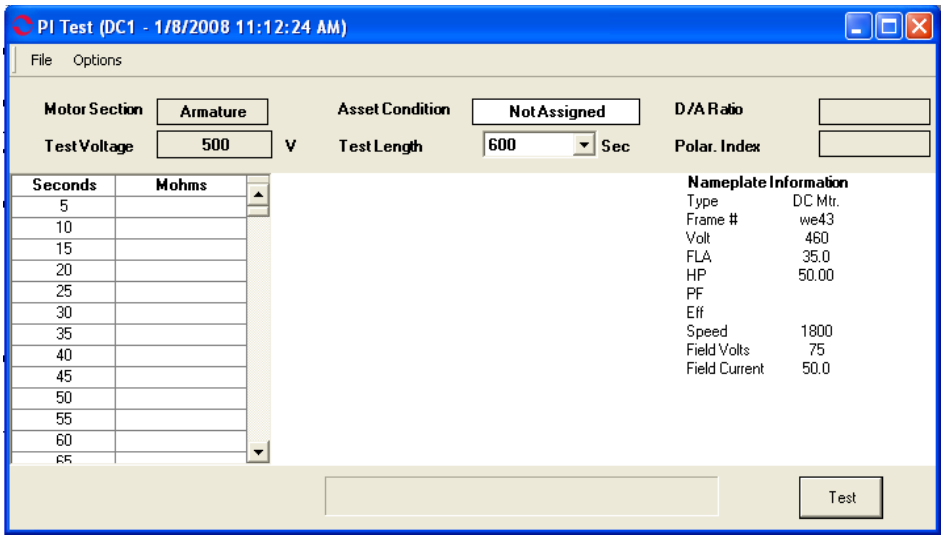


Figure 5-51: PI Test Window

13. Select the test length in seconds from the drop down list.

14. Click **Test** to begin testing.

    To stop the test at any time, click **Stop**. Click **Exit** to return to the Test Selection window.

15. Verify that you are about to apply "X" volts to the circuit by clicking **Yes**.

16. During the testing the D/A ratio and the Polarization Index will be computed and entered in the appropriate text boxes on the window.

17. Click **OK** at the end of testing in the Test Complete window.

18. Close the PI Test window by selecting File, Exit, or Ctrl+X, or the close button (red X in the upper right corner).

19. Click **Yes** to save test data, in the Save Test Data window. Or **No** to exit without saving test data.

20. Click **OK** in the Save Completed window.

Step Voltage

Step Voltage test is the same as for an AC Induction asset. See Step Voltage on page 5-24.

Bar-to-Bar

The Bar-to-Bar test is reached by selecting the Armature tab and Bar-to-Bar from the test list on the Test Selection window. See page 5-3, Test Selection Window for more information. Verify that the test set-up settings are correct and click **Test**. The Bar-to-Bar Test window opens. Figure 5-52.

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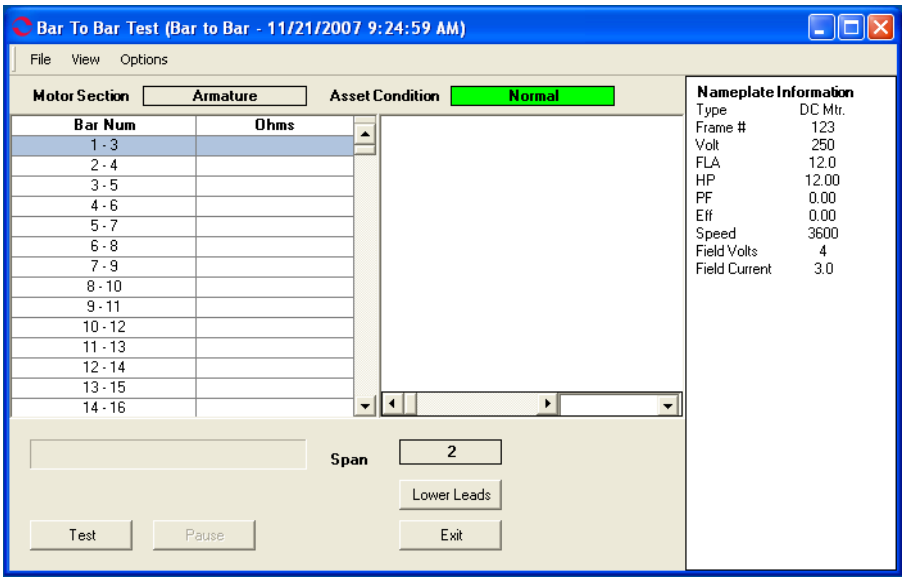


Figure 5-52: Bar-to-Bar Test Window

File Menu

Exit. Exit (Ctrl+X) closes the Bar-To-Bar Test window and returns you to the Home window.

View Menu

Create Message. Create Message (Ctrl+S) opens the Compose Asset Message window (Figure 5-53). The note is viewed in the Message Center. For more information on the Message Center, see Chapter 3, page 3-41.

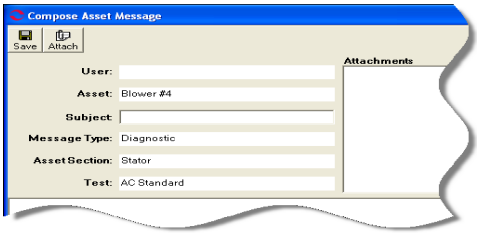


Figure 5-53: Compose Asset Message Window

Options Menu

Set Condition Code. Change the condition code by selecting the desired condition code option button (Figure 5-54). The Asset Condition box on the Bar-To-Bar Test window changes and a note is automatically generated by the software. The note is viewed in the Message Center. For more information on the Message Center, see Chapter 3, page 3-43.

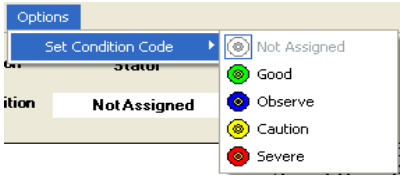


Figure 5-54: Set Condition Code Window

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Raise Leads/Lower Leads Button

The Raise Leads/Lower Leads button toggles to signify the action to be taken with the test leads during testing.

Exit Button

The Exit Button is inactive (dimmed) during testing, but is active between moving the leads.

Pause Button

The Pause Button is inactive (dimmed) during testing, but is active between moving the leads.

Test

The lower left area of the Bar-to-Bar test window, Figure 5-55, informs you what action is required. The Test Dialog box displays the testing progress. The software checks for the leads and if no leads are found displays, “Waiting for Leads” in the text box. When the leads are in position, testing begins automatically. During testing the text box displays Read Resistance, Checking Leads, Test Completed, Waiting for Leads.

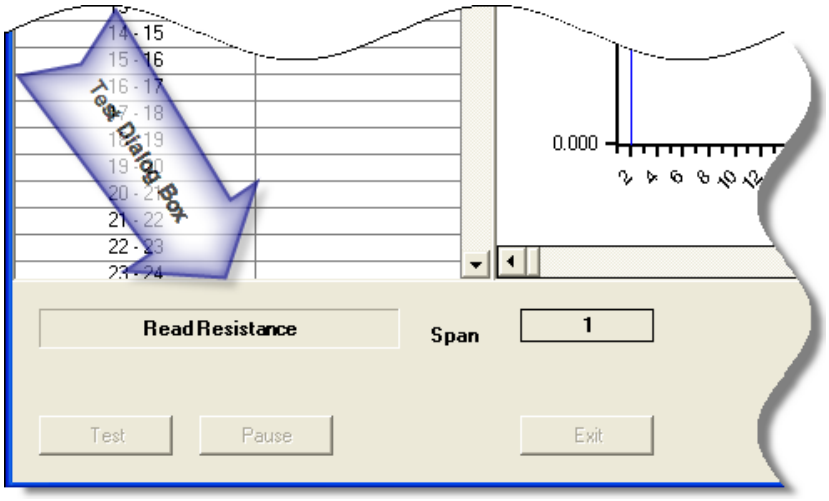


Figure 5-55:

Step-by-Step Bar-to-Bar Testing

1. Deenergize and lock out the starter and the asset.

2. Check for low level induced voltages using a Fluke multimeter or equivalent.

   Verify that the values do not exceed 0.5 VAC phase-to-phase and 15 VAC phase-to-ground. Check for low level stored voltage by verifying less than 15 VDC phase-to-ground.

3. Connect the bar-to-bar test leads to the MCE and to the laptop parallel port.

4. Highlight the asset to be tested on the Site Navigator.

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5. Select the Test Selection icon on the toolbar. The Test Selection window opens, Figure 5-56.

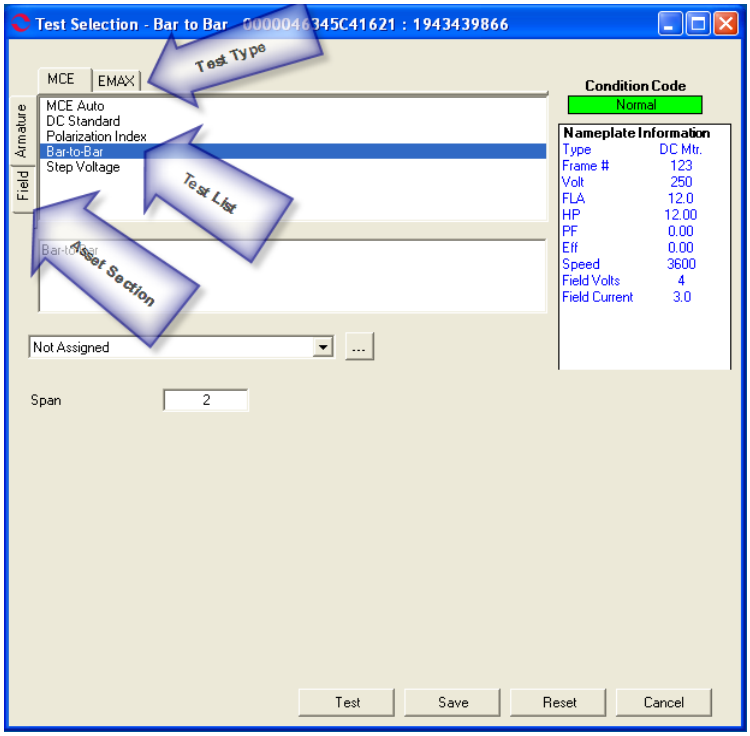


Figure 5-56: Test Selection Window

6. Verify that the MCE (Test Type) and Armature (Asset Section) tabs are selected. The type of asset determines which asset sections are available.

7. Click Bar-To-Bar from the Test List.

8. Verify the Test Location in the Test Setup section.

   To insure consistent trending and assist in trouble shooting, the actual test location should be stored for each test.

   The Test Location default is Not Assigned. To assign a test location, click the down arrow and select from the list. If the location is not known, click the browse button ... . The Test Location Selection window opens displaying a test location graph for the type of asset selected. Use the graph to determine the location, then click the down arrow, select from the list, and click **OK**. See Figure 5-57.

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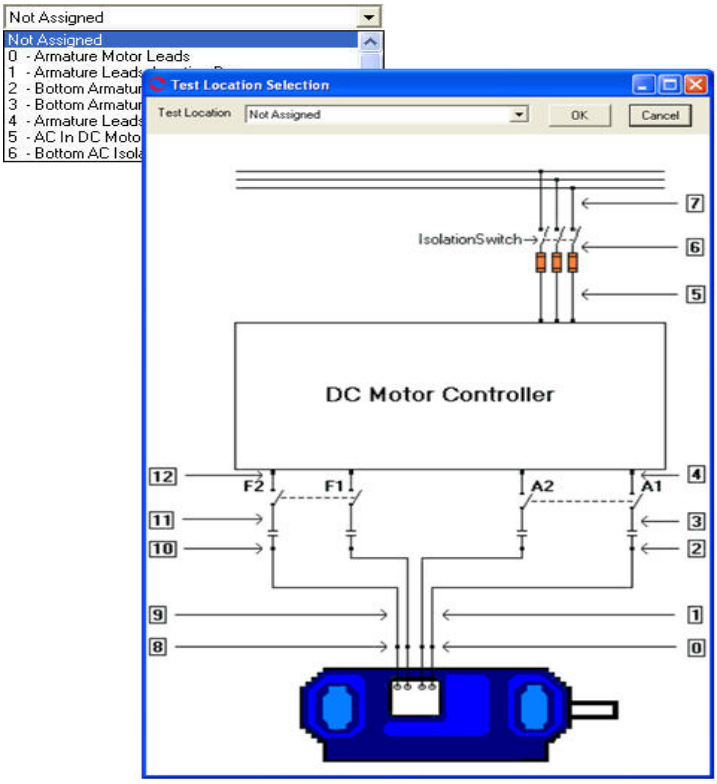


Figure 5-57: DC Asset Test Location

9. Verify the Span is correct.

10. Click **Save** to save the settings for this asset for future testing. Or click **Reset** to return the original settings. This can only be done if the new settings have not been saved.

11. Click **Test** to go to the testing window

12. To begin the Bar-to-Bar Test, click **Test.**

13. When "Waiting for Leads" appears in the Test Dialog Box, position the leads. Testing will begin automatically. The dialog box will inform you of the testing progress beginning with Read Resistance, Checking Leads, and finally Test Complete. See Figure 5-58.

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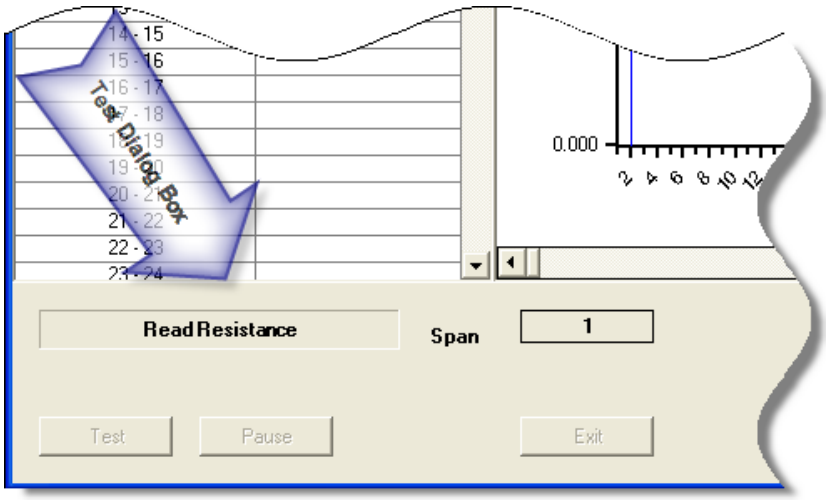


Figure 5-58: Test Dialog Box

14. During testing the test values are entered in the table on the left and are displayed in graph format in the center of the window. The magnification of the graph can be changed by using the down arrows below the graph area and selecting a new value from the drop down list. The default is Full.

15. When Test Complete appears in the Test Dialog box, reposition the leads. Testing will begin automatically.

16. Repeat Step 14 until all bars have been tested.

17. At the end of testing, you will be asked if you want to continue testing. Click **Yes** to continue or **No** to end testing.

18. Click **Exit**. You will be asked if you want to save test data.

    Click **Yes** to save the test data. Click **OK** in the Save Completed window. The Bar-to-Bar test window closes.

    Or click **No** to exit the window without saving.



Field Section Tests

MCE Auto

MCE Auto is the same as for an AC Induction asset. See MCE Auto on page 5-7.

DC Standard

DC Standard test for the Field section is the same as for the Armature section. See DC Standard on page 5-40.

Polarization Index

The Polarization Index test for the Field section is the same as for the Armature section. See Polarization Index on page 5-45.

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Step Voltage

Step Voltage test is the same as for an AC Induction asset. See Step Voltage on page 5-24.

TEST DATA ANALYSIS INFORMATION

Standard Test

The standard test is similar for both AC and DC assets. In an AC asset, the following are either measured or calculated during a standard test:

Resistance-to-ground
Capacitance-to-ground
Resistance phase-to-phase
Inductance phase-to-phase
Resistive imbalance (calculated)
Inductive imbalance (calculated)
Power loss

In a DC asset, the following are either measured or calculated during the standard test:

Resistance-to-ground
Capacitance-to-ground
Armature and/or field resistance
Armature and/or field inductance

Resistance-to-Ground

What Does it Tell You?

The resistance-to-ground (RTG) measurement indicates the cleanliness and health of the insulation system. As the insulation ages, cracks and small holes develop. It also becomes brittle over time, as the wiring expands due to heating and contracts when it cools off. Aging and temperature variations also break down the molecular structure of the insulation.

These factors allow contaminants and moisture, which collect on the surface of the insulation, to penetrate to the conductor. Since current follows the path of least resistance, some of the total current is diverted from the circuit to these alternate paths, and ultimately to ground. As the RTG value decreases over time, capacitance-to-ground often increases, indicating the presence of many current leakage paths to ground and the accumulation of contaminants.

Why is This Important?

A low RTG value indicates that the insulation needs to be cleaned. If the condition causing the low RTG is not corrected and the RTG value continues to drop, the insulation could completely fail and the asset windings could be damaged. This could require a complete rewind of the stator. If the condition causing the low RTG is corrected, a less expensive clean, dip, and bake may suffice.

Setting Warning Levels

Minimum Value. IEEE (the Institute of Electrical and Electronics Engineers, Inc.) has established a standard for the minimum value of insulation resistance which can be applied to most AC windings, DC armature windings, and AC and DC field windings. The

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standard is IEEE Std 43-2001. The equation for most windings made circa 1970 or before, all field windings, and others not noted in the exceptions listed below is IR_{1min}=kV+1.

In the formula:

IR_{1min} is the recommended minimum insulation resistance-to-ground, in megohms, at 40°C (104 °F) at the asset windings

kV is the rated terminal-to-terminal potential, in RMS kilovolts

Examples

A 480 volt asset has a minimum RTG value of 1.48 megohms (480 volts = .480 kilovolts; .48 + 1 = 1.48 megohms)

A 4160 volt asset has a minimum RTG value of 5.160 megohms (4160 volts = 4.160 kilovolts; 4.160 + 1 = 5.160 megohms)

MCEGold computes the minimum acceptable RTG value using this equation. This value is corrected to 40 °C. MCEGold provides both the temperature corrected RTG reading along with the actual measured RTG value. To make comparisons and trending valid, always enter actual asset winding temperature and trend the corrected measurement.

Exceptions to the equation are:

- Most DC armature and AC windings built circa or after 1970 (form wound coils). That standard is $IR_{1\ min}$ = 100.
- Most machines with random-wound stator coils and form-wound coils rated below 1 kV. That standard is IR_{1min}= 5.

Stator of AC Induction, Synchronous, and Wound Rotor Assets; Field and Armature of DC Assets

If the corrected RTG is between R_m and 2 times R_m, then the value is set at caution. The reading appears in yellow on the tester display or underlined on a printed copy of the Test History. If the reading is less than R_m, the value is set at alarm. The reading appears in red on the tester display or bolded on a printed copy.

Wound Rotors, Resistor Banks

Voltages in wound rotors and their three-phase resistor banks are typically too low to use the minimum resistance equation to figure minimum values. The warning levels should be set based on your experience. Establish a baseline test for new assets and assets tested for the first time, and watch the trends. Compare values on similar assets operating under similar conditions.

Exceptions

Some assets may show insulation resistance readings which are lower than the IEEE recommended minimum value and still have “good” insulation. These include:

- Windings with an extremely large surface area
- Large or slow-speed assets
- Assets with commutators

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A DC armature with a low RTG value typically has multiple paths for leakage current, not just one. Because of this, finding the exact location of ground faults is almost impossible and repair is very difficult. This problem is much more complex than in AC assets. Therefore, lower minimum acceptable RTG values are generally tolerated. In these cases, the IEEE standard of IR_{1min}= kV + 1 is typically relaxed to IR_{1min}= kV.

Out-of-service assets, without installed heaters operating, may absorb enough moisture to lower insulation resistance to less than the recommended limits.

Interpreting Readings

There are two factors, which require user input, which affect the value of RTG measurements. They are temperature and charge time. In order to compare temperature-corrected RTG readings for similar assets operating under similar conditions, these factors MUST be taken into account.

Temperature

The Test Selection window uses the IEEE standard reference value of 40°C as the default value for the winding temperature. This can be changed. The corrected RTG reading shown at the end of the test and in the Test History is the value that would be expected at 40°C regardless of the *actual* temperature of the asset winding insulation when the test was performed. In other words, if the reading is always corrected to the same temperature, then temperature is removed as an influencing factor. This allows you to use the corrected RTG value from test to test as a valuable trending tool.

Temperature correction is necessary since the resistance of an insulation material decreases significantly as its temperature increases. The materials which make up insulation have a negative temperature coefficient (inversely proportional). In other words, as the temperature increases their ability to stop current flow decreases. This means it is necessary to know the temperature of the asset when determining the condition of the insulation system.

Therefore, as the temperature of the asset increases, the measured insulation resistance decreases. To compare the reading you got today with a reading you got last month, it is important that you compare like results. The way to do this is to calculate the corrected resistance to a given temperature. MCE resistance values are corrected to a standard temperature of 40°C. This temperature is selected because the normal operating temperature for an asset is typically approximately 40°C (104°F). When comparing the results of different tests note the temperature input for possible variations.

Table 5-9 shows the report results for the same insulation with resistance to ground measurements taken at a variety of temperatures and compensated to different temperatures.

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Table 5-9: Temperature Compensation

Temperature	Actual Resistance	25 °C Compensated	40 °C Compensated
20 °C	20 Megaohm	14 Megaohm	5 Megaohm
25 °C	14 Megaohm	14 Megaohm	5 Megaohm
30 °C	10 Megaohm	14 Megaohm	5 Megaohm
35 °C	7 Megaohm	14 Megaohm	5 Megaohm
40 °C	5 Megaohm	14 Megaohm	5 Megaohm
45 °C	3.5 Megaohm	14 Megaohm	5 Megaohm
50 °C	2.5 Megaohm	14 Megaohm	5 Megaohm

It can be seen from the chart that if temperature compensation is not performed, the reported (actual) resistance to ground changes with temperature. When temperature compensation is performed, the reported resistance does not change when the test temperature changes. In order to compare results, all measurements MUST be compensated to the same temperature.

Test Voltage and Charge Time

The ground wall insulation in a asset has a conductor on either side. On one side of the insulation is the stator windings, the conductors that make up the individual coils in each pole group for each phase. On the other side is the stator core, formed by the stator laminations connected to the frame/casing of the asset. This design has the fundamental components which make up a capacitor. When a DC potential is applied, the insulation "charges" the way a capacitor does. This is important because if the resistance to ground reading is recorded as soon as the test potential is applied, it is lower than if it is recorded after the insulation is "charged."

A rule of thumb for performing RTG measurements is to *apply the test potential for 1 minute or until the reading has stabilized*. This allows for different technicians to obtain values from test to test which can be compared. However, this is not very accurate. On the MCE, the duration of time the voltage is applied to the insulation system is selectable.

Test voltage potential can be from 250 to 5000 volts, based on asset nameplate voltage. Charge time can be set between 15 and 600 seconds, at 15 second intervals. Defaults are set at 500 volts and 60 seconds. Again, using the same values every time makes comparison and trending a valuable tool.

Data Interpretation

If the RTG value is low, isolate the problem to either the power circuit or the asset. Assuming the first test was made at the MCC, perform another test at the asset connection box. Disconnect the asset leads and test the asset. If the RTG value is higher testing the asset, the fault is in the cables between the MCC and the asset. Check the connections in the asset connection box, look for moisture in the conduit, and examine the cables. The cables may require cleaning, drying, or replacement.

If the RTG value at the asset connection box is still low, the fault is in the asset. If the value is in caution, the asset may need to be dried, cleaned in place, or removed for a clean, dip, and bake. If the value is in alarm, the asset may need to be rewound. If the RTG value is less than the IEEE minimum, look for a ground fault and clear this condition before starting the asset.

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Examples

A conveyor asset was tested and had <.1 Megohm RTG. When the technician removed the terminal box cover, he found that one of the taped connections had arced to ground. The leads were repaired and the asset was retested. RTG increased to 263 Megohms.

A compressor asset was tested and had <.1 Megohm RTG. When the technician removed the terminal box cover, he saw that the box was half full of water. The leads were dried and the asset was retested. RTG increased to 21.5 Megohms

Capacitance-to-Ground

What Does it Tell You?

The capacitance-to-ground (CTG) measurement is indicative of the cleanliness of the windings and cables. As dirt and contaminants build up on windings and cables, CTG values increase. An increasing trend showing rising CTG values indicates that the asset needs to be cleaned.

Why is This Important?

A capacitor is formed by any two conducting materials, called plates, separated from each other by a dielectric material. Dielectric material is anything that is “unable to conduct direct electric current.” A cable or winding surrounded by insulation provides one conductor and the dielectric material. The second plate is formed by the stator core and casing iron.

Normally, when the outside of the insulation is clean and dry, it is not a good conductor. When dirt, moisture, and other contaminates begin to cover the stator windings inside the asset, they cause the outer insulation surface areas to become conductive. Since this surface is in contact with the ground, it allows an AC current path to ground. Cables in the power circuit are also subjected to the same affect, when moisture penetrates the outer casing. The cleanliness of the windings and cables can be determined by looking at the CTG value.

With a buildup of material on them, dirty windings and cables produce higher capacitance values than clean ones do. Over time, CTG values steadily increasing indicate an accumulation of dirt and that cleaning is necessary. This can be correlated with decreasing RTG values.

Dirt and contamination also reduce a asset’s ability to dissipate the heat generated by its operation, resulting in premature aging. A general rule of thumb is that insulation life decreases by 50% for every 10 °C (50 °F) increase in operating temperature above the design temperature of the insulation system. This holds true with the asset operating at or above a 75% load. Heat raises the resistance of conductor materials and breaks down the insulation. These factors accelerate the development of cracks in the insulation, providing paths for unwanted current to flow to ground. If capacitance is higher than normal, a low RTG reading is an indication that such a path already exists.

Setting Warning Levels

Preset warning levels for CTG values in MCEGold are based on a percent change from the baseline measurement. This is merely a comparison warning. A 100% increase from baseline produces a caution (yellow on the computer display or underlined on the printed copy). A 200% increase from baseline produces an alarm (red on the computer display or bold on the printed copy). These values are guidelines. As you gather data on a single

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asset or on similar assets operating in the same environment, reset the warning levels to reflect your specific conditions.

Data Interpretation

Capacitance-to-ground is a function of many factors. Therefore, comparison of CTG values is more revealing of a asset's condition than is the analysis of a single snapshot CTG value. For example, capacitance to ground is influenced by the design of each individual asset, the length of the cable between the MCE and asset, the type of insulation on the cables and asset windings, and the number and type of connectors in the circuit.

A new or recently refurbished asset may have a very low CTG reading. A "normal" capacitance value can vary from asset to asset and is NOT an absolute value. CTG must be analyzed by trending readings on the same asset or by comparing values taken on similar assets, with similar histories, operating under the same conditions. If CTG increases over time, dirt, moisture, and/or contaminants are building up on the windings, cables, or both.

Surge capacitors are used in some circuits and will affect CTG readings. Whenever possible, CTG tests should be performed with the capacitors in the circuit as well as disconnected, to indicate the health of the capacitors. This allows for trending the condition of the capacitors as well as the CTG of the asset.

Examples

Capacitors and surge caps were left in the circuit for tests of two chillers used to cool vital computers. Table 5-10 shows how several values were affected. Notice the difference in the readings when the power factor capacitors were removed.

Table 5-10: Effects of Power Correction Capacitors

	With Power Factor Capacitors Installed		With Power Factor Capacitors Removed	
	Chiller #1	Chiller #2	Chiller #1	Chiller #2
Balance of Resistance	1.74%	2.164%	0.050%	2.000%
Balance of Inductance	16.0%	0.520%	2.560%	0.500%
CTG	999,999 pF	999,999 pF	38,750 pF	37,250 pF
RTG	0 Megohms	0 Megohms	>2,000 Megohms	> 2,000 Megohms

A conveyor asset was tested and had <.1 Megohm RTG and 999,999 pF CTG. When the technician removed the terminal box cover, he found that one of the taped connections had arced to ground. The leads were repaired and the asset was retested. RTG increased to 263 Megohms and CTG decreased to 67,750 pF.

A compressor asset was tested and had <.1 Megohm RTG and 83,000 pF. When the technician removed the terminal box cover, he saw that the box was half full of water. The leads were dried and the asset was retested. RTG increased to 21.5 Megohms and CTG decreased to 8,000 pF.

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Phase-To-Phase Resistance

What Does it Tell You?

Phase-to-phase resistance is the measured DC resistance between phases of the stator in an AC asset and between polarities of the armature and field coils in a DC asset.

In AC induction assets, use the phase-to-phase resistance values and resistive imbalances for trending, troubleshooting, and quality control. In DC assets, use trending and relative comparison to determine the condition of the phases in the asset and power circuits. This includes comparing readings taken from identical assets operating in similar conditions and comparing current readings against past readings for the same asset.

An increasing resistive imbalance or a changing resistance over time can indicate one or more of the following:

- High resistance connections
- Coil-to-coil, phase-to-phase, or turn-to-turn current leakage paths
- Corroded terminals or connections
- Loose cable terminals or bus bar connections
- Open windings
- Poor crimps or bad solder joints
- Loose, dirty, or corroded fuse clips or manual disconnect switches
- Loose, pitted, worn, or poorly adjusted contacts in asset controllers or circuit breakers
- Mismatched components (incompatible materials, wrong sizes, etc.)
- Undersized conductors (misassembled or improperly engineered)

Why is This Important?

Circuit resistance is determined by the length, size, width, composition, condition, type and temperature of the conductors and connectors. When two different conductors are connected, dirt, corrosion, or an improper connection increases the circuit resistance. Also, inadequate connections cause heating of the conductor, which increases resistance even more. This could be caused if only a few strands of a conductor or portions of a soldered joint are improperly connected to a terminal or if undersized connectors are used.

In a three-phase asset circuit, the resistance in the conductor paths should be balanced. A “resistive imbalance” occurs when the phases have unequal resistances. The formula below shows that a very small resistive imbalance results in a high voltage imbalance. This produces uneven current flow and excessive heat.

$$Vimb = \frac{\frac{2}{3} \times (Rmax - Rmin) \times FLA}{Vl - \left(\left(\frac{2}{3}\right) \times (Rmax - Rmin) \times FLA\right)} x100$$

In the formula:

Vimb = voltage imbalance
Rmax = maximum winding resistance value
Rmin = minimum winding resistance value

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FLA = full load amp rating of asset
Vl = line voltage
100 = converts number to percentage

When voltage applied across three-phase asset leads is unbalanced, circulating currents, called “negative sequence currents”, are induced. When these negative sequence currents are present, they cause heating in the windings. EPRI’s (the Electric Power Research Institute) Handbook to Assess the Insulation Condition of Large Rotating Machines states “a 3.5% voltage imbalance can raise winding temperature 25% in the winding(s) affected by such currents.” EASA (the Electrical Apparatus Service Association) says a 1% voltage imbalance results in a 6-7% current imbalance.

The most extreme case of resistive imbalance occurs when a asset “single phases.” This “single phasing” quickly causes the asset to fail because the remaining two phases compensate by increasing current by 200% to 300% of normal. Rapid heating of the windings which are still connected destroys the insulation surrounding them.

Resistance to the flow of current in a circuit is of concern from the standpoints of safety, energy conservation, and insulation life. High resistance points in conductors generate heat both at the point where the resistance is located and in the three-phase assets being supplied.

Regardless of the source, some of the effects of increased heat production in the asset include:

- Higher resistance due to heat in conductor materials adjacent to the fault
- Deterioration (accelerated aging) of the surrounding and supporting insulating materials
- Imbalance in multi-phase circuits, which adversely affects equipment performance and life
- Increased power consumption in all cases
- Fire or failure in extreme situations

Setting Warning Levels

The preset warning levels in MCEGold are based on both actual values and on a % change from the baseline value.

Data Interpretation

Resistive imbalance above the setpoint indicates that a problem exists in either the power circuit or in the stator windings. First, isolate the problem to the asset or the circuit. Looking at individual resistance readings can help isolate the problem to a phase. Also, look for the following characteristics which indicate faulty connections.

- Aluminum cables connected to lugs marked for copper wire only
- Discoloration of insulation or contacts
- Damaged insulation having small cracks, bare conductors, or metal components
- Mismatched cables in common circuits
- Poor lug crimps on T-Leads
- Oxidation of conductor metals
- Presence of contaminants such as dirt

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Example

The following information is from a 7,000 HP vertical reactor coolant pump asset at a nuclear power plant. A high resistance solder joint between phases 1 and 3 produced a resistive imbalance of 37.15%. The cost associated with the power loss was calculated to be $58,517.84 per year. Multiple tests, shown in Table 5-11, were performed to verify the problem.

Table 5-11: MCE Tests Used in Troubleshooting Efforts

Test Date	5/31/96	5/31/96	5/31/96
Test ID:	331	332	333
Frequency	1200	1200	1200
	BASELINE		
Mohm Ph 1 to Gnd			
Charge Time	30	30	30
Voltage	1000	1000	1000
Motor Temp	40	40	40
Measured Mohm	>2000	>2000	>2000
Corrected Mohm	OVR	OVR	OVR
pF Ph 1 to Gnd	116250	116250	116250
ohm Ph 1 to 2	0.27450	0.26800	0.27400
ohm Ph 1 to 3	0.43750	0.43700	0.44100
ohm Ph 2 to 3	0.24500	0.24300	0.24200
mH Ph 1 to 2	6.750	6.750	6.750
mH Ph 1 to 3	6.755	6.750	6.750
mH Ph 2 to 3	6.745	6.745	6.745
% Res. Imbalance	37.15	38.29	38.24
% Ind. Imbalance	0.07	0.05	0.05
$ Power Loss	58517.84	58973.83	60493.78

Phase-to-Phase Inductance

What Does it Tell You?

In AC assets, phase-to-phase inductance readings can:

- Indicate the condition of the stator windings
- Detect phase-to-phase and coil-to-coil current leakage paths
- Reveal poor or incorrect rework

These readings can also be used to detect faults in power cables. A Rotor Influence Check (RIC) can be performed to further troubleshoot the asset to reveal faults such as:

- Broken/cracked rotor bars or end rings
- Porosity and lamination damage
- Eccentricity problems

In DC assets, inductance changes within the field or armature can indicate current leakage paths in the windings.

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Inductance changes when leakage paths develop. These paths can be either within the winding coils, or directly to ground. Leakage paths result from mechanical, thermal, environmental, or electrical damage to the insulation system of the windings. Additionally phase-to-phase and turn-to-turn shorts can occur. In either case, current flow bypasses some coils, thereby reducing inductive reactance and increasing current in other phases of the stator. Temperature rises in the remaining conductors and in the surrounding insulation. This accelerates the deterioration, which can cause an avalanche effect, as heat produces more insulation failures, resulting in more leakage paths and more coils removed from the circuit, further increasing temperature.

As there are fewer winding turns in a given phase actively creating the magnetic field upon which the asset is functioning, the windings in the other phases compensate to meet the requirements of the load on the asset. These windings in turn draw more current than is normally supplied by a balanced asset.

Why is This Important?

A large inductive imbalance causes torque-induced vibration at two-times line frequency ($2F_L$). This vibration can be linked to mechanical degradation. Also, inductive imbalance can contribute to other problems, among which are:

- Bearing damage
- Coupling damage
- Loosened rotor bars
- Insulation failure at winding end turns or at exit of stator slots

Setting Warning Levels

The preset warning levels in MCEGold are based on both actual values and on a change from the baseline value.

Data Interpretation

Many factors affect inductance readings, including asset winding coils, the stator iron, the rotor, and the number of rotor bars. The power circuit has little or no effect on the inductance readings unless there are power factor or surge capacitors in the circuit.

Power correction and surge capacitors are used in some circuits and will affect phase-to-phase inductance readings. Whenever possible, phase-to-phase inductance tests should be performed with the capacitors in the circuit as well as disconnected, to indicate the health of the capacitors. This allows for trending the condition of the capacitors as well as the phase-to-phase inductance of the asset.

If both inductive and resistive imbalance are high, look for a leakage path in a coil or an open coil. If resistive imbalance is low, the fault may be in the rotor.

A rotor bar/cage anomaly may not produce a large inductive imbalance on one single test. If inductive imbalance has increased or is high, perform a RIC to further define the problem. Excessive vibration can also be an indicator of inductive imbalance. If you notice high vibration readings, perform a RIC to collaborate the data.

Example

A new asset with a cast aluminum rotor was load-tested prior to installation. The asset failed to reach rated HP. A RIC was conducted and indicated the presence of broken rotor bars.

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When the rotor bars were cast, high resistance connections were formed. Operating the asset during the load-test produced excessive heat at those points. The melted paint on the rotor identified the high resistance connections beneath them.

Test Lead Check

The MCE verifies the resistance of the test leads before and after each test. This ensures test lead continuity and proper connection prior to running the test. If any test lead resistance exceeds a predetermined value, the MCE stops the test. That lead must then be reconnected and retested successfully to continue. This ensures maximum accuracy and repeatability of the collected data.

Resistive Imbalance

Resistive imbalance is calculated from the three individual phase-to-phase resistance readings taken during the standard test. It is displayed as a percentage and will be put into a caution or alarm state if it exceeds a specific limit. This limit can be changed in the MCEGold software. Because this value is calculated from *three* phase-to-phase readings, there is no resistive imbalance value for DC assets.

In AC assets, resistive imbalance is an indication of one or more high-resistance connections in the circuit or shorted turns. Assuming the original test was performed at the MCC, isolate the problem to the asset or to the power circuit by retesting the asset at the connection box. If the resistive imbalance remains, the problem is in the asset. If the resistive imbalance goes away, the problem is in the cables or power circuit. Look at the individual resistance readings to determine the faulty phase.

Inductive Imbalance

Inductive imbalance is calculated from the three individual phase-to-phase inductance readings taken during the standard test. It is displayed as a percentage and will be put into a caution or alarm state if it exceeds a specific limit. This limit can be changed in the MCEGold software. Due to the fact that this value is calculated from *three* phase-to-phase readings, there is no inductive imbalance value for DC assets.

In AC assets, this calculated value can indicate the condition of the stator and rotor/stator relationship. Turn-to-turn or phase-to-phase shorts in the stator causes a high inductive imbalance. Rotor/stator eccentricity causes a varying value of inductive imbalance, as seen on subsequent standard tests. To isolate a problem to the rotor or the stator, perform a Rotor Influence Check.

Power factor capacitors, line reactors, and other power correction devices can impact inductance values. Separation of these devices from the circuit may be required when troubleshooting the asset.

Average Inductance

Average inductance is calculated from the three individual phase-to-phase inductance readings taken during the standard test. Due to the fact that this value is calculated from *three* phase-to-phase readings, there is no inductance imbalance value for DC assets. In AC assets, this calculated value can indicate the condition of the rotor and rotor/stator relationship. Rotor defects will cause an increase in the average inductance. To isolate a problem to the rotor or the stator, perform a Rotor Influence Check.

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Polarization Index Test

What Does it Tell You?

The Polarization Index (PI) and Dielectric Absorption (DA) ratios indicate the condition of the insulation system of the asset and power circuit. Both of these tests use ratios of measurements of insulation resistance taken at two different times. The PI is the ratio of the reading taken at 10 minutes and divided by the reading taken at 1 minute. The DA is the ratio of the reading taken at 60 seconds divided by the reading taken at 30 seconds.

There are three different currents that flow through an insulator when a voltage potential is applied. Since the RTG test measures the voltage and current to calculate insulation resistance, all of these currents must be taken into account.

- First, the “capacitive current” starts out high and drops to nearly zero after the insulation has been charged to full test voltage. This is normally negligible after the first few seconds of the test.
- Second, the “absorption current” also starts out high and drops off. The majority of this current dissipates after one minute, but continues to decay for up to 5 to 10 minutes.
- Finally, the “conduction” or “leakage current” is a small, mostly steady current which becomes a factor after the absorption current drops to a negligible value. This current should remain steady for the remainder of the test.

The relationship between all these currents is shown in Figure 5-59.

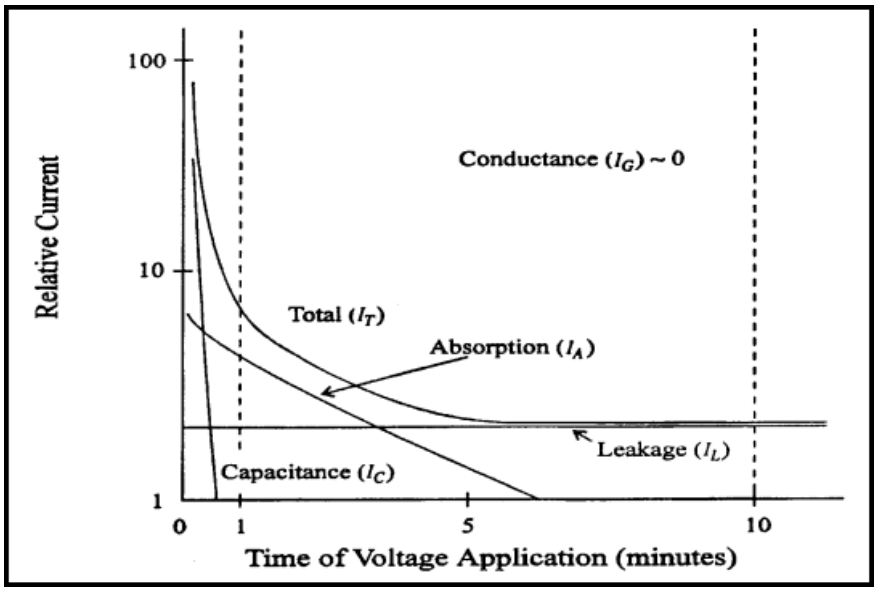


Figure 5-59: Current Relationships

As the asset accumulates dirt and as the insulation ages and cracks, the PI and DA ratios decrease. Dirt accumulates based on the operation and environment of the asset. The insulation cracks as a function of heat and aging of the asset.

Because of the effects of each of these varying currents, the resistance to ground measured by any insulation tester varies with the amount of time the voltage is applied to the insulation. In order to trend or compare insulation RTG values, the charge time for all tests

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MUST be the same. If the charge time is not the same, the trend or comparison may not be valid.

Finally, the charging developed by these three different currents does not dissipate immediately when the voltage is removed at the end of the test. The insulation system must be allowed to discharge sufficiently between resistance to ground tests in order to obtain accurate results. A rule of thumb states that insulation takes four times the amount of charge time to discharge.

Why Is This Important?

Resistance-to-ground readings involve three different current components: capacitive, absorption, and leakage. The PI test allows the charging and absorption currents to decay so that only actual leakage current is measured. As a voltage is continuously applied, healthy insulation slowly polarizes and the absorption current diminishes. This causes a steady rise in resistance until the majority of the current is from the small amount leaking to ground. In poor insulation, leakage current is high enough to overshadow the lowering absorption current and provide little increase in the resistance over time.

Setting Warning Levels

In Managing Motors, Richard Nailen, P.E., offers the following guidelines for interpreting PI and DA ratios. If the PI ratio is less than 2 or the DA ratio is less than 1.5, look for insulation degradation.

	Unacceptable	Acceptable
PI	1 to 1.5	2 to 4
DA	≤1.25	>1.50

IEEE recommends the following values for PI. Machines rated at 10,000 kVA and less should have values at least as large as the acceptable values listed below before operation or hi-pot testing.

	PI
Class A	1.5
Class B, F, H	2.0

Data Interpretation

Because the PI and DA values are ratios, temperature correction is unnecessary. PI and DA can be used for both on-the-spot, one-time checks and for trending over time. Individual readings can be compared to the recommended setpoints.

A good PI Profile (PIP) shows a sharp rise followed by a steady, but slowly increasing trend. A downward trend suggests deteriorating conditions. A flat or ragged trace indicates short-term current transients. Such traces indicate insulation breakdown, possibly due to contamination or moisture in the power circuit or asset. Observing the readings over time permits scheduling of cleaning or reconditioning before failure occurs.

If the PI or DA ratio is low, isolate the problem to the circuit or the asset. Assuming the first test was made at the MCC, run another test from the MCC with the “T” leads disconnected.

If the low value is gone, the problem is in the power circuit. If the low value still exists, test the asset at the asset connection box with the leads to the MCC disconnected. If the

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low value is gone, the problem is in the cables between the asset and the MCC. If the low value still exists, the problem is in the asset.

Examine the cables in the asset connection box. They could require cleaning, drying, or replacement. Also, check for water in the conduit.

If the PI or DA ratio is < 1.0, look for a ground fault. Clear this fault before starting the asset.

Some exceptions to be aware of include:

- Moisture or contamination on the windings decreases the PI
- The PI can be lowered by certain semiconducting materials which are used for corona elimination on the end windings of some high-potential AC machines
- Performing PI testing in ambient temperatures less than the dew point may significantly impact the PI values

Examples

The following pictures show the response of the insulation in both a good (Figure 5-60) and a bad (Figure 5-61) asset, with a constant voltage applied for a 10 minute period. The increase in the RTG value is due to the decrease in current through the insulation.

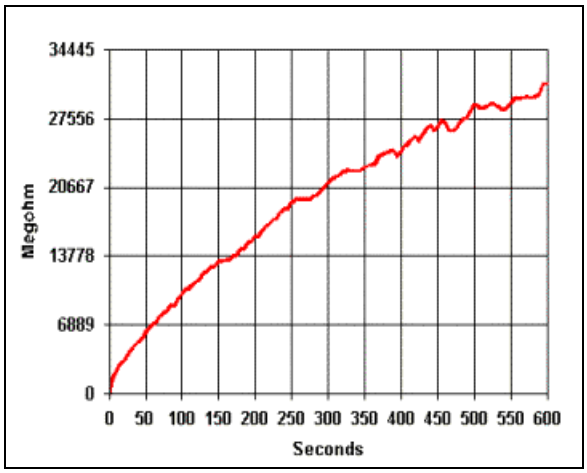


Figure 5-60: Asset with a Good PI

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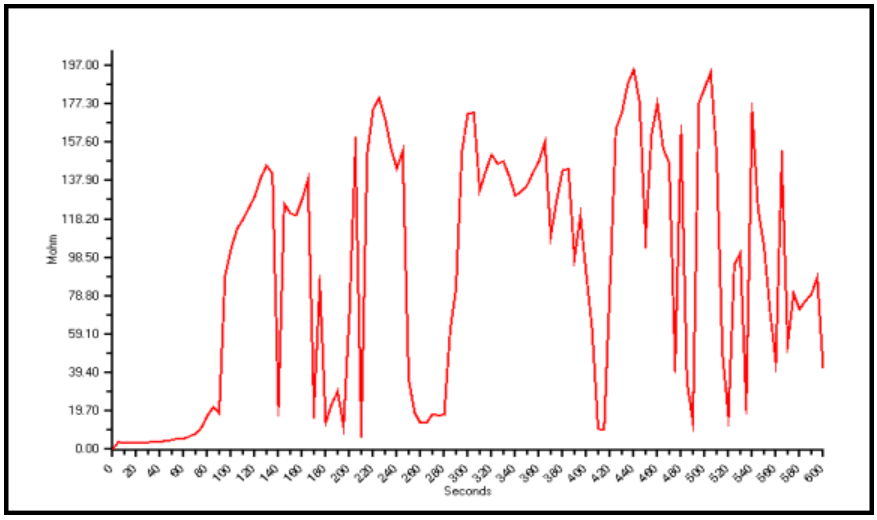


Figure 5-61: Asset With a Bad PI

The unstable RTG readings in the bad PI are a result of low level discharges occurring in faults in the insulation.

ROTOR INFLUENCE CHECK (RIC)

What Does It Tell You?

The Rotor Influence Check (RIC) is a graphical representation of the rotor/stator relationship. By analyzing variations in the magnetic flux while rotating the rotor, eccentricity and rotor defects are identified. The RIC can also be used to confirm stator faults. Figure 5-62 shows a RIC graph for a motor with no defects.

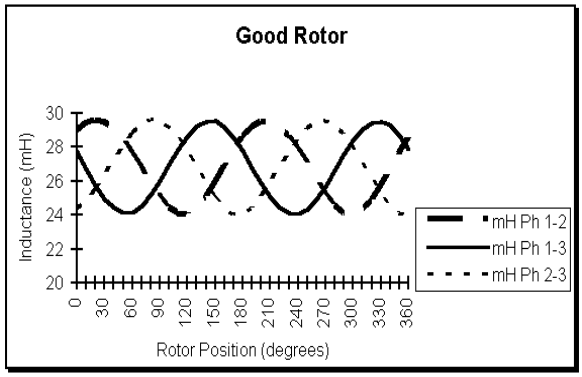


Figure 5-62: RIC from a Good Asset

A motor acts similar to an electromagnet. The rotor acts like the “core” and the stator acts like the windings of the electromagnet. A RIC shows how the rotor’s residual magnetism influences the stator inductance in different positions. As the magnetic field of the rotor interacts with more of the coils in each stator winding, the inductance of that winding changes. This influence causes repeatable patterns of change in the graph of the stator inductance, shown above as sinusoidal waveforms.

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Why Is This Important?

Broken rotor bars can cause extreme heat and vibration, which can result in winding failure, bearing failure, and loss of torque in a motor. Eccentricity, a non-uniformity of the air gap between the rotor and stator, can cause excessive vibration, which can result in winding and bearing failure.

Rotor Position And Aliasing

Each RIC consists of a series of inductance measurements taken at predetermined positions of the rotor. The amount by which the rotor is moved for each measurement and the total rotation of the rotor for the test are determined by the number of poles in the asset. The increment and total rotation are calculated to show the RIC pattern for one complete pole group. If additional readings are taken beyond the total and at the same increments, the pattern should repeat itself. Table 5-12 shows the recommended increments and total rotation to cover one pole face for a asset with a given number of poles.

Table 5-12: RIC Degree Increments vs. Number of Poles

Poles	Increment	Total
2	10.0°	180°
4	5.0°	90°
6	3.3°	60°
8+	2.5°	45°

The number of increments and total rotation are automatically calculated by MCEGold, based on the entered nameplate data. You may reduce the increment and perform more tests to cover the recommended total rotation. Increasing the increments and performing fewer measurements than the default values is not recommended because doing this results in “aliasing.” Because not enough points are taken to reveal a true picture of the curve, aliasing produces an inaccurate and incomplete graph.

The following example shows how to determine the number of poles a asset has, the number of total degrees to turn the rotor, and the increments by which to turn it. Start with the basic equation:

$$F = \frac{NP}{120}$$

In the formula:

F = line frequency (60 Hertz in the US)
N = synchronous asset speed
P = number of poles in the asset
120 = 120 degrees of electrical spacing between poles

For a asset whose synchronous speed is 1800 rpm, use a variation of this equation to find the number of poles:

P = 120F/N
P = (120)x(60)/1800
P = 4 poles

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Next, determine the number of degrees per pole face. To find this, divide 360 by the number of poles.

360/4 = 90 degrees per pole face.

Next, determine the increments, in degrees, by which to position the rotor to generate an accurate RIC pattern. To find this, divide the number of degrees per pole face by 18.

90/18 = 5 degrees.

Thus, the following would apply for a asset whose synchronous speed is 1800 rpm:

4 poles
90 degrees per pole face
5 degree increments per rotation to develop an accurate RIC

The increments were chosen since the RIC pattern typically repeats itself by the same number of poles in the asset through a complete 360° rotation of the rotor. Using these increments is recommended to increase consistency and reduce aliasing. Also, use the same increments and total rotation each time you perform a RIC. This ensures that the RIC is started and run the same way for each test. Doing this enables you to reliably compare the data and graph to subsequent tests for trending.

When the RIC is started, the MCE measures the resistance of each phase winding. At each increment the inductance of each winding pair is measured and recorded. Between measurements you are prompted to move the rotor to the next position.

Data Interpretation

Aliasing

Aliasing occurs when too few measurements are taken too far apart to show the true shape of the curve. The following figures show RICs which exhibit aliasing.

Figure 5-63 shows two waveforms of a good rotor in a 6-pole asset. The waveform with the connected circles was generated with measurements taken at the recommended interval of 3.3°. The waveform with the dashed lines was generated with measurements taken at 15° intervals. The waveform from measurements taken at 15° intervals shows a lack of definition.

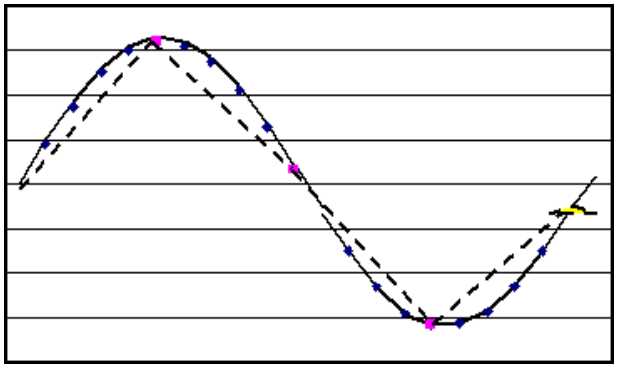


Figure 5-63: Aliasing

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Figure 5-64 shows two waveforms taken on a asset which has known rotor faults. The presence of the fault is hidden when the measurements are taken at 15° increments (dashed waveform). When they were made at the recommended 3.3° increments (circles), the presence of the rotor fault is indicated by the flattened peaks. Note that the dashed waveforms shown in Figure 5-63 and 5-64 appear identical masking the true rotor conditions.

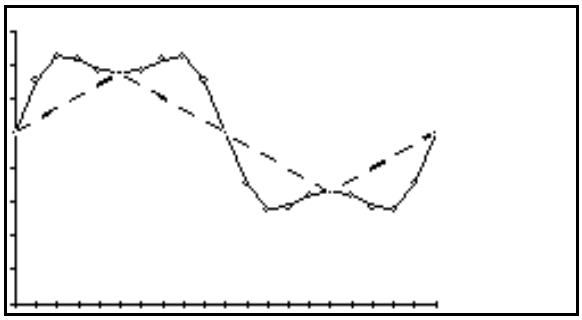


Figure 5-64: Aliasing

Good Asset

Figure 5-65 shows a RIC test for a typical AC induction asset with a good rotor. The three graphs resemble sine waves which are 120° out of phase with each other. The sinusoidal pattern is smooth and repeatable. The amplitude of the sine waves varies from asset to asset, due to factors specific to each asset, such as winding configuration, air gap, core steel quality, and rotor construction and design.

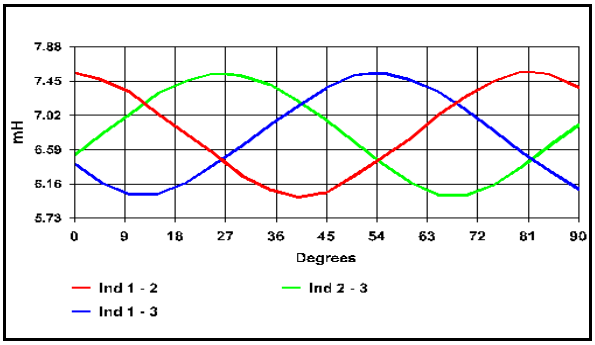


Figure 5-65: RIC from Good Asset

In some assets, the amplitude changes of the graphs are very small and may appear erratic. This erratic appearance may be due to measurement resolution steps, and not due to actual changes in inductance. This condition may indicate a low influence rotor with no rotor defects. One such low influence rotor is shown in the RIC graph in Figure 5-66.

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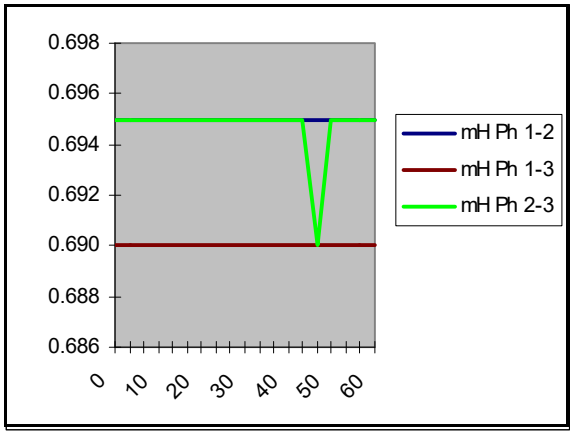


Figure 5-66: RIC from Asset with Low Influence Rotor

Eccentricity

Eccentricity is defined as the condition of the air gap between the rotor and stator, all the way around 360° of the asset. This gap should be the same width all the way around. If the rotor is bowed, the bearing clearances improperly set, or the end bell not aligned properly, the air gap will not be equal. An unequal air gap produces a phase-to-phase inductance graph that is markedly higher at one end of the graph than at the other. This is shown in Figure 5-67.

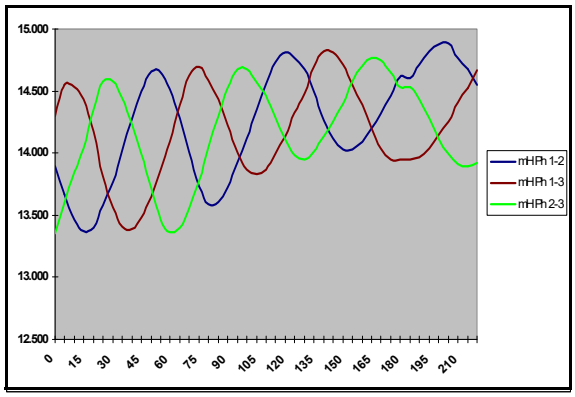


Figure 5-67: RIC from Asset with Eccentricity

If an eccentricity problem is suspected, continue performing the RIC to include at least two pole faces beyond the default increment setting. An exception to be aware of is when sleeve bearings are used in the asset. Due to their oil film, they can falsely indicate eccentricity problems since the rotor "settles" when the asset is not running.

Broken Rotor Bars

A rotor with broken bars produces graphs with anomalies in their wave shapes, such as flattened and staggered peaks.

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Figure 5-68 shows a motor with ten broken rotor bars. These were found following a RIC. The flattening of the peaks in the phase-to-phase inductance graphs results from the influence of the broken bars. The irregularities in these traces are repeatable in each phase.

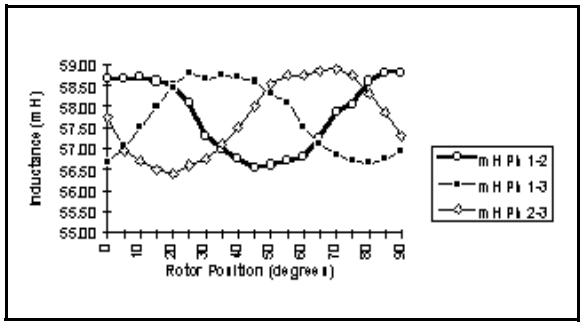


Figure 5-68: RIC from Motor with Broken Rotor Bars

Figure 5-69 shows a motor with cracked welded joints at the shorting rings. The cracked welded joints were found in 14 out of 122 rotor bars after a RIC was taken. The erratic pattern of flattened and staggered peaks points to the presence of the broken bars.

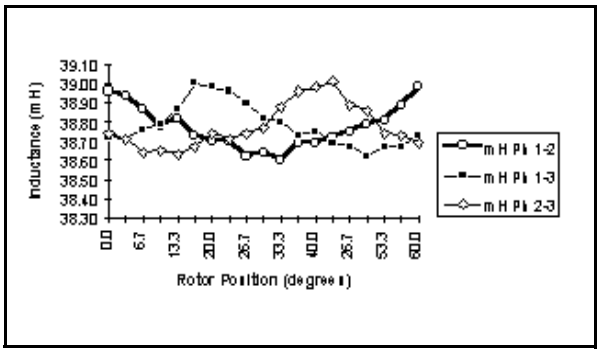


Figure 5-69: RIC from Motor with Broken Rotor Bars

Figure 5-70 shows the RIC test of a 480 volt 60 HP AC induction motor with broken rotor bars and a slight air gap problem. Note the flattened peaks in each phase-to-phase graph.

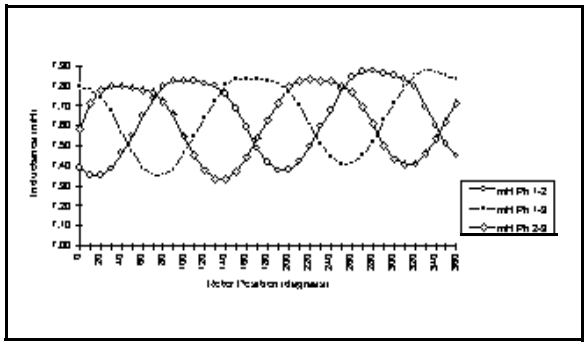


Figure 5-70: RIC from Motor with Broken Rotor Bars

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Figure 5-71 shows the staggered peaks in a RIC for a 480 volt 5 HP motor. A rotor anomaly was determined to be the cause for these peaks. This was the result of a maintenance supervisor drilling a hole in one rotor bar as a demonstration.

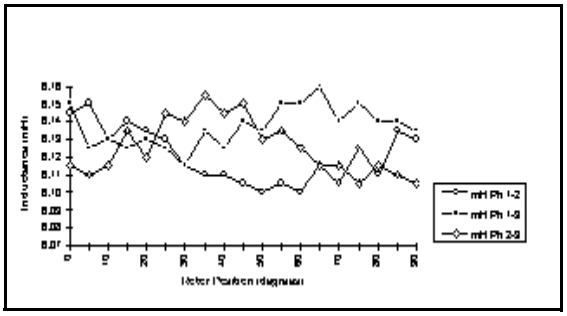


Figure 5-71: RIC from Motor with Broken Rotor Bars

One-Up/Two-Down and Two-Up/One-Down

Phase-to-phase or turn-to-turn stator winding shorts can result in either a one-up/two-down or two-up/one-down RIC pattern. This is shown in the graphs in Figure 5-72.

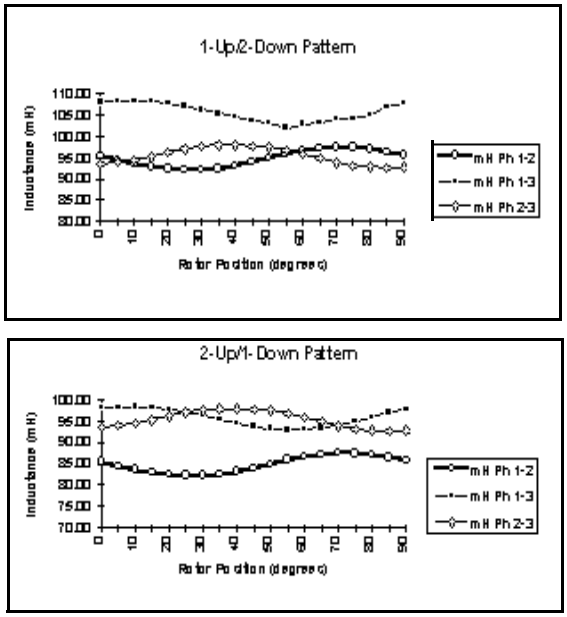


Figure 5-72: RIC from Motor with Phase-to-Phase or Turn-to-Turn Shorts

To assist in the analysis, compare the RIC with the phase-to-phase resistance readings on the standard test. If the same phases are affected resistively and inductively, this further confirms a winding defect. If resistance readings do not confirm this condition, evaluate the asset for eccentricity/air gap problems.

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DC Bar-to-Bar Test

What Does It Tell You?

Testing the resistance between commutator bars gives an indication of the comparative value of resistance that exists between all like electrical circuits in an armature.

Why Is This Important?

The commutator consists of insulated segments assembled into a cylinder and held together by insulated rings. Electric current is transferred to the armature windings by "brushes" made mainly of carbon and graphite. Brush wear creates carbon dust, a conductive contaminant, which penetrates into crevices, cracks and openings of the armature. Copper particles add to the contaminant accumulation when the wrong brushes are installed or the brushes are improperly installed, or when maintenance is inadequate. If the insulating material on the commutator bars or their risers has cracked, these contaminants can short entire windings.

Also, high resistance connections can develop at the risers causing open or high-resistance armature coils. Equalizing connections can break and cause an imbalance due to the loss of equalization.

Data Interpretation

The resistance readings between bars are in the microhm range for medium to large machines. Most DC assets of this size have armatures constructed with equalizing jumpers or compensating shorting connections. The effect of these connections on the Bar-to-Bar test results shows as a regular pattern of change from bar to bar. Good bars have 1 or 2 different values. If a bar differs greatly from either of these 2 values then look for faults.

Armatures with 50% compensation have every other bar equalized; with 33% compensation have every 3rd bar equalized; with 25% compensation have every 4th bar equalized.

MCE ANALYSIS

AC Induction Assets

Rotor Influence Check (RIC)

- Normal - smooth three-phase sinusoidal waveforms
- Rotor Defect - repeatable erratic inductance throughout the peaks of the waveforms
- Eccentricity - inconsistent variations in the amplitude of the waveforms. Static eccentricity sometimes causes a consistent separation in the three sine waves, coupled with a low inductive imbalance.

One method of analyzing a RIC is done by following four steps, outlined by the acronym SAME.

- S - look at the *scale*; verify correct resolution
- A - check the *alignment* of the peaks; check for eccentricity
- M - check the *max-to-min* values of the peaks; all three waveforms should be the same; check for stator problems
- E - *evaluate* the characteristics of the waveforms

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Standard Test

- In the Fault Zone Report, check for Caution and Alarm indications. Click the value highlighted in yellow or red to see the recommended actions.
- Low Resistance-to-Ground - RTG in Caution or Alarm indicates a possible breakdown in the insulation system.
- High Capacitance-to-Ground - CTG in Caution or Alarm indicates an increase in the contamination on the surface of the insulation.
- High Resistive Imbalance - Resistive Imbalance in Caution or Alarm indicates high resistance connection in the switchgear, disconnect, or asset connection box. Refer to the individual phase-to-phase resistance readings to assist in locating the fault.
- High Inductive Imbalance - Inductive Imbalance in Caution or Alarm indicates a winding defect (turn-to-turn or phase-to-phase) or severe eccentricity. Refer to the individual phase-to-phase inductance readings to assist in locating the fault. If a RIC has not been performed, perform a RIC to obtain additional information.

Polarization Index/Dielectric Absorption

- Low PI or DA ratio - PI or DA in Caution or Alarm indicates changing or excessive surface contamination.
- Breakdown of insulation system.

At this point, a Condition Code may be assigned and Notes completed to explain the following:

- Asset condition/status; basis for the asset condition assigned.
- Anomalies that had to be overcome during the performance of the test.
- If multiple tests were performed during troubleshooting, explain where test leads were connected for each test.

AC Synchronous Assets

Stator

Rotor Influence Check (RIC)

- Normal - smooth three-phase sinusoidal waveforms
- Rotor Defect - appears like a normal sine wave but has a larger than normal inductive imbalance
- Eccentricity - inconsistent variations in the amplitude of the waveforms. Static eccentricity can sometimes cause a consistent separation in the three sine waves.

One method of analyzing a RIC is done by following four steps, outlined by the acronym SAME.

- S - look at the *scale*; verify correct resolution
- A - check the *alignment* of the peaks; check for eccentricity
- M - check the *max-to-min* values of the peaks; all three waveforms should be the same; check for stator problems
- E - *evaluate* the characteristics of the waveforms

Standard Test

- In the Fault Zone Report, check for Caution and Alarm indications. Click the value highlighted in yellow or red to see the recommended actions.

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- Low Resistance-to-Ground - RTG in Caution or Alarm indicates a possible breakdown in the insulation system.
- High Capacitance-to-Ground - CTG in Caution or Alarm indicates an increase in the contamination on the surface of the insulation.
- High Resistive Imbalance - Resistive Imbalance in Caution or Alarm indicates high resistance connection in the switchgear, disconnect, or asset connection box. Refer to the individual phase-to-phase resistance readings to assist in locating the fault.
- High Inductive Imbalance - Inductive Imbalance in Caution or Alarm indicates a winding defect (turn-to-turn or phase-to-phase), circuit defect (cable short or power factor correction capacitor failure), or severe eccentricity. Refer to the individual phase-to-phase inductance readings to assist in locating the fault. If a RIC has not been performed, perform a RIC to obtain additional information on the rotor condition.

Polarization Index/Dielectric Absorption

- Low PI or DA ratio- PI or DA ratio in Caution or Alarm indicates changing or excessive surface contamination.

Step Voltage

- If the plot of the curve of current versus voltage deviates from near linear, impending breakdown is suggested.

Field Circuit

Synchronous Test

- In the Fault Zone Report, check for Caution and Alarm indications. Click the value highlighted in yellow or red to see the recommended actions.
- Low Resistance-to-Ground - RTG in Caution or Alarm indicates a breakdown in the insulation system.
- High Capacitance-to-Ground - CTG in Caution or Alarm indicates an increase in the contamination on the surface of the insulation.
- High/Low Resistance - Resistance in Caution or Alarm indicates a high or low resistance of the field windings.

  NOTE: The Caution and Alarm limits are set based on nameplate field voltage and current values at normal operating temperature of the asset. Testing on a cold asset may indicate values outside the Caution and Alarm settings.

- Low Inductance - Low Inductance in Caution or Alarm indicates turn-to-turn faults in the field coils.

Polarization Index/Dielectric Absorption

- Low PI or DA ratio - PI or DA ratio in Caution or Alarm indicates changing or excessive surface contamination.

At this point, a Condition Code may be assigned and Notes completed to explain the following:

- Asset condition/status; basis for the asset condition assigned.
- Anomalies that had to be overcome during the performance of the test.
- If multiple tests were performed during troubleshooting, explain where test leads were connected for each test.

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Step Voltage

- If the plot of the curve of current versus voltage deviates from near linear, impending breakdown is suggested.

AC Wound Rotor Assets

Stator

Rotor Influence Check (RIC)

- Normal - smooth three-phase sinusoidal waveforms
- Rotor Defect - appears like a normal sine wave but has a larger than normal inductive imbalance
- Eccentricity - inconsistent variations in the amplitude of the waveforms. Static eccentricity can sometimes cause a consistent separation in the three sine waves, coupled with a low inductive imbalance.

One method of analyzing a RIC is done by following four steps, outlined by the acronym SAME.

- S - look at the *scale*; verify correct resolution
- A - check the *alignment* of the peaks; check for eccentricity
- M - check the *max-to-min* values of the peaks; all three waveforms should be the same; check for stator problems
- E - *evaluate* the characteristics of the waveforms

Standard Test

- In the Fault Zone Report, check for Caution and Alarm indications. Click the value highlighted in yellow or red to see the recommended actions.
- Low Resistance-to-Ground - RTG in Caution or Alarm indicates a breakdown in the insulation system.
- High Capacitance-to-Ground - CTG in Caution or Alarm indicates an increase in the contamination on the surface of the insulation.
- High Resistive Imbalance - Resistive Imbalance in Caution or Alarm indicates high resistance connection in the switchgear, disconnect, or asset connection box. Refer to the individual phase-to-phase resistance readings to assist in locating the fault.
- High Inductive Imbalance - Inductive Imbalance in Caution or Alarm indicates a winding defect (turn-to-turn or phase-to-phase) or severe eccentricity. Refer to the individual phase-to-phase inductance readings to assist in locating the fault. If a RIC has not been performed, perform a RIC to obtain additional information.

Polarization Index/Dielectric Absorption

- Low PI or DA ratio - PI or DA ratio in Caution or Alarm indicates changing or excessive surface contamination.

Step Voltage

- If the plot of the curve of current versus voltage deviates from near linear, impending breakdown is suggested.

Rotor

Standard Test

- In the Fault Zone Report, check for Caution and Alarm indications. Click the value highlighted in yellow or red for recommended actions.

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- Low Resistance-to-Ground - RTG in Caution or Alarm indicates a breakdown in the insulation system.
- High Capacitance-to-Ground - CTG in Caution or Alarm indicates an increase in the contamination on the surface of the insulation.
- High Resistive Imbalance - Resistive Imbalance in Caution or Alarm indicates high resistance connection on the slip ring or winding connections. Refer to the individual phase-to-phase resistance readings to assist in locating the fault.
- High Inductive Imbalance - Inductive Imbalance in Caution or Alarm indicates a winding defect (turn-to-turn or phase-to-phase). Refer to the individual phase-to-phase inductance readings to assist in locating the fault.

Polarization Index/Dielectric Absorption

- Low PI or DA ratio - PI or DA ratio in Caution or Alarm indicates changing or excessive surface contamination.

Step Voltage

- If the plot of the curve of current versus voltage deviates from near linear, impending breakdown is suggested.

Resistor Bank

Resistor Bank

- In the Fault Zone Report, check for Caution and Alarm indications. Click the value highlighted in yellow or red to see the recommended actions.
- Low Resistance-to-Ground - RTG in Caution or Alarm indicates a breakdown in the insulation system.
- High Capacitance-to-Ground - CTG in Caution or Alarm indicates an increase in the contamination on the surface of the insulation.
- High Resistive Imbalance - Resistive Imbalance in Caution or Alarm indicates high resistance connection between the resistors or a faulty resistor. Refer to the individual phase-to-phase resistance readings to assist in locating the fault.

Polarization Index/Dielectric Absorption

- Low PI or DA ratio - PI or DA ratio in Caution or Alarm indicates changing or excessive surface contamination.

At this point, a Condition Code may be assigned and Notes completed to explain the following:

- Asset condition/status; basis for the asset condition assigned.
- Anomalies that had to be overcome during the performance of the test.
- If multiple tests were performed during troubleshooting, explain where test leads were connected for each test.

Step Voltage

- If the plot of the curve of current versus voltage deviates from near linear, impending breakdown is suggested.

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DC Assets

Armature Circuit

Standard Test

- In the Fault Zone Report, check for Caution and Alarm indications. Click the value highlighted in yellow or red to see the recommended actions.
- Low Resistance-to-Ground - RTG in Caution or Alarm indicates a possible breakdown in the insulation system.
- High Capacitance-to-Ground - CTG in Caution or Alarm indicates an increase in the contamination on the surface of the insulation.
- High/Low Resistance - values in Caution or Alarm indicate high resistance connection in the switchgear, disconnect, or asset connection box. This can also indicate improper brush wear/seating or a poor commutator film.
- High/Low Inductance - values in Caution or Alarm indicate a winding defect (turn-to-turn or coil-to-coil).

Polarization Index/Dielectric Absorption

- Low PI or DA ratio - PI or DA ratio in Caution or Alarm indicates changing or excessive surface contamination.

Bar-to-Bar

- High/Low Resistance - values significantly above or below the average resistance reading indicate an open or a short in the armature winding or commutator segments.

Field Circuit

Standard Test

- In the Fault Zone Report, check for Caution and Alarm indications. Click the value highlighted in yellow or red to see the recommended actions.
- Low Resistance-to-Ground - RTG in Caution or Alarm indicates a possible breakdown in the insulation system.
- High Capacitance-to-Ground - CTG in Caution or Alarm indicates an increase in the contamination on the surface of the insulation.
- High/Low Resistance - values in Caution or Alarm indicate a high resistance connection in the switchgear, disconnect, or asset connection box.
- High/Low Inductance - values in Caution or Alarm indicate a winding defect (turn-to-turn or coil-to-coil).

Polarization Index/Dielectric Absorption

- Low PI or DA Ratio - PI or DA Ratio in Caution or Alarm indicates changing or excessive surface contamination.

At this point, a Condition Code may be assigned and Notes completed to explain the following:

- Asset condition/status; basis for the asset condition assigned.
- Anomalies that had to be overcome during the performance of the test.
- If multiple tests were performed during troubleshooting, explain where test leads were connected for each test.

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CHAPTER 6: EMAX CURRENT ANALYSIS

EMAX testing may be started by selecting either the Test Selection  or the EMAX Auto  icons on the toolbar.

Selecting the EMAX Auto icon automatically runs the Rotor Evaluation, Eccentricity, Power, and Demod tests. At the completion, after the test results are saved, the Fault Zone Analysis window displays. It uses the existing testing setup values. EMAX Auto is discussed in detail on page 6-18.

Selecting the Test Selection icon allows you to verify and/or change the testing setup values and select which test you want to run. Test Selection is discussed in detail on page 6-3.

TESTING QUICK START

1. Connect the EMAX Data Acquisition cable to the PCMCIA DAQ Card in the laptop computer.
2. Start MCEGold and highlight the motor to be tested on the Site Navigator or WatchList.
3. Select the Test Selection icon on the toolbar.
4. Choose EMAX tab on the Test Selection window.
5. From the Test Selection window select the test desired. EMAX Auto, Rotor Evaluation, Eccentricity, In-Rush/Start-Up, and Demod are Current Analysis tests. Power is the Power Analysis test and is discussed in Chapter Seven.

   Note: Each test is discussed in detail in the Step-by-step Procedures.
6. Connect the current probes and select the correct current range.
7. Make the appropriate changes in the EMAX Test Setup section. The displayed settings will change depending on the test selected.
8. Click **Test**. At the end of testing the Test Results window displays test results. Verify the data is valid and save the test data.

VIEW DATA

1. Start MCEGold and highlight the motor on the Site Navigator or WatchList.
2. Select the Test History icon on the toolbar.
3. Select EMAX from the drop down menu on the History Chart window.

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4. Select the tab, located across the top of the History Chart, corresponding to the desired test data.

INTRODUCTION

Current analysis utilizes three-phase simultaneous current measurements to perform rotor bar and eccentricity analysis, in-rush/start-up trending, and high frequency spectrum analysis.

Rotor bar defects result in high temperatures and loss of torque in the motor. By evaluating the amplitude of the pole pass frequency (F_p) sidebands, EMAX indicates broken rotor bars before damage can occur to the stator windings.

Static or dynamic eccentricity results in increased vibration and potential rotor/stator rubbing. Uncorrected, this condition could cause catastrophic failure of the stator windings and/or reduce the life of the bearings. By evaluating the eccentricity frequency and its associated sidebands, EMAX indicates the condition of the air gap.

The most severe electrical and mechanical stresses applied to a motor occur during start-up. As much as seven times the normal full load amperage can be applied during the start-up. By monitoring the in-rush/start-up current, faults or anomalies which are evident under these conditions, but not during normal operation, can be identified. Trending and comparison of the in-rush/start-up time domain signature to the motor's baseline test allows for early indication of rotor or stator degradation and load or operational changes.

High frequency spectrum analysis is used to confirm stator winding defects and perform mechanical fault diagnostics.

GETTING STARTED

Current analysis is performed with the motor circuit energized. A 70% of the rated load, or greater, is recommended (but not required) to maximize the analysis capability of EMAX.

WARNING:



FOLLOW ALL ELECTRICAL SAFETY PRECAUTIONS AND PROCEDURES FOR WORKING ON ENERGIZED EQUIPMENT.

There are four AC tests performed by the Current Analysis program: Rotor Evaluation, Eccentricity, In-Rush/Start-Up, and Demod. There are two DC tests performed by the Current Analysis program: DC Current Analysis, DC In-Rush/Start-Up.

The EMAX AC Current test leads consist of three individual iron core current probes and are connected through a 3 BNC to a DB 9 adaptor cable. The EMAX DC Current test leads consist of two individual Hall Effect current probes and are connected through a 3 BNC to a DB 9 adaptor cable. The BNC side of the adaptor is color coded black for Phase 1, blue for Phase 2, and red for Phase 3. The DB9 side of the adaptor cable connects in the space provided on the right side of the tester deck.

When connecting the three clamp-on current probes to each phase of the three phase motor, ensure that the arrows on the current probes point in the direction of the cables leading to the motor. When connecting the two clamp-on current probes to the armature or

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field leads of the DC motor, ensure that the arrows on the current probes point in the direction of the current flow through the cables.

The Current Analysis program is started by selecting an asset from the MCEGold Site Navigator and then the Test Selection icon on the toolbar. MCEGold software options are covered in Chapter Three. Detailed testing procedures are covered in the Step-by-Step Testing Procedures section of this chapter.

TEST SELECTION WINDOW

The Test Selection window section is followed by the Test Window and Step-by-Step testing procedures for AC assets and then DC assets.

Note: For an AC asset selecting the EMAX Auto  icon on the tool bar automatically runs the Rotor Evaluation, Eccentricity, Power, and Demod tests using either the default or previously saved test settings. For a DC asset selecting the EMAX Auto  icon on the tool bar automatically runs the DC Power and DC Current Analysis using either the default or previously saved test settings. At the completion, after the test results are saved, the Fault Zone Analysis window displays.

To open the Test Selection Window highlight an asset on the Site Navigator or WatchList and click the Test Selection icon  on the tool bar.

The Test Selection window is shown in Figure 6-1. The asset name is located on the title bar to the right of the window name. The Test Selection window is used for both MCE and EMAX testing. Test Type is determined by selecting the desired test type tab.

The asset section tabs are found along the left side of the test selection area and are dependent on the asset type. Possible sections are Stator, Armature, and Field Circuits.

- For AC Induction assets, the only option is Stator.
- For AC Synchronous assets, the only option is Stator.
- For Wound Rotor assets, the only option is Stator.
- For DC assets, options are Armature and Field Circuit.

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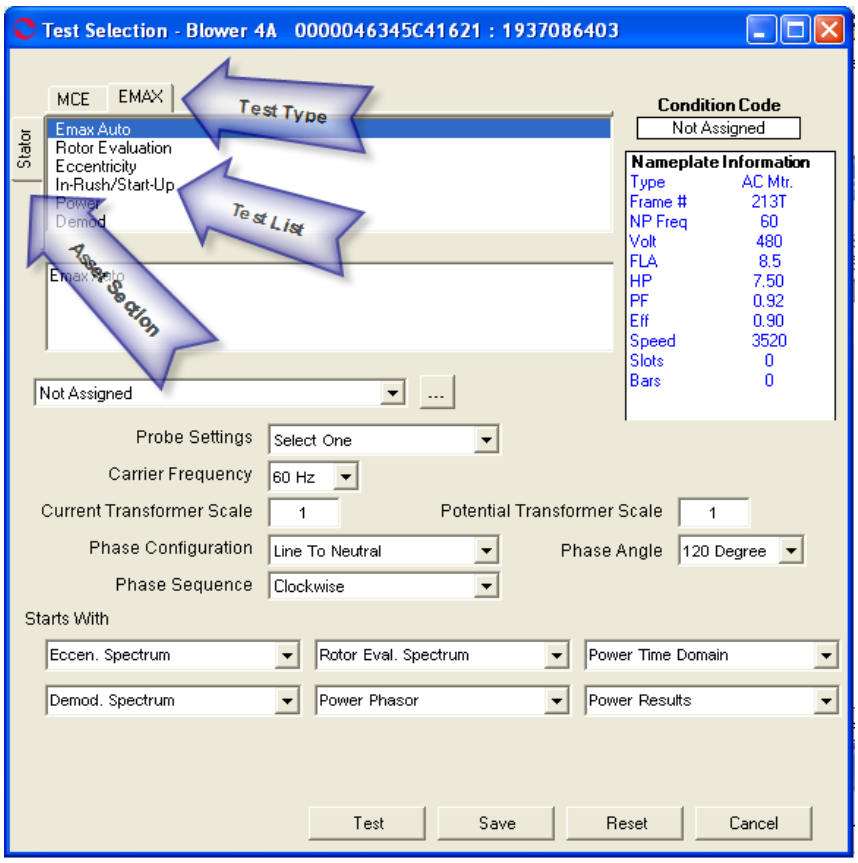


Figure 6-1: EMAX Test Selection Window

Test List

The top left section of the window contains a list of test selections for either MCE or EMAX, depending on asset type, test type and asset section tabs selected. When a test is selected, the name of the test is highlighted blue and the test set up area changes to values appropriate for the test selected. The test list possibilities for EMAX testing are:

- EMAX Auto (AC Induction, Wound Rotor, Synchronous)
- Rotor Evaluation (AC Induction, Wound Rotor, Synchronous)
- Eccentricity (AC Induction, Wound Rotor, Synchronous)
- In-Rush/Start-Up (AC Induction, Wound Rotor, Synchronous)
- Power (AC Induction, Wound Rotor, Synchronous)
- Demod (AC Induction, Wound Rotor, Synchronous)
- DC EMAX Auto (DC Armature Circuit)
- DC Power (Armature and Field Circuits)
- DC Current Analysis (DC Armature Circuit)
- DC In-Rush/Start-Up (Armature and Field Circuits
- Drive Input (DC Armature Circuit)

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Asset Information

Asset Information is located on the right side. This area displays the Condition Code and nameplate information of the asset being tested. The information comes from the nameplate data that was entered when the asset was set up and cannot be edited on this window. Information displayed, depending on asset type, may include: Type, Frame #, NP Frequency, Voltage, FLA, HP, PF, Eff, Speed, Slots, and Bars. Also, Field Volts and Field Current are listed for DC assets.

Test Setup

The lower half of the window is devoted to test set-up options. The set-up options depend on the asset type and test selected. This section of the manual shows a screen capture of each test type, by asset type and is followed by a description of the set-up options.

AC Assets

EMAX Auto

The EMAX Auto test set-up selections shown in Figure 6-2 apply to AC Induction, Synchronous, and Wound Rotor assets. Each option is discussed in the Set-up Options section beginning on page 6-13.

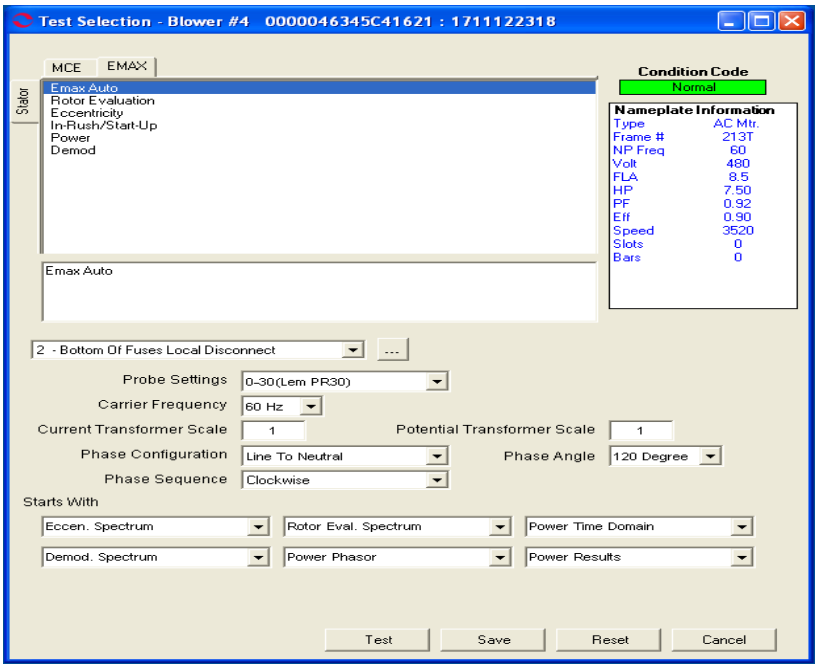


Figure 6-2: Test Set-up Window for AC Assets

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Rotor Evaluation

The Rotor Evaluation test set-up selections shown in Figure 6-3 apply to AC Induction, Synchronous, and Wound Rotor assets. Each option is discussed in the Set-up Options section beginning on page 6-13.

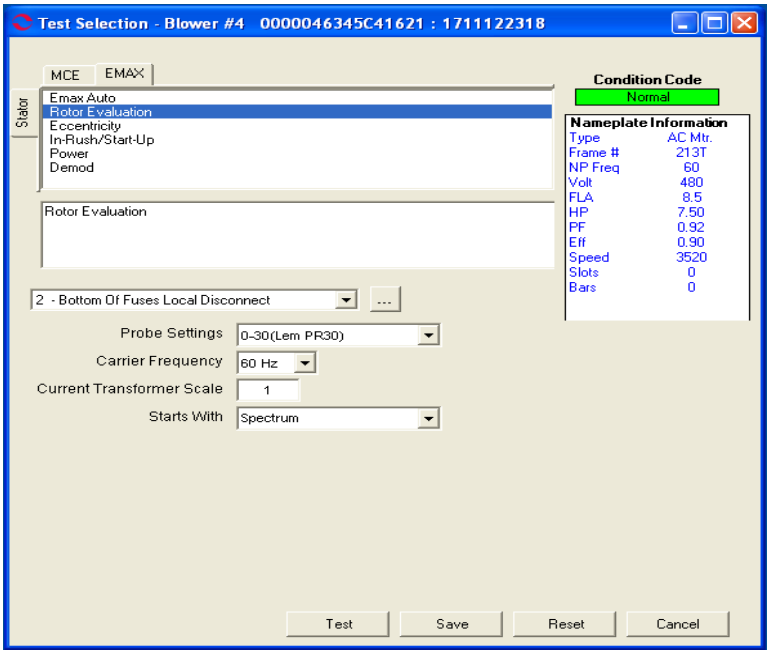


Figure 6-3: Test Set-up Window for Rotor Evaluation

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Eccentricity

The Eccentricity test set-up selections shown in Figure 6-4 apply to AC Induction, Synchronous, and Wound Rotor assets. Each option is discussed in the Set-up Options section beginning on page 6-13.

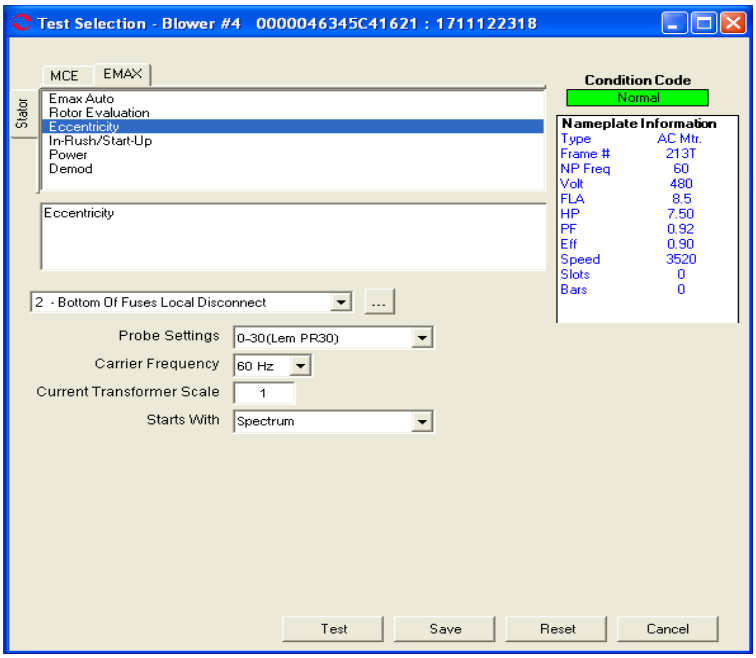


Figure 6-4: Test Set-up Window for Eccentricity

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In-Rush/Start-Up

The In-Rush/Start-Up test set-up selections shown in Figure 6-5 apply to AC Induction, Synchronous, and Wound Rotor assets. Each option is discussed in the Set-up Options section beginning on page 6-13.

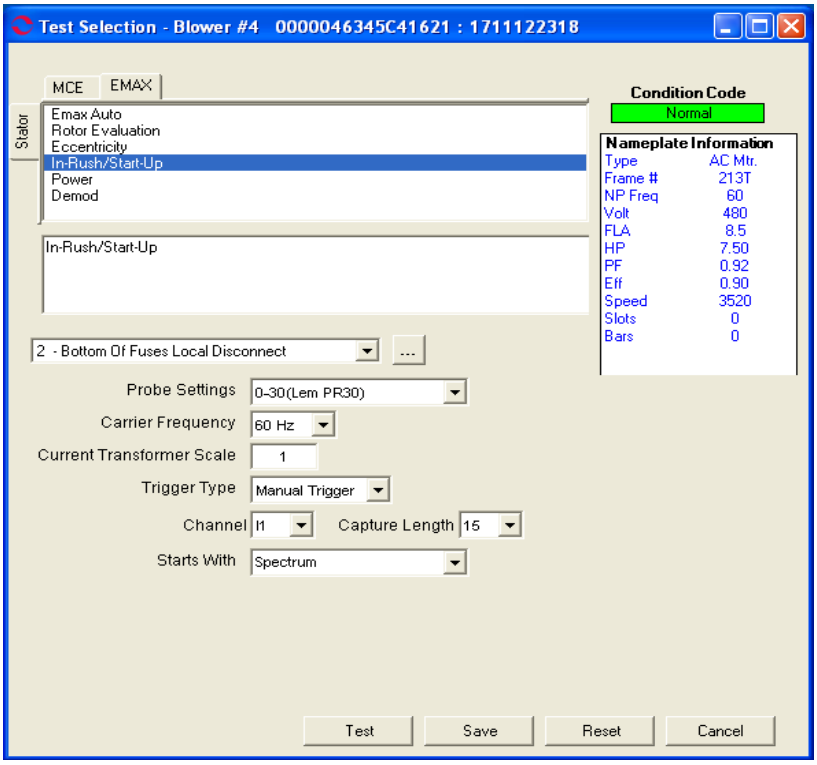


Figure 6-5: Test Set-up Window for In-Rush/Start-Up

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Demod

The Demod test set-up selections shown in Figure 6-6 apply to AC Induction, Synchronous, and Wound Rotor assets. Each option is discussed in the Set-up Options section beginning on page 6-13.

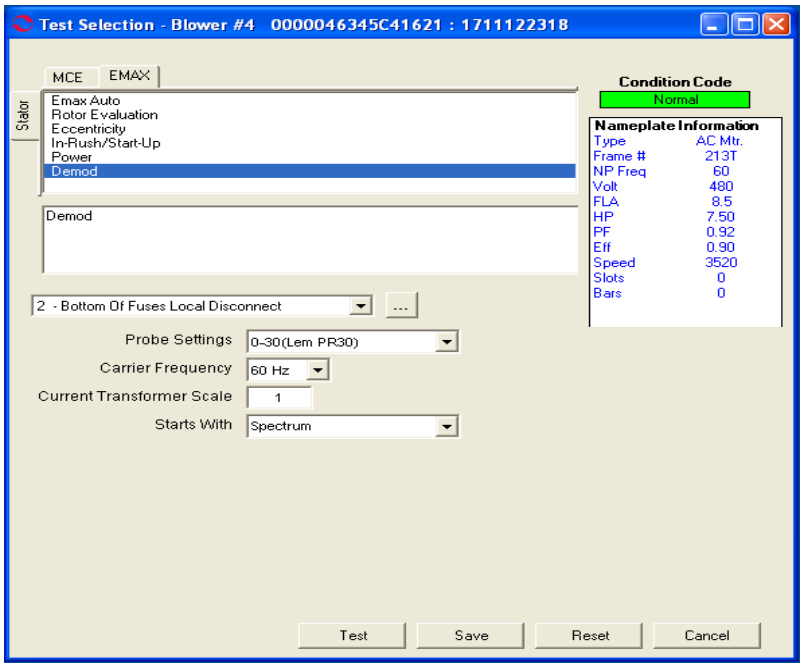


Figure 6-6: Test Set-up Window for Demod

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DC Asset

DC EMAX Auto

The DC EMAX Auto test is performed only on the armature section of a DC asset. The DC EMAX Auto test set-up selections shown in Figure 6-7 apply to DC assets. Each option is discussed in the Set-up Options section beginning on page 6-13.

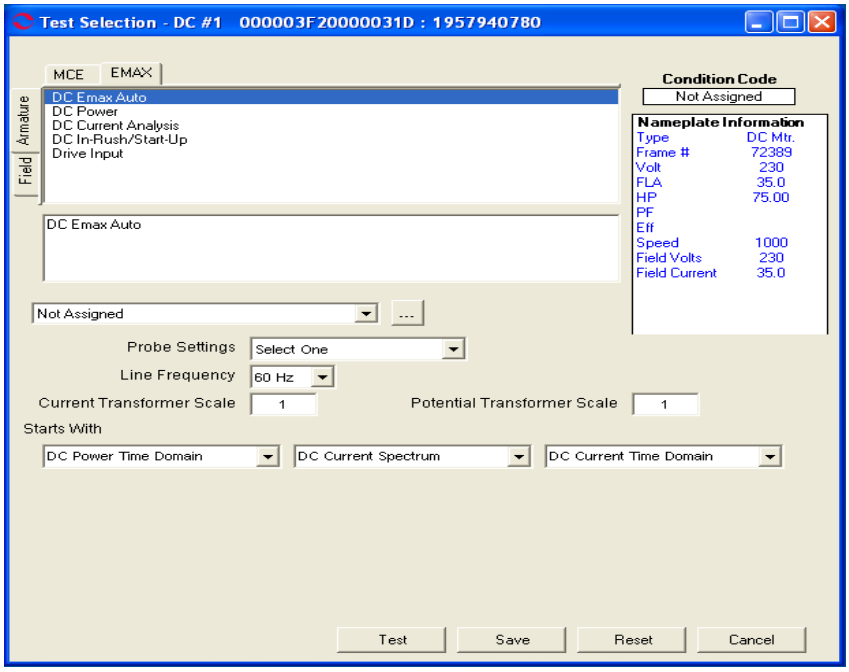


Figure 6-7: Test Set-up for DC Asset DC EMAX Auto

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DC Current Analysis

DC Current Analysis is performed only on the armature section of a DC asset. The DC Current Analysis test set-up selections shown in Figure 6-8 apply to DC assets. Each option is discussed in the Set-up Options section beginning on page 6-13.

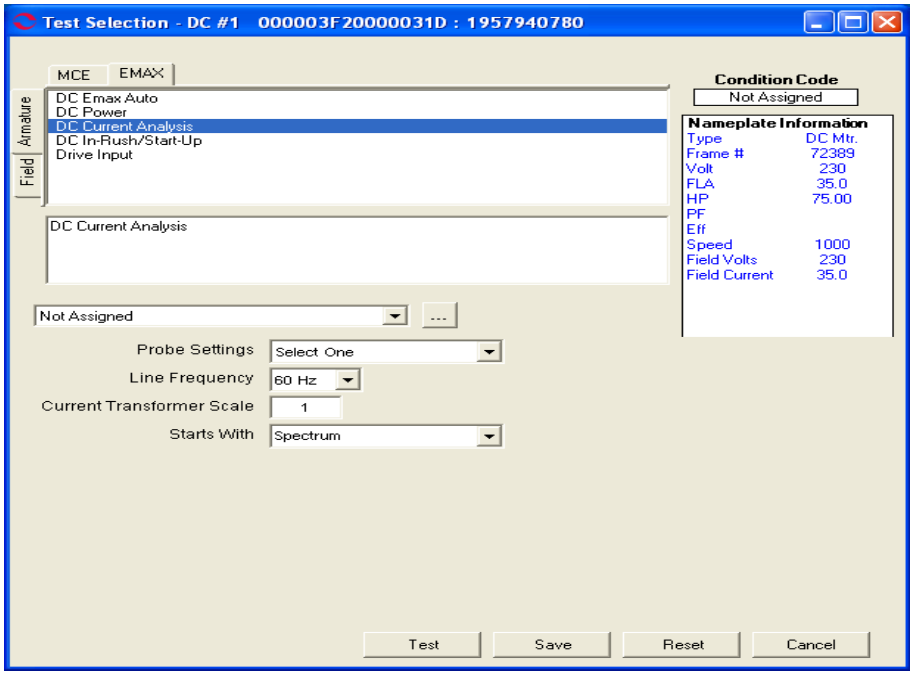


Figure 6-8: Test Set-up for DC Asset - DC Current Analysis

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DC In-Rush/Start-Up

DC In-Rush/Start-Up is performed on both the armature and field sections of a DC asset. The DC In-Rush/Start-Up test set-up selections shown in Figure 6-9 apply to DC assets. Each option is discussed in the Set-up Options section beginning on page 6-13.

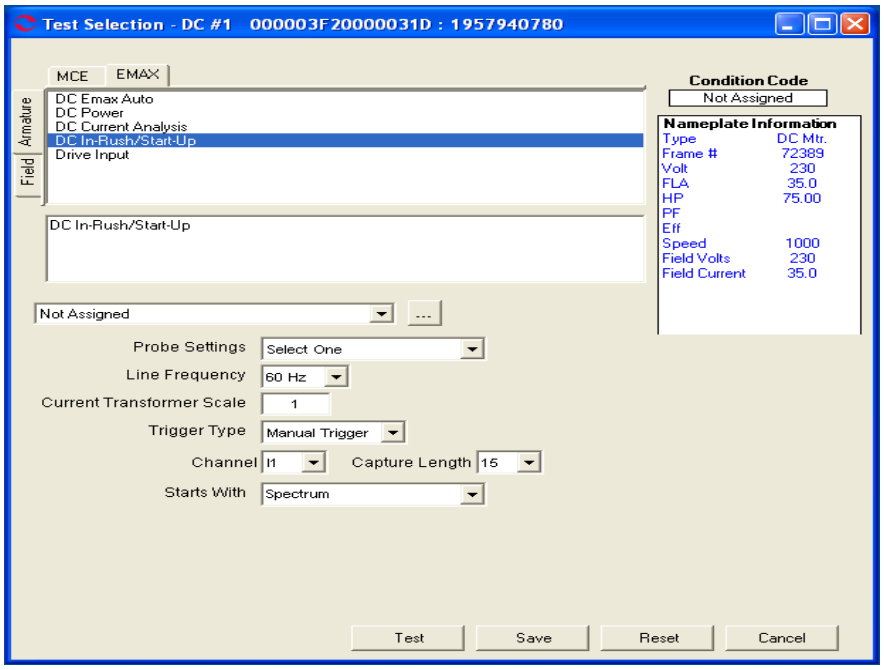


Figure 6-9: Test Set-up for DC Asset - DC In-Rush/Start-Up

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Drive Input

Drive Input test is performed only on the armature section of a DC asset. The Drive Input test set-up selections shown in Figure 6-10 apply to DC assets. Each option is discussed in the Set-up Options section beginning on this page.

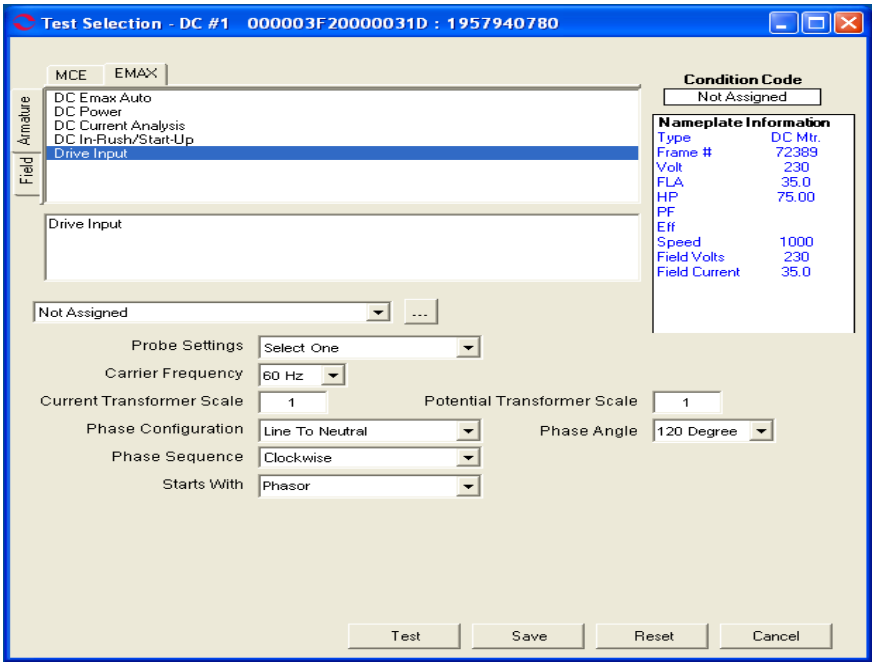


Figure 6-10: Test Set-up for DC Asset - Drive Input

Set-up Options

Asset Test Location

To insure consistent trending and assist in trouble shooting, the actual test location should be stored for each test.

Asset Test Location selection is available for all asset types and tests.

The Asset Test Location default is Not Assigned. To assign a test location, click the down arrow and select from the list. If the location is not known, click the browse button ... . The Test Location Selection window opens displaying a test location graph for the type of asset selected. See Figure 6-11. Use the graph to determine the location, then click the down arrow in the Test Location text box, select the location from the list, and click **OK.**

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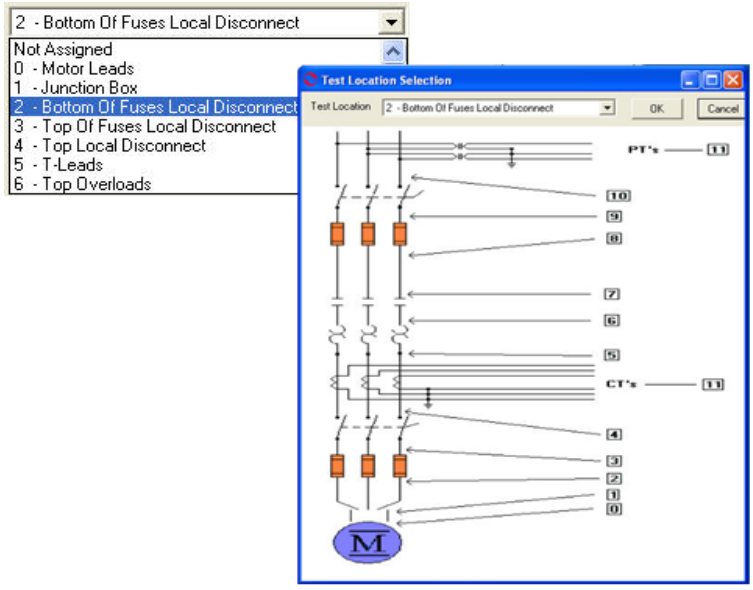
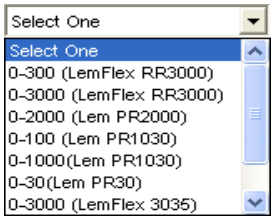


Figure 6-11: Asset Test Location

Probe Settings

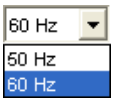
Probe Settings selection is available for all asset types and tests. This is a required field.



Select the Probe Settings from the drop down list. It may be necessary to use the scroll bar to see the complete list.

Carrier Frequency/Line Frequency

Carrier Frequency selection is available for all asset types and tests, except DC EMAX Auto, DC Current Analysis, and DC In-Rush/Start-Up. For those exceptions it is labeled Line Frequency.



Select the Carrier or Line Frequency from the drop down list. The choices are 60 Hz or 50 Hz.

Current Transformer Scale

Current Transformer Scale is available for all asset types and tests. Place the cursor in the text box, delete the value and enter the new current transformer scale.



Potential Transformer Scale

This setting is only available for the EMAX Auto test for AC and DC assets, AC Power tests (see Chapter 7), and for the Drive Input test for DC Assets.

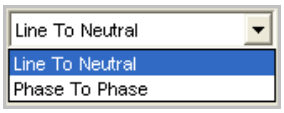


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Place the cursor in the text box, delete the value and enter the new potential transformer scale.

Phase Configuration

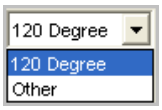
This setting is only available for the EMAX Auto test for AC assets, AC Power tests (see Chapter 7), and Drive Input for DC assets.



Select the Phase configuration from the drop down list. The choices are Line-to-Neutral and Phase-to-Phase.

Phase Angle

This setting is only available for the EMAX Auto test for AC assets, AC Power tests (see Chapter 7), and DC Drive Input test when Line-to-Neutral is selected in the Phase Configuration setting.



Select the Phase Angle from the drop down list. The choices are 120 degrees or Other.

Missing Currents

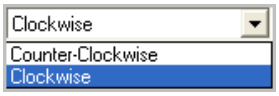
This setting is only available for the EMAX Auto test for AC assets, AC Power tests (see Chapter 7), and DC Drive Input test when Phase-to-Phase is selected in the Phase Configuration setting.



Select the missing currents from the drop down list. The choices are None, 1, 2, or 3.

Phase Sequence

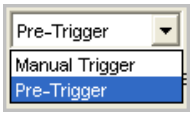
Phase Sequence is only available for the EMAX Auto test for AC assets, AC Power tests (see Chapter 7), and DC Drive Input test for DC assets.



Select the Phase Sequence from the drop down list. The choices are Clockwise and Counter-Clockwise.

Trigger Type (In-Rush/Start-Up only)

For the In-Rush/Start-Up test, use the Trigger Type drop down list to select between Manual Trigger and Pre-Trigger. This option applies to both AC and DC assets. If Pre-Trigger is selected the Pre-Trigger Length and Trigger Factor text boxes appear.



Pre-Trigger Length (In-Rush/Start-Up only)

For the In-Rush/Start-Up test when Pre-Trigger is selected as the trigger type it is necessary to select a pre-trigger length (seconds) from the drop down list.



Trigger Factor (In-Rush/Start-Up only)

For the In-Rush/Start-Up test when Pre-Trigger is selected as the trigger type it is necessary to select a trigger factor from the drop down list. When the selection is made the software automatically calculates and displays the Trigger Factor on the Test Selection window.

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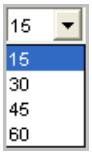
Channel (In-Rush/Start-Up only)

For the In-Rush/Start-Up test, use the Channel drop down list to select between l1, l2, or l3 for AC Assets. For DC Assets there is only one choice, l1. This option applies to both AC and DC assets.



Capture Length (In-Rush/Start-Up only)

For the In-Rush/Start-Up test, use the Capture Length drop down list to select between 15, 30, 45, and 60 seconds capture length. This option applies to both AC and DC assets.



Starts With

EMAX Auto Test

AC Assets. The Starts With section for the EMAX Auto test for AC assets consist of six drop down list boxes. The default selections for an AC Induction asset are shown in Figure 6-12. To change a selection highlight the desired display on the drop down list. The options are shown in Figure 6-13.

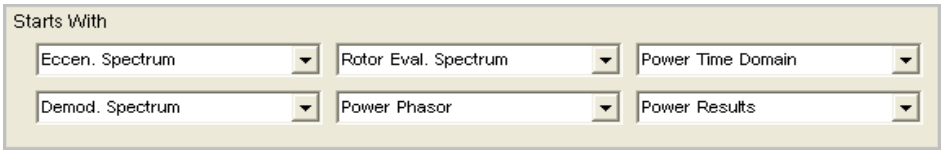


Figure 6-12: Starts With Section for EMAX Auto Test for AC Assets

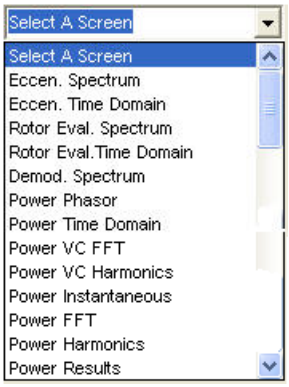


Figure 6-13: Starts With Drop Down List

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DC Assets. The Starts With section for the EMAX Auto test for DC assets consist of three drop down list boxes. The default selections for a DC asset are shown in Figure 6-14. The options are: DC Current Spectrum, DC Current Time Domain, and DC Power Time Domain. To change a selection highlight the desired display on the drop down list.

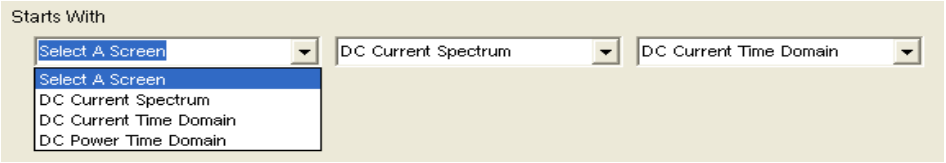


Figure 6-14: Starts With Section for DC EMAX Auto Test for DC Assets

All Other Tests

For all other AC and DC asset tests the Starts With options consist of one drop down list. The options in the list vary according to the test. Figure 6-15 shows the drop down list for an AC Induction asset, Rotor Evaluation test.

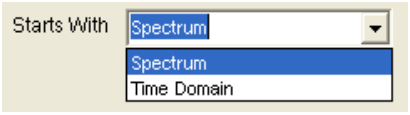


Figure 6-15: Starts With Drop Down List

Test Button

Click **Test** to advance to the test window.

Save Button

Click **Save** when the test set-up selections are complete. This saves the settings as default values for that asset for subsequent tests, but is not required. If you forget to save and click Test, you will be asked if you want to save your changes.

Reset Button

Click **Reset** to set values back to the pre-changed value. Note: If you have clicked the Save button they will not reset and it will be necessary to manually change them back.

Cancel Button

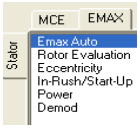
Click **Cancel** to close the Test Selection window without saving setup changes or proceeding to the test window. You will be asked if you want to save test setup settings.

TEST WINDOW

Once the asset section and setup parameters are selected, you are ready to run the test. This section explains each test by asset type and asset section. The test window is discussed followed by step-by-step testing procedures. Test analysis information begins on page 6-49.

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AC Induction Assets



The EMAX tests for an AC Induction asset are EMAX Auto, Rotor Evaluation, Eccentricity, In-Rush/Start-Up, Power, and Demod. Power test is discussed in Chapter 7, EMAX Power Analysis. The remainder are discussed in detail in this section.

EMAX Auto

EMAX Auto test performs a Rotor Evaluation test followed by Eccentricity, Power, and Demod tests, then saves the data and displays the six Test Results windows in the order chosen in the test setup.

EMAX Auto test can be started by clicking the EMAX Auto icon 

on the toolbar or selecting EMAX Auto from the test list in the Test Selection Window. If you select the EMAX Auto icon, the EMAX test begins bypassing the test selection window and displays the Fault Zone Analysis window at the end of testing.

If you need to change the test setup settings or you want to see the graphs of the test results, select the Test Selection icon  on the toolbar.

Step-by-Step EMAX Auto

1. Connect the EMAX Data Acquisition cable to the DAQ card in the laptop computer.
2. Start MCEGold.
3. Highlight the motor being tested in the Site Navigator or on a WatchList.
4. Select the Test Selection icon  on the toolbar. The Test Selection window, shown in Figure 6-16 opens.

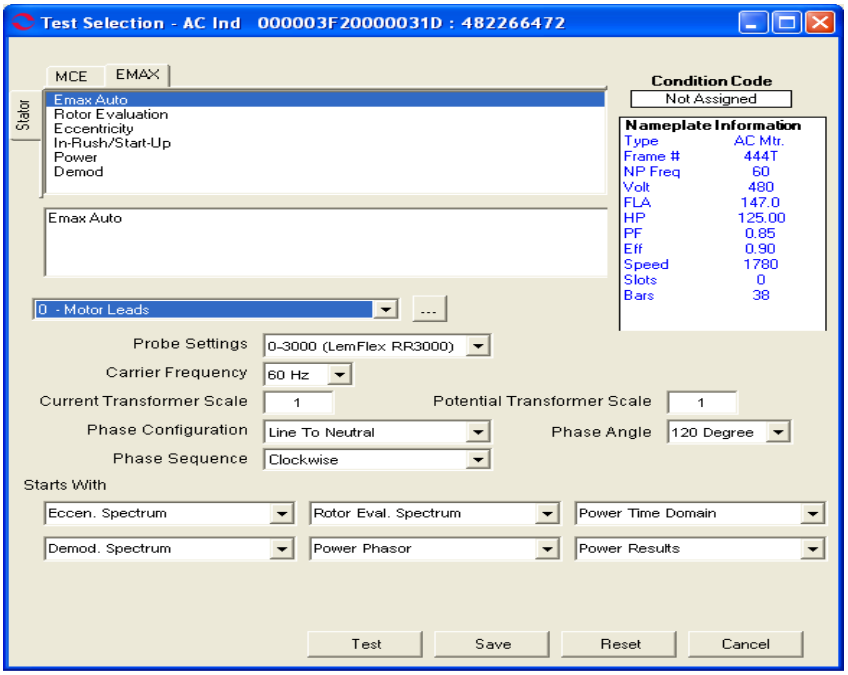


Figure 6-16: EMAX Auto Test Selection Window

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5. Make the test set-up selections and click **Test**.

6. If you have changed the test setup settings, you will be prompted to save the test setup settings. Click **Yes** or **No** as desired.

7. Testing begins. A Progress Bar shows the test progress.

8. At the end of testing you will be informed the test data is being saved and the forms loaded. It may take a few minutes depending on the speed of your computer processor. Then the six test results windows chosen during the test setup and an EMAX Auto Test Manager window will open. See Figure 6-17.

   Note: You may position the windows by grabbing the title bar and dragging them to the desired location or using a command from the Windows menu on the menu bar.

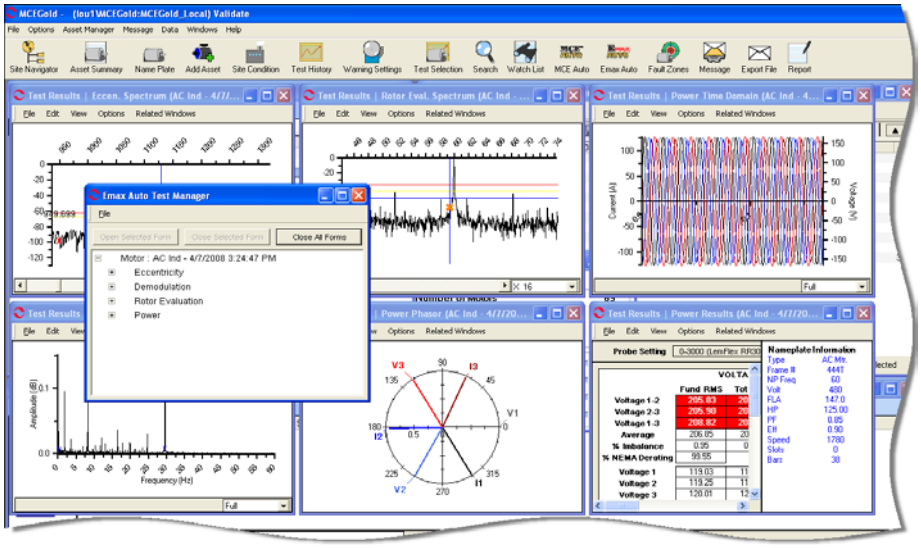


Figure 6-17: EMAX Auto Test Results Windows

9. The EMAX Auto test Manager window shown in Figure 6-18 can be expanded in order to identify which test results are displayed and make changes to the display. Figure 6-19 shows the expanded menu.

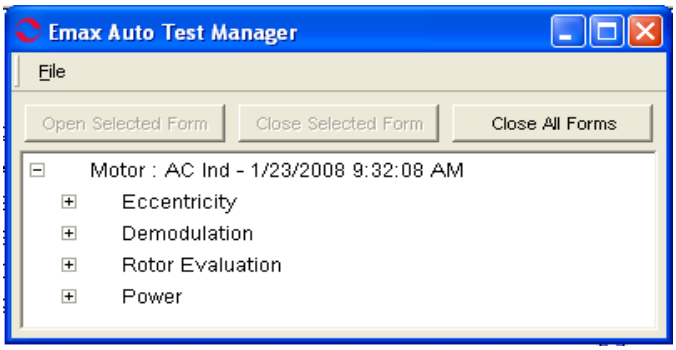


Figure 6-18: EMAX Auto Test Manager Window

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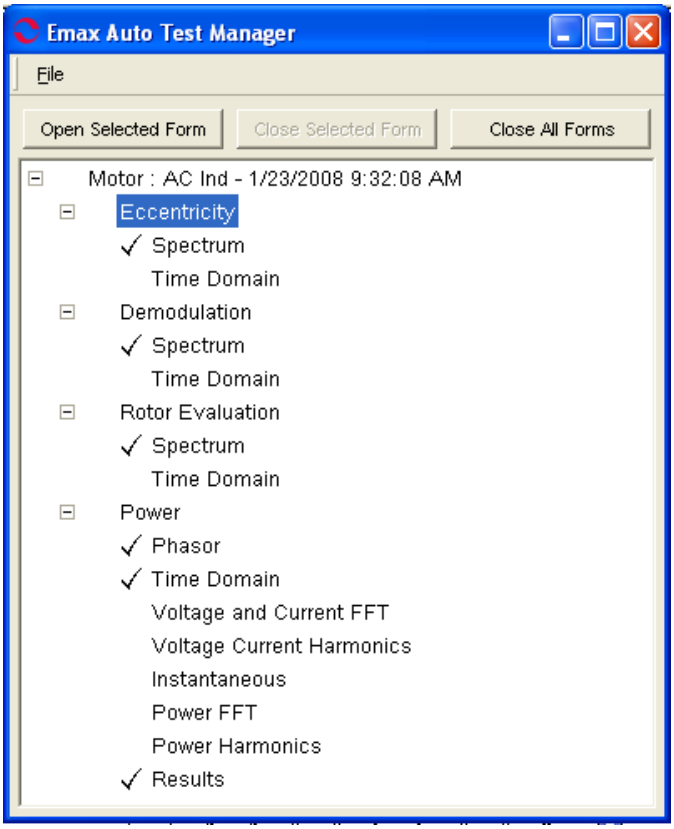


Figure 6-19: EMAX Auto Test Manager Window With Menu Expanded

10. On the expanded EMAX Auto Test Manager menu, a check mark indicates the test results window is displayed. To open a non-displayed window, highlight the desired test results and click **Open Selected Form**.

11. To close a particular test results window, highlight it on the menu and click **Close Selected Form**. The test results window closes.

12. To close all the test results windows, click **Close All Forms**.

13. To close the EMAX Auto Test Manager window select File, Exit or click the Close button in the upper right corner.

14. The test results have been automatically saved and may be viewed using the Test History function.

Rotor Evaluation

Step-by-Step Rotor Evaluation

1. Connect the EMAX Data Acquisition cable to the DAQ card in the laptop computer.

2. Start MCEGold.

3. Highlight the motor being tested in the Site Navigator or on a WatchList.

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4. Select the Test Selection icon on the toolbar. The Test Selection window, shown in Figure 6-20 opens.

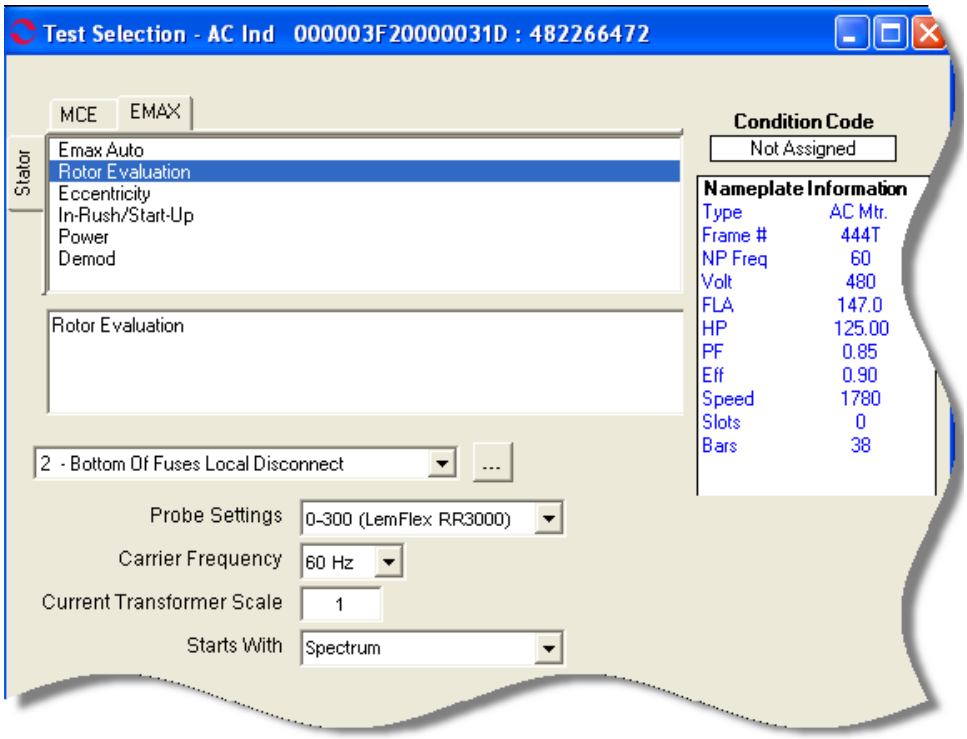


Figure 6-20: Rotor Evaluation Test Selection Window

5. Select EMAX Tab.

6. Select Rotor Evaluation from the test list.

7. Select Asset Test Location. To insure consistent trending and assist in trouble shooting, the actual test location should be stored for each test. The Asset Test Location default is Not Assigned. To assign a test location, click the down arrow and select from the list.

   If the location is not known, click the browse button . The Test Location Selection window opens displaying a test location graph for the type of asset selected. See Figure 6-21. Use the graph to determine the location, then click the down arrow in the Test Location text box, select the location from the list, and click **OK.**

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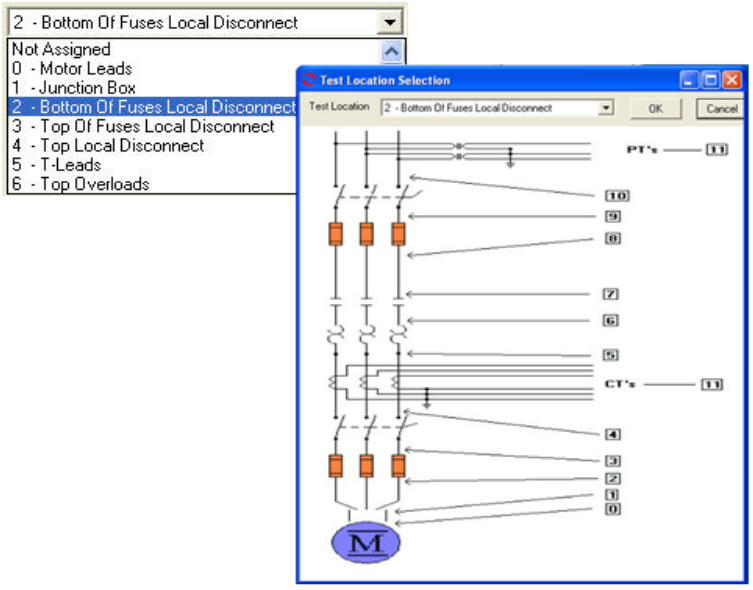


Figure 6-21: Asset Test Location

8. Select the appropriate probes for measuring the current for the asset by clicking on the down arrow to the right of the text box. Highlight the probe from the drop-down list.

9. Select the correct Carrier Frequency by clicking once on the down arrow to the right of the text box. Highlight either 50 Hz or 60 Hz.

10. Enter the correct Current Transformer Scale. Click in the text box and delete the existing number if it is not the correct number, then enter the correct number.

11. Select the Starts With category by clicking once on the down arrow to the right of the text box. Highlight either Spectrum or Time Domain from the drop down list.

12. Click **Save** to save these settings for future testing of this asset. Or click **Reset** to return the original settings. This can only be done if the new settings have not been saved.

13. Connect the current probes to EMAX and the circuit to be measured. Ensure that the arrows on the probes point to the motor.

14. Select the appropriate range on the probes.

15. Click **Test** to begin testing.

16. At the conclusion of testing the Test Results window chosen in step 11 displays the test data.

17. To view the Test Results window for the other graph, select View and the desired graph. A second Test Results window will open.



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Note: It is possible to have multiple windows open at the same time. They may be positioned by grabbing the title bar and dragging them to the desired location or using a command from the Windows menu on the menu bar.

18. Close the Test Results window by selecting File, Close or clicking the close button in upper right corner.

19. You will be asked if you want to save the changes, click desired answer. The Test Results window closes.

Eccentricity

Step-by-Step Eccentricity

1. Connect the EMAX Data Acquisition cable.

2. Start MCEGold.

3. Highlight the motor being tested in the Site Navigator or on a WatchList.

4. Select the Test Selection icon on the toolbar. The Test Selection window, shown in Figure 6-22 opens.

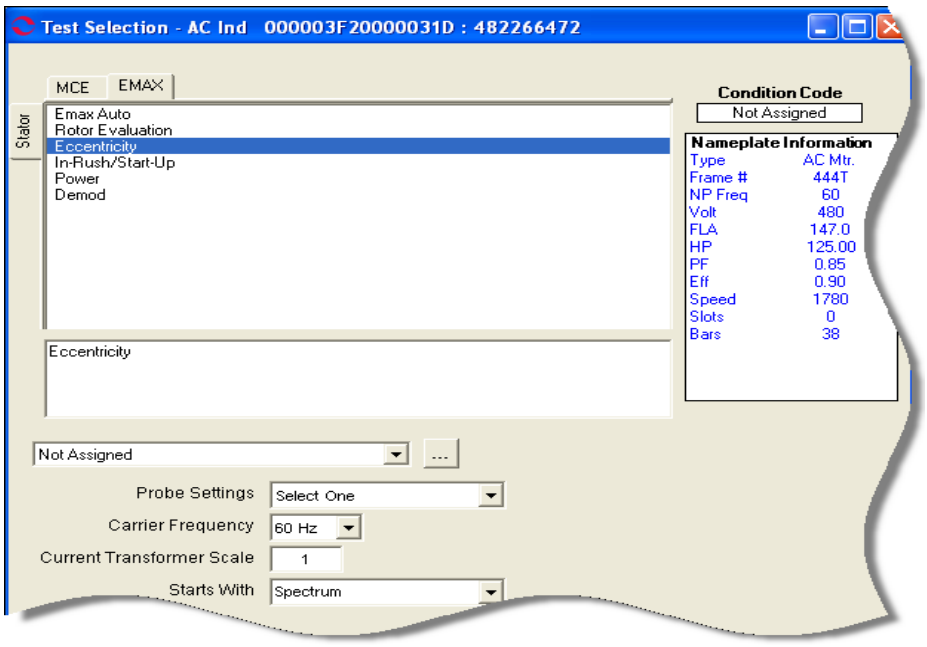


Figure 6-22: Eccentricity Test Selection Window

5. Select the EMAX tab in the Test Type.

6. Select Eccentricity by clicking once on the name in the Test List.

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7. Select Asset Test Location. To insure consistent trending and assist in trouble shooting, the actual test location should be stored for each test. The Asset Test Location default is Not Assigned. To assign a test location, click the down arrow and select from the list.

   If the location is not known, click the browse button . The Test Location Selection window opens displaying a test location graph for the type of asset selected. See Figure 6-23. Use the graph to determine the location, then click the down arrow in the Test Location text box, select the location from the list, and click **OK.**

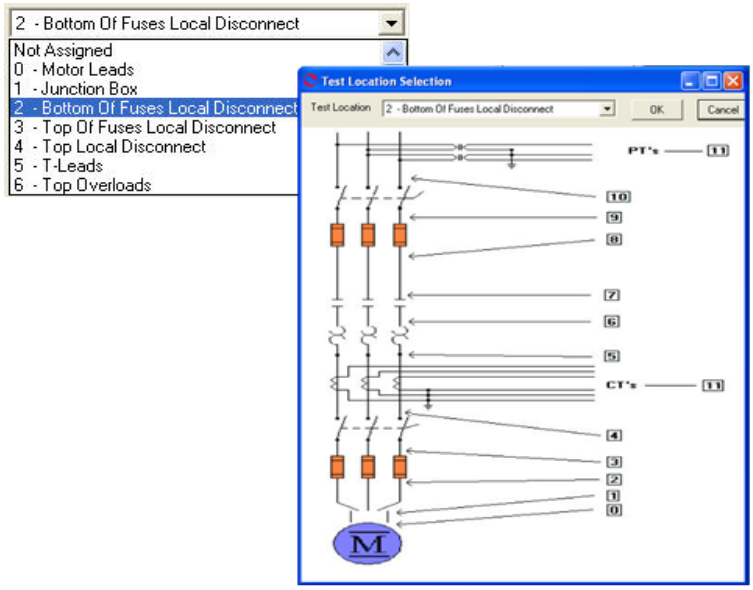


Figure 6-23: Asset Test Location

8. Select the appropriate probes for measuring the current for the asset by clicking on the down arrow to the right of the text box. Highlight the probe from the drop-down list.

9. Select the correct Carrier Frequency by clicking once on the down arrow to the right of the text box. Highlight either 50 Hz or 60 Hz.

10. Enter the correct Current Transformer Scale. Click in the text box and delete the existing number if it is not the correct number, then enter the correct number.

11. Select the Starts With category by clicking once on the down arrow to the right of the text box. Highlight either Spectrum or Time Domain from the drop down list.

12. Click **Save** to save these settings for future testing of this asset. Or click **Reset** to return the original settings. This can only be done if the new settings have not been saved.

13. Connect the current probes to EMAX and the circuit to be measured. Ensure that the arrows on the probes point to the motor.

14. Click **Test** to begin testing. If you have not saved any changes to the setup settings, the system will ask you if you want to save test setup settings at this time.

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15. This test only takes two seconds and may not display a progress bar.

16. At the conclusion of testing the Test Results window chosen in Step 11 displays the test data.

17. To view the Test Results window for the other graph, select View and the desired graph. The selected window will open.



Note: It is possible to have multiple windows open at the same time. They may be positioned by grabbing the title bar and dragging them to the desired location or using a command from the Windows menu on the menu bar.

18. Close the Test Results windows by selecting File, Close or clicking the close button in upper right corner.

19. You will be asked if you want to save the changes, click desired answer. The Test Results window closes.

In-Rush/Start-Up

NOTE: This test can be performed to monitor load changes if the motor is already running.

Step-by-Step In-Rush/Start-Up

1. Connect the EMAX Data Acquisition cable.

2. Start MCEGold.

3. Highlight the motor being tested in the Site Navigator or Watch List.

4. Select the Test Selection icon on the toolbar. The Test Selection window, shown in Figure 6-24 opens.

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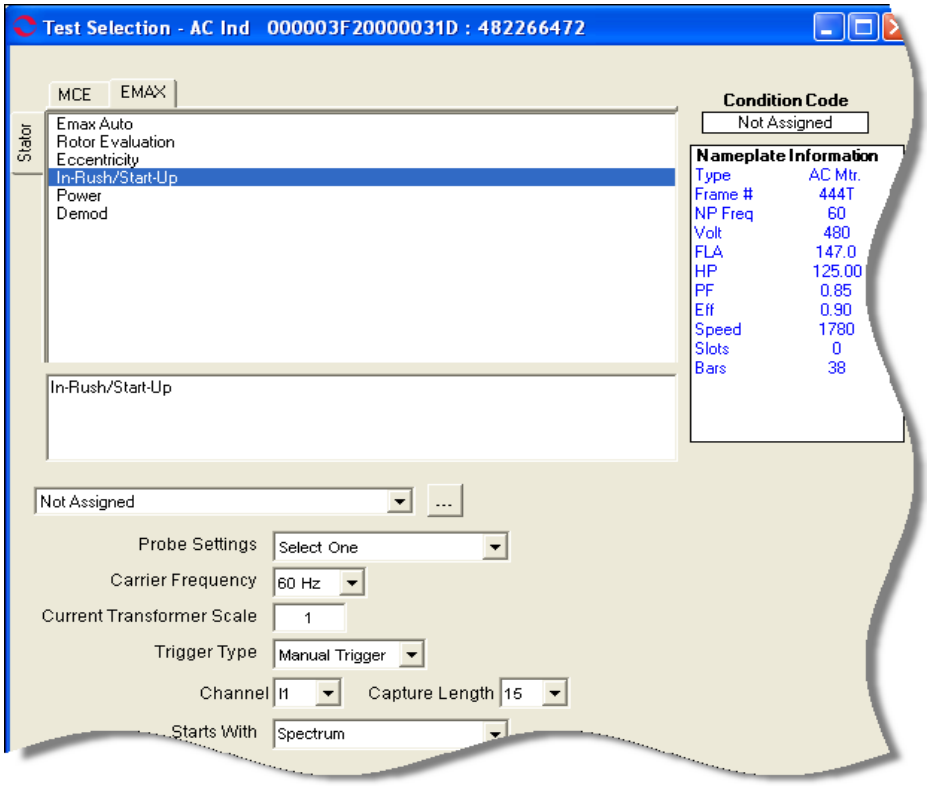


Figure 6-24: In-Rush/Start-Up Test Selection Window

5. Select EMAX tab in the Test Type.

6. Select In-Rush/Start-Up in the Test List, by clicking once on the name.

7. Select Asset Test Location. To insure consistent trending and assist in trouble shooting, the actual test location should be stored for each test. The Asset Test Location default is Not Assigned. To assign a test location, click the down arrow and select from the list.

   If the location is not known, click the browse button ... . The Test Location Selection window opens displaying a test location graph for the type of asset selected. See Figure 6-25. Use the graph to determine the location, then click the down arrow in the Test Location text box, select the location from the list, and click **OK.**

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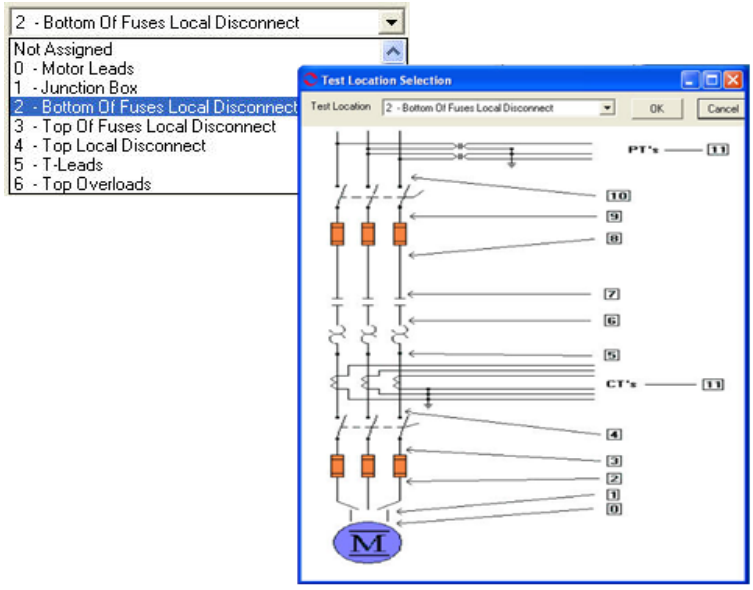


Figure 6-25: Test Location Selection

8. Select the appropriate probes for measuring the current for the asset by clicking on the down arrow to the right of the text box. Highlight the probe from the drop-down list.

9. Select the correct Carrier Frequency by clicking on the down arrow to the right of the text box. Highlight either 50 Hz or 60 Hz.

10. Enter the correct Current Transformer Scale. Click in the text box and delete the existing number if it is not the correct number, then enter the correct number.

11. Select the Trigger Type form the drop down list. The choices are Manual Trigger or Pre-Trigger.

    If Manual Trigger is selected go to step 12.

    If Pre-Trigger is selected it is necessary to select the Pre-Trigger Length by clicking on the down arrow in the Pre-Trigger Length text box to display a list of available seconds. Highlight the desired length.

    Also, if Pre-Trigger is selected it is necessary to select the Trigger Factor by clicking on the down arrow in the Trigger Factor text box to display a list of factors. Highlight the desired factor.

12. Select the Channel. Use the down arrow in the Channel text box to display a list of available channels. Highlight the desired channel.

13. Select the Capture Length. Use the down arrow in the Capture Length text box to display a list of available settings. Highlight the desired length.

14. The Starts With category defaults to Spectrum, the only choice.

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15. Click **Save** to save these settings for future testing of this asset. Or click **Reset** to return the original settings. This can only be done if the new settings have not been saved.

16. Connect the current probes to EMAX and the circuit to be measured. Ensure that the arrows on the probes point to the motor.

17. Click **Test** to begin testing. If you have not saved any changes to the setup settings, the system will ask you if you want to save test setup settings at this time.

18. This test only takes two seconds and may not display a progress bar.

19. At the conclusion of testing the In-Rush/Start-Up Spectrum displays test data. This spectrum is discussed in the Analysis section, page 6-63.

20. Close the selected windows by selecting File, Close or clicking the close button in upper right corner.

21. You will be asked if you want to save the changes, click desired answer.

Demod

Demodulation is the process of filtering out the 50/60 Hz carrier frequency and reveals the hidden signals, representing repetitive load variations. These load variations can then be analyzed.

Step-by-Step Demod

1. Connect the EMAX Data Acquisition cable.

2. Start MCEGold.

3. Highlight the motor being tested in the Site Navigator or Watch List.

4. Select the Test Selection icon on the toolbar. The Test Selection window, shown in Figure 6-26 opens.

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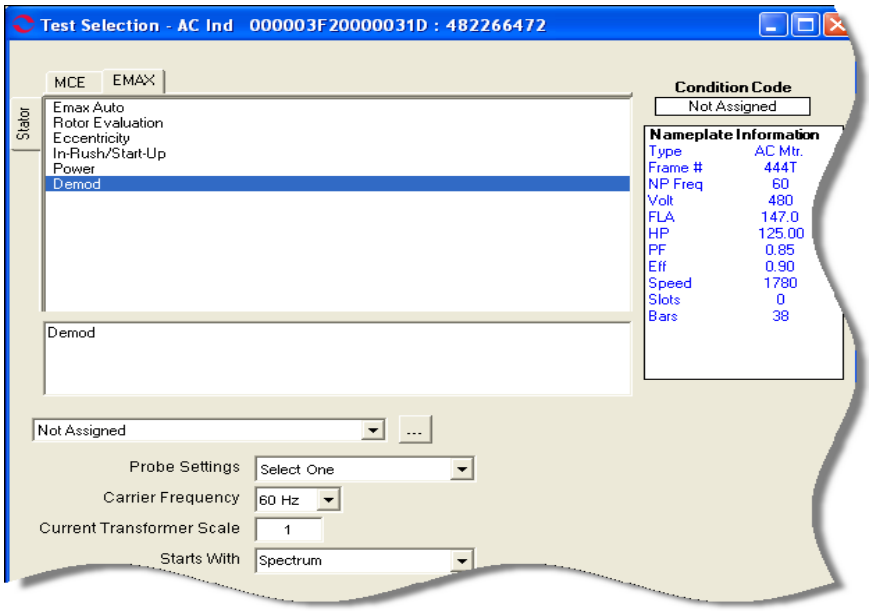


Figure 6-26: Demod Test Selection Window

5. Select EMAX tab in the Test Type.

6. Select Demod in the Test List, by clicking once on the name.

7. Select Asset Test Location. To insure consistent trending and assist in trouble shooting, the actual test location should be stored for each test. The Asset Test Location default is Not Assigned. To assign a test location, click the down arrow and select from the list.

   If the location is not known, click the browse button ... . The Test Location Selection window opens displaying a test location graph for the type of asset selected. See Figure 6-27 Use the graph to determine the location, then click the down arrow in the Test Location text box, select the location from the list, and click **OK.**

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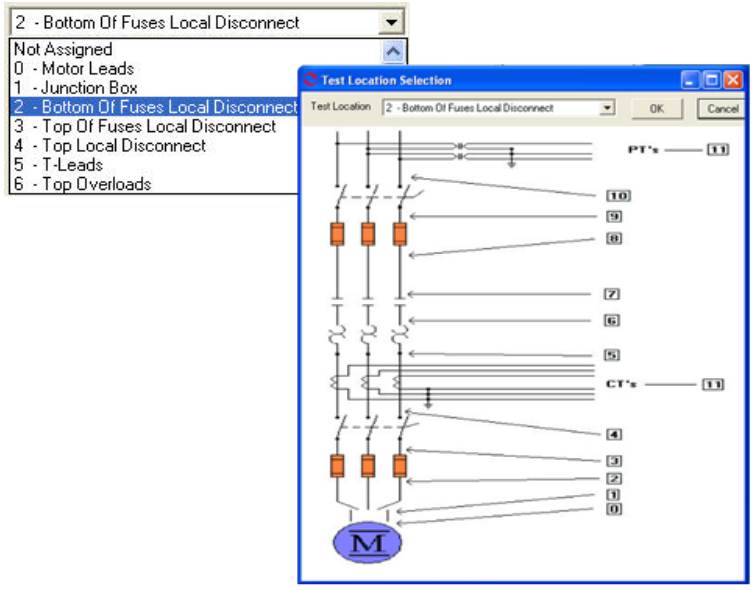


Figure 6-27: Test Location Selection

8. Select the appropriate probes for measuring the current for the asset by clicking on the down arrow to the right of the text box. Highlight the probe from the drop-down list.

9. Select the correct Carrier Frequency by clicking on the down arrow to the right of the text box. Highlight either 50 Hz or 60 Hz.

10. Enter the correct Current Transformer Scale. Click in the text box and delete the existing number if it is not the correct number, then enter the correct number.

11. The Starts With category defaults to Spectrum, the only choice.

12. Click **Save** to save these settings for future testing of this asset. Or click **Reset** to return the original settings. This can only be done if the new settings have not been saved.

13. Connect the current probes to EMAX and the circuit to be measured. Ensure that the arrows on the probes point to the motor.

14. Click **Test** to begin testing. If you have not saved any changes to the setup settings, the system will ask you if you want to save test setup settings at this time.

15. This test only takes two seconds and may not display a progress bar.

16. At the conclusion of testing if the MCEGold software cannot identify the motor speed, the Auto Speed Warning window opens. See Figure 6-28. You may manually check one of the two speed if neither are checked. Select Accept if you agree to an identified speed shown with a check mark or Cancel if you want to search the spectrum for another speed.

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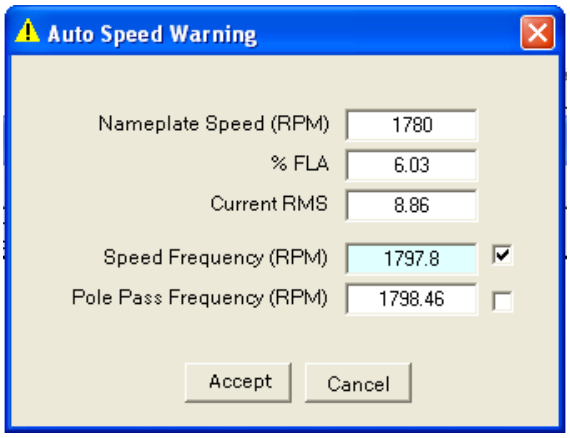


Figure 6-28: Auto Speed Warning Window

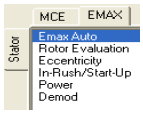
17. The Demod Spectrum window displays test data. This spectrum is discussed in the Analysis section, page 6-69.

18. Close the Test Results window by selecting File, Close or clicking the close button in upper right corner).

19. You will be asked if you want to save the changes, click desired answer. The Test Results window closes.

20. If you selected **Yes**, click **OK** in the Save Status window. If you clicked **No**, the Save Status and Test Results windows close.

AC Synchronous



EMAXAuto

EMAX Auto is the same as EMAX Auto for AC Induction asset. It is discussed on page 6-18.

Rotor Evaluation

The Rotor Evaluation test is the same as Rotor Evaluation test for an AC Induction asset. It is discussed on page 6-20

Eccentricity

The Eccentricity test is the same as Eccentricity test for an AC Induction asset. It is discussed on page 6-23

In-Rush/Start-Up

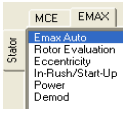
The In-Rush/Start-Up test is the same as In-Rush/Start-Up test for an AC Induction asset. It is discussed on page 6-25.

Demod

The Demod test is the same as Demod test for an AC Induction asset. It is discussed on page 6-28.

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AC Wound Rotor



EMAX Auto

EMAX Auto is the same as EMAX Auto for AC Induction asset. It is discussed on page 6-18.

Rotor Evaluation

The Rotor Evaluation test is the same as Rotor Evaluation test for an AC Induction asset. It is discussed on page 6-20.

Eccentricity

The Eccentricity test is the same as Eccentricity test for an AC Induction asset. It is discussed on page 6-23.

In-Rush/Start-Up

The In-Rush/Start-Up test is the same as In-Rush/Start-Up test for an AC Induction asset. It is discussed on page 6-25.

Demod

The Demod test is the same as Demod test for an AC Induction asset. It is discussed on page 6-28.

DC Asset

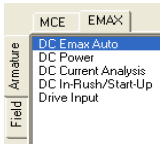
EMAX tests are run on both the Armature and Field sections of a DC asset.

The EMAX tests for the Armature section are DC EMAX Auto, DC Power, DC Current Analysis, DC In-Rush/Start-Up, and Drive Input.

The EMAX tests for the Field section are DC Power and DC In-Rush/Start-Up.

DC Power, which is tested in both the Armature and Field sections is covered in Chapter 7, Power Analysis.

Armature Section Tests



DC EMAX Auto

DC EMAX Auto test can be started by clicking the EMAX Auto icon 

on the toolbar or selecting EMAX Auto from the test list in the Test Selection Window. If you select the EMAX Auto icon, the EMAX test begins bypassing the test selection window and displays the Fault Zone Analysis window at the end of testing.

If you need to change the test setup settings or you want to see the graphs of the test results at the end of testing, select the Test Selection icon  on the toolbar.

Step-by-Step EMAX Auto

1. Connect the EMAX Data Acquisition cable to the DAQ card in the laptop computer.
2. Start MCEGold.
3. Highlight the motor being tested in the Site Navigator or on a WatchList.

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4. Select the Test Selection icon on the toolbar. The Test Selection window, shown in Figure 6-29 opens.

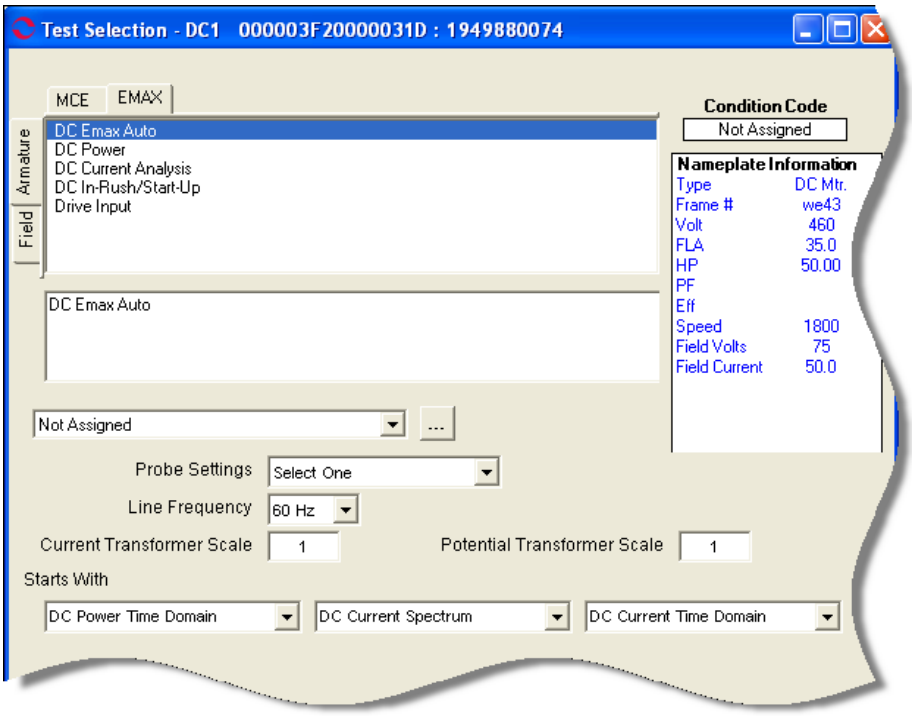


Figure 6-29: DC EMAX Auto Test Selection Window

5. Select EMAX Tab.

6. Select DC EMAX Auto from the test list.

7. Select Asset Test Location. To insure consistent trending and assist in trouble shooting, the actual test location should be stored for each test. The Asset Test Location default is Not Assigned. To assign a test location, click the down arrow and select from the list.

   If the location is not known, click the browse button . The Test Location Selection window opens displaying a test location graph for the type of asset selected. Use the graph to determine the location, then click the down arrow in the Test Location text box, select the location from the list, and click **OK.** See Figure 6-30.

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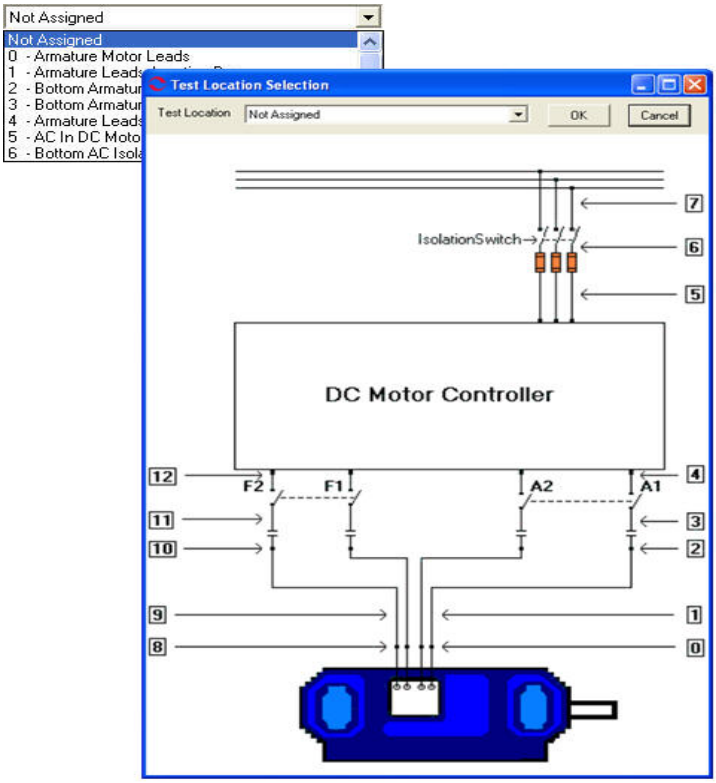
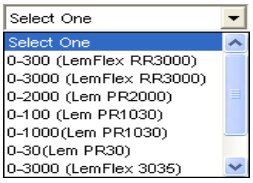
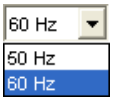


Figure 6-30: DC Asset Test Location

8. Select the Probe Settings from the drop down list, using the scroll bar to see the complete list if necessary.



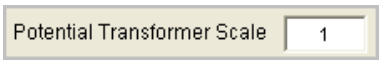
9. Select the Line Frequency from the drop down list. The choices are 60 Hz or 50 Hz.



10. Enter the Current Transformer Scale. Place the cursor in the text box, delete the value and enter the new current transformer scale value.



11. Enter the Potential Transformer Scale. Place the cursor in the text box, delete the value and enter the new potential transformer scale value.



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12. Select the Starts With selections by highlighting the desired display on the drop down list. The DC Starts With section is shown in Figure 6-31.

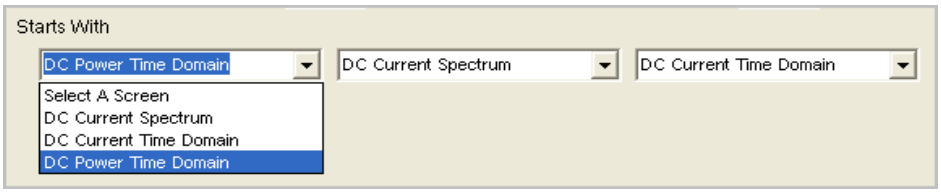


Figure 6-31: Starts With Section for EMAX Auto Test for DC Assets

13. Click **Test**.

14. If you have changed the test setup settings, you will be prompted to save the test setup settings. Click **Yes** or **No** as desired.

15. This test only takes two seconds and may not display a progress bar.

16. At the end of testing you will be informed the test data is being saved and the forms loaded. It may take a few minutes depending on the speed of your computer processor. Then the three test results windows chosen during the test setup and an EMAX Auto Test Manager window will open. See Figure 6-32.

    Note: You may position the windows by grabbing the title bar and dragging them to the desired location or using a command from the Windows menu on the menu bar.

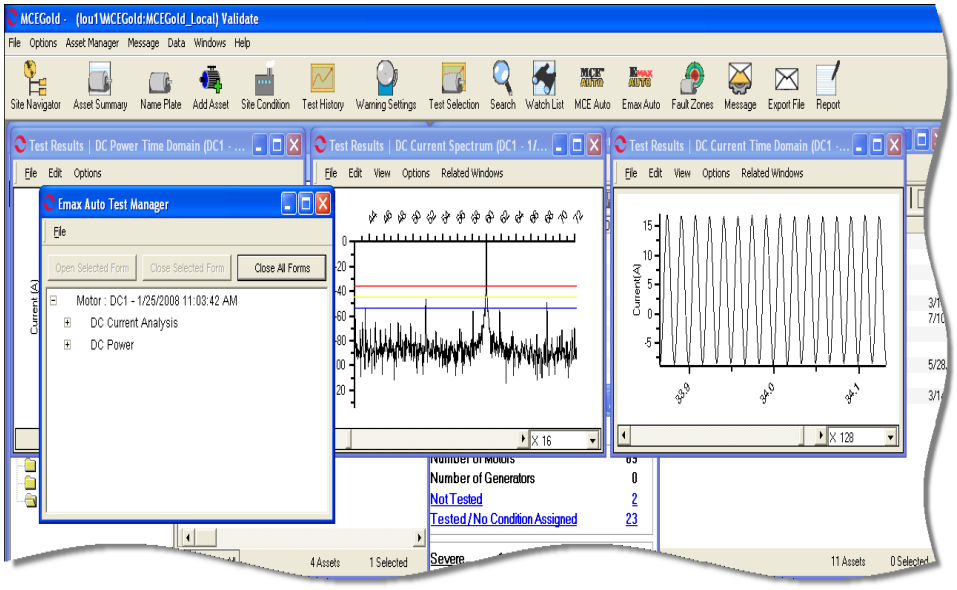


Figure 6-32: EMAX Auto Test Results

17. The EMAX Auto Test Manager window shown in Figure 6-33 can be expanded in order to identify which test results are displayed and make changes to the display. Figure 6-34 shows the expanded menu.

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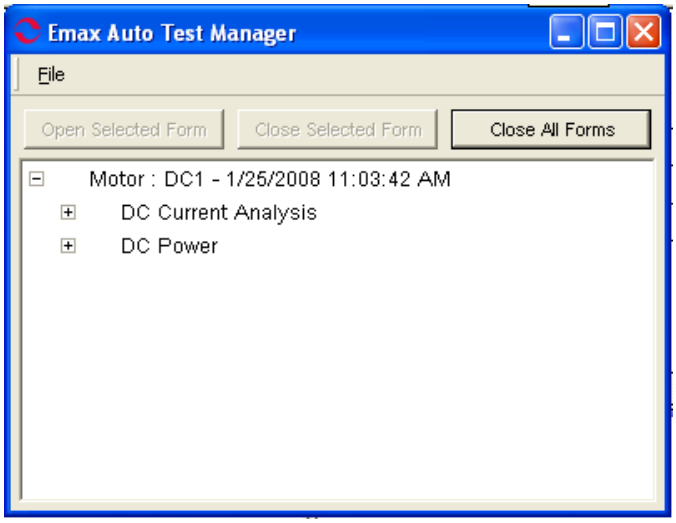


Figure 6-33: DC EMAX Auto Test Manager Window

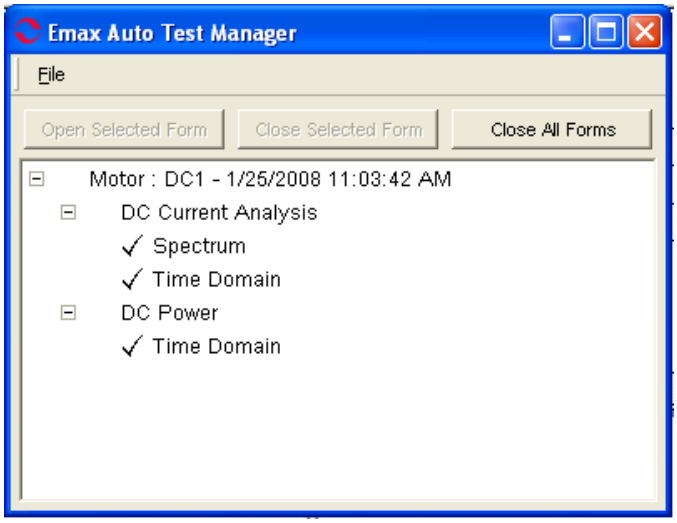


Figure 6-34: DC EMAX Auto Test Manager Window Expanded

18. On the expanded EMAX Auto Test Manager menu, a check mark indicates the test results window is displayed. To open a non-displayed window, highlight the desired test results and click **Open Selected Form**. The button will not be active until a non-displayed window is highlighted.

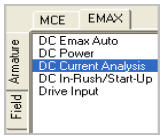
19. To close a particular test results window, highlight it on the menu and click **Close Selected Form**. The button will not be active until a displayed window is highlighted. The test results window closes.

20. To close all the test results windows, click **Close All Forms**.

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21. To close the EMAX Auto Test Manager window select File, Exit or click the Close button in the upper right corner.

22. The test results have been automatically saved and may be viewed using the Test History function.



DC Current Analysis

1. Connect the EMAX Data Acquisition cable to the DAQ card in the laptop computer.

2. Start MCEGold.

3. Highlight the motor being tested in the Site Navigator or on a WatchList.

4. Select the Test Selection icon on the toolbar. The Test Selection window, shown in Figure 6-35 opens.

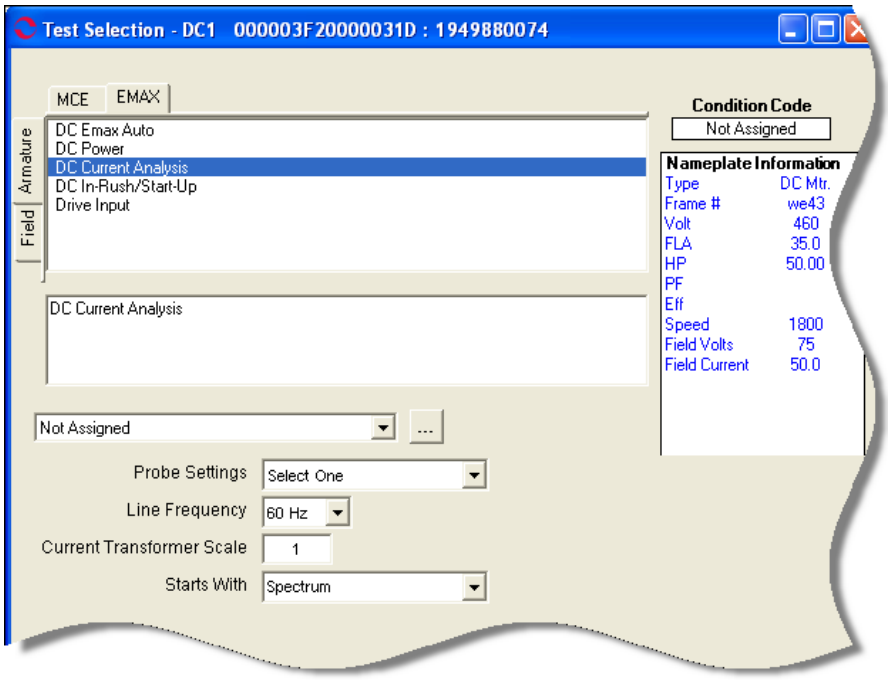


Figure 6-35: DC Current Analysis Test Selection Window

5. Select the EMAX tab from the test type section, the Armature tab (default) from the asset section, and DC Current Analysis from the test list.

6. Select Asset Test Location. To insure consistent trending and assist in trouble shooting, the actual test location should be stored for each test. The Asset Test Location default is Not Assigned. To assign a test location, click the down arrow and select from the list.

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If the location is not known, click the browse button . The Test Location Selection window opens displaying a test location graph for the type of asset selected. Use the graph to determine the location, then click the down arrow in the Test Location text box, select the location from the list, and click **OK.** See Figure 6-36.

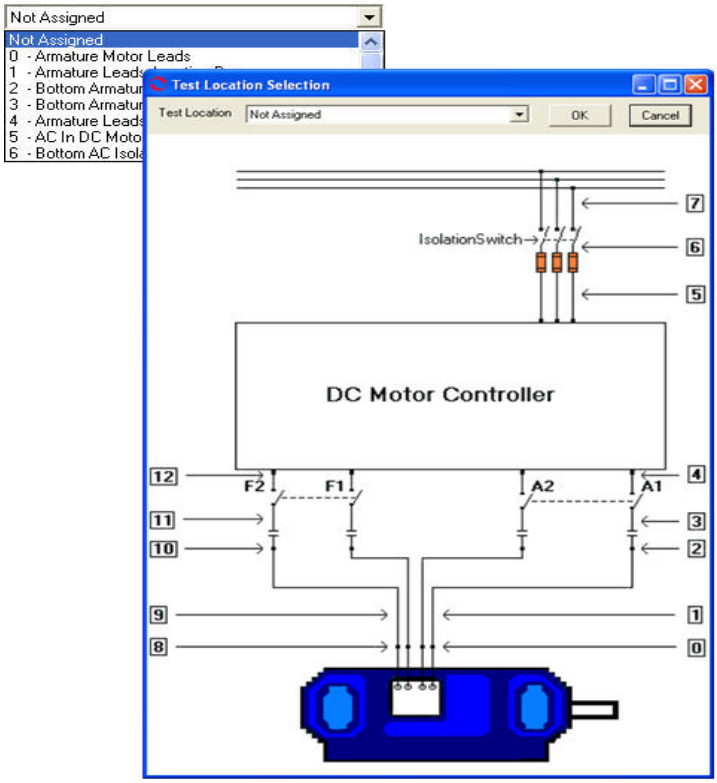
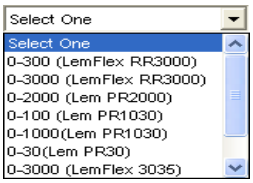
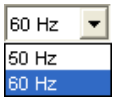


Figure 6-36: DC Asset Test Location

7. Select the Probe Settings from the drop down list, using the scroll bar to see the complete list if necessary.



8. Select the Line Frequency from the drop down list. The choices are 60 Hz or 50 Hz.



9. Enter the Current Transformer Scale. Place the cursor in the text box, delete the value and enter the new current transformer scale value.



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10. Select the Starts With selections by highlighting the desired display on the drop down list. The DC Starts With section is shown in Figure 6-37.

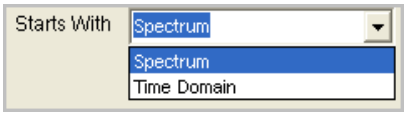


Figure 6-37: Starts With Selection for DC Asset

11. Click **Test**.

12. If you have changed the test setup settings, you will be prompted to save the test setup settings. Click **Yes** or **No** as desired.

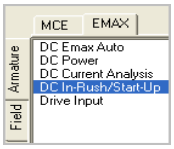
13. This test only takes two seconds and may not display a progress bar.

14. When testing is complete the Test Results window selected in step 10 opens.

15. To close the window used the File, Close menu or click the Close button in the upper right corner.

16. You will be asked if you want to save the test data? Click the desired button.

DC In-Rush/Start-Up



1. Connect the EMAX Data Acquisition cable to the DAQ card in the laptop computer.

2. Start MCEGold.

3. Highlight the motor being tested in the Site Navigator or on a WatchList.

4. Select the Test Selection icon on the toolbar. The Test Selection window, shown in Figure 6-38 opens.

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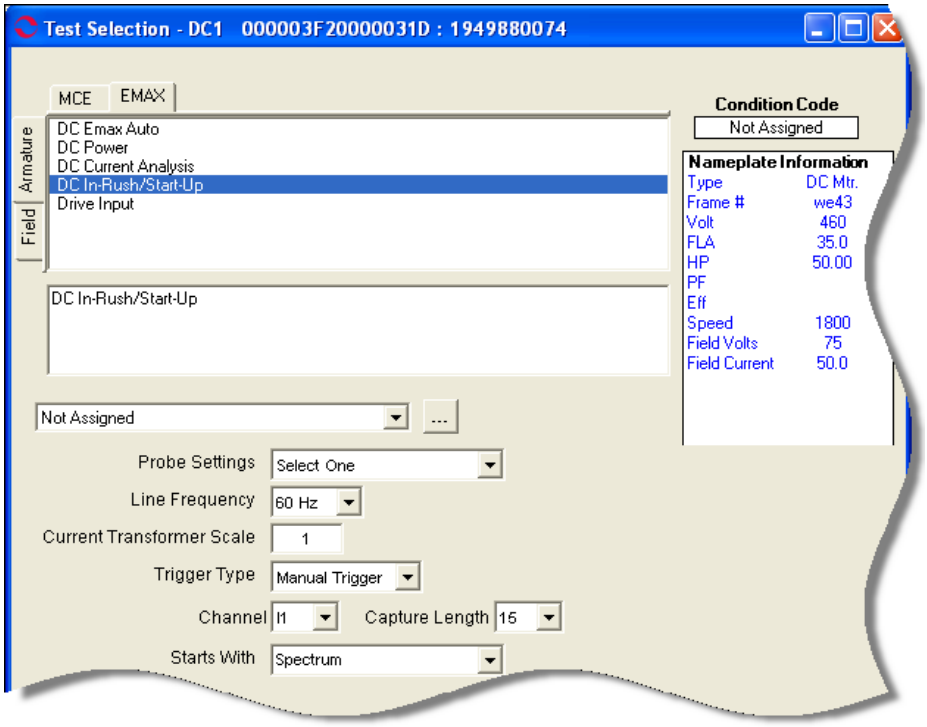


Figure 6-38: DC In-Rush/Start-Up Test Selection Window

5. Select the EMAX tab from the test type section, the Armature tab (default) from the asset section, and DC In-Rush/Start-Up from the test list.

6. Select Asset Test Location. To insure consistent trending and assist in trouble shooting, the actual test location should be stored for each test. The Asset Test Location default is Not Assigned. To assign a test location, click the down arrow and select from the list.

   If the location is not known, click the browse button ... . The Test Location Selection window opens displaying a test location graph for the type of asset selected. Use the graph to determine the location, then click the down arrow in the Test Location text box, select the location from the list, and click **OK.** See Figure 6-39.

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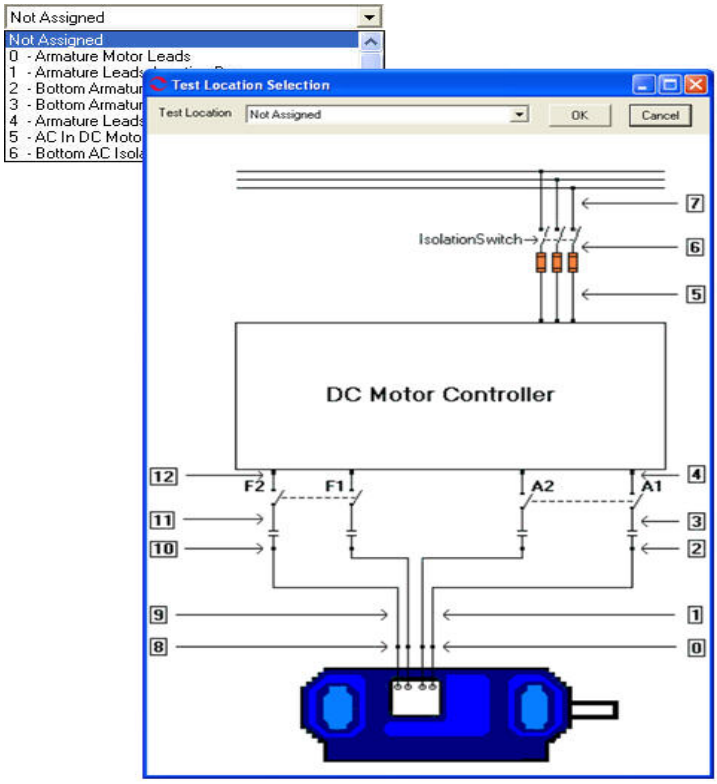
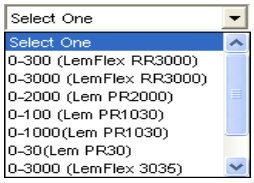
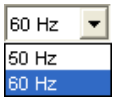


Figure 6-39: DC Asset Test Location

7. Select the Probe Settings from the drop down list, using the scroll bar to see the complete list if necessary.



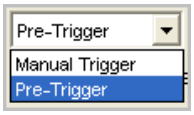
8. Select the Line Frequency from the drop down list. The choices are 60 Hz or 50 Hz.



9. Enter the Current Transformer Scale. Place the cursor in the text box, delete the value and enter the new current transformer scale value.



10. Select the Trigger Type form the drop down list. The choices are Manual Trigger (default) or Pre-Trigger.If Manual Trigger is selected go to step 12.



If Pre-Trigger is selected it is necessary to select the Pre-Trigger Length by clicking on the down arrow in the Pre-Trigger Length text box to display a list of available seconds. Highlight the desired length.



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Also, if Pre-Trigger is selected it is necessary to select the Trigger Factor by clicking on the down arrow in the Trigger Factor text box to display a list of factors. Highlight the desired factor. See Figure 6-40. When the selection is made the software automatically calculates and displays the Trigger Factor on the Test Selection window. See Figure 6-41.

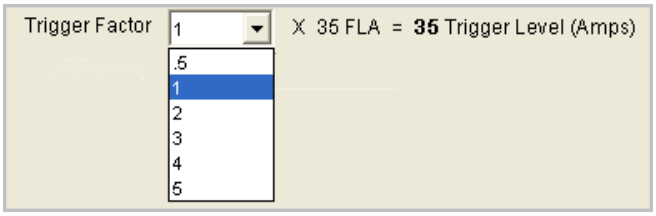


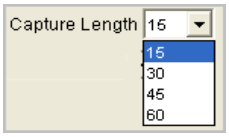
Figure 6-40: Trigger Factor Before Adjustment



Figure 6-41: Trigger Factor After Adjustment

11. Select the Channel. Use the down arrow in the Channel text box to display a list of available channels. Highlight the desired channel.

12. Select the Capture Length. Use the down arrow in the Capture Length text box to display a list of available settings. Highlight the desired length.



13. The Starts With category defaults to Spectrum, the only choice.



14. Click **Save** to save these settings for future testing of this asset. Or click **Reset** to return the original settings. This can only be done if the new settings have not been saved.

15. Connect the current probes to EMAX and the circuit to be measured. Ensure that the arrows on the probes point to the motor.

16. Click **Test** to begin testing. If you have not saved any changes to the setup settings, the system will ask you if you want to save test setup settings at this time.

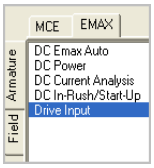
17. This test only takes two seconds and may not display a progress bar.

18. At the conclusion of testing, the In-Rush/Start-Up Spectrum displays test data. This spectrum is discussed in the Analysis section, page 6-80.

19. Close the Test Results window by selecting File, Close or clicking the close button in upper right corner.

20. You will be asked if you want to save the changes, click desired answer. The Test Results window closes.

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Drive Input

Step-by-Step Drive Input

1. Connect the EMAX Data Acquisition cable to the DAQ card in the laptop computer.

2. Start MCEGold.

3. Highlight the motor being tested in the Site Navigator or on a WatchList.

4. Select the Test Selection icon on the toolbar. The Test Selection window, shown in Figure 6-42 opens.

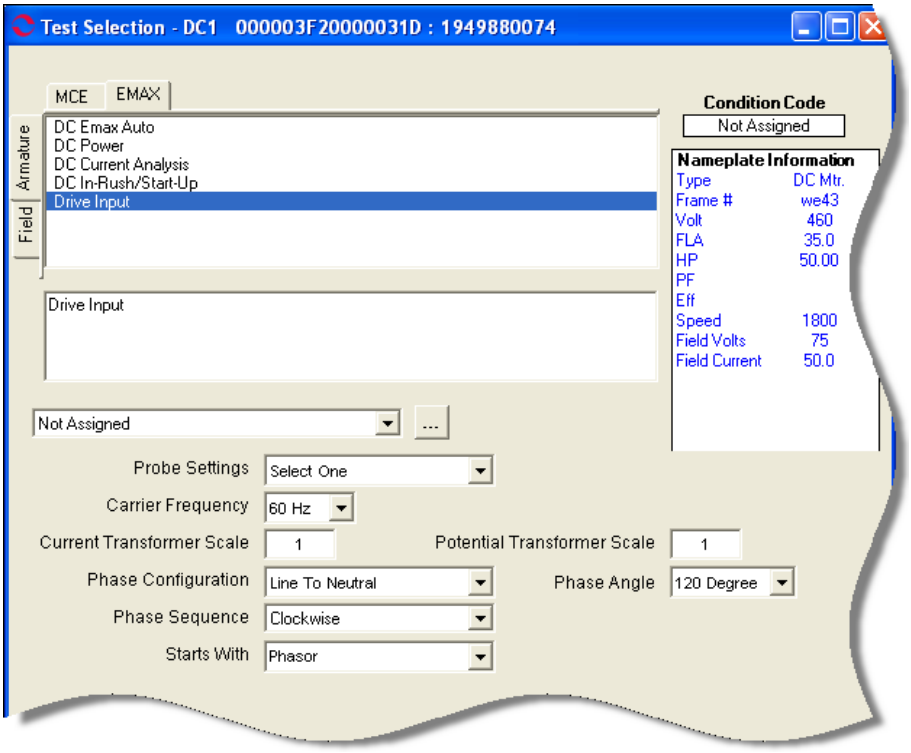


Figure 6-42: Drive Input Test Selection Window

5. Select the EMAX tab from the test type section, the Armature tab (default) from the asset section, and Drive Input from the test list.

6. Select Asset Test Location. To insure consistent trending and assist in trouble shooting, the actual test location should be stored for each test. The Asset Test Location default is Not Assigned. To assign a test location, click the down arrow and select from the list.

   If the location is not known, click the browse button ... . The Test Location Selection window opens displaying a test location graph for the type of asset selected. Use the graph to determine the location, then click the down arrow in the Test Location text box, select the location from the list, and click **OK.** See Figure 6-43.

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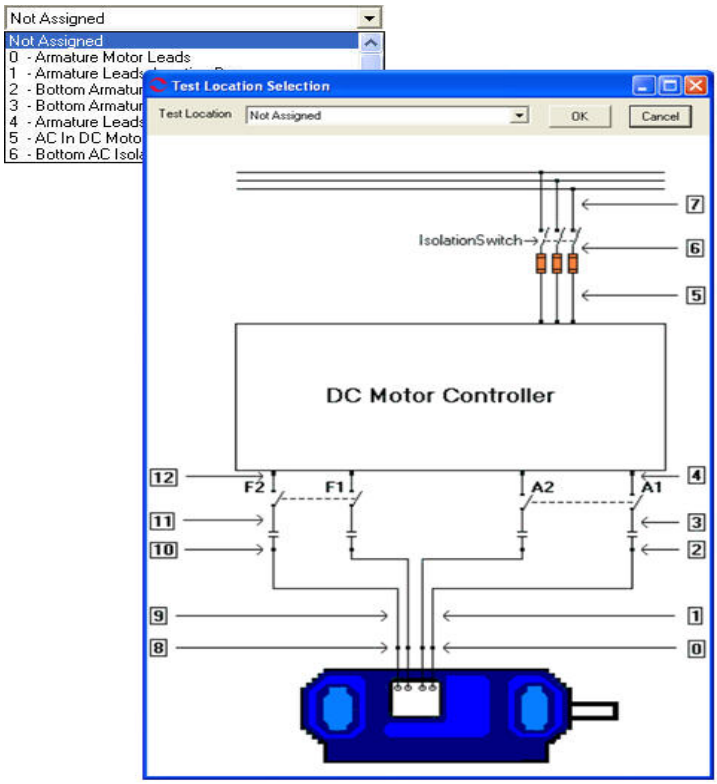
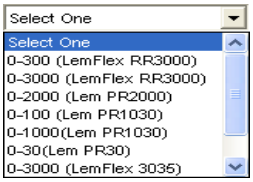
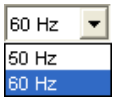


Figure 6-43: DC Asset Test Location

7. Select the Probe Settings from the drop down list, using the scroll bar to see the complete list if necessary.



8. Select the Line Frequency from the drop down list. The choices are 60 Hz or 50 Hz.



9. Enter the Current Transformer Scale. Place the cursor in the text box, delete the value and enter the new current transformer scale value.



10. Enter the Potential Transformer Scale. Place the cursor in the text box, delete the value and enter the new potential transformer scale value.



11. Select the Phase configuration from the drop down list. The choices are Line-to-Neutral and Phase-to-Phase.

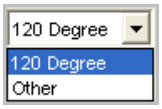
    If Line-to-Neutral is selected then Phase Angle must be selected. See Step 12.



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If Phase-to-Phase is selected then Missing Currents must be selected. See Step 13.

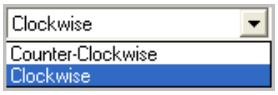
12. Select Phase Angle from the drop down list. This setting is only available when Line-to-Neutral is selected in the Phase Configuration setting.



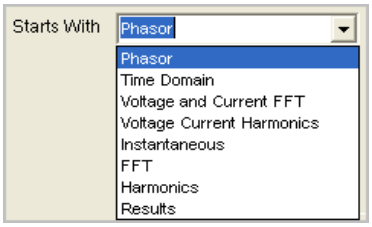
13. Select Missing Currents from the drop down list. This setting is when Phase-to-Phase is selected in the Phase Configuration setting.



14. Select Phase Sequence from the drop down list.



15. Select the Starts With selection by highlighting the desired display on the drop down list.



16. Click **Save** to save these settings for future testing of this asset. Or click **Reset** to return the original settings. This can only be done if the new settings have not been saved.

17. Connect the current probes to EMAX and the circuit to be measured. Ensure that the arrows on the probes point to the motor.

18. Click **Test** to begin testing. If you have not saved any changes to the setup settings, the system will ask you if you want to save test setup settings at this time.

19. This test only takes two seconds and may not display a progress bar.

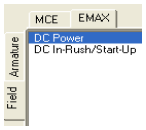
20. At the conclusion of testing, the test results window selected in Step 15 displays test data.

21. Close the Test Results windows by selecting File, Close or clicking the close button in upper right corner.

22. You will be asked if you want to save the changes, click desired answer. The Test Results window closes.

Field Section Tests

The Field Section Tests for DC assets are DC Power and DC In-Rush/Start-Up. DC Power is discussed in Chapter 7, Power Analysis.



DC In-Rush/Start-Up

Step-by-Step In-Rush/Start-Up

1. Connect the EMAX Data Acquisition cable.

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2. Start MCEGold.

3. Highlight the motor being tested in the Site Navigator or Watch List.

4. Select the Test Selection icon on the toolbar. The Test Selection window, shown in Figure 6-44 opens.

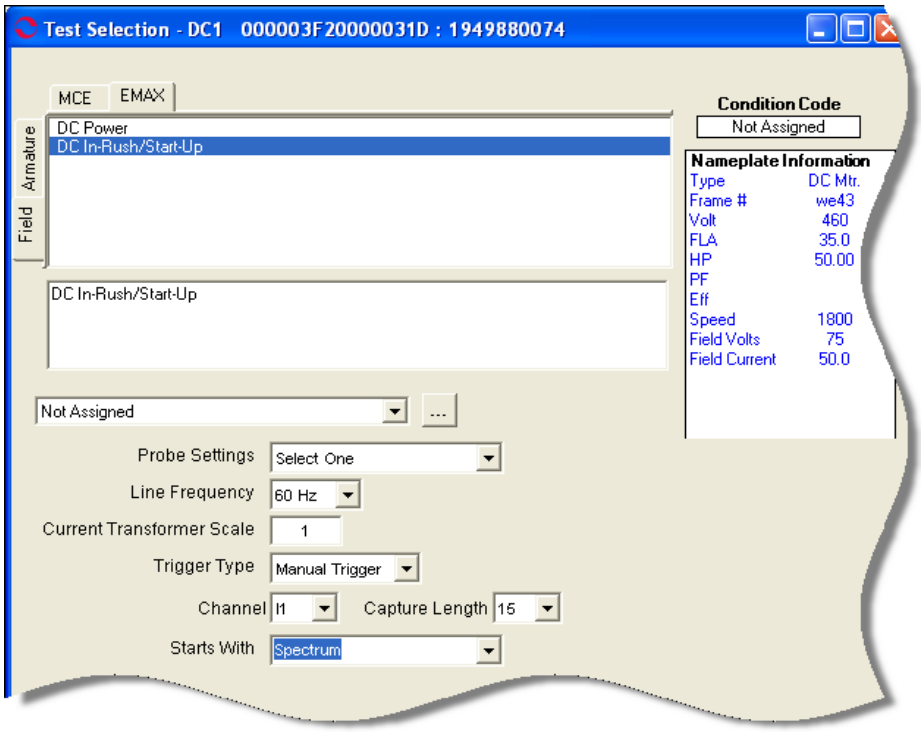


Figure 6-44: DC In-Rush/Start-Up Test Selection Window

5. Select EMAX tab in the Test Type.

6. Select In-Rush/Start-Up in the Test List, by clicking once on the name.

7. Select Asset Test Location. To insure consistent trending and assist in trouble shooting, the actual test location should be stored for each test. The Asset Test Location default is Not Assigned. To assign a test location, click the down arrow and select from the list.

   If the location is not known, click the browse button . The Test Location Selection window opens displaying a test location graph for the type of asset selected. See Figure 6-45. Use the graph to determine the location, then click the down arrow in the Test Location text box, select the location from the list, and click **OK.**

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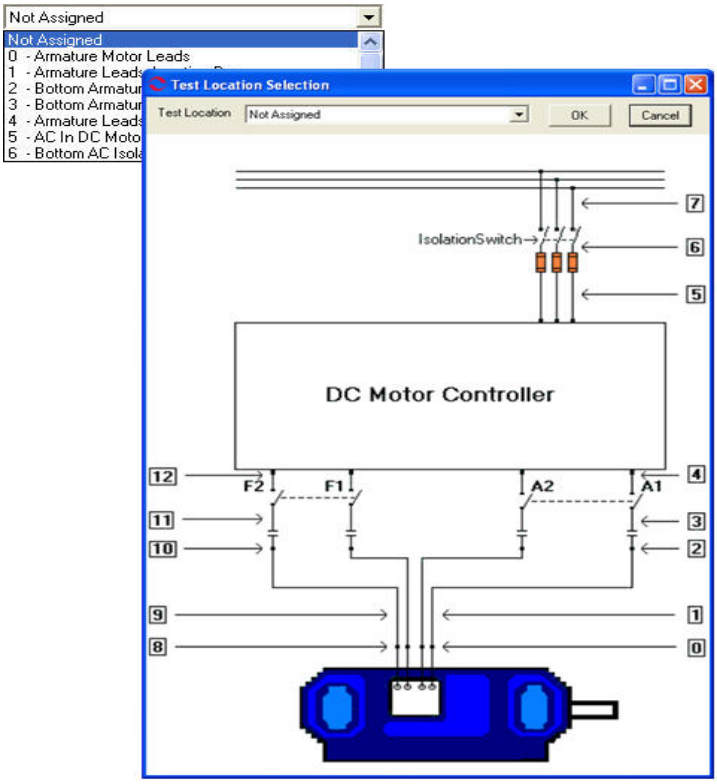
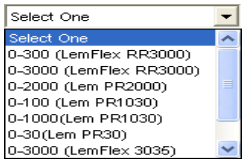
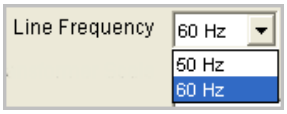


Figure 6-45: Test Location Selection

8. Select the appropriate probes for measuring the current for the asset by clicking on the down arrow to the right of the text box. Highlight the probe from the drop-down list.



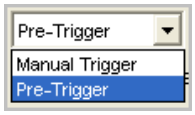
9. Select the correct Line Frequency by clicking on the down arrow to the right of the text box. Highlight either 50 Hz or 60 Hz.



10. Enter the Current Transformer Scale. Place the cursor in the text box, delete the value and enter the new current transformer scale value.



11. Select the Trigger Type form the drop down list. The choices are Manual Trigger (default) or Pre-Trigger. If Manual Trigger is selected go to step 13.



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If Pre-Trigger is selected it is necessary to select the Pre-Trigger Length by clicking on the down arrow in the Pre-Trigger Length text box to display a list of available seconds. Highlight the desired length.



Also, if Pre-Trigger is selected it is necessary to select the Trigger Factor by clicking on the down arrow in the Trigger Factor text box to display a list of factors. Highlight the desired factor. See Figure 6-46. When the selection is made the software automatically calculates and displays the Trigger Factor on the Test Selection window. See Figure 6-47.

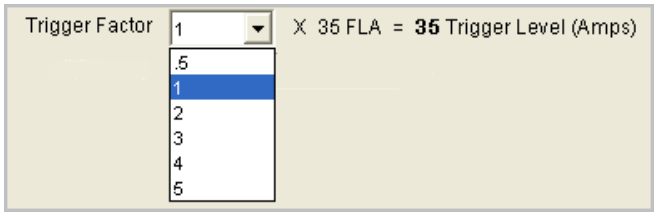


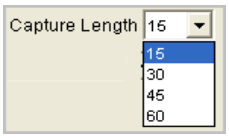
Figure 6-46: Trigger Factor Before Adjustment



Figure 6-47: Trigger Factor After Adjustment

12. Select the Channel. Use the down arrow in the Channel text box to display a list of available channels. Highlight the desired channel.

13. Select the Capture Length. Use the down arrow in the Capture Length text box to display a list of available settings. Highlight the desired length.



14. The Starts With category defaults to Spectrum, the only choice.



15. Click **Save** to save these settings for future testing of this asset. Or click **Reset** to return the original settings. This can only be done if the new settings have not been saved.

16. Connect the current probes to EMAX and the circuit to be measured. Ensure that the arrows on the probes point to the motor.

17. Click **Test** to begin testing. If you have not saved any changes to the setup settings, the system will ask you if you want to save test setup settings at this time.

18. This test only takes two seconds and may not display a progress bar.

19. At the conclusion of testing, the DC In-Rush/Start-Up Spectrum displays test data. This spectrum is discussed in the Analysis section, page 6-80.

20. Close the Test Results windows by selecting File, Close or clicking the close button in upper right corner.

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21. You will be asked if you want to save the changes, click desired answer. The Test Results window closes.

ANALYSIS

EMAX Auto

The EMAX Auto test produces six test results windows. How and the order they appear in is determined by the selections made in the test setup. The current analysis results are: Eccentricity Spectrum, Eccentricity Time Domain, Rotor Evaluation Spectrum, Rotor Evaluation Time Domain, and Demod spectrum. They are discussed in this chapter under the appropriate test. The power analysis results are discussed in Chapter 7.

Rotor Evaluation

Rotor Evaluation testing is used for rotor bar analysis. The test is performed by selecting the EMAX tab on the Test Selection window and Rotor Evaluation from the test list. See page 6-20 for detailed information on the testing procedures. At the end of the test, the Test Results window shown in Figure 6-48 opens.

Note: You can also access the Test Results by highlighting the asset on the Site Navigator or WatchList and selecting the Test History icon on the tool bar.

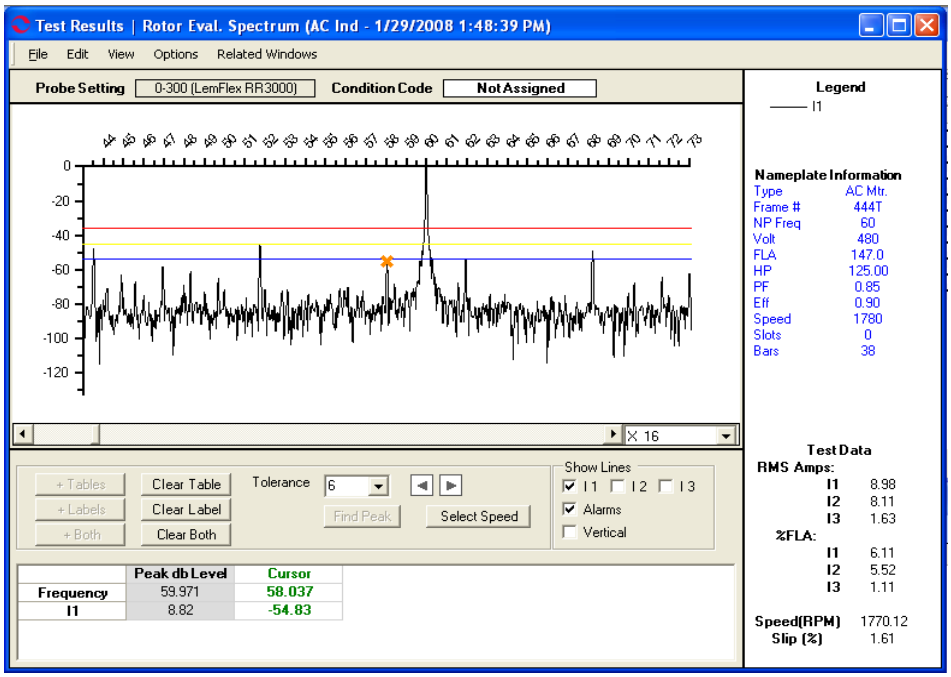
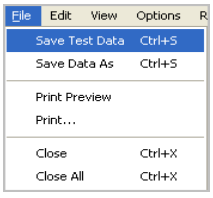


Figure 6-48: Test Results - Rotor Evaluation Spectrum



File Menu

Save Test Data

Selecting File, Save Test Data saves the test data to the Test History file. When the data is saved a message box informs you “Complete”. Click **OK**.

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Note: Changes made to the appearance of the graph and data is not saved by using the menu save commands. To save the modified spectrum, use Print Preview. From the Print Preview window you can use File, Export to PDF or Export to HTML.

Save Data As

Selecting File, Save Data As allows you to save the test data to a location you choose. The Save Data window opens, select a location and enter a file name, click **Save**. The file is saved as an .xls file type.

Note: Changes made to the appearance of the graph and data is not saved by using the menu save commands. To save the modified spectrum, use Print Preview. From the Print Preview window you can use File, Export to PDF or Export to HTML.

Print Preview

Selecting File, Print Preview causes the Rotor Evaluation Spectrum to display as it will print. To print, select the print icon, from the Print window verify the printer destination, and click **OK**. To close the Print Preview, select File, Close or click the close button in upper right corner.

Print

Selecting File, Print causes the Print window to open, verify the printer destination, and click **OK**.

Close

Selecting File, Close closes the Test Results window. If you have not saved the test data you will be asked if you want to save.

Close All

Selecting File, Close All closes all Test Results windows associated with the Rotor Evaluation test that are open. If you have not saved the test data you will be asked if you want to save.



Edit

Create Message (Ctrl+M)

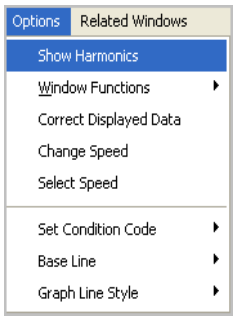
Selecting Edit, Create Message opens the Compose Asset Message window. Use this function to add a message/note to the asset record. The messages/notes can be read using the Message Center. Compose Asset Message and the Message Center are discussed in Chapter 3- MCEGold, Message Center on page 3-41.



View

The two test result choices for the Rotor Evaluation test are Spectrum and Time Domain. The result to be displayed is selected during test setup in the Starts With section. You can view additional test results windows by selecting View, Time Domain or Spectrum. The current window will remain open, in addition to the selected test results window.

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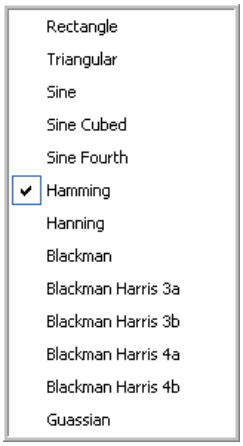
Options

Show Harmonics

Selecting Show Harmonics acts as a toggle to cause an x to be placed on the graph at whole number multiples of line frequency location or to removes it. A check mark indicates the harmonics are marked.

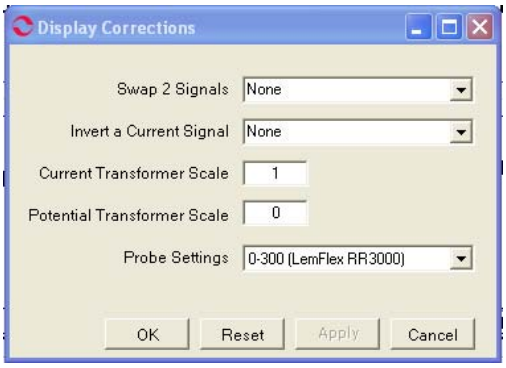
Window Functions

Selecting Options, Window Functions allows you to change the way the test results graph is displayed. See graphic for a list of the choices. A check mark in front of the name indicates how the results are being displayed.



Correct Displayed Data

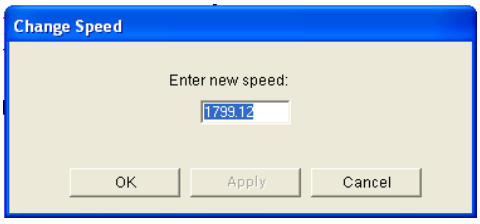
Selecting Options, Correct Displayed Data allows you to make four adjustments to the test results. Those adjustments are: Swap 2 Signals, Invert a Current Signal, Current Transformer Scale, Potential Transformer Scale, and Probe Settings.



Make the desired adjustments and click **OK** to make the changes and close the window or **Apply** to make the changes and leave the window open.

Change Speed

Selecting Options, Change Speed opens the Change Speed window. Enter a new speed in the text box and click **OK** to make the change and close the window or **Apply** to make the change and leave the window open.



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Set Condition Code

Selecting Options, Set condition Code displays the submenu shown on the right. Click on the desired condition code.



Baseline

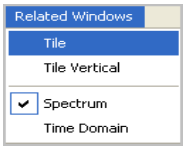
Selecting Options, Baseline displays the Set As Baseline option. This sets the test results as the baseline.



Graph Line Style

electing Options, Graph Line Style displays the sub menu containing options to Show Patterns and Show Markers on the test results graph. A check mark indicates the option is active.





Related Windows

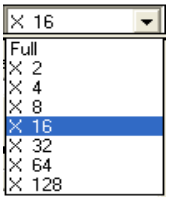
Selecting Related Windows, displays functions that control how the open windows are displayed and lists the open windows.

Display Options

The area below the test results graph contains options to enhance the test data display.

Magnification

The drop down list located to the lower right of the test results graph allows you to increase or decrease the magnification of the graph.



+ Tables

Clicking the +**Tables** button opens the Add/Edit Cursor Table window. Enter a name in the text box and click OK. A column is added to the display. When the cursor is moved to another location you may add an additional column.

Clear Table

Clicking the **Clear Table** button removes the column/s added by clicking +Tables.

+ Labels

Clicking + **Labels** places a label on the cursor location on the graph. Each time the cursor is moved, click + Labels to place a label on the new location.

Clear Label

Clicking **Clear Label** removes the labels placed on the graph by clicking + Labels.

+ Both

Clicking + **Both** adds a column on the table and places a label on the graph.

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Clear Both

Clicking **Clear Both** removes the column/s and label/s on the graph.It does not return the cursor to the original location.

Tolerance

Tolerance is a drop down list of values used to limit the cursor movement to within a range.

Arrows

Use the arrow buttons to move the active cursor right or left one increment at a time.

Find Peak

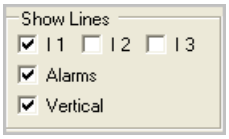
When the cursor has been moved, click the **Find Peak** button to locate the cursor on the highest frequency peak within the tolerance selected. The values will change in the appropriate table below the graph.

Select Speed

Click the Select Speed button to calculate the speed in RPM from the F_p side band.

Show Lines

Show Lines consists of check boxes used to add or remove lines for l1, l2, l3, Alarms, and Vertical cursor. A check mark indicates the line is visible.



Review Spectrum

The Rotor Evaluation Spectrum displays at the end of testing or it can be reached by highlighting the asset on the Site Navigator or WatchList and clicking the Test History icon on the toolbar. From the Test History window, highlight the desired test and select View, Raw Data from the menu.

The spectrum is a graph of current amplitude in dB versus frequency in Hz. This spectrum is achieved by performing a Fast Fourier Transform (FFT) of the current data. The Amplitude scale is in decibels (dB), shown on the left side of the display. It automatically scales as necessary to display the entire graph.

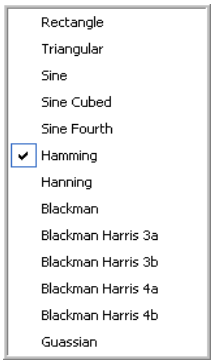
The highest peak, which occurs at line frequency, is set at a reference level of 0 dB. The Peak dB level box below the display is filled in with line frequency and the uncorrected line frequency amplitudes when the current graphs are displayed. The uncorrected amplitude is the true value of the line frequency before referencing the graph to zero. This is done so that the other peaks in the spectrum can be easily compared to line frequency. The Frequency scale is in hertz (shown horizontally across the top) and centers on the fundamental frequency.

Pole pass side band (Fp) amplitude indicates the condition of the rotor bars. Fp equals the number of poles times the slip frequency. As the rotor bars deteriorate, the amplitude of the Fp side band increases. At loads greater than 70%, the dB difference between the line frequency and F_p side band peaks of greater than 54 dB indicates a healthy rotor condition.

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If the dB difference is between 54 and 45, this indicates problems could be developing on the rotor, including cracked rotor bars and high resistance joints. At this dB level, EMAX places the F_p Amplitude values in the Test History in a Caution condition.

The default method of display is Frequency (Hz) - Hanning. There are different methods of displaying this graph. To change the different displays, select Options, Window Functions and select the desired method from the list. The list is shown on the right.



Review the Spectrum to identify the F_p side bands and its associated amplitude to determine the condition of the rotor. When the side bands and amplitude have been identified, motor speed can be determined and used for eccentricity analysis. Eccentricity analysis is covered in the Eccentricity section.

Activate the vertical bar cursor by clicking on the spectrum graph. To identify the Fp side band, click on the highest peak to the left of the line frequency peak. Click **Find Peak** to move the cursor to the true peak.

Review the cursor entry in the data table. If the dB value of the displayed current at the cursor position is greater than 54, this indicates that the rotor is in a healthy condition.

Click **Select Speed** to calculate the speed in RPM from the F_p side band frequency. If the speed calculation does not appear correct based on the motor's load, move the cursor to a different F_p side band and click **Select Speed** to recalculate the speed. Moving the cursor to the right increases the selected speed; moving it to the left decreases speed. Use of a strobe tach is recommended to confirm the speed.

When the speed is calculated and placed in the Speed (RPM) box, compare this speed along with the % FLA value to the nameplate speed in the speed (NP) box to verify that the highlighted peak is the Fp side band frequency. Refer to the graph in Figure 6-49 to aid in verification.

- If the % FLA value is near 100%, the Speed (RPM) value should be close to the Speed (NP).
- If the % FLA value is less than 100%, the Speed (RPM) value should be higher than the Speed (NP). For maximum test effectiveness, % FLA should be greater than 70% during the tests.
- If you determine that the highlighted peak is not the Fp side band frequency, select another peak and recalculate the Speed (RPM).

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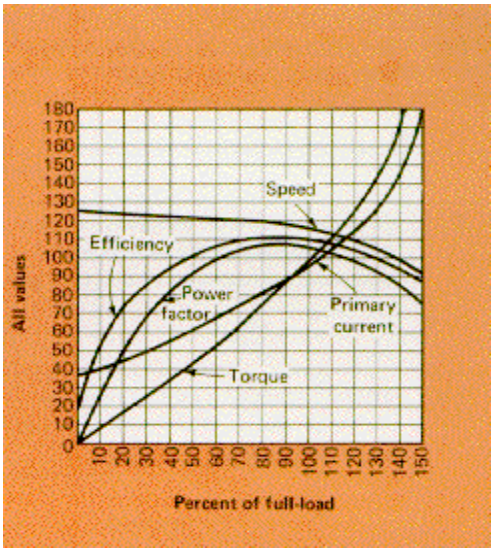


Figure 6-49: Motor Parameters vs. Percent Full Load

If a tachometer is used to determine the speed, F_p side band frequency can be identified by moving the cursor to a point near the F_p side band frequency. Click **Select Speed**. Continue to move the cursor and calculate the speed until the calculated speed value matches the motor speed from the tachometer. At this speed, the cursor will be on the F_p side band frequency.

The rotor condition should be based on the phase with the highest Fp side band frequency (least negative) value. Review the cursor entry line in the data area.

- If the dB value is between 45-54, place the motor in a caution condition. Increase monitoring of the motor and correlate with other technologies (i.e., MCE, vibration) to assist in determining the condition of the rotor.
- If the dB value is less than 45, place the motor in an alarm condition. Correlate with other technologies to assist in determining the severity of the problem. Schedule an inspection at the next availability.
- If the dB value is less than 30, consider taking immediate actions to shut down the motor and investigate.

Review Time Domain

To verify the data capture was valid, review the Time Domain display. When reviewing the display, ensure all three current signals are visible. The Time Domain display can be reached by selecting View, Time Domain from the Rotor Evaluation Spectrum window. See Figure 6-50.

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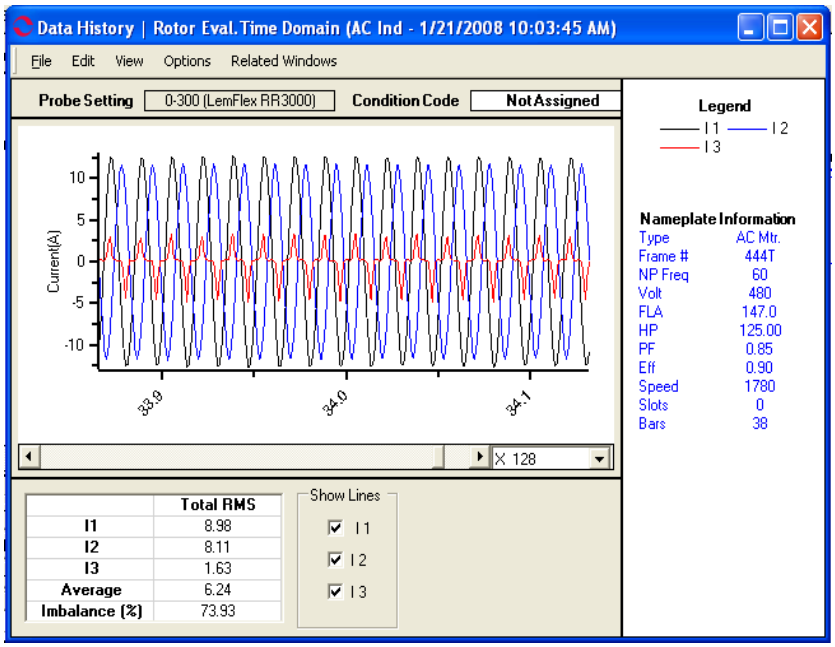


Figure 6-50: Rotor Evaluation - Time Domain

The Time Domain display can indicate if any of the following have occurred, which invalidates the test data:

- Improper probe selection
- Improper range selected on current probes
- Improper probe connection
- Probes not energized during testing
- Motor speed not constant during testing
- Signal failure at the end of the test

Verify that the proper range was selected on the current probes by observing the display of the three current signals. Flat peaks at the tops of the sine waves indicate that clipping occurred. This happens when the range on the probes is too low and the current signals overdrive the probes.

Verify that the probes were energized and connected properly. If a phase has a very low amplitude and is extremely erratic, the probe could have been improperly connected or not turned on. An erratic signal can also be caused by noise.

Verify that the motor speed was constant during the entire test. Varying peak-to-peak values of current are an indication of load changes. Change the scale of the display to full by selecting full from the scale drop-down list box. Observe the entire waveform and verify that there were no peak-to-peak variations throughout the entire display. The graph may be scrolled by using the arrow keys on the keyboard or the slide bar located above the graph.

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Review Test History

To review the Test History, highlight the asset in the Site Navigator or WatchList and click the Test History icon 

on the toolbar. In the Test History window select EMAX from the drop down list and the Rotor Evaluation tab. Locate the test by using the scroll bar at the bottom of the window. Figure 6-51 shows the Test History window for an AC Induction asset, EMAX Rotor Evaluation test. The Test History window menus and functions are discussed in Chapter 3 - MCEGold, page 3-28.

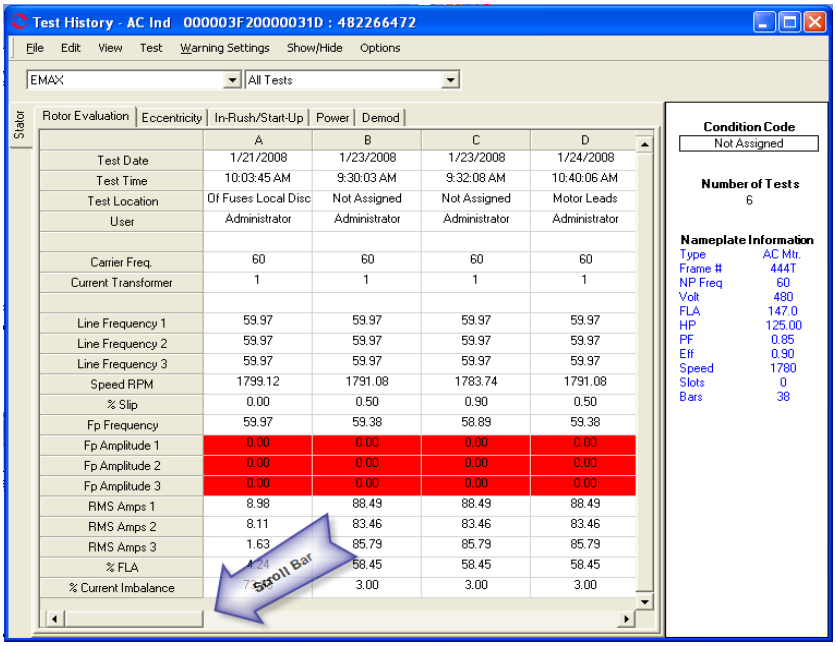


Figure 6-51: Test History - Rotor Evaluation

The top four lines on the Test History show the Date and Time the test was taken, Test Location, and User (person performing the test). Next the Carrier Frequency and Current Transformer information is displayed. These are entered during the test setup.

The Condition Code, Number of Tests that have been performed on the motor, and Nameplate information is displayed along the right side of the window.

Test Result Values

Line Frequency is the frequency of the incoming power source to the motor.

Speed RPM is the calculated motor speed based on the Fp side bands highlighted on the spectrum. If you have not selected a side band frequency for a test, this value is 0. If the speed is calculated on the Spectrum View window and the data is saved, the next time the Test History is reviewed, the calculated value is displayed.

% Slip is the difference between the shaft speed and the stator's rotating synchronous magnetic field. An increase in the slip value could result from an increase in load or a rotor defect. An increasing slip value coupled with increasing RMS Amp values indicates an

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increase in load. An increasing slip value coupled with steady RMS Amp values indicates rotor bar defects.

Fp Frequency is the frequency at which the Fp side band is located. A decrease in the slip frequency value could result from an increase in load or a rotor bar defect. If the speed is calculated on the Spectrum View window and the data saved, the next time the Test History is reviewed, the slip frequency value is displayed.

Fp Amplitude (1, 2, and 3) is the amplitude of the Fp side band. The difference between fundamental and Fp should be greater than 54 dB. Amplitudes between 45-54 indicate a moderate condition and are displayed in yellow (Caution). This indicates problems could be developing on the rotor, including cracked rotor bars and high resistance joints. Amplitudes less than 45 indicate a severe condition and are displayed in red (Alarm). This indicates cracked rotor bars and high resistance joints are likely.

RMS Amps (1, 2, and 3) are the root mean square (RMS) values of the current data. These can be compared to changes in the Slip and Slip Frequency values to differentiate between load changes and possible rotor bar defects. An increasing Slip or decreasing Slip Frequency value coupled with increasing RMS Amp values indicates an increase in load. An increasing Slip value or decreasing Slip Frequency value coupled with steady RMS Amp values indicates rotor bar defects.

% Full Load Amps (FLA) is the percentage of nameplate FLA at which the motor is operating.

% Current Imbalance indicates a difference in current between phases of a three phase motor. It is calculated using the three phase current measurements and the following equation: % I_{imb}=(max deviation from avg)/avg x 100.

Analysis

Review the Test History for any Caution and Alarm values. To assist in the analysis process, graphing may be used for visual trending on motors with more than one set of test results. To view a graph, highlight the row of test results to be trended, then select View, Graph from the menu.

If the test results appear erratic, verify the data by reviewing the time domain display. To view the time domain, highlight the column for the test results, then select View, Raw Data from the menu. When the Rotor Evaluation spectrum window opens, select View, Time Domain.

Eccentricity

Eccentricity is the non-uniformity of the air gap between the rotor and stator. Eccentricity testing is used to indicate static or dynamic air gap problems. Static eccentricity occurs when the centerline of the rotor is offset from the centerline of the stator and is stationary. Dynamic eccentricity occurs when the centerline of the rotor is offset from the centerline of the stator and is not stationary. In extreme cases, dynamic eccentricity can result in rotor/stator contact. The Eccentricity test sample is approximately 0-6000 Hz.

The Eccentricity Test is performed by selecting the EMAX tab on the Test Selection window and Eccentricity from the test list. See page 6-23 for detailed information on the testing procedures. At the end of the test, the Test Results window shown in Figure 6-52

opens. The window menu items and buttons behave the same as for a Rotor Evaluation Spectrum and are discussed on page 6-49.

Note: You can also access the Test Results by highlighting the asset on the Site Navigator or WatchList and selecting the Test History icon on the toolbar.

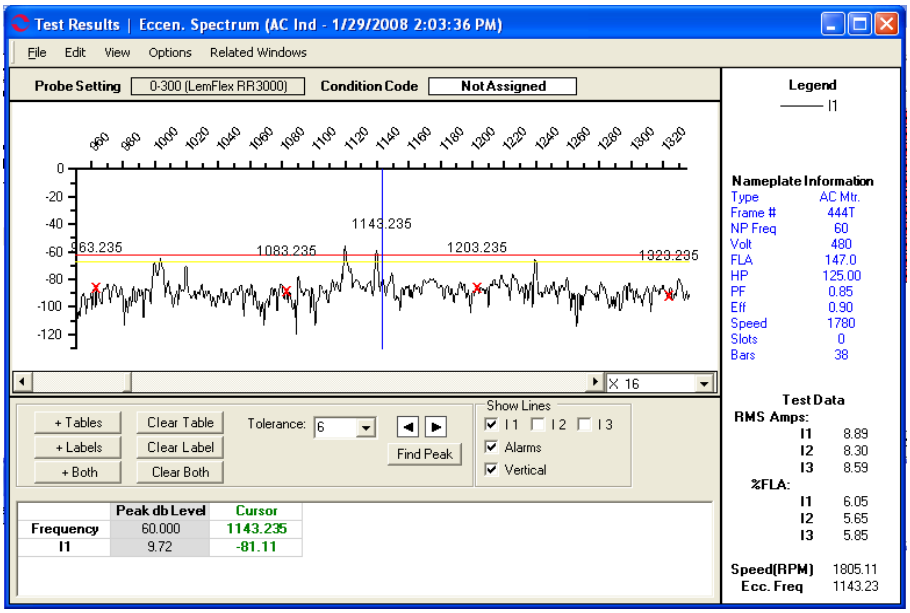


Figure 6-52: Test Results - Eccentricity Spectrum

Review Spectrum

The default Current Spectrum window display, see Figure 6-52, shows only one waveform - phase 1 current. Current for phases 2 and 3 can be displayed by clicking the check boxes located in the Show Lines section below the graph.

The Spectrum is a graph of amplitude versus frequency. The Amplitude scale is in decibels (shown vertically on the left side of the display). It auto-scales as necessary to display all of the values. The Frequency scale is in hertz (shown across the top of the display).

The default method of display is Frequency (Hz) - Hanning. There are various methods of displaying this graph. The display function operates as described in the Rotor Evaluation section on page 6-49.

The table area located across the bottom of the window is for Peak dB Level and Cursor location. The Peak dB level box is filled in with line frequency and the uncorrected line frequency amplitudes when the current graphs are displayed. This uncorrected amplitude is the true value of the line frequency before referencing the graph to zero. The Cursor box indicates the frequency and dB levels at the point where the cursor is located.

In the area below the Nameplate information is the Test Data section. This area contains RMS Amps, % FLA, Speed (RPM), and Ecc. Freq (eccentricity frequency). The values are produced automatically by MCEGold.

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Speed (RPM) is taken from the demod test in EMAX Auto. If the speed acquisition in demod fails or a stand alone eccentricity test is run, speed will not be identified. The RPM value is converted to an equivalent frequency. Eccentricity frequency (Ecc. Freq.) is calculated by multiplying the number of rotor bars and the Speed (Hz) value. If speed is not available Ecc Freq. will not be identified.

Review the spectrum to identify the first and third harmonics of line frequency as sidebands around the eccentricity frequency. When these harmonics and their amplitudes have been identified, the condition of the air gap between the rotor and the stator can be evaluated.

The eccentricity frequency is calculated by multiplying the number of rotor bars by the speed (in Hz). Speed (in Hz) is calculated by dividing the speed (RPM) by 60.

The first harmonic of line frequency appears at +\- 60 Hz from the eccentricity frequency. The third harmonic of line frequency appears at +\- 180 Hz from the eccentricity frequency.

All four of these harmonics will be non-synchronous to line frequency. This means that they are at a frequency which is not a whole number multiple of line frequency i.e., 60, 120,180,200, etc. For example, a frequency peak at 1200 Hz is the 20th synchronous harmonic of line frequency (1200/60=20). A frequency peak at 1000 Hz however, is a non-synchronous harmonic of line frequency (1000/20=16.667).

If these four harmonics are less than 20 dB above noise level, there is no immediate concern. Place the motor in an observation mode and monitor changes.

Review Time Domain

To verify the signal capture is valid, review the Time Domain display. When reviewing the display, ensure all three current signals are visible.The Time Domain display can be reached by selecting View, Time Domain from the Eccentricity Spectrum window. See figure 6-53.

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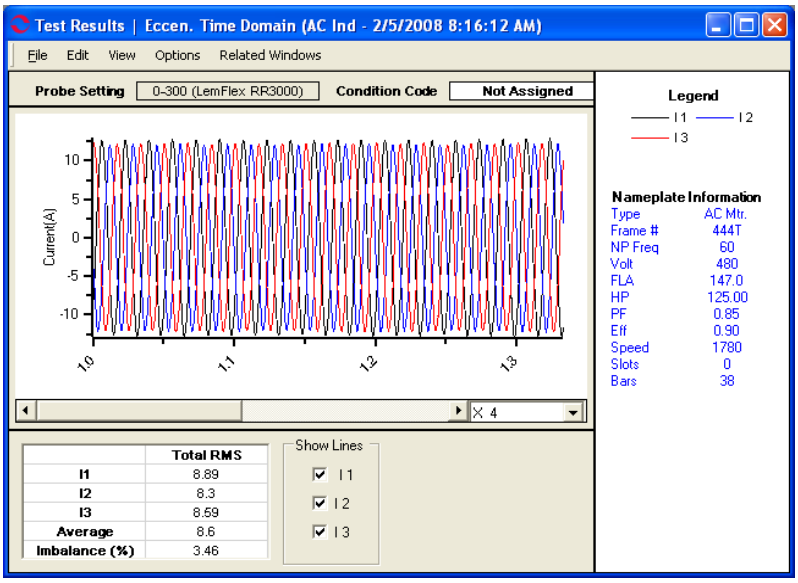


Figure 6-53: Test Results - Eccentricity Time Domain

The Time Domain display shows if any of the following occurred, which invalidates the test data:

- Improper probe selection
- Improper range selected on current probes
- Improper probe connection
- Probes not energized during testing
- Motor speed not constant during testing
- Signal failure at the end of the test

Verify that the proper range was selected on the current probes by looking at the display of the three current signals. Flat peaks at the tops of the sine waves indicate that clipping occurred. This happens when the range on the probes is too low and the current signals overdrive the probes.

Verify that the probes were energized and connected properly. If a phase has a very low amplitude and is extremely erratic, the probe could have been improperly connected or not turned on. An erratic signal can also be caused by noise.

Verify that the motor speed was constant during the entire test. Varying peak-to-peak values of current are an indication of load changes. Change the scale of the display to full by selecting full from the scale drop-down list box. Look at the entire waveform and verify that there were no peak-to-peak variations throughout the entire display. The graph may be scrolled by using the arrow keys on the keyboard or the slide bar located above the graph.

Review Test History

To review the Test History, highlight the asset in the Site Navigator or WatchList and click the Test History icon 

on the toolbar. In the Test History window select EMAX from

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the drop down list and the Eccentricity tab. Locate the test by using the scroll bar at the bottom of the window. Figure 6-54 shows the Test History window for an AC Induction asset, EMAX Eccentricity test. The Test History window menus and functions are discussed in Chapter 3 - MCEGold, page 3-28.

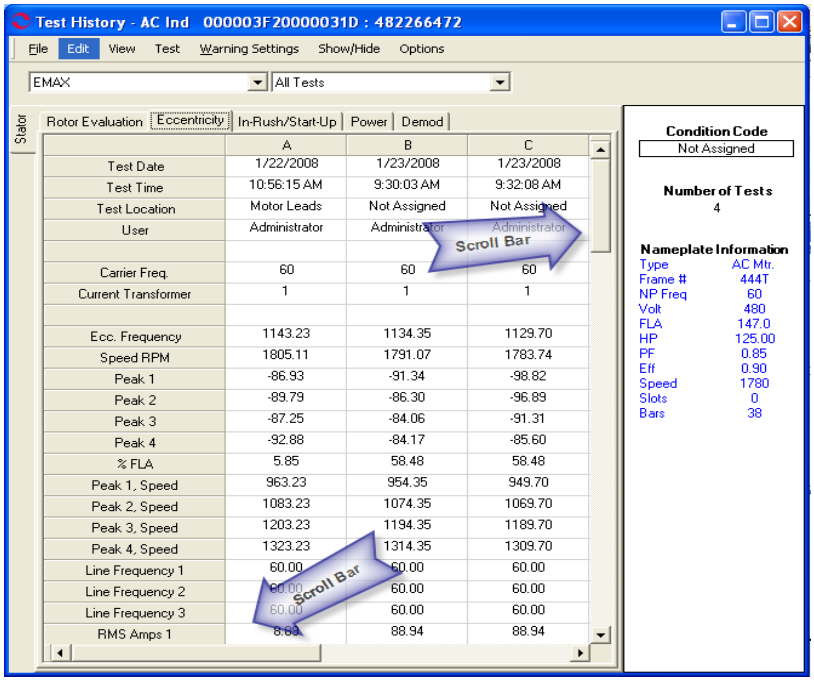


Figure 6-54: Test History - Eccentricity

The top four lines on the Test History show the Date and Time the test was taken, Test Location, and User (person performing the test). Next the Carrier Frequency and Current Transformer information is displayed. These are entered during the test setup.

The Condition Code, Number of Tests that have been performed on the motor, and Nameplate information is displayed along the right side of the window.

Test Result Values

Ecc. Frequency is calculated by multiplying the number of rotor bars by the speed (in Hz). Speed (in Hz) is calculated by dividing the speed (RPM) by 60.

Speed RPM is the calculated motor speed recorded at the time of the Eccentricity test. If no speed is recorded this value is 0. If the speed is calculated on the Spectrum View window and the data is saved, the next time the Test History is reviewed, the calculated value is displayed.

Peak 1, 2, 3, 4 are the amplitudes of the 1st and 3rd harmonic sidebands around the eccentricity frequency.

%FLA (Full Load Amps) is the percentage of nameplate FLA at which the motor is operating.

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Peak 1, 2, 3, 4 Speed are the amplitudes of the 1st and 3rd harmonic sidebands around the eccentricity frequency.

Line Frequency (1, 2, 3) are the frequencies associated with the fundamental F_c of each phase.

RMS Amps (1, 2, 3) are the root mean square (RMS) values of the current data.

% Current Imbalance indicates a difference in current between phases of a three phase motor. It is calculated using the three phase current measurements and the following equation: $\% I_{imb}$=(max deviation from avg)/avg x 100.

In-Rush/Start-Up

In-Rush/Start-Up testing is used to monitor the changes in current during motor startup. Changes in the high in-rush current are good indicators of motor health. The startup signal may be monitored for up to 60 seconds.

The test is performed by selecting the EMAX tab on the test Selection window and In-Rush/Start-Up from the test list. See page 6-25 for detailed information on the testing procedures. At the end of the test, the Test Results window shown in Figure 6-55 opens.

Note: You can also access the Test Results by highlighting the asset on the Site Navigator or WatchList and selecting the Test History icon on the tool bar.

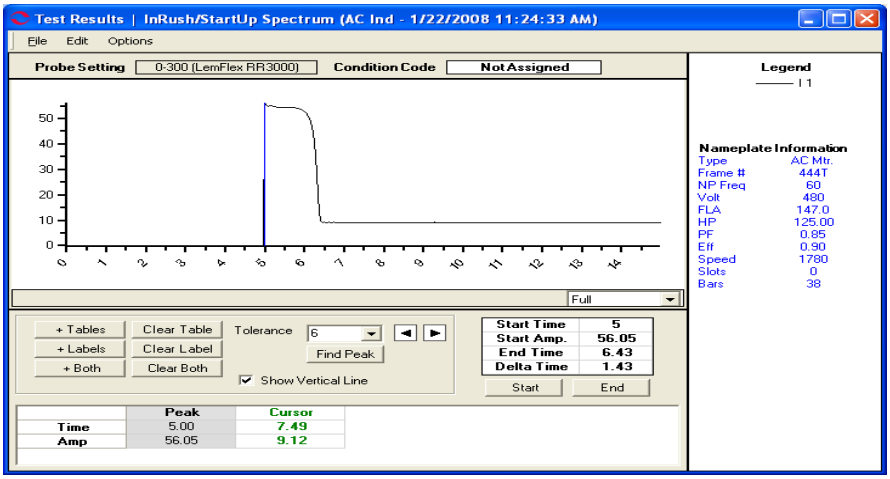
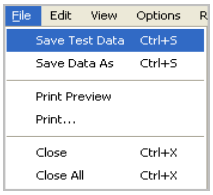


Figure 6-55: Test Results - In-Rush/Start-Up Spectrum



File Menu

Save Test Data

Selecting File, Save Test Data saves the test data to the Test History file. When the data is saved a message box informs you "Complete". Click **OK**.

Note: Changes made to the appearance of the graph and data are not saved by using the menu save commands. To save the modified spectrum, use Print Preview. From the Print Preview window you can use File, Export to PDF or Export to HTML.

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Save Data As

Selecting File, Save Data As allows you to save the test data to a location you choose. The Save Data window opens, select a location and enter a file name, click **Save**. The file is saved as an .xls file type.

> Note: Changes made to the appearance of the graph and data is not saved by using the menu save commands. To save the modified spectrum, use Print Preview. From the Print Preview window you can use File, Export to PDF or Export to HTML.

Print Preview

Selecting File, Print Preview causes the In-Rush/Start-Up Spectrum to display as it will print. To print, select the print icon, from the Print window verify the printer destination, and click **OK**. To close the Print Preview, select File, Close or click the close button in upper right corner.

Print

Selecting File, Print causes the Print window to open, verify the printer destination, and click **OK**.

Close

Selecting File, Close closes the Test Results window. If you have not saved the test data you will be asked if you want to save.

Close All

Selecting File, Close All closes all Test Results windows associated with the Eccentricity test that are open. If you have not saved the test data you will be asked if you want to save.



Edit Menu

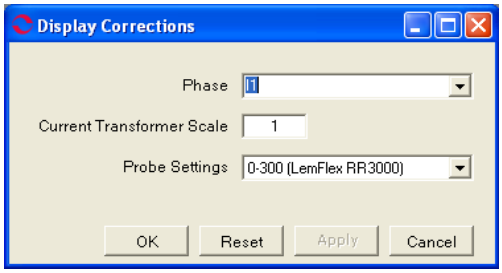
Create Message (Ctrl+M)

Selecting Edit, Create Message opens the Compose Asset Message window. Use this function to add a message/note to the asset record. The messages/notes can be read using the Message Center. Compose Asset Message and the Message Center are discussed in Chapter 3- MCEGold, Message Center on page 3-41.

Options

Correct Displayed Data

Selecting Options, Correct Displayed Data allows you to make three adjustments to the test results. Those adjustments are: Phase, Current Transformer Scale, and Probe Settings



Make the desired adjustments and click **OK** to make the changes and close the window or **Apply** to make the changes and leave the window open.

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Set Condition Code

Selecting Options, Set condition Code displays the submenu shown on the right. Click on the desired condition code.



Baseline

Selecting Options, Baseline displays the Set As Baseline option. This set the test results as the baseline.



Graph Line Style

electing Options, Graph Line Style displays the sub menu containing options to Show Patterns and Show Markers on the test results graph. A check mark indicates the option is active.

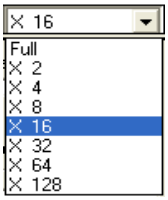


Display Options

The area below the test results graph contains options to enhance the test data display.

Magnification

The drop down list located to the lower right of the test results graph allows you to increase or decrease the magnification of the graph.



+ Tables

Clicking the **+Tables** button opens the Add/Edit Cursor Table window. Enter a name in the text box and click OK. A column is added to the display. When the cursor is moved to another location you may add an additional column.

Clear Table

Clicking the **Clear Table** button removes the column/s added by clicking +Tables.

+ Labels

Clicking **+ Labels** places a label on the cursor location on the graph. Each time the cursor is moved, click + Labels to place a label on the new location.

Clear Label

Clicking **Clear Label** removes the labels placed on the graph by clicking + Labels.

+ Both

Clicking **+ Both** adds a column on the table and places a label on the graph.

Clear Both

Clicking **Clear Both** removes the column/s and label/s on the graph. It does not return the cursor to the original location.

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Tolerance

Tolerance is a drop down list of values used to limit the cursor movement to within a range.

 Arrows

Use the arrow buttons to move the active cursor right or left one increment at a time.

Find Peak

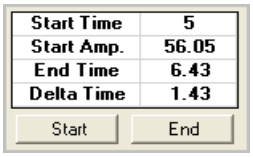
When the cursor has been moved, click the **Find Peak** button to cause the cursor to be placed exactly on the highest peak. The values will change in the appropriate table below the graph.

Show Vertical Line

A check mark in the show Vertical Line box causes a vertical line/cursor to display on the graph. The vertical line must show for the + Tables, + Labels, +Both, Find Peak, Start and End buttons to be active.

Test Time

The Test Time area is located below the graph. It displays the Start Time of the capture, the Start Amps, the End Time of the capture, and the Delta (elapsed) test time.



Use the Start and End buttons to change the display. To do this, place the cursor at the desired location on the graph and click the appropriate button. The values on the test time table will be updated.

Review Spectrum

The In-Rush/Start-Up Spectrum displays at the end of testing or it can be reach by highlighting the asset on the site Navigator or WatchList and clicking the Test History icon on the toolbar. From the Test History window., highlight the desired test and select View, Raw Data from the menu.

Each In-Rush/Startup test measures current in one phase, designated at the beginning of the test. The default display shows the current signal captured during the test, and the baseline, if a baseline is designated.

The current scale is in amps (shown vertically on the left side of the display). It auto-scales as necessary to display all of the data. The current scale is referenced to time in seconds (shown horizontally at the bottom of the display).

Review the graph to determine the in-rush current amplitude and start-up time, and to identify any anomalies in the startup signature.

Place the arrow cursor on the start point of the startup transient and click with the left mouse button to activate the vertical bar cursor. This places the vertical bar cursor at the start point and activates the **Start** button to the right of the data box.

To assist in accurately identifying the highest peak, as indicated by the value in the box below the graph, move the cursor by clicking on the cursor arrows located to the right of the Tolerance drop down list box. When you get close to the peak, click **Find Peak** to

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move the cursor to the highest point of the peak. Click **Start** to record the start time. The Start Time and Start Amp. values are entered in the data boxes.

Move the arrow cursor to the point where the current levels off at the end of the transient and click with the left mouse button to activate the vertical bar cursor. This places the vertical bar cursor at the end of the transient. Verify that the vertical bar cursor is on the end point of the transient and click **End**. This places values in the End Time and Delta Time boxes.

By following the above steps, you can calculate the time between any two points on the graph.

The startup signature should not change significantly from one test to the next. Compare the signatures of subsequent tests to the baseline test and identify any changes. Changes indicate a change in the operating conditions or deterioration of motor health. For maximum effectiveness in analyzing and comparing, in-rush/startup data, ensure you are monitoring the same phase in all subsequent tests.

Review Test History

To review the Test History, highlight the asset in the Site Navigator or WatchList and click the Test History icon 

on the toolbar. In the Test History window select EMAX from the drop down list and the In-Rush/Start-Up tab. Locate the test by using the scroll bar at the bottom of the window. Figure 6-56 shows the Test History window for an AC Induction asset, EMAX In-Rush/Start-Up test. The Test History window menus and functions are discussed in Chapter 3 - MCEGold, page 3-28.

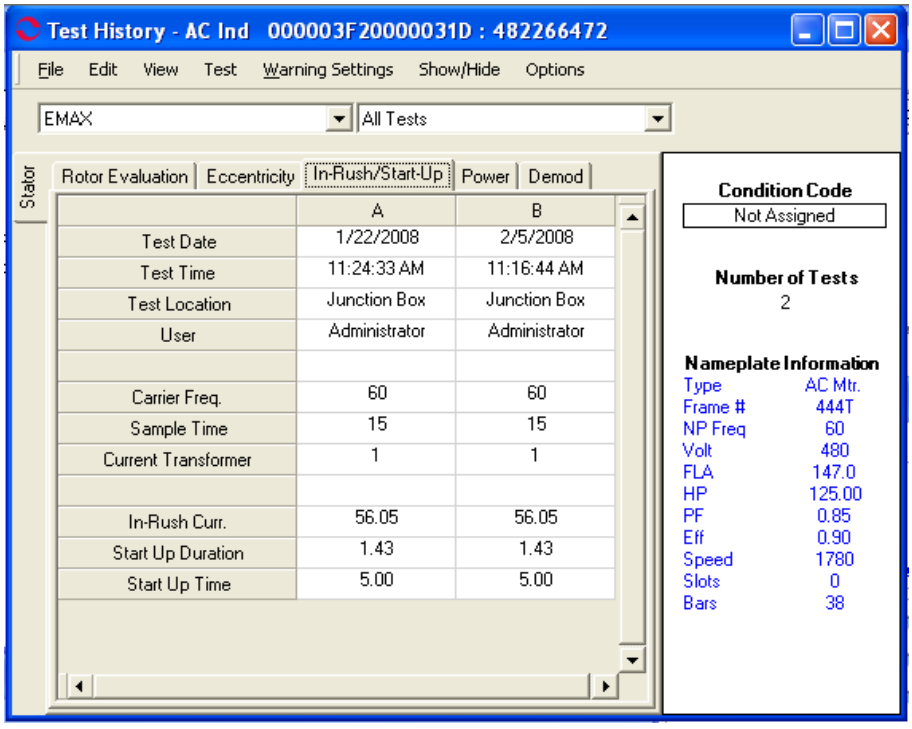


Figure 6-56: Test History - In-Rush/Start-Up

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The top four lines on the Test History show the Date and Time the test was taken, Test Location, and User (person performing the test). Next the Carrier Frequency Sample Time and Current Transformer information is displayed. These are entered during the test setup.

The Condition Code, Number of Tests that have been performed on the motor, and Nameplate information is displayed along the right side of the window.

Review the History Chart for any caution and alarm values. To assist in the analysis process, graphing may be used for visual trending on motors with more than one set of test results. Highlight the row containing the test value to be graphed and select View, Graph from the Test History window menu.

In-Rush Current is the maximum current felt by the motor during in-rush. When the History Chart is reviewed for the first time, the value is 0. If the Start Amplitude is calculated on the InRush/Startup window and the data is saved, the next time the History Chart is reviewed, the In-Rush Current is displayed.

Under the same operating conditions, the amplitude of this in-rush current should not change from one test to the next. Changes in in-rush current amplitude are caused by changes in operating conditions or deteriorating motor health.

Start Up Duration is the time difference between the point of in-rush and the time the motor reaches steady state. When the History Chart is reviewed for the first time, this value is 0. If the Delta time is calculated on the In-Rush/Start-Up window and the data is saved, the next time the History Chart is reviewed, the Start Up Duration value is displayed.

Under the same operating conditions, the value of Start Up Duration should not change from one test to the next. Changes in the Start Up Duration are caused by changes in operating conditions or deteriorating motor health.

Demod

Demodulation filters out the 60Hz carrier frequency and reveals the hidden signals, representing repetitive load variations. These load variations can then be analyzed. Advanced Spectral Analysis is the process of determining what those load variations mean and allows you to identify potential faults with belts, bearings, gears, pumps, compressor stages and other mechanical related anomalies.

The test is performed by selecting the EMAX tab on the Test Selection window and Demod from the test list. See page 6-28 for detailed information on the testing procedures. At the end of the test the Test Results, Demod Spectrum window shown in Figure 6-57 opens.

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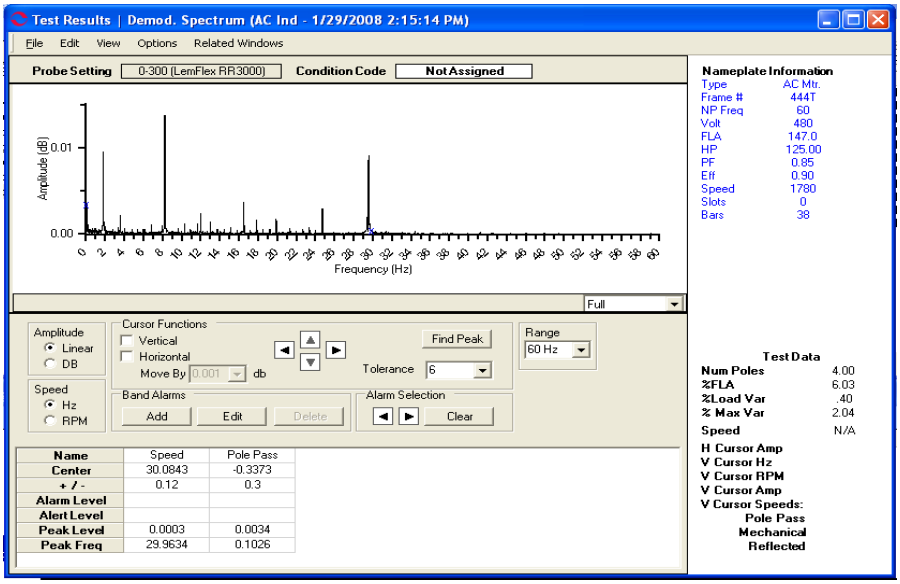
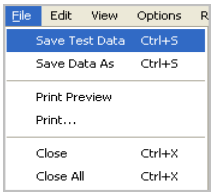


Figure 6-57: Test Results - Demod Spectrum



File Menu

Save Test Data

Selecting File, Save Test Data saves the test data to the Test History file. When the data is saved a message box informs you "Complete". Click **OK**.

> Note: Changes made to the appearance of the graph and data is not saved by using the menu save commands. To save the modified spectrum, use Print Preview. From the Print Preview window you can use File, Export to PFD or Export to HTML.

Save Data As

Selecting File, Save Data As allows you to save the test data to a location you choose. The Save Data window opens, select a location and enter a file name, click **Save**. The file is saved as an .xls file type.

> Note: Changes made to the appearance of the graph and data is not saved by using the menu save commands. To save the modified spectrum, use Print Preview. From the Print Preview window you can use File, Export to PDF or Export to HTML.

Print Preview

Selecting File, Print Preview causes the Rotor Evaluation Spectrum to display as it will print. To print, select the print icon, from the Print window verify the printer destination, and click **OK**. To close the Print Preview, select File, Close or click the close button in upper right corner.

Print

Selecting File, Print causes the Print window to open, verify the printer destination, and click **OK**.

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Close

Selecting File, Close closes the Test Results window. If you have not saved the test data you will be asked if you want to save.

Close All

Selecting File, Close All closes all Test Results windows associated with the Eccentricity test that are open. If you have not saved the test data you will be asked if you want to save.



Edit

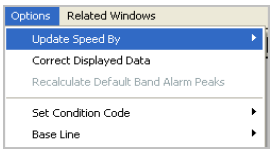
Create Message (Ctrl+M)

Selecting Edit, Create Message opens the Compose Asset Message window. Use this function to add a message/note to the asset record. The messages/notes can be read using the Message Center. Compose Asset Message and the Message Center are discussed in Chapter 3- MCEGold, Message Center on page 3-41.



View

The two test results choices for the Demod test are Spectrum and Time Domain. The result to be displayed is selected during test setup in the Starts With section. You can view additional test results windows by selecting View, Time Domain or Spectrum. The current window will remain open, in addition to the selected test results window.



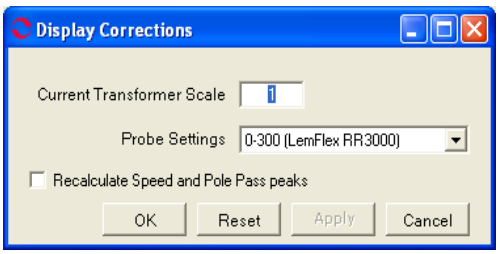
Options

Update Speed By



Selecting Options, Update Speed By allows you to change the speed by Pole-Pass or Mechanical means.

Correct Displayed Data



Selecting Options, Correct displayed Data allows you to change the Current Transformer Scale, Probe Settings, and then Recalculate the Speed and Pole-Pass peaks.

Make the desired adjustments, ensure a check mark is in the Recalculate speed and Pole-Pass peaks check box if you wish the displayed data to reflect the changes. Click **OK** to make the changes and close the window or **Apply** to make the changes and leave the window open.

Recalculate Default Band Alarm Peaks

Selecting Options, Recalculate Default Alarm Band Peaks will perform a recalculation of the motor speed based on the existing F_p and speed band alarms.

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Set Condition Code

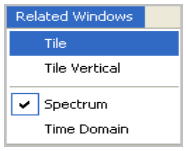
Selecting Options, Set condition Code displays the submenu shown on the right. Click on the desired condition code.



Baseline

Selecting Options, Baseline displays the Set As Baseline option. This set the test results as the baseline.





Related Windows

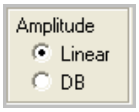
Selecting Related Windows, displays functions that control how the open windows are displayed and lists the open windows related to the displayed test results.

Display Options

The area below the test results graph contains options to enhance the test data display.

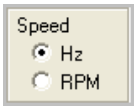
Amplitude

The amplitude default display is Linear. Selecting the dB changes the vertical axis on the graph to a decibel display. It also affects the Move By drop down list in the Cursor Function section.



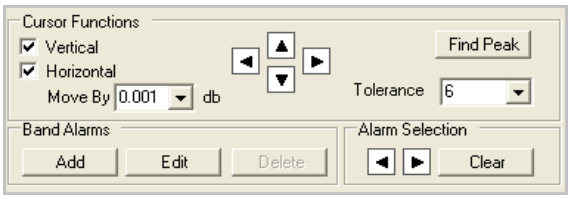
Speed

The speed default display is in Hertz (Hz). Selecting the RPM changes the horizontal axis on the graph to RPM.



Cursor Functions

The cursor can be displayed on the graph either vertical, horizontal, or both by placing a check mark in the box in front of the desired function.



Selecting Vertical activates the Find Peak and Tolerance options. Clicking Find Peak moves the vertical cursor to the nearest peak on the graph. Tolerance is a drop down list of values used to limit the cursor movement to within a range.

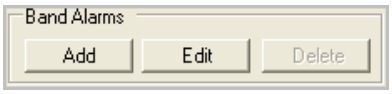
Selecting Horizontal activates the Move By option. Move By is a drop down list that controls the increments the cursor moves when using the up and down arrow buttons.

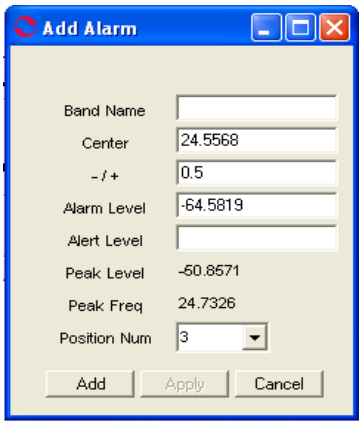
The arrow keys move the cursor in the direction of the arrow.

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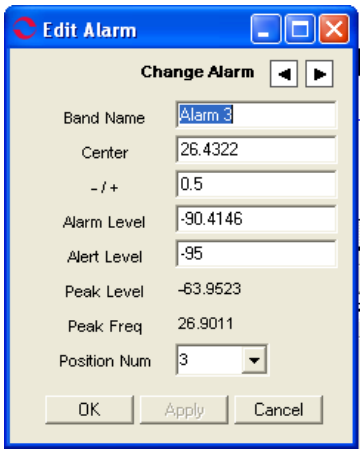
Band Alarms

Selecting **Add** in the Band Alarms section opens the Add Alarm window. Fill in the text boxes and click **Add**. This places a new column in the table in the lower section of the window.

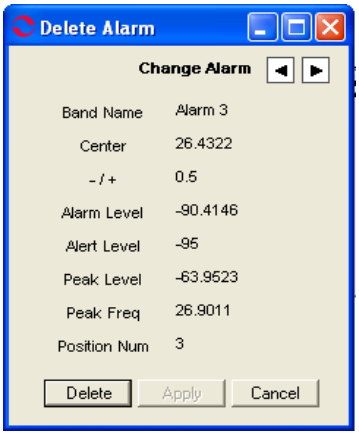




To change values in any of the columns, highlight the column and click **Edit**. The Edit Alarm window opens. When values are entered in the text boxes the Apply button becomes active. If you wish to change values in a second column, click Apply and then use the change arrow to move the highlight to the desired column. Continue until all changes have been made then click **OK** to close the window.



To Delete a column, highlight the column and then click **Delete**. The Delete Alarm window opens, verify it is the correct column and click **Delete**. If you wish to change the column, use the change arrow to move the highlight to the desired column.



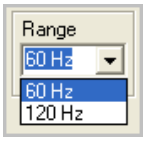
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Alarm Selection



Using the arrows in the Alarm Selection section causes an alarm band column to be highlighted and the appropriate markers placed on the graph. Clear removes the highlighting, but does not remove the graph markers. They are removed when the alarm band column is deleted.

Range



The Range drop down list allows you to change the Frequency to either 60 or 120 Hz. When a selection is made the graph automatically changes.

Review Spectrum

The Demod. Spectrum displays at the end of testing or it can be reached by highlighting the asset on the Site Navigator or WatchList and clicking the Test History icon on the toolbar. From the Test History window, highlight the desired test and select View, Raw Data from the menu.

Review the spectrum for increasing peaks. Increasing amplitudes of peaks identified indicate a changing condition of the system associated with that peak. Increasing speed peaks on the spectrum indicate possible imbalance related abnormalities. The speed frequency is also used for speed acquisition. Increasing pole-pass frequency (F_p) amplitude indicates possible rotor degradation, such as cracked or broken rotor bars or end rings. F_p is also used for speed acquisition. Increasing frequencies related to belts indicate possible belt damage, angular offset of the pulleys or a loose belt.

Review Test History

To review the Test History, highlight the asset in the Site Navigator or WatchList and click the Test History icon 

on the toolbar. In the Test History window select EMAX from the drop down list and the Demod tab. Locate the test by using the scroll bar at the bottom of the window. Figure 6-58 shows the Test History window for an AC Induction asset, EMAX Demod test. The Test History window menus and functions are discussed in Chapter 3 - MCEGold, page 3-28.

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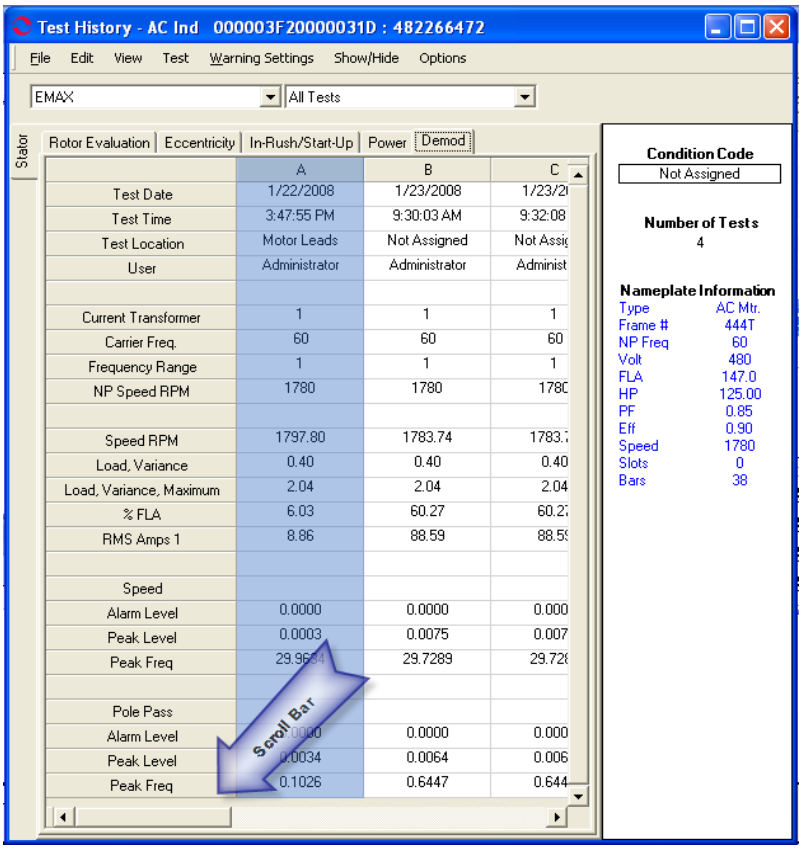


Figure 6-58: Test History - Demod

Test Results Values

Current Transformer is a value entered by the user in the Test Selection window at the time of the test setup.

Carrier Freq. is the value entered by the user in Test Selection window at the time of the test setup.

NP Speed RPM is the speed entered in the nameplate section when the asset was added.

Speed RPM is the calculated motor speed based on the Fp side bands highlighted on the spectrum. If you have not selected a side band frequency for a test, this value is 0. If the speed is calculated on the Spectrum View window and the data is saved, the next time the Test History is reviewed, the calculated value is displayed.

Load, Variance is the average load variation calculated during the test.

Load, Variance, Maximum is the peak load variation calculated during the test.

% Full Load Amps (FLA) is the percentage of nameplate FLA at which the motor is operating. Operating the motor at above 70% FLA is recommended for a good signal-to-noise ratio.

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RMS Amps 1 is the root mean square (RMS) values of the current data. These can be compared to changes in the Slip and Slip Frequency values to differentiate between load changes and possible rotor bar defects. An increasing Slip or decreasing Slip Frequency value coupled with increasing RMS Amp values indicates an increase in load. An increasing Slip value or decreasing Slip Frequency value coupled with steady RMS Amp values indicates rotor bar defects.

Speed - Alarm Level is the alarm level assigned by the technician for the default speed band alarm.

Speed - Peak Level is the measured amplitude of the speed peak for the given acquisition.

Speed - Peak Frequency is the frequency measured for the speed peak.

Pole-Pass - Alarm Level is the calculated speed in RPM based on the vertical cursor being located at the F_p. The alarm level is assigned by the technician for the default pole-pass band alarm.

Pole-Pass - Peak Level is the calculated speed in RPM based on the vertical cursor being located at the F_p. The Peak Level is the measured amplitude of the pole-pass peak for the given acquisition.

Pole-Pass - Peak Frequency is the calculated speed in RPM based on the vertical cursor being located at the F_p. The Peak Frequency is the frequency measured for the pole-pass peak.

Analysis

Review the Test History for any Caution and Alarm values. To assist in the analysis process, graphing may be used for visual trending on motors with more than one set of test results. To view a graph, highlight the row of test results to be trended, then select View, Graph from the menu.

Increasing amplitudes of peaks identified indicate a changing condition of the system associated with that peak. Commonly, peaks are associated with a mechanical function which modulates the fundamental frequency at a given frequency.

Compare the pole-pass frequencies (F_p) levels. Increasing F_p indicates possible rotor degradation, such as cracked or broken rotor bars or end rings.

Compare speed peak levels. Increasing speed peaks indicated possible imbalance related anomalies.

DC Assets

For DC assets the primary interest is the condition of the ground wall and turn insulation systems of the armature and field and the health of the DC drive supplying power to the asset. Many common faults such as shorted turns or commutator bars, grounded windings, and off magnetic neutral axis faults may be detected using online current and voltage signature analysis.

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Armature Section

DC EMAX Auto

The DC EMAX Auto test produces three test results windows. How and the order they appear in is determined by the selections made in the test setup. They are DC Power Time domain, DC Current Spectrum, and DC Current Time Domain. The DC Current Spectrum and DC Current Time Domain are discussed in this chapter under the appropriate test. The DC Power Time Domain results are discussed in Chapter 7.

DC Current Analysis

DC Current Analysis is used for qualitative analysis of armature current**.** The test is performed by selecting the EMAX tab on the Test Selection window and DC Current Analysis from the test list. See page 6-37 for detailed information on the testing procedures. At the end of the test, the Test Results window shown in Figure 6-59 opens.

Note: You can also access the Test Results by highlighting the asset on the Site Navigator or WatchList and selecting the Test History icon on the toolbar.

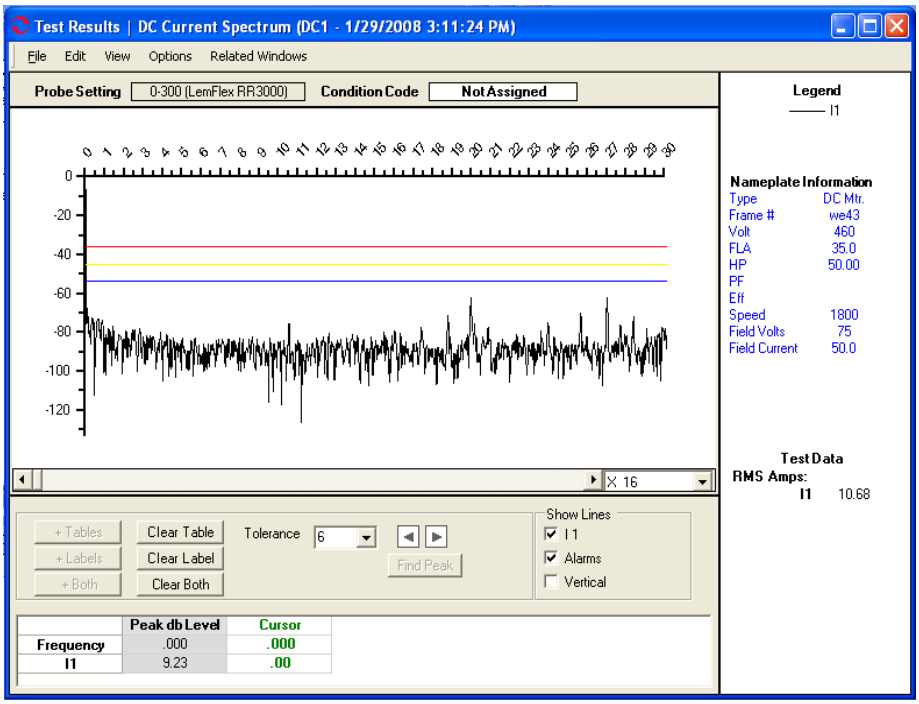
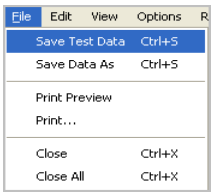


Figure 6-59: Test Results - DC Current Spectrum



File Menu

Save Test Data

Selecting File, Save Test Data saves the test data to the Test History file. When the data is saved a message box informs you "Complete". Click **OK**.

Note: Changes made to the appearance of the graph and data is not saved by using the menu save commands. To save the modified spectrum, use Print Preview. From the Print Preview window you can use File, Export to PDF or Export to HTML.

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Save Data As

Selecting File, Save Data As allows you to save the test data to a location you choose. The Save Data window opens, select a location and enter a file name, click **Save**. The file is saved as an .xls file type.

> Note: Changes made to the appearance of the graph and data is not saved by using the menu save commands. To save the modified spectrum, use Print Preview. From the Print Preview window you can use File, Export to PDF or Export to HTML.

Print Preview

Selecting File, Print Preview causes the Rotor Evaluation Spectrum to display as it will print. To print, select the print icon, from the Print window verify the printer destination, and click **OK**. To close the Print Preview, select File, Close or click the close button in upper right corner.

Print

Selecting File, Print causes the Print window to open, verify the printer destination, and click **OK**.

Close

Selecting File, Close closes the Test Results window. If you have not saved the test data you will be asked if you want to save.

Close All

Selecting File, Close All closes all Test Results windows associated with the Eccentricity test that are open. If you have not saved the test data you will be asked if you want to save.



Edit

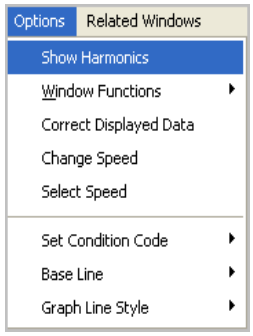
Create Message (Ctrl+M)

Selecting Edit, Create Message opens the Compose Asset Message window. Use this function to add a message/note to the asset record. The messages/notes can be read using the Message Center. Compose Asset Message and the Message Center are discussed in Chapter 3- MCEGold, Message Center on page 3-43.



View

The two test result choices for the DC Current Analysis test are Spectrum and Time Domain. The result to be displayed is selected during test setup in the Starts With section. You can view additional test results windows by selecting View, Time Domain or Spectrum. The current window will remain open, in addition to the selected test results window.



Options

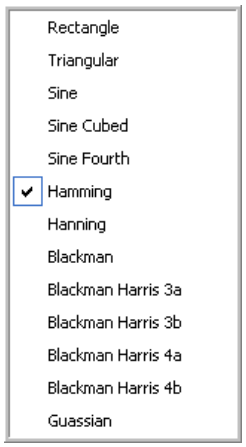
Show Harmonics

Selecting Show Harmonics acts as a toggle to cause an x to be placed on the graph at the line frequency and each integer multiple after or to remove it. A check mark indicates the harmonics are marked.

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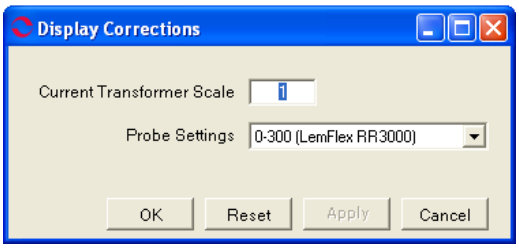
Window Functions

Selecting Options, Window Functions allows you to change the way the test results graph is displayed. See graphic for a list of the choices. A check mark in front of the name indicates how the results are being displayed.



Correct Displayed Data

Selecting Options, Correct Displayed Data allows you to make adjustments to the Current Transformer Scale and the Probe Settings.



Make the desired adjustments and click **OK** to make the changes and close the window or **Apply** to make the changes and leave the window open.

Set Condition Code

Selecting Options, Set condition Code displays the submenu shown on the right. Click on the desired condition code.



Baseline

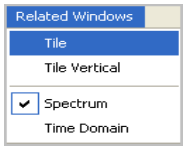
Selecting Options, Baseline displays the Set As Baseline option. This set the test results as the baseline.



Graph Line Style

Selecting Options, Graph Line Style displays the sub menu containing options to Show Patterns and Show Markers on the test results graph. A check mark indicates the option is active.





Related Windows

Selecting Related Windows, displays functions that control how the open windows are displayed and lists the open windows related to the displayed test results.

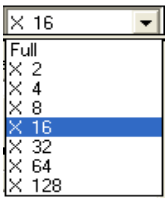
Display Options

The area below the test results graph contains options to enhance the test data display.

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Magnification

The drop down list located to the lower right of the test results graph allows you to increase or decrease the magnification of the graph.



+ Tables

Clicking the **+Tables** button opens the Add/Edit Cursor Table window. Enter a name in the text box and click **OK**. A column is added to the display. When the cursor is moved to another location you may add an additional column.

Clear Table

Clicking the **Clear Table** button removes the column/s added by clicking +Tables.

+ Labels

Clicking **+ Labels** places a label on the cursor location on the graph. Each time the cursor is moved, click + Labels to place a label on the new location.

Clear Label

Clicking **Clear Label** removes the labels placed on the graph by clicking + Labels.

+ Both

Clicking **+ Both** adds a column on the table and places a label on the graph.

Clear Both

Clicking **Clear Both** removes the column/s and label/s on the graph.It does not return the cursor to the original location.

Tolerance

Use the drop down list to select the tolerance/range to be used when the Find Peak function is used to place the cursor.



Arrows

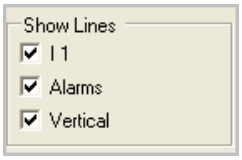
Use the arrow buttons to move the active cursor right or left one increment at a time.

Find Peak

When the cursor has been moved, click the **Find Peak** button to cause the cursor to be placed exactly on the peak. The values will change in the appropriate table below the graph.

Show Lines

Show Lines consists of check boxes used to add or remove the l1, Alarms, and Vertical cursor lines. A check mark indicates the line is visible.



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Review Spectrum

The DC Current Spectrum displays at the end of testing or it can be reached by highlighting the asset on the Site Navigator or WatchList and clicking the Test History icon on the toolbar. From the Test History window, highlight the desired test and select View, Raw Data from the menu.

Review Time Domain

The DC Current Time Domain is reached by selecting View, Time Domain on the DC Current Spectrum window menu. The DC Current Time Domain allows for a longer evaluation of the Armature signal for VFD and Armature winding anomalies.

DC In-Rush/Start-Up

The DC In-Rush/Start-Up evaluates the initial in-rush transient current, after applying the initial voltage to the asset.

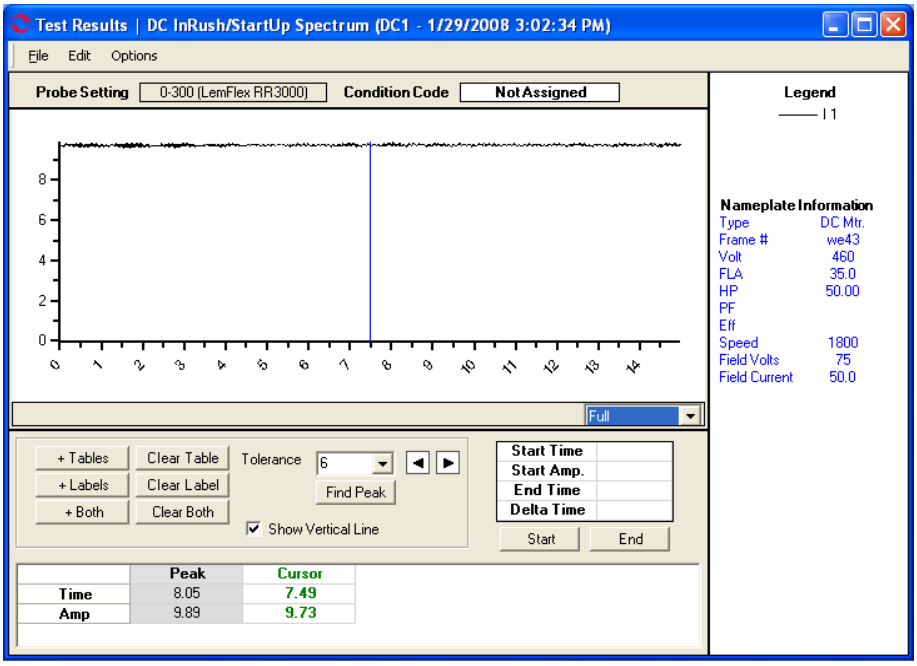
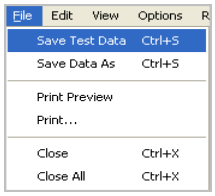


Figure 6-60: Test Results - In-Rush/Start-Up Spectrum



File Menu

Save Test Data

Selecting File, Save Test Data saves the test data to the Test History file. When the data is saved a message box informs you "Complete". Click **OK**.

Note: Changes made to the appearance of the graph and data are not saved by using the menu save commands. To save the modified spectrum, use Print Preview. From the Print Preview window you can use File, Export to PDF or Export to HTML.

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Save Data As

Selecting File, Save Data As allows you to save the test data to a location you choose. The Save Data window opens, select a location and enter a file name, click **Save**. The file is saved as an .xls file type.

> Note: Changes made to the appearance of the graph and data is not saved by using the menu save commands. To save the modified spectrum, use Print Preview. From the Print Preview window you can use File, Export to PDF or Export to HTML.

Print Preview

Selecting File, Print Preview causes the Rotor Evaluation Spectrum to display as it will print. To print, select the print icon, from the Print window verify the printer destination, and click **OK**. To close the Print Preview, select File, Close or click the close button in upper right corner.

Print

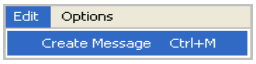
Selecting File, Print causes the Print window to open, verify the printer destination, and click **OK**.

Close

Selecting File, Close closes the Test Results window. If you have not saved the test data you will be asked if you want to save.

Close All

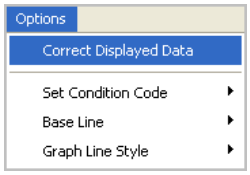
Selecting File, Close All closes all Test Results windows associated with the Eccentricity test that are open. If you have not saved the test data you will be asked if you want to save.



Edit Menu

Create Message (Ctrl+M)

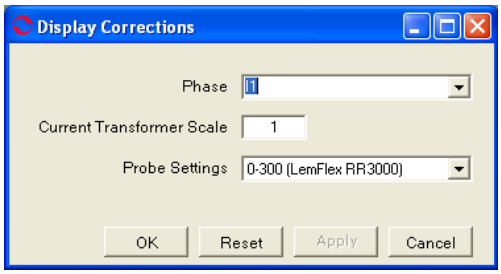
Selecting Edit, Create Message opens the Compose Asset Message window. Use this function to add a message/note to the asset record. The messages/notes can be read using the Message Center. Compose Asset Message and the Message Center are discussed in Chapter 3- MCEGold, Message Center on page 3-43.



Options

Correct Displayed Data

Selecting Options, Correct Displayed Data allows you to make three adjustments to the test results. Those adjustments are: Phase, Current Transformer Scale, and Probe Settings



Make the desired adjustments and click **OK** to make the changes and close the window or **Apply** to make the changes and leave the window open.

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Set Condition Code

Selecting Options, Set condition Code displays the submenu shown on the right. Click on the desired condition code.



Baseline

Selecting Options, Baseline displays the Set As Baseline option. This set the test results as the baseline.



Graph Line Style

Selecting Options, Graph Line Style displays the sub menu containing options to Show Patterns and Show Markers on the test results graph. A check mark indicates the option is active.

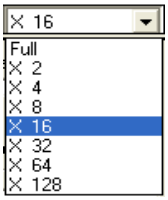


Display Options

The area below the test results graph contains options to enhance the test data display.

Magnification

The drop down list located to the lower right of the test results graph allows you to increase or decrease the magnification of the graph.



+ Tables

Clicking the +**Tables** button opens the Add/Edit Cursor Table window. Enter a name in the text box and click **OK**. A column is added to the display. When the cursor is moved to another location you may add an additional column.

Clear Table

Clicking the **Clear Table** button removes the column/s added by clicking +Tables.

+ Labels

Clicking + **Labels** places a label on the cursor location on the graph. Each time the cursor is moved, click + Labels to place a label on the new location.

Clear Label

Clicking **Clear Label** removes the labels placed on the graph by clicking + Labels.

+ Both

Clicking + **Both** adds a column on the table and places a label on the graph.

Clear Both

Clicking **Clear Both** removes the column/s and label/s on the graph.It does not return the cursor to the original location.

Tolerance

Tolerance is a drop down list of values used to limit the cursor movement to within a range.

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 Arrows

Use the arrow buttons to move the active cursor right or left one increment at a time.

Find Peak

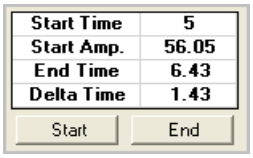
When the cursor has been moved, click the **Find Peak** button to cause the cursor to be placed exactly on the peak. The values will change in the appropriate table below the graph.

Show Vertical Line

A check mark in the show Vertical Line box causes a vertical line/cursor to display on the graph. The vertical line must show for the + Tables, + Labels, +Both, Find Peak, Start and End buttons to be active.

Test Time

The Test Time area is located below the graph. It displays the Start Time of the capture, the Start Amps, the End Time of the capture, and the Delta (elapsed) test time.



Use the Start and End buttons to change the display. To do this, place the cursor at the desired location on the graph and click the appropriate button. The values on the test time table will be updated.

Review Spectrum

The In-Rush/Start-Up Spectrum displays at the end of testing or it can be reach by highlighting the asset on the site Navigator or WatchList and clicking the Test History icon on the toolbar. From the Test History window, highlight the desired test and select View, Raw Data from the menu.

Each In-Rush/Start-Up test measures current in one phase. The default display shows the current signal captured during the test, and the baseline, if a baseline is designated.

The current scale is in amps (shown vertically on the left side of the display). It auto-scales as necessary to display all of the data. The current scale is referenced to time in seconds (shown horizontally at the bottom of the display).

Review the graph to determine the in-rush current amplitude and start-up time, and to identify any anomalies in the start-up signature.

Place the arrow cursor on the start point of the startup transient and click with the left mouse button to activate the vertical bar cursor. This places the vertical bar cursor at the start point and activates the **Start** button to the right of the data box.

To assist in accurately identifying the highest peak, as indicated by the value in the box below the graph, move the cursor by clicking on the cursor arrows located to the right of the Tolerance drop down list box. When you get close to the peak, click **Find Peak** to move the cursor to the highest point of the peak. Click **Start** to record the start time. The Start Time and Start Amp. values are entered in the data boxes.

Move the arrow cursor to the point where the current levels off at the end of the transient and click with the left mouse button to activate the vertical bar cursor. This places the vertical bar cursor at the end of the transient. Verify that the vertical bar cursor is on the

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end point of the transient and click **End**. This places values in the End Time and Delta Time boxes.

By following the above steps, you can calculate the time between any two points on the graph.

The startup signature should not change significantly from one test to the next. Compare the signatures of subsequent tests to the baseline test and identify any changes. Changes indicate a change in the operating conditions or deterioration of motor health. For maximum effectiveness in analyzing and comparing, in-rush/startup data, ensure you are monitoring the same phase in all subsequent tests.

Review Test History

To review the Test History, highlight the asset in the Site Navigator or WatchList and click the Test History icon 

on the toolbar. In the Test History window select EMAX from the drop down list and the DC In-Rush/Start-Up tab. Locate the test by using the scroll bar at the bottom of the window. Figure 6-61 shows the Test History window for a DC asset, EMAX DC In-Rush/Start-Up test. The Test History window menus and functions are discussed in Chapter 3 - MCEGold, page 3-28.

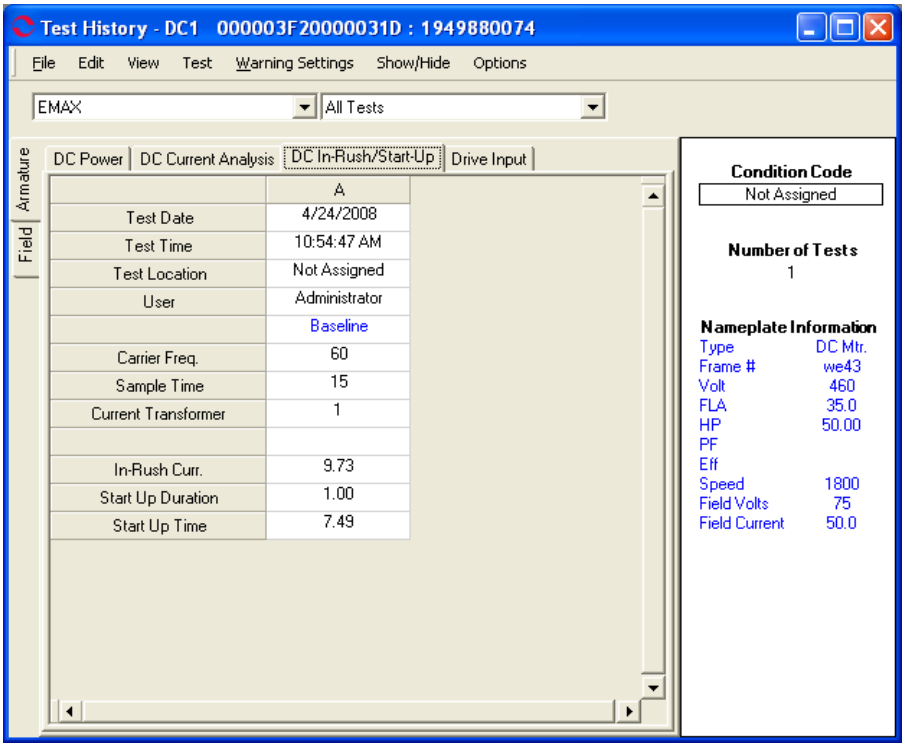


Figure 6-61: Test History - DC In-Rush/Start-Up

The top four lines on the Test History show the Date and Time the test was taken, Test Location, and User (person performing the test). Next the Carrier Frequency, Sample Time and Carrier Transformer information is displayed. These are entered during the test setup.

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The Condition Code, Number of Tests that have been performed on the motor, and Nameplate information is displayed along the right side of the window.

Review the History Chart for any caution and alarm values. To assist in the analysis process, graphing may be used for visual trending on motors with more than one set of test results. Highlight the row containing the test value to be graphed and select View, Graph from the Test History window menu.

In-Rush Current is the maximum current felt by the motor during in-rush. When the History Chart is reviewed for the first time, the value is 0. If the Start Amplitude is calculated on the InRush/Startup window and the data is saved, the next time the History Chart is reviewed, the In-Rush Current is displayed.

Under the same operating conditions, the amplitude of this in-rush current should not change from one test to the next. Changes in in-rush current amplitude are caused by changes in operating conditions or deteriorating motor health.

Start-Up Duration is the time difference between the point of in-rush and the time the motor reaches steady state. When the History Chart is reviewed for the first time, this value is 0. If the Delta time is calculated on the In-Rush/Start-Up window and the data is saved, the next time the History Chart is reviewed, the Start-Up Duration value is displayed.

Under the same operating conditions, the value of Start Up Duration should not change from one test to the next. Changes in the Start Up Duration are caused by changes in operating conditions or deteriorating motor health.

Drive Input

Drive Input provides a snapshot of the distribution system power quality. The current recorded during the test can be used to determine if there are potential problems in both the rectifier circuit and possibly the firing circuit. Comparison of these power tests over time with specific attention to the current trace provides valuable information when troubleshooting a potential DC drive fault.

The test is performed by selecting the EMAX tab on the Test Selection window and Drive Input from the test list. See page 6-43 for detailed information on the testing procedures. At the end of the test, the Test Results window shown in Figure 6-62 opens.

> Note: You can also access the Test Results by highlighting the asset on the Site Navigator or WatchList and selecting the Test History icon on the toolbar.

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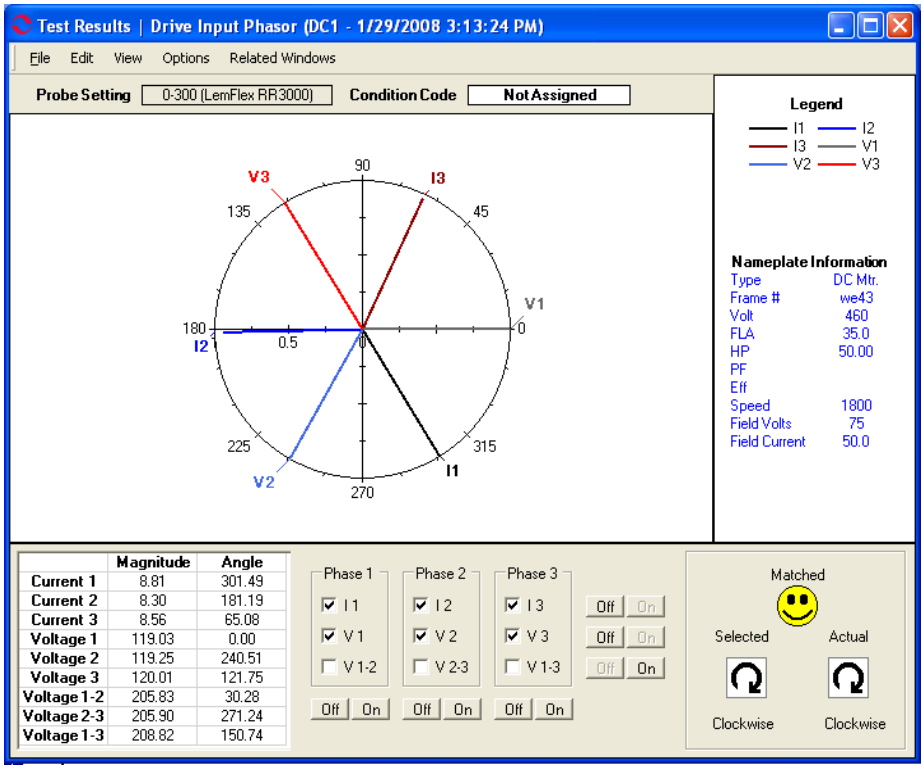
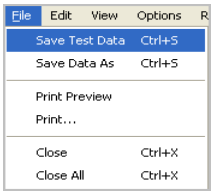


Figure 6-62: Test Results - Drive Input Phasor



File Menu

Save Test Data

Selecting File, Save Test Data saves the test data to the Test History file. When the data is saved a message box informs you "Complete". Click **OK**.

> Note: Changes made to the appearance of the graph and data are not saved by using the menu save commands. To save the modified spectrum, use Print Preview. From the Print Preview window you can use File, Export to PDF or Export to HTML.

Save Data As

Selecting File, Save Data As allows you to save the test data to a location you choose. The Save Data window opens, select a location and enter a file name, click **Save**. The file is saved as an .xls file type.

> Note: Changes made to the appearance of the graph and data is not saved by using the menu save commands. To save the modified spectrum, use Print Preview. From the Print Preview window you can use File, Export to PDF or Export to HTML.

Print Preview

Selecting File, Print Preview causes the Rotor Evaluation Spectrum to display as it will print. To print, select the print icon, from the Print window verify the printer destination, and click **OK**. To close the Print Preview, select File, Close or click the close button in upper right corner.

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Print

Selecting File, Print causes the Print window to open, verify the printer destination, and click **OK**.

Close

Selecting File, Close closes the Test Results window. If you have not saved the test data you will be asked if you want to save.

Close All

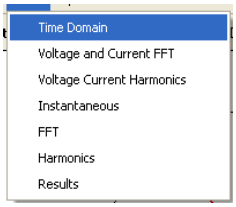
Selecting File, Close All closes all Test Results windows associated with the Eccentricity test that are open. If you have not saved the test data you will be asked if you want to save.



Edit Menu

Create Message (Ctrl+M)

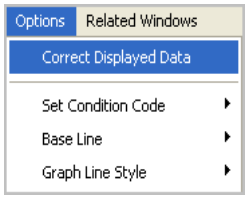
Selecting Edit, Create Message opens the Compose Asset Message window. Use this function to add a message/note to the asset record. The messages/notes can be read using the Message Center. Compose Asset Message and the Message Center are discussed in Chapter 3- MCEGold, Message Center on page 3-41.



View Menu

The View menu provides the option to open additional test result windows by clicking on the desired window. A check mark in front of the name indicates that window is open. It is possible to have multiple windows open at the same time. Use the Related Windows menu to display them in a tile format. The test results windows available are:

Time Domain
Voltage and Current FFT Voltage Current Harmonics
Instantaneous
FFT
Harmonics
Results

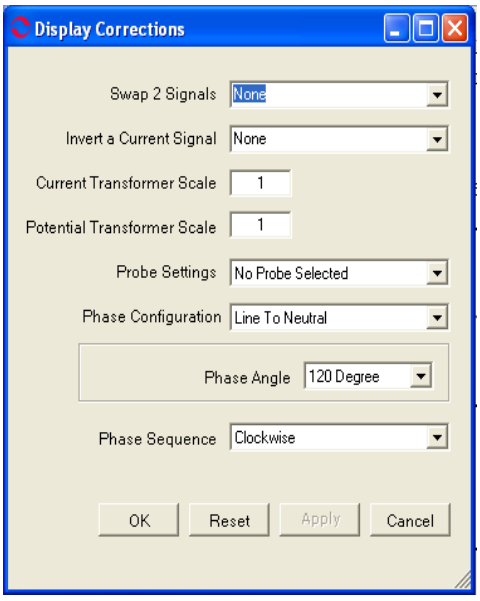


Options

Correct Displayed Data

Selecting Options, Correct Displayed Data allows you to make multiple adjustments to the test results using selections from the drop down list or in the case of current and potential transformer scales entering a value in a text box. Those adjustments are:

- Swap Two Signals
- Invert a Current Signal
- Current Transformer Scale
- Potential Transformer Scale
- Probe Settings
- Phase Configuration
- Phase Angle
- Phase Sequence



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Make the desired adjustments and click **OK** to make the changes and close the window or **Apply** to make the changes and leave the window open.

Set Condition Code

Selecting Options, Set condition Code displays the submenu shown on the right. Click on the desired condition code.



Baseline

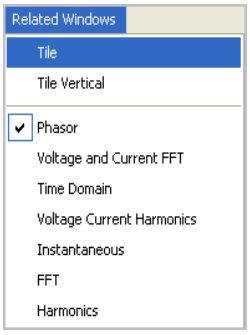
Selecting Options, Baseline displays the Set As Baseline option. This set the test results as the baseline.



Graph Line Style

Selecting Options, Graph Line Style displays the sub menu containing the option to Show Markers on the test results graph. A check mark indicates the option is active.





Related Windows

Selecting Related Windows, displays functions that control how the open windows are displayed and lists the open windows. The Drive Input Phasor window is the default, the other window are opened using the View menu. A check mark indicates the active window.

Display Options

The area below the Phasor diagram contains test result values and options to enhance the phasor display.

The table displays the values for Magnitude and Angle.

The Phase 1, 2, and 3 check boxes control how the data is displayed on the phasor diagram. To control the individual value, click on the box to place or remove a check mark. To control all three values either horizontally or vertically use the Off and On buttons to the left and bottom of the area. The phasor diagram will change as values are turned on or off.

The Phase Sequence area displays the selected phase and the actual phase sequence. When the selected and actual are the same the word Matched is displayed along with a smiley face. When they are not the same the word Unmatched is displayed along with a frowning face.

Review Drive Input Phasor

In the phasor diagram the base data for voltage and current is represented in polar form. The default phasor diagram indicates the phase relationship between all three currents and

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voltages. The purpose of the diagram is to verify proper test connections. Phase-to-phase voltages may be added. The diagram represents 0-360 degrees of electrical rotation. The 0 degree mark is the reference point for phase 1 voltage (V1); 120 degrees for phase 3 voltage (V3); 240 degrees for phase 2 voltage (V2). These reference marks are located on the outside of the circle.

Current lags voltage by an amount determined by the plant power factor. Therefore, phase 1 current (I1) is in the 270-0 degrees quadrant. The reference points for current, I1, I2, and I3 are also shown on the outside of the circle.

Actual voltage and current signals are labeled on the signal line inside the circle.

This display is useful to see the phase relationships for voltage and current. This display does NOT show the magnitude difference of each of the signals. To see the magnitudes of the different signals, refer to the table below the Phasor Diagram. This table lists magnitude and angle for all 3 phases of voltage and current and all 3 phase-to-phase voltage combinations. This table does not change as the Phasor Diagram changes.

To the right of the table, are nine boxes which control the display of each phase of voltage and current, and combination of phase-to-phase voltage. A check mark in the box indicates that phase display is turned on. Click in the box to toggle on and off. Click the **Off** or **On** buttons to control combination phase-to-phase display.

To the right of the Phase 1, 2, and 3 area is the Phase Sequence box. There are three indications in this box: Selected, Matched/Unmatched, and Actual.

- Selected Phase Sequence indicates the default setting for the motor. To change this setting, select Options, Correct Displayed Data. Make your changes in the Display Corrections window and click **OK**.
- Actual Phase Sequence is the true relationship of voltages and currents being tested. Clockwise is phase 1, phase 2, phase 3, left to right. Counter Clockwise is when two phases are reversed.
- When the Selected Phase Sequence and Actual Phase Sequence are the same, the word Matched is placed between the Selected and Actual indications with a “smiley” face. When they are not the same, the word Unmatched appears with a “frown” face.

Field Section

DC In-Rush/Start-Up

The DC In-Rush/Start-Up test provides data on how the field circuit builds during start-up. The data is used for comparison to baseline data. Changes of the established baseline need to be investigated.

Same as Armature Section DC In-Rush/Start-Up testing. See page 6-80.

WARNING SETTINGS

Warning levels can be set for each individual motor to indicate problems that exist within that motor or motor circuit. Warnings can be set at both the Caution and Alarm levels. Caution levels indicate less severe conditions than Alarm levels. Predefined default levels are set in MCEGold by PdMA and may be changed by the user. Based on experience the default values may be changed to be more or less conservative. Test results which exceed the Caution setpoint are shown in yellow and test results which exceed the Alarm setpoint are shown in red.

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In addition to providing Caution and Alarm warnings based on a parameter varying from a setpoint, MCEGold can provide warnings based on parameters changing from a baseline reading. Again, test results which exceed the Caution value are shown in yellow and results which exceed the Alarm value are shown in red. Preset change from baseline values are 5% for Caution and 10% for Alarm.

Default warning setpoints are based on testing at the MCC. As you gain experience with the EMAX tester, you may choose to narrow the range of acceptable values. The condition of the motor and the criticality of its application to your operation or process are other factors that should be considered when setting up the warning levels within MCEGold.

Changing the warning levels will affect all subsequent, as well as all previous tests. Therefore, whenever a warning level is changed, an uneditable message is automatically entered into the asset notes.

Warning levels may be set on the parameters listed below:

Voltage Line to Line [+-#%NP]
Voltage Line to Neutral (Tot)
Voltage Imbalance (LL) [>#]
Voltage Imbalance (Tot LN) [XXX]
Voltage Crest Factor (LL) [>#]
Voltage Crest Factor (LN) [>#]
Voltage THD (LL) [>#]
Voltage THD (LN)
Harmonic Factor [>#]
Current RMS [>#%FLA]
Current Imbalance [>#]
Current Crest Factor [>#]
Current THD [>#]
Self Impedance Imbalance [>#]
Line Frequency [Base+-#]
Speed
Fp Frequency
Fp Amplitude [<#]
% Full Load Amps [>#]

The information inside the brackets describes how the Caution or Alarm level is set; “<” is less than; “>” is greater than; “Base” indicates the baseline value; “+” means baseline plus this value; “-” means baseline minus this value; # is the numeric value for the Caution or Alarm for that parameter.

For example, the Line Caution or Alarm value is “<Base-#.” In the number box enter 5 for Caution and 10 for Alarm. This means that if a subsequent test measures 5 RPM more or less than the baseline value, RPM indicates in a Caution condition. If a subsequent test measures 10 RPM more or less than the baseline value, RPM indicates in an Alarm condition.

For the settings which do not reference a baseline, the value obtained will be in Caution or Alarm if it is outside the specific parameter of the Caution or Alarm setting.

For Fp Amplitude the value obtained will be in Caution or Alarm if it is less than the numbers entered into the Caution and Alarm boxes for the parameters.

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A test point without brackets indicates that there is no Caution or Alarm default value.

Change Warning Settings

Warning Settings are changed using the Asset Manager, Warning Settings on the home page. This is discussed in Chapter 3-MCEGold, page 3-7. They may also be changed using the Warning Settings menu on each Test History window. See the Test History information for each test for more information.

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CHAPTER 7: EMAX POWER ANALYSIS

EMAX testing may be started by selecting either the Test Selection  or the EMAX Auto  icons on the toolbar.

Selecting the EMAX Auto icon automatically runs the Rotor Evaluation, Eccentricity, Power, and Demod tests. At the completion, after the test results are saved, the Fault Zone Analysis window displays. It uses the existing testing setup values.

Selecting the Test Selection icon allows you to verify and/or change the testing setup values and select which test you want to run. Test Selection is discussed in detail on page 7-3.

TESTING QUICK START

1. Connect the EMAX Data Acquisition cable to the PCMCIA DAQ Card in the laptop computer.
2. Start MCEGold and highlight the motor to be tested on the Site Navigator or WatchList.
3. Select the Test Selection icon on the toolbar.
4. Choose EMAX tab on the Test Selection window.
5. From the Test Selection window select the Power Analysis test. EMAX Auto, Rotor Evaluation, Eccentricity, In-Rush/Start-Up, and Demod are Current Analysis tests and are discussed in Chapter Six.

   Note: Each test is discussed in detail in the Step-by-step Procedures.
6. Connect the current probes.
7. Make the appropriate changes in the EMAX Test Setup section. The displayed settings will change depending on the test selected.
8. Click **Test**. At the end of testing the Test Results window displays test results. Verify the data is valid and save the test data.

VIEW DATA

1. Start MCEGold and highlight the motor on the Site Navigator or WatchList.
2. Select the Test History icon on the toolbar.
3. Select EMAX from the drop down menu on the History Chart window.

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4. Select the Power tab, located across the top of the History Chart.

INTRODUCTION

Power analysis utilizes three-phase simultaneous voltage and current measurements to perform power quality analysis.

Power analysis test results may include indications of voltage imbalances, voltage and current spikes, excessive harmonic distortion, and stator faults.

High resistance connections result in *voltage imbalances* and *excessive circulating currents.* These circulating currents cause increased winding temperatures, which lead to insulation damage. By recording phase voltages and calculating a voltage imbalance, EMAX quantifies the severity of the high resistance connections by comparing the voltage imbalance to National Electrical Manufacturers Association (NEMA) standards.

Voltage and current spikes can be caused by a number of different events, including starting and stopping of plant loads; use of solid state switching equipment, such as variable frequency drive units; and power distribution system configuration changes. Significant voltage spikes stress the motor's insulation system, eventually resulting in catastrophic insulation failure. EMAX identifies these voltage spikes by calculating the crest factor of the voltage and current signals.

Harmonics are primarily caused by the use of solid state switching equipment, such as variable frequency drives and non-linear loads. The presence of these harmonics can result in excessive heating of the insulation in the motor, the distribution system, and the drive itself. EMAX quantifies the severity of the harmonic distortion by comparing the harmonic voltage factor to NEMA standards.

Stator faults can be caused by a number of things, including manufacturing defects, insulation breakdown over the life of the motor, excessive vibration, and rotor/stator contact due to severe eccentricity or bearing failure. EMAX calculates an impedance imbalance, which aids in isolating problems between the power distribution system and the stator.

GETTING STARTED

WARNING:



FOLLOW ALL ELECTRICAL SAFETY PRECAUTIONS AND PROCEDURES FOR WORKING ON ENERGIZED EQUIPMENT.

Power analysis is performed with the motor circuit energized. To maximize the effectiveness of EMAX, connect the voltage probes as far down in the power circuit as possible, typically at the "T" lead connections leaving the motor control center.

There are four sizes of current probes and one size of voltage probe. The current probes each have a different size and current rating. When hooking up the current probes to the DB 9 adaptor cable, ensure that the leads are connected to the correct numbered terminal.

The EMAX voltage test leads contain fuses and are color coded black (phase 1), blue (phase 2), red (phase 3), and green (ground). They connect in the space provided on the right side of the tester deck.

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When connecting the three clamp-on current probes to each phase of the three phase motor, ensure that the arrows on the current probes point in the direction of the cables leading to the motor.

TEST SELECTION WINDOW

The Test Selection window section is followed by the Test Window and Step-by-Step testing procedures for AC assets and then DC assets.

Note: Selecting the EMAX Auto  icon on the tool bar automatically runs the Rotor Evaluation, Eccentricity, Power, and Demod tests using either the default or previously saved test settings. At the completion, after the test results are saved, the Fault Zone Analysis window displays.

To open the Test Selection Window highlight an asset on the Site Navigator or WatchList and click the Test Selection icon  on the tool bar.

The Test Selection window is shown in Figure 7-1. The asset name is located on the title bar to the right of the window name. The Test Selection window is used for both MCE and EMAX testing. Test Type is determined by selecting the desired test type tab.

The asset section tabs are found along the left side of the test selection area and are dependent on the asset type. Possible sections are Stator, Armature, and Field Circuits.

- For AC Induction assets, the only option is Stator.
- For AC Synchronous assets, the only option is Stator.
- For Wound Rotor assets, the only option is Stator.
- For DC assets, options are Armature and Field Circuit.

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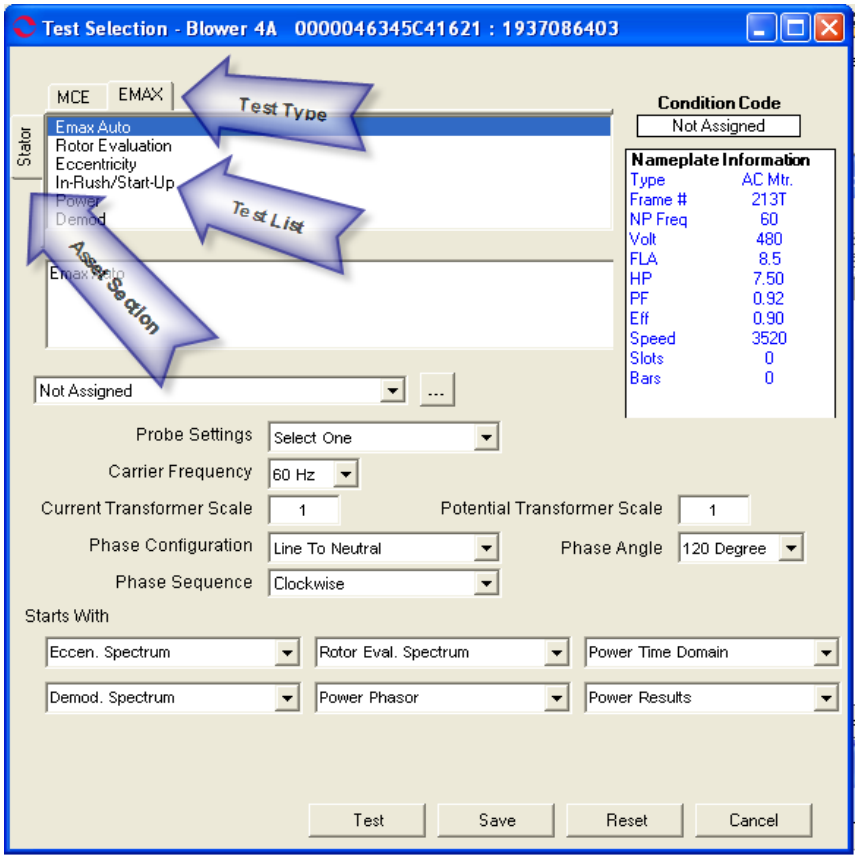


Figure 7-1: EMAX Test Selection Window

Test List

The top left section of the window contains a list of test selections for either MCE or EMAX, depending on asset type, test type and asset section tabs selected. When a test is selected, the name of the test is highlighted blue and the test set up area changes to values appropriate for the test selected. The test list possibilities for EMAX testing are:

- EMAX Auto (AC Induction, Wound Rotor, Synchronous)
- Rotor Evaluation (AC Induction, Wound Rotor, Synchronous)
- Eccentricity (AC Induction, Wound Rotor, Synchronous)
- In-Rush/Start-Up (AC Induction, Wound Rotor, Synchronous)
- Power (AC Induction, Wound Rotor, Synchronous)
- Demod (AC Induction, Wound Rotor, Synchronous)
- DC EMAX Auto (DC Armature Circuit)
- DC Power (Armature and Field Circuits)
- DC Current Analysis (DC Armature Circuit)
- DC In-Rush/Start-Up (Armature and Field Circuits
- Drive Input (DC Armature Circuit)

Asset Information

Asset Information is located on the right side. This area displays the Condition Code and nameplate information of the asset being tested. The information comes from the

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nameplate data that was entered when the asset was set up and cannot be edited on this window. Information displayed, depending on asset type, may include: Type, Frame #, NP Frequency, Voltage, FLA, HP, PF, Eff, Speed, Slots, and Bars. Also, Field Volts and Field Current are listed for DC assets.

Test Setup

The lower half of the window is devoted to test set-up options. The set-up options depend on the asset type and test selected. This section shows a screen capture of the Power Test Selection by asset type and is followed by a description of the set-up options.

AC Assets

Power

The Power test set-up selections shown in Figure 7-2 apply to AC Induction, Synchronous, and Wound Rotor assets.

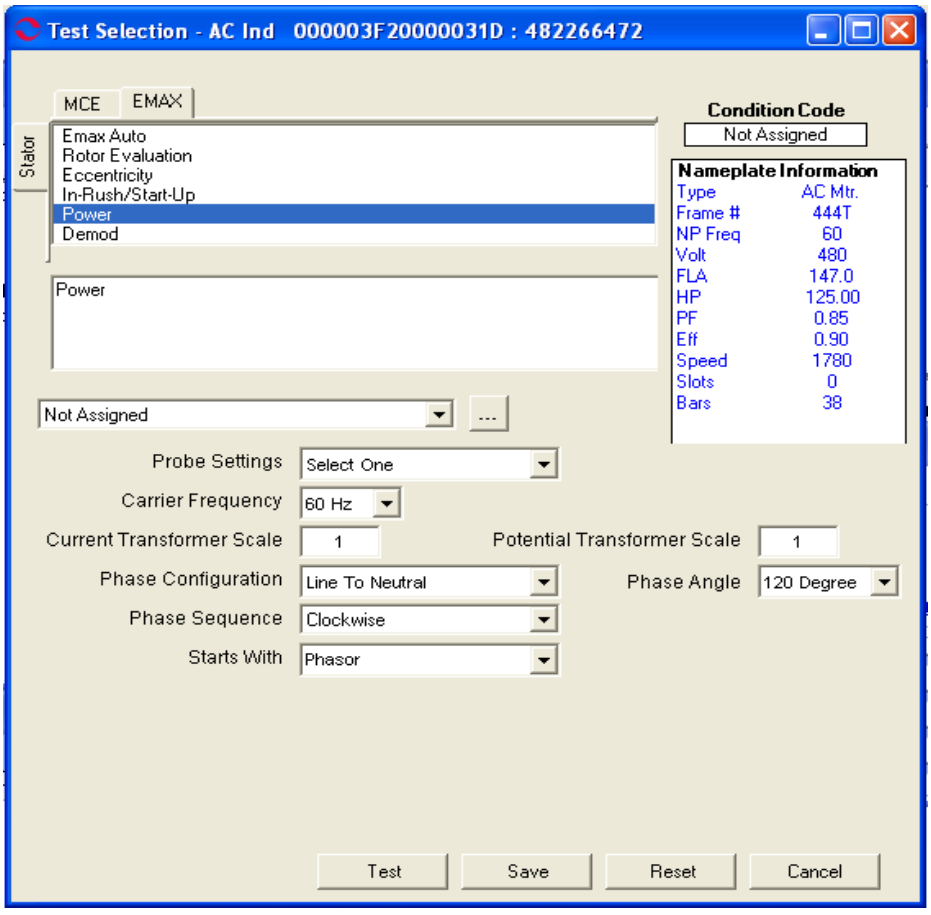


Figure 7-2: Test Set-up Window for AC Induction Power Test

Asset Test Location

To insure consistent trending and assist in trouble shooting, the actual test location should be stored for each test.

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Asset Test Location selection is available for all asset types and tests.

The Asset Test Location default is Not Assigned. To assign a test location, click the down arrow and select from the list. If the location is not known, click the browse button . The Test Location Selection window opens displaying a test location graph for the type of asset selected. See Figure 7-3. Use the graph to determine the location, then click the down arrow in the Test Location text box, select the location from the list, and click **OK.**

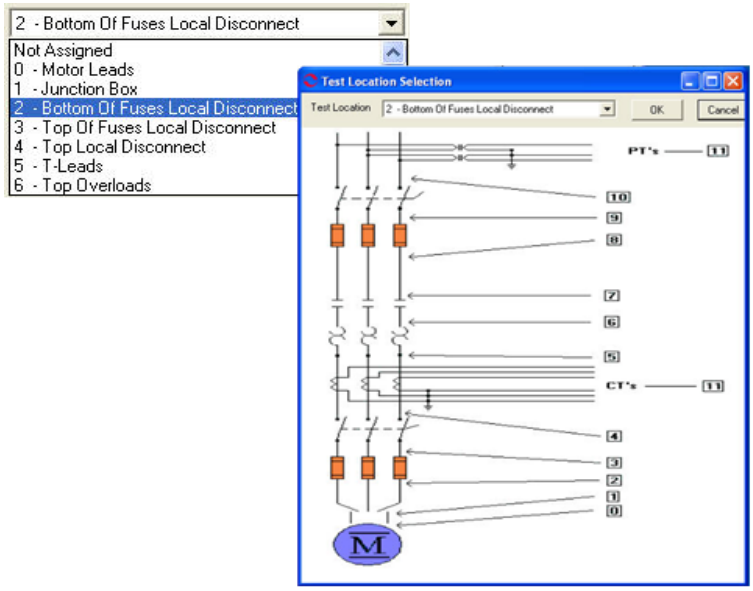
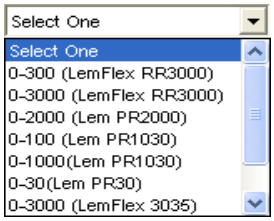


Figure 7-3: Asset Test Location

Probe Settings

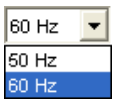
Probe Settings selection is available for all asset types and tests. This is a required field.



Select the Probe Settings from the drop down list. It may be necessary to use the scroll bar to see the complete list.

Carrier Frequency/Line Frequency

Carrier Frequency selection is available for all asset types and tests, except DC EMAX Auto, DC Current Analysis, and DC In-Rush/Start-Up. For those exceptions it is labeled Line Frequency.



Select the Carrier or Line Frequency from the drop down list. The choices are 60 Hz or 50 Hz.

Current Transformer Scale

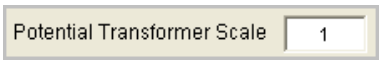
Current Transformer Scale is available for all asset types and tests. Place the cursor in the text box, delete the value and enter the new current transformer scale.



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Potential Transformer Scale

This setting is only available for the EMAX Auto test for AC and DC assets and for the Drive Input test for DC Assets.



Place the cursor in the text box, delete the value and enter the new current potential transformer scale.

Phase Configuration

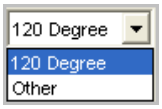
This setting is only available for the EMAX Auto test for AC assets and Drive Input for DC assets.



Select the Phase configuration from the drop down list. The choices are Line-to-Neutral and Phase-to-Phase.

Phase Angle

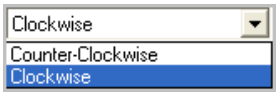
This setting is only available for the EMAX Auto test for AC assets and DC Drive Input test when Line-to-Neutral is selected in the Phase Configuration setting.



Select the Phase Angle from the drop down list. The choices are 120 degrees or Other.

Phase Sequence

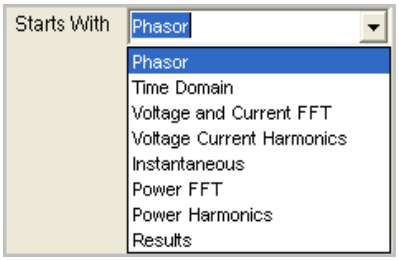
Phase Sequence is only available for the EMAX Auto test for AC assets and DC Drive Input test for DC assets.



Select the Phase Sequence from the drop down list. The choices are Clockwise and Counter-Clockwise.

Starts With

Starts with selects the method of displaying the test results.Additional graphs may be opened from the first one.



Test Button

Click **Test** to advance to the test window.

Save Button

Click **Save** when the test set-up selections are complete. This saves the settings as default values for that asset for subsequent tests, but is not required. If forget to save and click Test, you will be asked if you want to save your changes.

Reset Button

Click **Reset** to set values back to the pre-changed value. Note: If you have clicked the Save button they will not reset and it will be necessary to manually change them back.

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Cancel Button

Click **Cancel** to close the Test Selection window without saving setup changes or proceeding to the test window. You will be asked if you want to save test setup settings.

DC Assets

DC Power

The Power test set-up selections shown in Figure 7-4 apply to DC assets. The DC Power test may be run on both the Armature and Field Circuits.

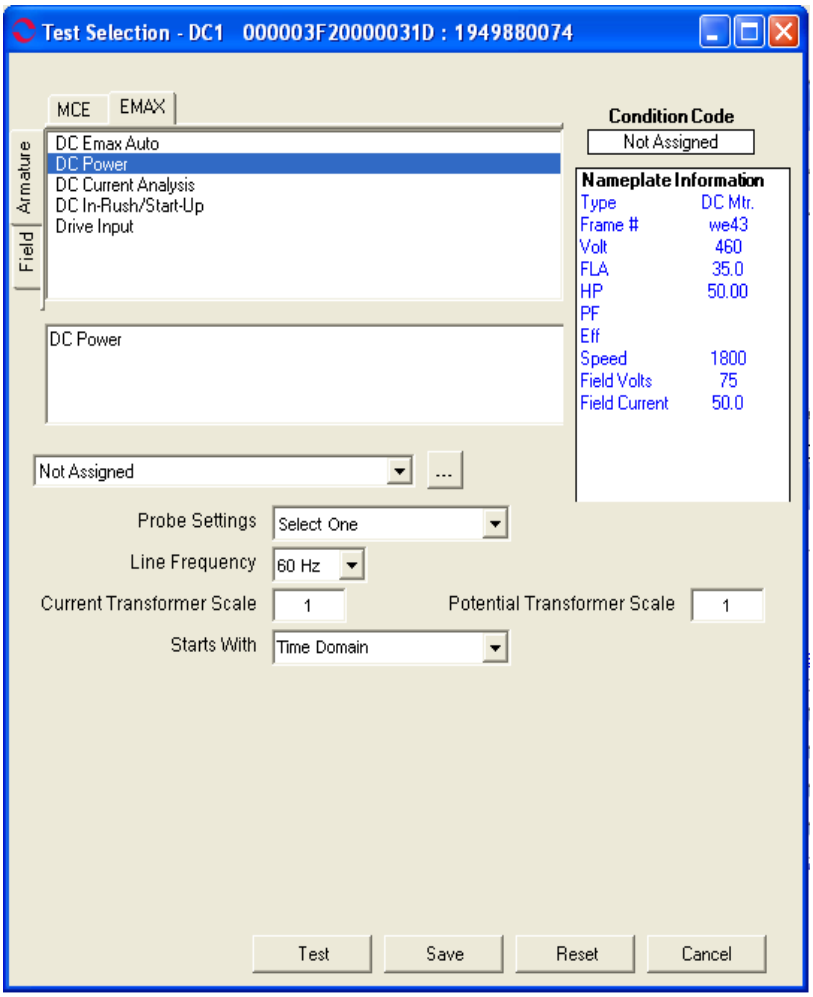


Figure 7-4: Test Set-up Window for DC Power Test

Asset Test Location

To insure consistent trending and assist in trouble shooting, the actual test location should be stored for each test.

Asset Test Location selection is available for all asset types and tests.

The Asset Test Location default is Not Assigned. To assign a test location, click the down arrow and select from the list. If the location is not known, click the browse button ... .

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The Test Location Selection window opens displaying a test location graph for the type of asset selected. See Figure 7-5. Use the graph to determine the location, then click the down arrow in the Test Location text box, select the location from the list, and click **OK.**

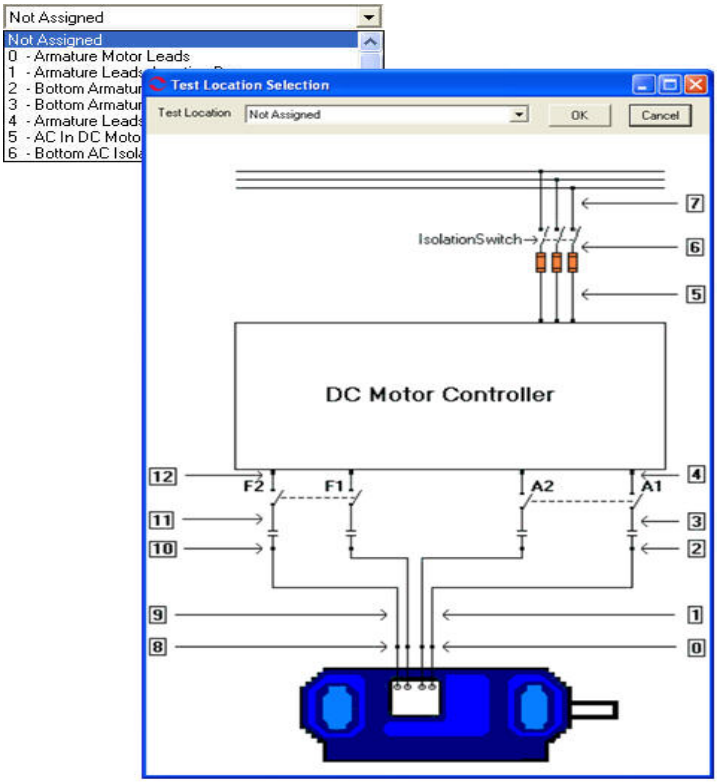
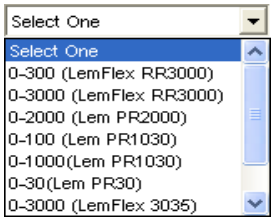


Figure 7-5: DC Asset Test Location

Probe Settings

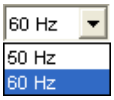
Probe Settings selection is available for all asset types and tests. This is a required field.



Select the Probe Settings from the drop down list. It may be necessary to use the scroll bar to see the complete list.

Carrier Frequency/Line Frequency

Carrier Frequency selection is available for all asset types and tests, except DC EMAX Auto, DC Current Analysis, and DC In-Rush/Start-Up. For those exceptions it is labeled Line Frequency.



Select the Carrier or Line Frequency from the drop down list. The choices are 60 Hz or 50 Hz.

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Current Transformer Scale

Current Transformer Scale is available for all asset types and tests. Place the cursor in the text box, delete the value and enter the new current transformer scale.



Potential Transformer Scale

This setting is only available for the EMAX Auto test for AC and DC assets and for the Drive Input test for DC Assets.



Starts With

Starts with selects the method of displaying the test results.The default and only option is Time Domain.



Test Button

Click **Test** to advance to the test window.

Save Button

Click **Save** when the test set-up selections are complete. This saves the settings as default values for that asset for subsequent tests, but is not required. If forget to save and click Test, you will be asked if you want to save your changes.

Reset Button

Click **Reset** to set values back to the pre-changed value. Note: If you have clicked the Save button they will not reset and it will be necessary to manually change them back.

Cancel Button

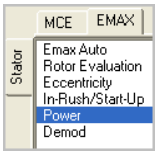
Click **Cancel** to close the Test Selection window without saving setup changes or proceeding to the test window. You will be asked if you want to save test setup settings.

TEST WINDOW

Once the asset section and setup parameters are selected, you are ready to run the Power test. This section describes step-by-step procedures by asset type and asset section. Test analysis information begins on page 7-14.

AC Induction Assets

Step-by-Step Power



1. Connect the EMAX Data Acquisition cable to the DAQ card in the laptop computer.
2. Start MCEGold.
3. Highlight the motor being tested in the Site Navigator or on a WatchList.
4. Select the Test Selection icon  on the toolbar. The Test Selection window, shown in Figure 7-6 opens

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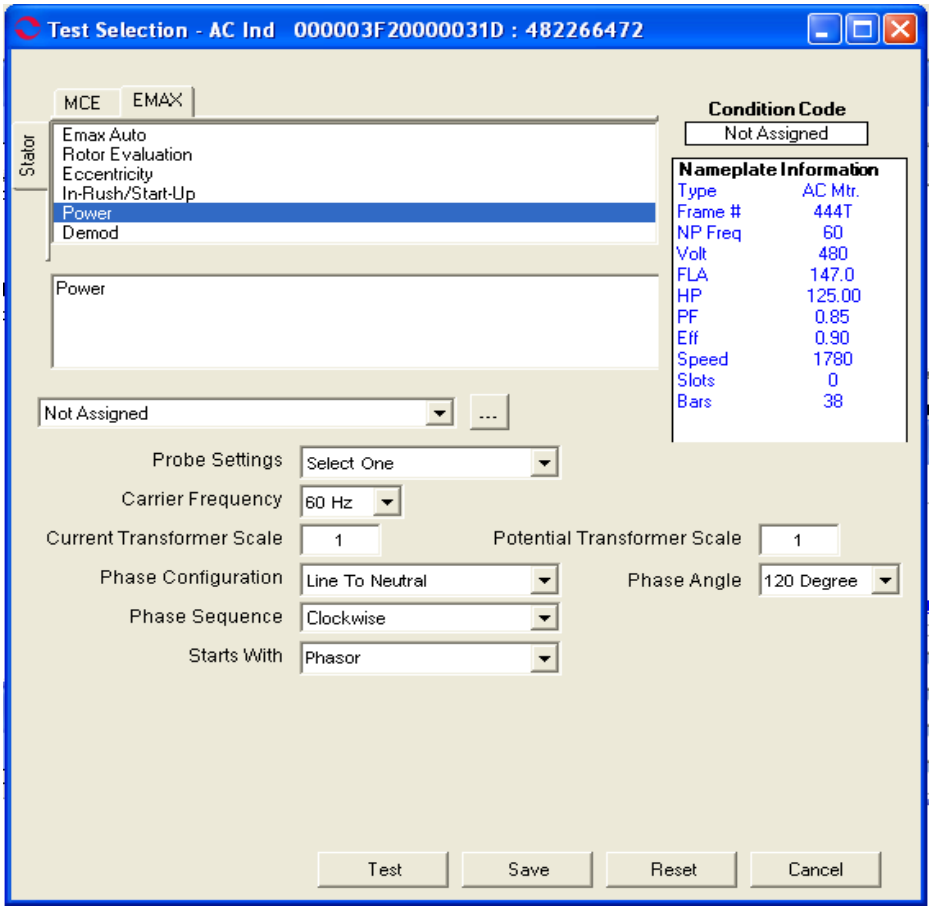


Figure 7-6: Power Test Selection Window - AC Asset

5. Select the EMAX tab.

6. Select the Power test from the test list.

7. Make the test set-up selections and click **Test**.

8. If you have changed the test setup settings, you will be prompted to save the test setup settings. Click **Yes** or **No** as desired.

9. At the end of testing the test results are displayed in the form chosen in the Starts With section of the Test Selection window. Additional test result graphs may be displayed by choosing View and the graph desired.

   Note: You may have multiple windows open. They may be positioned by grabbing the title bar and dragging them to the desired location or using a command from the Windows menu on the menu bar.

10. To close the Test Results window select File, Close or click the Close button in the upper right corner.

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11. You will be asked if you want to save the test data. Click the appropriate button. The action is taken. If the test results have been saved they may be viewed using the Test History function on the toolbar.

AC Synchronous Assets

EMAX Power test for AC synchronous assets is the same as for AC Induction. See page 7-10 for step-by-step testing procedures.

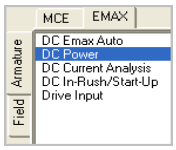
AC Wound Rotor Assets

EMAX Power test for AC synchronous assets is the same as for AC Induction. See page 7-10 for step-by-step testing procedures.

DC Assets

Armature Section

Step-by-Step DC Power



1. Connect the EMAX Data Acquisition cable to the DAQ card in the laptop computer.
2. Start MCEGold.
3. Highlight the motor being tested in the Site Navigator or on a WatchList.
4. Select the Test Selection icon  on the toolbar. The Test Selection window, shown in Figure 7-7 opens.

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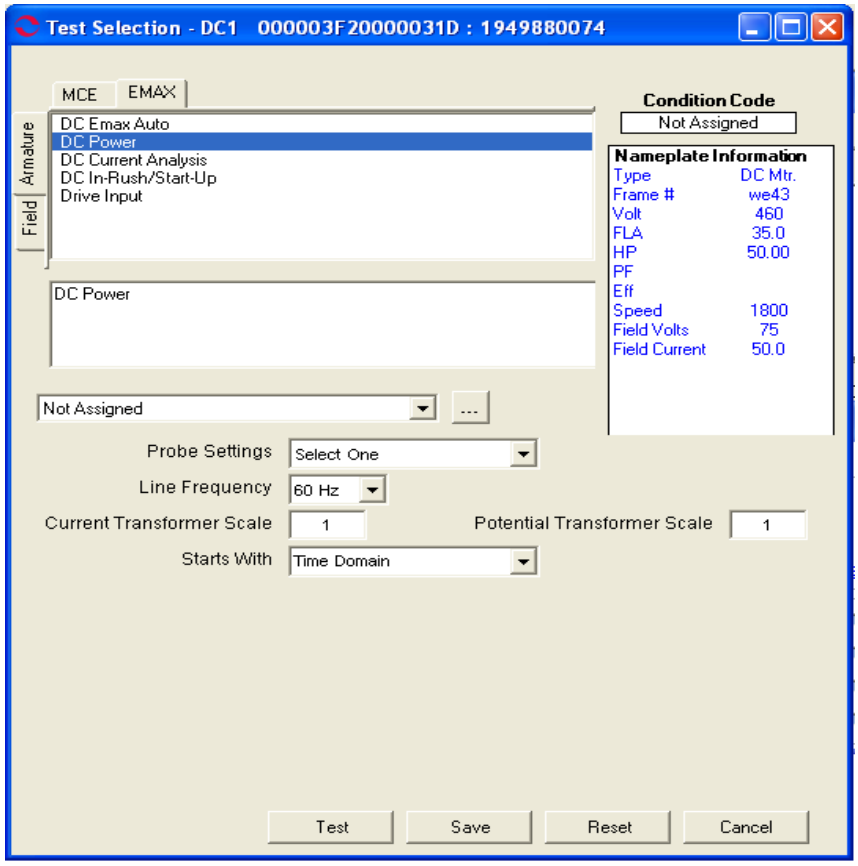


Figure 7-7: Power Test Selection Window - DC Asset

5. Select the EMAX and Armature tabs.

6. Select the Power test from the test list.

7. Make the test set-up selections and click **Test**.

8. If you have changed the test setup settings, you will be prompted to save the test setup settings. Click **Yes** or **No** as desired.

9. At the end of testing the DC Power Time Domain is displayed.

10. To close the Test Results window select File, Close or click the Close button in the upper right corner.

11. You will be asked if you want to save the test data. Click the appropriate button. The action is taken. If the test results have been saved they may be viewed using the Test History function on the toolbar.

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Field Section

Step-by-Step DC Power

The testing procedure for the Field section is the same as for the Armature section. With the exception that you need to select the Field tab in step 5. See Page 7-13.

ANALYSIS

AC Assets

The AC EMAX Power test produces a single, user selected, Test Results window at the end of testing. The selection is made during the test set-up, which is discussed on page 7-7, Starts With.

Power Phasor

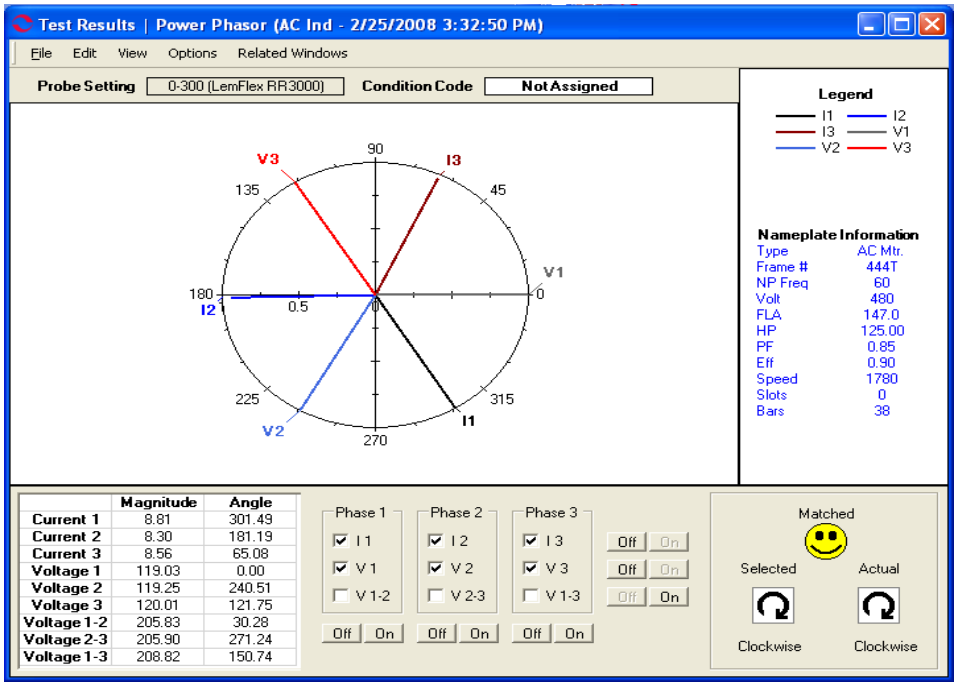
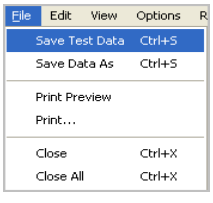


Figure 7-8: Test Results - Power Phasor



File Menu

Save Test Data

Selecting File, Save Test Data saves the test data to the Test History file. When the data is saved a message box informs you "Complete". Click **OK**.

Note: Changes made to the appearance of the graph and data is not saved by using the menu save commands. To save the modified spectrum, use Print Preview. From the Print Preview window you can use File, Export to PDF or Export to HTML.

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Save Data As

Selecting File, Save Data As allows you to save the test data to a location you choose. The Save Data window opens, select a location and enter a file name, click **Save**. The file is saved as an .xls file type.

> Note: Changes made to the appearance of the graph and data is not saved by using the menu save commands. To save the modified spectrum, use Print Preview. From the Print Preview window you can use File, Export to PDF or Export to HTML.

Print Preview

Selecting File, Print Preview causes the Rotor Evaluation Spectrum to display as it will print. To print, select the print icon, from the Print window verify the printer destination, and click **OK**. To close the Print Preview, select File, Close or click the close button in upper right corner.

Print

Selecting File, Print causes the Print window to open, verify the printer destination, and click **OK**.

Close

Selecting File, Close closes the Test Results window. If you have not saved the test data you will be asked if you want to save.

Close All

Selecting File, Close All closes all Test Results windows associated with the Eccentricity test that are open. If you have not saved the test data you will be asked if you want to save.

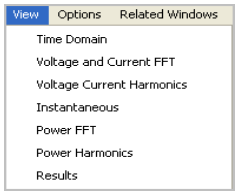


Edit

Create Message (Ctrl+M)

Selecting Edit, Create Message opens the Compose Asset Message window. Use this function to add a message/note to the asset record. The messages/notes can be read using the Message Center. Compose Asset Message and the Message Center are discussed in Chapter 3- MCEGold, Message Center on page 3-4114

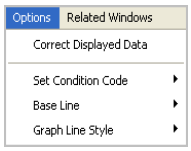
.



View

There are seven additional display choices for the Power test results. The initial display is selected during test setup in the Starts With section. You can view additional test results windows by selecting View and desired display. The initial window will remain open, the additional window opens. It is possible to have all windows open at the same time. You can drag them to the desired position on your monitor or use the Related Windows menu to display them.

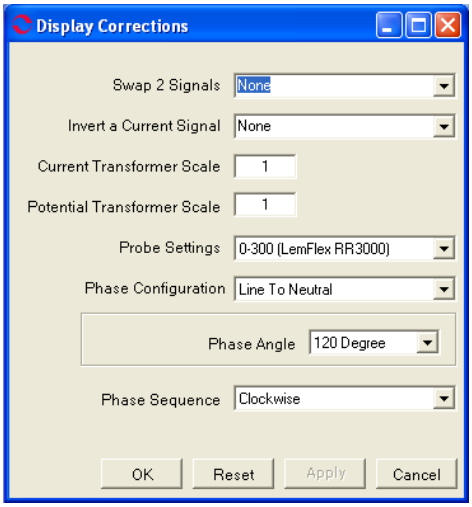
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Options

Correct Displayed Data

Selecting Options, Correct Displayed Data allows you to make adjustments to the test results. Those adjustments are: Swap 2 Signals, Invert a Current Signal, Current Transformer Scale, Potential Transformer Scale, Probe Setting, Phase Configuration, Phase Angle, and Phase Sequence.



Make the desired adjustments and click **OK** to make the changes and close the window or **Apply** to make the changes and leave the window open.

Set Condition Code

Selecting Options, Set condition Code displays the submenu shown on the right. Click on the desired condition code.



Baseline

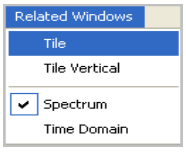
Selecting Options, Baseline displays the Set As Baseline option. This sets the test results as the baseline.



Graph Line Style

Selecting Options, Graph Line Style displays the option to Show Markers.A check mark indicated the option is active.





Related windows

Selecting Related Windows, displays functions that control how the open windows are displayed and lists the open windows.

Display Options

The area below the Phasor diagram contains test result values and options to enhance the phasor display.

The table displays the values for Magnitude and Angle.

The Phase 1, 2, and 3 check boxes control how the data is displayed on the phasor diagram. To control the individual value, click on the box to place or remove a check mark. To control all three values either horizontally or vertically use the Off and On buttons to the left and bottom of the area. The phasor diagram will change as values are turned on or off.

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The Phase Sequence area displays the selected phase and the actual phase sequence. When the selected and actual are the same the word Matched is displayed along with a smiley face. When they are not the same the word Unmatched is displayed along with a frowning face.

Review Phasor

In the phasor diagram the base data for voltage and current is represented in polar form. The default phasor diagram indicates the phase relationship between all three currents and voltages. The purpose of the diagram is to verify proper test connections. Phase-to-phase voltages may be added. The diagram represents 0-360 degrees of electrical rotation. The 0 degree mark is the reference point for phase 1 voltage (V1); 120 degrees for phase 3 voltage (V3); 240 degrees for phase 2 voltage (V2). These reference marks are located on the outside of the circle and are based on a clockwise rotation.

Current lags voltage by an amount determined by the plant power factor. Therefore, phase 1 current (I1) is in the 270-0 degrees quadrant. The reference points for current, I1, I2, and I3 are also shown on the outside of the circle.

Actual voltage and current signals are labeled on the signal line inside the circle.

This display shows a qualitative view of the magnitude difference of each of the signals. To see a quantitative measure of the magnitudes of the different signals, refer to the table below the Phasor Diagram. This table lists magnitude and angle for all 3 phases of voltage and current and all 3 phase-to-phase voltage combinations. This table does not change as the Phasor Diagram changes.

To the right of the table, are nine boxes which control the display of each phase of voltage and current, and combination of phase-to-phase voltage. A check mark in the box indicates that phase display is turned on. Click in the box to toggle on and off. Click the **Off** or **On** buttons to control combination phase-to-phase display.

To the right of the Phase1, 2, and 3 area is the Phase Sequence box. There are three indications in this box: Selected, Matched/Unmatched, and Actual.

- Selected Phase Sequence indicates the default setting for the motor. To change this setting, select Options, Correct Displayed Data. Make your changes in the Display Corrections window and click **OK**.
- Actual Phase Sequence is the true relationship of voltages and currents being tested. Clockwise is phase 1, phase 2, phase 3, left to right. Counter Clockwise is when two phases are reversed.
- When the Selected Phase Sequence and Actual Phase Sequence are the same, the word Matched is placed between the Selected and Actual indications with a “smiley” face. When they are not the same, the word Unmatched appears with a “frowning” face.

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Power Time Domain

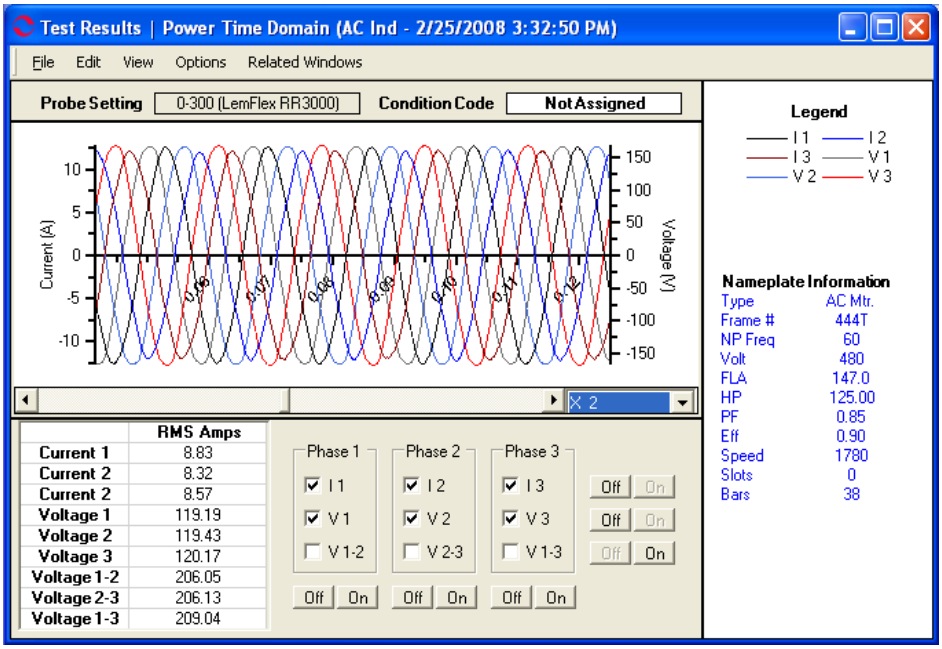


Figure 7-9: Test Results - Power Time Domain

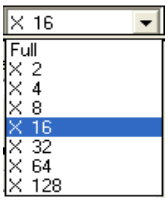
The menu options are the same as for the Power Phasor Test Results. See page 7-14.

Display Options

The area below the Power Time Domain contains test result values and options to enhance the Time Domain display.

Magnification

The drop down list located to the lower right of the test results graph allows you to increase or decrease the magnification of the graph. Depending on the magnification it may be necessary to use the slider to view the complete results



Table

The table displays the values for RMS Amps.

Phase Control

The Phase 1, 2, and 3 check boxes control how the data is displayed on the Time Domain. To control the individual value, click on the box to place or remove a check mark. To control all three values either horizontally or vertically use the Off and On buttons to the right and bottom of the area. The phasor diagram will change as values are turned on or off.

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Review Time Domain

The Voltage and Current Time Domain display is reviewed to verify signal validity, proper phase sequence, and general condition. When reviewing the display, ensure all three voltage and current signals are visible.

The default display shows six waveforms - voltage and current for phases 1, 2, and 3. Additionally, phase-to-phase voltages for 1-2, 2-3, and 3-1 can be displayed.

The current scale is in amps (shown vertically on the left side of the display) and the voltage scale is in volts (shown vertically on the right). The voltage and current scales change as necessary to display all of the graphs. Both are referenced to time in seconds (shown horizontally in the middle).

The Voltage and Current Time Domain display shows if any of the following occurred, which invalidates the test data:

- Improper range selected on current probes
- Improper probe connection
- Probes not energized during the test

Verify that the proper ranges were selected on the current probes by looking at the display of the current signals. Flat peaks at the tops of the sine waves indicates that clipping occurred. This happens when the selected range is too low and the current signals overdrive the probes.

Verify that the current probes were energized and voltage and current probes were connected properly. If a phase has a very low amplitude and is extremely erratic, the probes could have been improperly connected or not turned on. An erratic signal can be caused by excessive noise.

Change the zoom factor on the Scale drop-down list box to Full to confirm that the entire signal capture is valid. Analyze the general condition of the voltage and current waveforms by observing the sinewaves for peak to peak variations and non-sinusoidal waveforms.

Voltage and current imbalances cause variations in the peak to peak values. Non-sinusoidal waveforms result from high frequency harmonics riding on the fundamental carrier frequency.

For induction motors verify proper phase sequence by confirming that phase 1 current lags phase 1 voltage. This is shown on the Voltage and Current vs. Time display as the black current crossing the x-axis shortly after the black voltage. Phases 2 (blue) and 3 (red) should look the same with a proper phase sequence.

A second method of verifying the phase sequences are matched is by viewing the Phasor Diagram. Confirm the selected and actual voltage phase sequences are matched as seen by the smiley face. Confirm the selected and actual current phase sequences are matched as seen by the selected I1, I2, and I3 on the outside of the Phasor Diagram lining up in the vicinity with the actual I1, I2, and I3 on the inside.

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Power Voltage and Current FFT

The Power Voltage and Current FFT graph indicates the effect of the voltage and current relationship on the power signal.

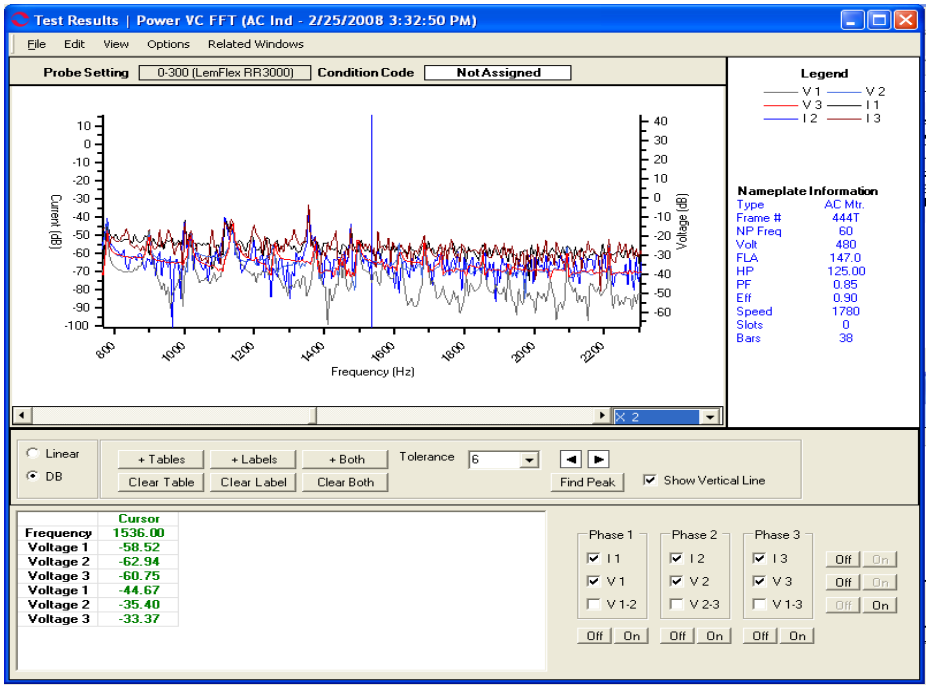


Figure 7-10: Test Results - Power Voltage and Current FFT

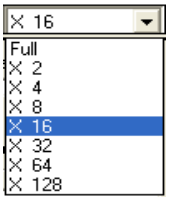
The menu options are the same as for the Power Phasor Test Results. See page 7-14.

Display Options

The area below the test results graph contains options to enhance the test data display.

Magnification

The drop down list located to the lower right of the test results graph allows you to increase or decrease the magnification of the graph. Depending on the magnification it may be necessary to use the slider to view the complete results



Linear/Decibel (DB)

The default display for the graph is decibel (dB), which shows the current (dB) and Frequency (Hz). Selecting Linear changes the graph to show the current (A) and Frequency (Hz). The values in the Test Results Table change when a change is made to the linear/decibel display.

+ Tables

Clicking the **+Tables** button opens the Add/Edit Cursor Table window. Enter a name in the text box and click **OK**. A column is added to the display. When the cursor is moved to another location you may add an additional column.

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Clear Table
Clicking the **Clear Table** button removes the column/s added by clicking +Tables.

+ Labels
Clicking **+ Labels** places a label on the cursor location on the graph. Each time the cursor is moved, click + Labels to place a label on the new location.

Clear Label
Clicking **Clear Label** removes the labels placed on the graph by clicking + Labels.

+ Both
Clicking **+ Both** adds a column on the table and places a label on the graph.

Clear Both
Clicking **Clear Both** removes the column/s and label/s on the graph. It does not return the cursor to the original location.

Tolerance
Tolerance is a drop down list of values used to limit the cursor movement to within a range.



Arrows
Use the arrow buttons to move the active cursor right or left one increment at a time.

Find Peak
When the cursor has been moved, click the **Find Peak** button to cause the cursor to be placed exactly on the peak. The values will change in the appropriate table below the graph.

Show Vertical Line
A check mark in the show Vertical Line box causes a vertical line/cursor to display on the graph. The vertical line must show for the + Tables, + Labels, +Both, Find Peak, Start and End buttons to be active.

Test Value Table
The cursor position along with the voltages are displayed in the test value table. The values change depending on the selection of linear or decibel display.

Phase1, 2 and 3
The Phase 1, 2, and 3 check boxes control how the data is displayed on the Power Voltage Current diagram. To control the individual value, click on the box to place or remove a check mark. To control all three values either horizontally or vertically use the Off and On buttons to the right and bottom of the area. The Power Voltage Current diagram will change as values are turned on or off.

Review Power Voltage and Current FFT
The default display shows six waveforms - voltage and current for phases 1, 2, and 3. Additionally, phase-to-phase voltages for 1-2, 2-3, and 3-1 can be displayed.

The current scale is in dB (shown vertically on the left side of the display) and the voltage scale is in volts (shown vertically on the right). The voltage and current scales change as

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necessary to display the entire graph. Both are referenced to frequency in hertz (shown horizontally).

Below the graph is a table for the frequency, current, and voltage values for each of the parameters. Vertical and horizontal scroll bars are included if needed.

Click anywhere in the graph to show the vertical bar cursor. This causes the values of the displayed parameters at the point where the cursor is located to be displayed in the table below the graph.

The voltage and current FFT graph is used to compare the voltage and current frequency peaks to isolate the source of possible problems to either the power circuit or the motor. Peaks are expected at line frequency and its harmonics for both voltage and current.

If a spike occurs on the current graph that is non-harmonic and does not have a voltage spike associated with it, the probable cause of the spike is the motor. This may be due to eccentricity, bearing defects, mechanical problems, etc.

Power Voltage and Current Harmonics

The Power Voltage and Current Harmonics graph indicates how the product of voltage and current affects the overall power signal.

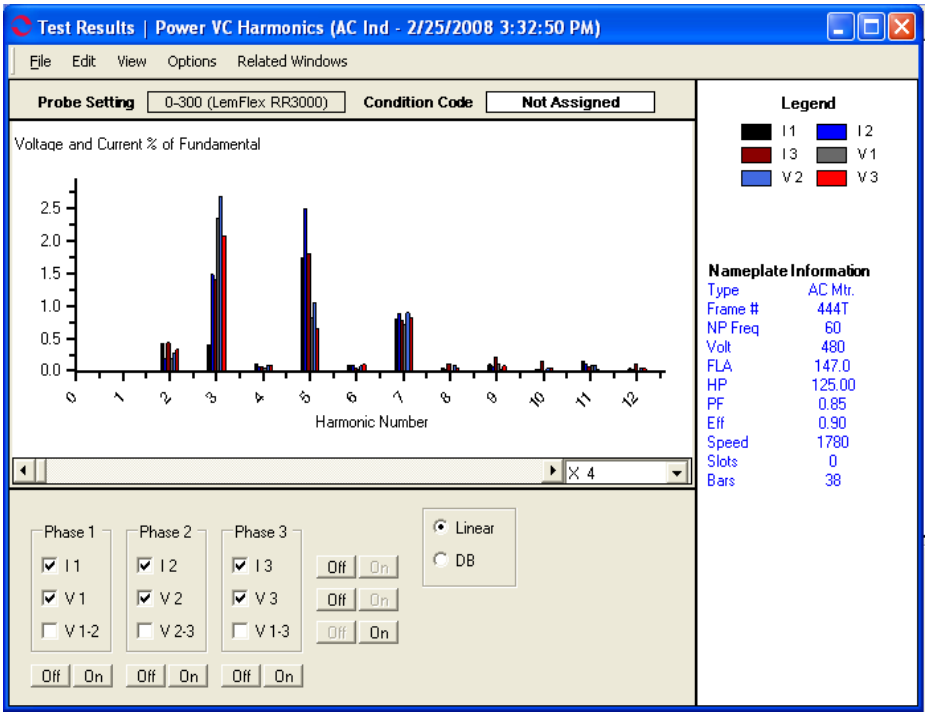


Figure 7-11: Test Results - Power Voltage and Current Harmonics

The menu options are the same as for the Power Phasor Test Results, except under View there is no Graph Line Style option. See page 7-14.

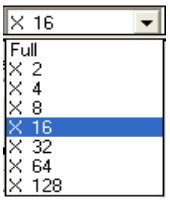
Display Options

The area below the test results graph contains options to enhance the test data display.

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Magnification

The drop down list located to the lower right of the test results graph allows you to increase or decrease the magnification of the graph. Depending on the magnification it may be necessary to use the slider to view the complete results.



Phase1, 2 and 3

The Phase 1, 2, and 3 check boxes control how the data is displayed on the Power Voltage Current diagram. To control the individual value, click on the box to place or remove a check mark. To control all three values either horizontally or vertically use the Off and On buttons to the right and bottom of the area. The Power Voltage Current diagram will change as values are turned on or off.

Linear/Decibel (DB)

The default display for the graph is Linear which shows the voltage and current % of the fundamental at the harmonic number. Selecting Decibel (dB) shows the voltage and current (dB). The values in the Test Results Table change when a change is made to the linear/decibel display.

Review Power Voltage and Current Harmonics

Harmonics are measured to determine the influence of nonlinear loads on the power system. Switching devices, such as computer and variable speed drives, are examples of nonlinear loads.

Normally, odd numbered harmonics are of the most concern. Specifically, the fifth harmonic tends to be a primary indicator of variable speed drive influence on the power lines.

Although even numbered harmonics do not oppose the torque in a motor, they still increase the load on the system and can be detrimental if they are present in large quantities.

In general, the THD of the voltage signal should be less than 5%. Problems resulting from excessive harmonics include exceeding transformer limits and overheating electric motors. If excessive voltage harmonics are present, EMAX indicates on the Results page the recommended horsepower derating NEMA standards.

The default display shows six graphical representations, voltage and current for phases 1, 2, and 3 for each harmonic. Additionally, phase-to-phase voltages for 1-2, 2-3, and 3-1 can be displayed.

The voltage and current scales are in percent of fundamental harmonic (both shown vertically on the left side of the display). Both are referenced to the harmonic number (shown horizontally).

Below the graph is a scroll bar which controls the display horizontally. This permits viewing the display out to the 50th harmonic.

Power Instantaneous

The Power Instantaneous graph indicates the effect of the voltage and current relationship on the power signal.

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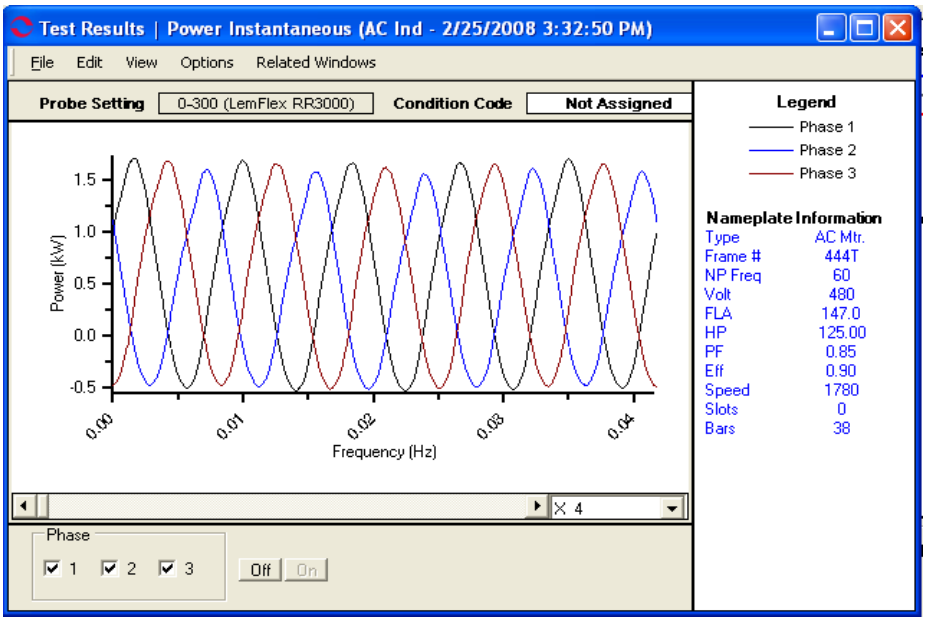


Figure 7-12: Test Results - Power Instantaneous

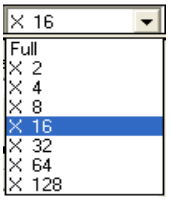
The menu options are the same as for the Power Phasor Test Results. See page 7-14.

Display Options

The area below the test results graph contains options to enhance the test data display.

Magnification

The drop down list located to the lower right of the test results graph allows you to increase or decrease the magnification of the graph. Depending on the magnification it may be necessary to use the slider to view the complete results.



Phase 1, 2, and 3

The Phase 1, 2, and 3 check boxes control how the data is displayed on the Power Instantaneous diagram. To control the individual display, click on the box to place or remove a check mark. To control all three values use the Off and On buttons to the right of the check boxes. The Power Instantaneous diagram will change as phases are turned on or off.

Review Power Instantaneous

The Instantaneous Power graph indicates the effect of the voltage and current relationship on the power signal. It also gives a visual representation of the difference in real and reactive power being sent to the motor. This graph is currently included for illustration only and has no influence on signal analysis.

The default display shows three graphical representations - power for phase 1, 2, and 3.

The power scale is in kilowatts (shown vertically on the left side of the display). It changes as necessary to display all of the graph. Power is referenced to time (shown horizontally).

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Power FFT

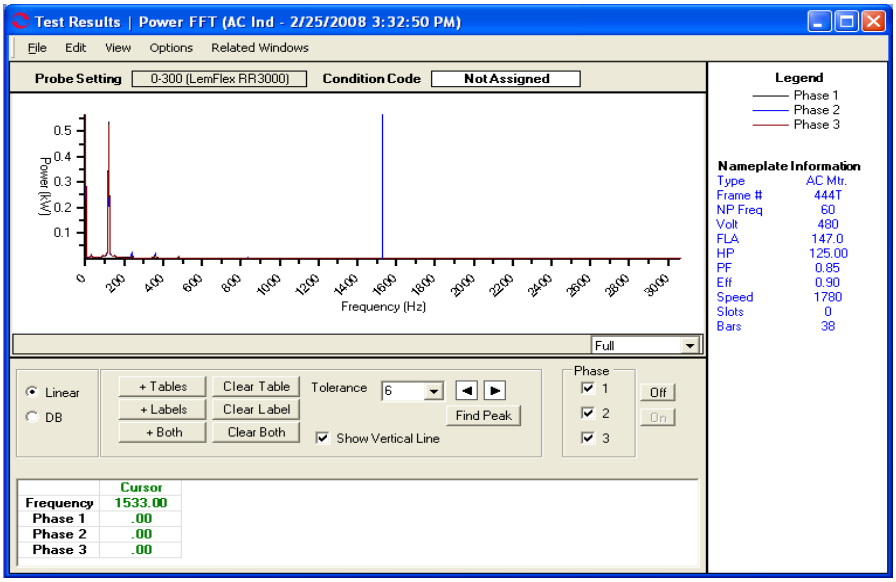


Figure 7-13: Test Results - Power FFT

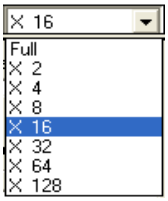
The menu options are the same as for the Power Phasor Test Results. See page 7-14.

Display Options

The area below the test results graph contains options to enhance the test data display.

Magnification

The drop down list located to the lower right of the test results graph allows you to increase or decrease the magnification of the graph. Depending on the magnification it may be necessary to use the slider to view the complete results



Linear/Decibel (DB)

The default display for the graph is Linear which shows the Power (KW) and Frequency (Hz). Selecting Decibel (dB) shows the power (dB) and Frequency (Hz).

+ Tables

Clicking the **+Tables** button opens the Add/Edit Cursor Table window. Enter a name in the text box and click **OK**. A column is added to the display. When the cursor is moved to another location you may add an additional column.

Clear Table

Clicking the **Clear Table** button removes the column/s added by clicking +Tables.

+ Labels

Clicking **+ Labels** places a label on the cursor location on the graph. Each time the cursor is moved, click + Labels place a label on the new location.

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Clear Label
Clicking **Clear Label** removes the labels placed on the graph by clicking + Labels.

+ Both
Clicking **+ Both** adds a column on the table and places a label on the graph.

Clear Both
Clicking **Clear Both** removes the column/s and label/s on the graph. It does not return the cursor to the original location.

Tolerance
Tolerance is a drop down list of values used to limit the cursor movement to within a range.



Arrows

Use the arrow buttons to move the active cursor right or left one increment at a time.

Find Peak
When the cursor has been moved, click the **Find Peak** button to cause the cursor to be placed exactly on the peak. The values will change in the appropriate table below the graph.

Show Vertical Line
A check mark in the show Vertical Line box causes a vertical line/cursor to display on the graph. The vertical line must show for the + Tables, + Labels, +Both, and Find Peak buttons to be active.

Phase1, 2 and 3
The Phase 1, 2, and 3 check boxes control how the data is displayed on the Power FFT diagram. To control the individual value, click on the box to place or remove a check mark. To control all three values use the Off and On buttons to the right of the area. The Power FFT diagram and the test value table will change as values are turned on or off.

Test Value Table
The cursor position along with the voltages are displayed in the test value table. The values change depending on the selection of linear or decibel display.

Review Power FFT
The Power FFT graph indicates the effect of the voltage and current relationship on the individual power signal frequencies. This graph is currently included for illustration only and has no influence on signal analysis.

The decibel display shows three waveforms - power for phases 1, 2, and 3.

The power scale is in decibels (shown vertically on the left side of the display). It changes as necessary to display all of the graph. Power is referenced to frequency in hertz (shown horizontally).

Below the graph are the frequency and power values for each of the three parameters. Click anywhere in the graph to show the vertical bar cursor. When you do this, the values

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of the displayed parameters at the point where the cursor is located are displayed in the value boxes under the graph.

Power Harmonics

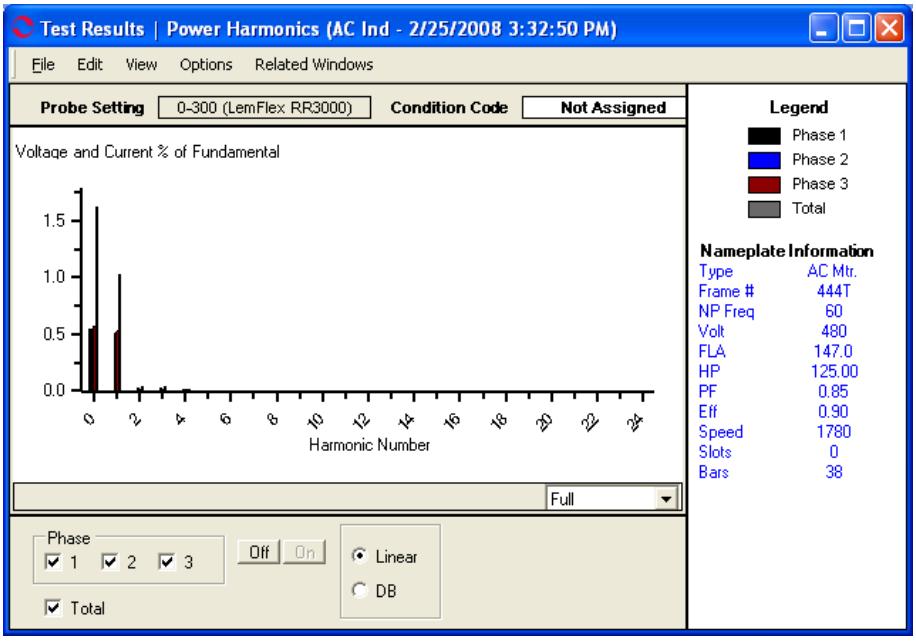


Figure 7-14: Test Results - Power Harmonics

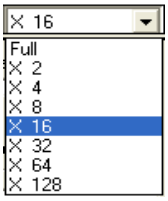
The menu options are the same as for the Power Phasor Test Results, except under View there is no Graph Line Style option. See page 7-14.

Display Options

The area below the test results graph contains options to enhance the test data display.

Magnification

The drop down list located to the lower right of the test results graph allows you to increase or decrease the magnification of the graph. Depending on the magnification it may be necessary to use the slider to view the complete results



Phase1, 2 and 3

The Phase 1, 2, and 3 check boxes control how the data is displayed on the Power Harmonics diagram. To control the individual phase, click on the box to place or remove a check mark. To control all three phases use the Off and On buttons to the right of the area. The diagram will change as values are turned on or off.

Total

The Total option is independent of the Phase 1, 2, and 3 check boxes and is not turned off or on by the Off/On buttons.

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Linear/Decibel (DB)

The default display for the graph is Linear which shows the Voltage and Current % of Fundamental. Selecting Decibel (dB) shows the Voltage and Current (dB).

Review Power Harmonics

The Power Harmonics graph indicates how the product of voltage and current affects the overall power signal. This graph is currently included for illustration only and has no influence on signal analysis.

The default display shows four graphical representations of power for phases 1, 2, 3, and the total for each harmonic.

The power scale is in kilowatts (shown vertically on the left side of the display). It changes as necessary to display all of the graph. Power is referenced to the harmonic number (shown horizontally).

At the bottom of the window is a scroll bar which controls the display horizontally. This permits viewing the display out to the 25th harmonic.

Power Results

The Power Results page displays detailed numeric test data and nameplate information. It is designed to provide a one page summary of an individual test, including warning conditions (caution and alarms). All items on the Results page are included in the Test History. No changes can be made on this page.

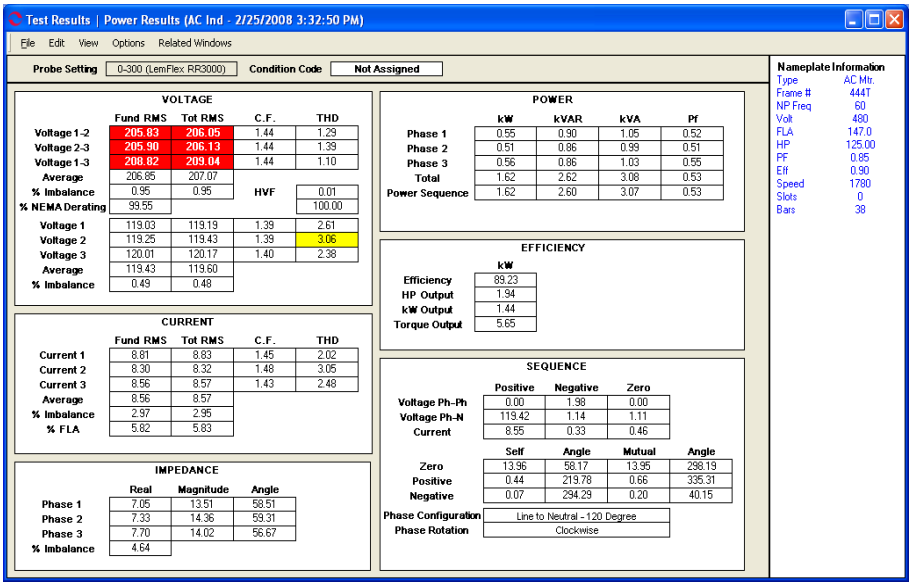
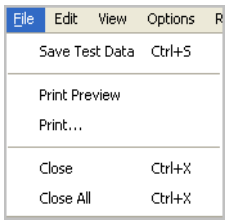


Figure 7-15: Test Results - Power Results

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File Menu

Save Test Data

Selecting File, Save Test Data saves the test data to the Test History file. When the data is saved a message box informs you "Complete". Click **OK**.

> Note: Changes made to the appearance of the graph and data is not saved by using the menu save commands. To save the modified spectrum, use Print Preview. From the Print Preview window you can use File, Export to PDF or Export to HTML.

Print Preview

Selecting File, Print Preview causes the Test Results to display as it will print. To print, select the print icon, from the Print window verify the printer destination, and click **OK**.

To close the Print Preview, select File, Close or click the close button in upper right corner.

Print

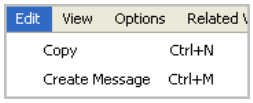
Selecting File, Print causes the Print window to open, verify the printer destination, and click **OK**.

Close

Selecting File, Close closes the Test Results window. If you have not saved the test data you will be asked if you want to save.

Close All

Selecting File, Close All closes all Test Results windows associated with the Power test that are open. If you have not saved the test data you will be asked if you want to save.



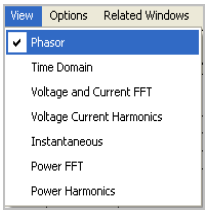
Edit

Copy

The Edit, Copy function is used to copy the Results page and paste it in a Detailed Report.

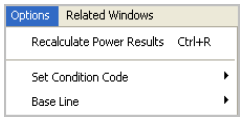
Create Message (Ctrl+M)

Selecting Edit, Create Message opens the Compose Asset Message window. Use this function to add a message/note to the asset record. The messages/notes can be read using the Message Center. Compose Asset Message and the Message Center are discussed in Chapter 3- MCEGold, Message Center on page 3-43.



View

There are seven additional display choices for the Power test results. The initial display is selected during test setup in the Starts With section. You can view additional test results windows by selecting View and desired display. The initial window will remain open, the additional window opens. It is possible to have all windows open at the same time. You can drag them to the desired position on your monitor or use the Related Windows menu to display them.



Options

Recalculate Power Results

Recalculate Power Results is used when changes have been made to the raw data and/or nameplate information. Selecting this option after changes have been made updates the Power Results display.

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Set Condition Code

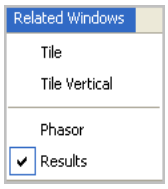
Selecting Options, Set condition Code displays the submenu shown on the right. Click on the desired condition code.



Baseline

Selecting Options, Baseline displays the Set As Baseline option. This set the test results as the baseline.





Related Windows

Selecting Related Windows, displays functions that control how the open windows are displayed and lists the open windows.

Review Power Results

Power Results is designed to provide a one page summary of an individual test, including warning conditions (caution and alarms). All items on the Results page are included in the History Chart.

There are two sections to the Results Page window. On the right is the Nameplate information. The larger section on the left window contains the test results data.

Voltage

The top three lines have information for phase-to-phase combinations 1-2, 2-3, and 3-1.

- Fund RMS (in volts) is the RMS value for the fundamental voltage signal.
- Tot RMS voltage (in volts) is the RMS value for the total voltage signal. This includes noise and other non-fundamental components.
- CF (crest factor) is the ratio between peak and RMS phase-to-phase voltages.
- THD (total harmonic distortion; in percent) indicates the RMS value of the signal with the fundamental component removed, expressed as a percentage of the total signal's RMS value.

Average is the average of the three phase-to-phase voltages (in volts).

% Imbalance is the highest measured deviation from the average of the three phase-to-phase voltages, divided by the average voltage, in percent.

% NEMA Derating indicates the recommended percentage of full load for safe operation of the motor based on the horsepower derating factor recommended by the National Electrical Manufacturer's Association standards. This derating factor is based on the percentage of voltage imbalance.

HVF is a ratio between the fundamental and non-fundamental voltage signals.

% NEMA Derating indicates the recommended percentage of full load for safe operation of the motor based on the horsepower derating factor recommended by the NEMA standards. The derating factor is based on HVF.

Next is the information for phase-to-neutral for phases 1, 2, and 3.

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- Fund RMS (in volts) is the RMS value for the fundamental voltage signal.
- Tot RMS voltage (in volts) is the RMS value for the total voltage signal. This includes noise and other non-fundamental components.
- CF (crest factor) is the ratio between peak and RMS phase-to-phase voltages.
- THD (total harmonic distortion; in percent) indicates the RMS value of the signal with the fundamental component removed, expressed as a percentage of the total signal's RMS value.

Average is the average of the three phase-to-neutral voltages (in volts).

% Imbalance is the highest measured deviation from the average of the three phase-to-neutral voltages, divided by the average voltage, in percent.

Current

The top three lines have information for current for phases 1, 2, and 3.

- Fund RMS (in amps) is the RMS value for the fundamental current signal.
- Tot RMS current (in amps) is the RMS value for the total current signal. This includes noise and other non-fundamental components.
- CF (crest factor) is the ratio between peak and RMS currents.
- THD (total harmonic distortion; in percent) indicates the RMS value of the signal with the fundamental component removed, expressed as a percentage of the total signal's RMS value.

Average is the average of the three currents (in amps).

% FLA is the percentage of the nameplate full load amps (FLA) at which the motor is running.

% Imbalance is the highest measured deviation from the average of the three phase currents, divided by the average current, in percent.

Impedance

There are real and magnitude impedance values (in ohms) for all three phases, along with the angle between each. Real indicates the real component of the impedance triangle. This data is used in the calculations for Impedance Imbalance.Magnitude indicates the apparent component of the impedance triangle.

Impedance Imbalance (in percent) is based on voltage and current, and the phase angle between them. It is used for stator analysis.

Power

The Power data table displays kilowatts (kW), kilovolt-amps-reactive (kVAR), kilovolt-amps (KVA), and power factor (PF) values for the total signal of each of the three phases.

The Total row contains the sums of kW, kVAR, and KVA and the average power factor respectively.

Power sequence contains the sums of each phase for kW, kVAR, and KVA and the average PF. These values are based on the fundamental signal only

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Efficiency

Efficiency Calculation is the calculated efficiency of the motor (in percent) at the time of the test.

HP Output, kW Output, and Torque Output are the calculated outputs of the motor at the time of the test.

Sequence

The Sequence data table displays positive, negative, and zero sequence values for phase-to-phase voltage (in volts), phase-to-neutral voltage (in volts), and current (in amps).

- Positive sequence voltage and current produce aiding torque in the motor.
- Negative sequence voltage and current produce opposing torque in the motor.
- Zero sequence voltage and current produce no affect on torque in the motor. These are monitored for indications of insulation degradation.

Review Test History

To review the Test History, highlight the asset in the Site Navigator or WatchList and click the Test History icon 

on the toolbar. In the Test History window select EMAX from the drop down list and the Power tab. Locate the test by using the scroll bar at the bottom of the window. Figure 7-16 shows the Test History window for an AC Induction asset, EMAX Power test. Use the Scroll Bars to locate the desired test results. The Test History window menus and functions are discussed in Chapter 3 - MCEGold, page 3-28.

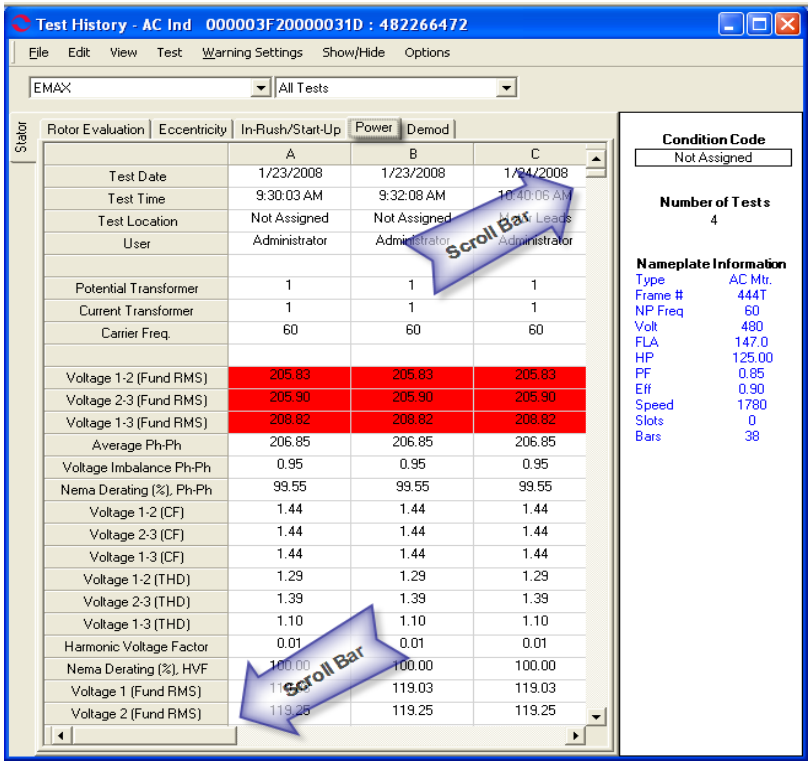


Figure 7-16: Test History - Power

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There are a number of parameters in the Test History which have Caution and Alarm Warning Levels associated with them. First, look at the parameters with Caution and Alarm setpoints. Then, look at the other parameters which do not have warning levels.

To assist in the analysis process, graphing may be used for visual trending on motors with more than one set of test results.

Parameters with Warning Levels

Voltage Line-to-Line is monitored to indicate if voltage on any phase changes by a given percentage above or below nameplate voltage.

- For example, bad transformer output, single-phasing, or high resistance connections can cause motor operation outside design parameters, resulting in insulation degradation. High voltages cause increased stress to the insulation. Low voltages cause increased currents and overheating of the insulation.

Voltage Imbalance is monitored to indicate if the voltage on any phase deviates by a given percentage from the average voltage.

- High resistance connections in the power circuit or inside the motor can cause voltage imbalances, resulting in high negative sequence currents and overheating of the insulation.

Voltage Crest Factor is monitored to indicate if any voltage spikes deviate from the RMS voltage value by a given amount.

- Switching devices, VFDs, and load transients are all causes of voltage fluctuations. Severe voltage spikes cause stress to the insulation system.

Voltage THD is monitored to indicate if the power signal distortion exceeds a given value.

- VFDs, single-phase loads, and computers are all causes of harmonic distortion, and can result in overheating of the winding insulation.

Harmonic Factor (Harmonic Voltage Factor) is also monitored to indicate if the power signal distortion exceeds a given value.

Current RMS is monitored to indicate if current on any phase changes by a given percentage above or below nameplate FLA.

- Improper motor applications or excessive loading can result in excessive currents and overheating of the insulation.

Current Imbalance is monitored to indicate if current on any phase deviates by a given percentage from the average current.

- High resistance connections in the power circuit or inside the motor can result in current imbalances and overheating of the insulation.

Current Crest Factor is monitored to indicate if current spikes deviate from the RMS current value by a given amount.

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- Switching devices, VFDs, and load transients are all causes of current fluctuations. Severe current spikes cause stress to the insulation system.

Current THD is monitored to indicate if the power signal distortion exceeds a given value.

- VFDs, single-phase loads, and computers are all causes of harmonic distortion, and result in overheating of the winding insulation.

Self Impedance Imbalance is monitored to indicate if impedance on any phase deviates by a given percentage from the average impedance.

- Stator winding defects cause inconsistent variations in the phase relationship between voltage and current in each phase leading to motor failure.

DC Assets

The DC EMAX Power test produces a DC Power Time Domain at the end of testing. The Power Domain window is the same for the Armature and Field sections. See Figure 7-17.

Power

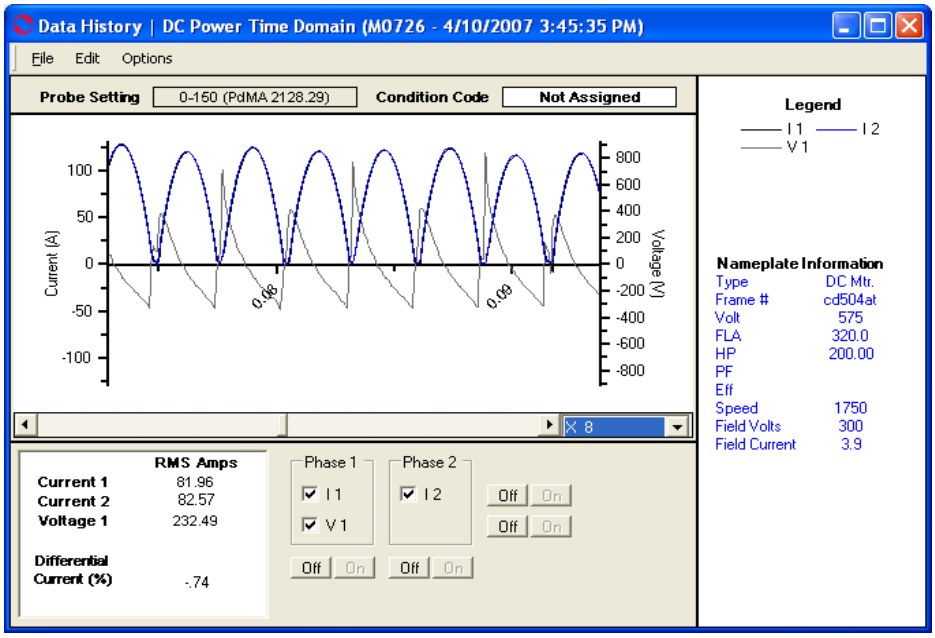
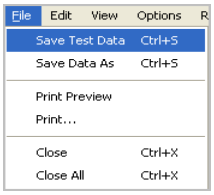


Figure 7-17: DC Power Armature Section Results



File Menu

Save Test Data

Selecting File, Save Test Data saves the test data to the Test History file. When the data is saved a message box informs you “Complete”. Click **OK**.

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Note: Changes made to the appearance of the graph and data is not saved by using the menu save commands. To save the modified spectrum, use Print Preview. From the Print Preview window you can use File, Export to PDF or Export to HTML.

Save Data As

Selecting File, Save Data As allows you to save the test data to a location you choose. The Save Data window opens, select a location and enter a file name, click **Save**. The file is saved as an .xls file type.

Note: Changes made to the appearance of the graph and data is not saved by using the menu save commands. To save the modified spectrum, use Print Preview. From the Print Preview window you can use File, Export to PDF or Export to HTML.

Print Preview

Selecting File, Print Preview causes the Rotor Evaluation Spectrum to display as it will print. To print, select the print icon, from the Print window verify the printer destination, and click **OK**. To close the Print Preview, select File, Close or click the close button in upper right corner.

Print

Selecting File, Print causes the Print window to open, verify the printer destination, and click **OK**.

Close

Selecting File, Close closes the Test Results window. If you have not saved the test data you will be asked if you want to save.

Close All

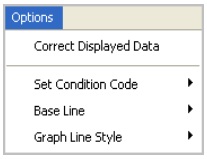
Selecting File, Close All closes all Test Results windows associated with the Eccentricity test that are open. If you have not saved the test data you will be asked if you want to save.



Edit

Create Message (Ctrl+M)

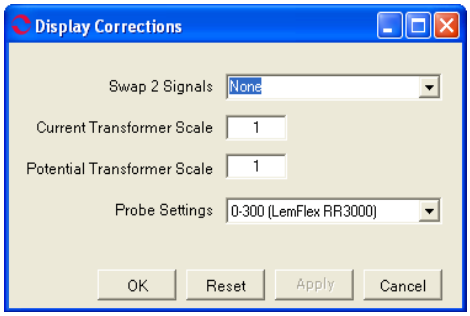
Selecting Edit, Create Message opens the Compose Asset Message window. Use this function to add a message/note to the asset record. The messages/notes can be read using the Message Center. Compose Asset Message and the Message Center are discussed in Chapter 3- MCEGold, Message Center on page 3-41.



Options

Correct Displayed Data

Selecting Options, Correct displayed Data allows you to Swap 2 Signals, change the Current and Potential Transformer Scale and change the Probe Settings.



Make the desired adjustments and click OK to make the changes and close the Display Corrections window or Apply to make the changes and leave the window open.

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Set Condition Code

Selecting Options, Set condition Code displays the submenu shown on the right. Click on the desired condition code.



Baseline

Selecting Options, Baseline displays the Set As Baseline option. This sets the test results as the baseline.



Graph Line Style

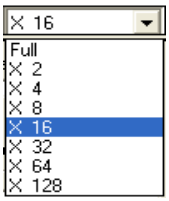
electing Options, Graph Line Style displays the sub menu containing options to Show Patterns and Show Markers on the test results graph. A check mark indicates the option is active.



Display Options

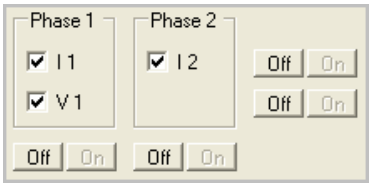
Magnification

The drop down list located to the lower right of the test results graph allows you to increase or decrease the magnification of the graph.



Phase 1 and Phase 2

The Phase 1 and Phase 2 areas of the Time Domain window are used to add or remove lines on the graph. They may be controlled individually using the check boxes or in combination using the Off/ On buttons.



Review Power Time Domain

To verify the signal capture is valid, review the Time Domain display. When reviewing the display, ensure all three current signals are visible.

The Time Domain display shows if any of the following occurred, which invalidates the test data:

- Improper probe selection
- Improper range selected on current probes
- Improper probe connection
- Probes not energized during testing
- Motor speed not constant during testing
- Signal failure at the end of the test

Verify that the proper range was selected on the current probes by looking at the display of the three current signals. Flat peaks at the tops of the sine waves indicate that clipping

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occurred. This happens when the range on the probes is too low and the current signals overdrive the probes.

Verify that the probes were energized and connected properly. If a phase has a very low amplitude and is extremely erratic, the probe could have been improperly connected or not turned on. An erratic signal can also be caused by noise.

Verify that the motor speed was constant during the entire test. Varying peak-to-peak values of current are an indication of load changes. Change the scale of the display to full by selecting full from the scale drop-down list box. Look at the entire waveform and verify that there were no peak-to-peak variations throughout the entire display. The graph may be scrolled by using the arrow keys on the keyboard or the slide bar located above the graph.

Review the Test History

To review the Test History, highlight the asset in the Site Navigator or WatchList and click the Test History icon 

on the toolbar. In the Test History window select EMAX from the drop down list and the Power tab. Locate the test by using the scroll bar at the bottom of the window. Figure 7-17 shows the Test History window for an DC asset, EMAX Power test. The Test History window menus and functions are discussed in Chapter 3 - MCEGold, page 3-28.

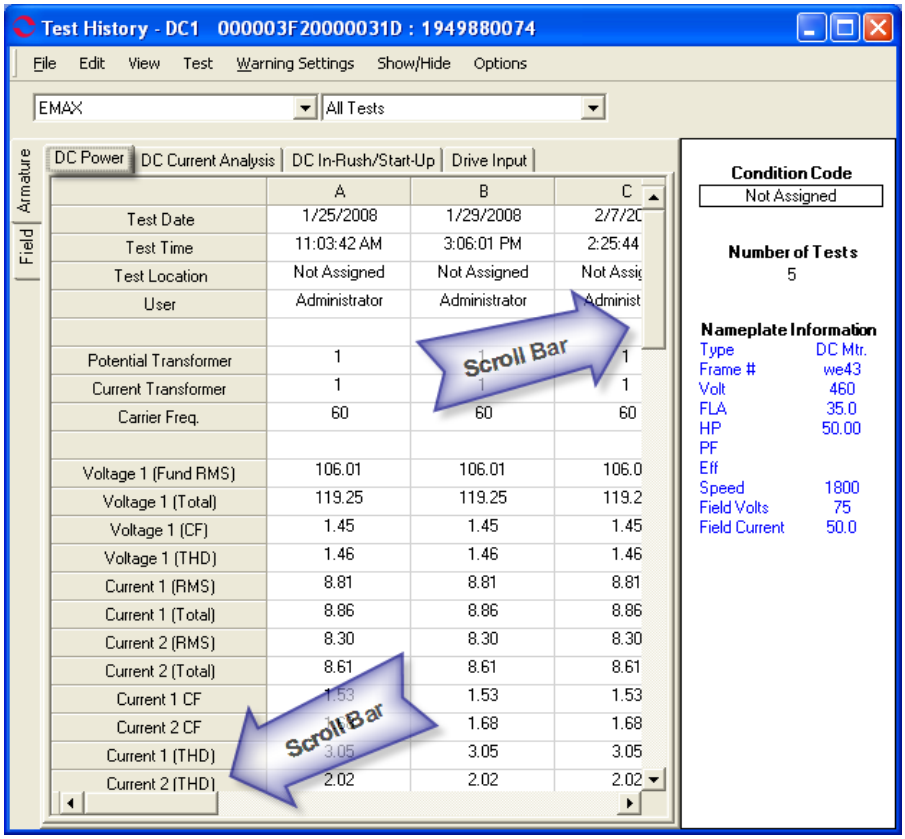


Figure 7-18: Test History - EMAX Power DC Asset

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The top four lines on the Test History show the Date and Time the test was taken, Test Location, and User (person performing the test). Next the Potential Transformer, Current Transformer, and Carrier Frequency information is displayed. These are entered during the test setup.

The Condition Code, Number of Tests that have been performed on the motor, and Nameplate information is displayed along the right side of the window.

There are a number of parameters in the Test History which have Caution and Alarm Warning Levels associated with them. First, look at the parameters with Caution and Alarm setpoints. Then, look at the other parameters which do not have warning levels.

Parameters with Warning Levels

Voltage (THD) is taken on the 3-phase line side of an energized DC motor drive. It is the RMS value of the voltage signal with the line frequency removed. A perfect 60 Hz sine wave would have 0% THD. Another way of defining THD is that it is the ratio of the root mean square of the harmonic content to the root mean square value of the fundamental quantity, expressed as a percent of the fundamental. This value is only provided from a Drive Input test for the armature section of a DC motor.

Current (THD) is taken on the 3-phase line side of an energized DC motor drive. It is the RMS value of the current signal with the line frequency removed. A perfect 60 Hz sine wave would have 0% THD. Another way of defining THD is that it is the ratio of the root mean square of the harmonic content to the root mean square value of the fundamental quantity, expressed as a percent of the fundamental.

Differential Current is the percent difference in current going into and returning from the armature or field windings under test. Increasing differential current due to dropping values of return current may be indicative of increasing leakage current. This value is provided for armature and field sections of a DC motor.

Warning Settings

Warning levels can be set for each individual asset to indicate problems that exist within that asset or asset circuitry. Warnings can be set at both the Caution and Alarm levels. Caution levels indicate less severe conditions than Alarm levels. Predefined default levels are set in MCEGold by PdMA and may be changed by the user. Based on experience the default values may be changed to be more or less conservative. Test results which exceed the Caution setpoint are shown in yellow and test results which exceed the Alarm setpoint are shown in red.

In addition to providing Caution and Alarm warnings based on a parameter varying from a setpoint, MCEGold can provide warnings based on parameters changing from a baseline reading. Again, test results which exceed the Caution value are shown in yellow and results which exceed the Alarm value are shown in red.

Default warning setpoints are based on testing at the MCC. As you gain experience with the MCE tester, you may choose to narrow the range of acceptable values. The condition of the motor and the importance of its application to your operation or process are other factors that must be considered when setting up the warning levels within MCEGold.

Changing the warning levels will affect all subsequent, as well as all previous tests. Therefore, whenever a warning level is changed, an uneditable message is automatically entered into the motor notes.

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Warning levels may be set on the parameters listed below:

Voltage THD (LL) [>#]
Current THD [>#]
Differential Current [>#, Base+-#]

The information inside the brackets describes how the Caution or Alarm level is set; "<" is less than; ">" is greater than; "Base" indicates the baseline value; "+" means baseline plus this value; "-" means baseline minus this value; # is the numeric value for the Caution or Alarm for that parameter.

For the settings which do not reference a baseline, the value obtained will be in Caution or Alarm if it is greater than the numbers entered into the Caution and Alarm boxes for the parameters.

For example, for Fp Amplitude the value obtained will be in Caution or Alarm if it is less than the numbers entered into the Caution and Alarm boxes for the parameters.

A test point without brackets indicates that there is not a default value.

Change Warning Settings

Warning Settings are changed using the Asset Manager, Warning Settings on the home page. This is discussed in Chapter 3-MCEGold, page 3-3. They may also be changed using the Warning Settings menu on each Test History window. See the Test History information for each test for more information.

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APPENDIX A: RESOURCES

GENERAL INFORMATION

A Stitch in Time (The Complete Guide to Electrical Insulation Testing). 3rd ed. 6/92. Bell, PA: AVO Biddle Instruments in Blue, 1984.

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APPENDIX B: ASSET SCHEDULER

DESCRIPTION

The Asset Scheduler Module allows an asset to be set up for regularly scheduled testing. When an asset is scheduled for regular testing a message is generated in the Schedules section of the Message Center.

PROCEDURE

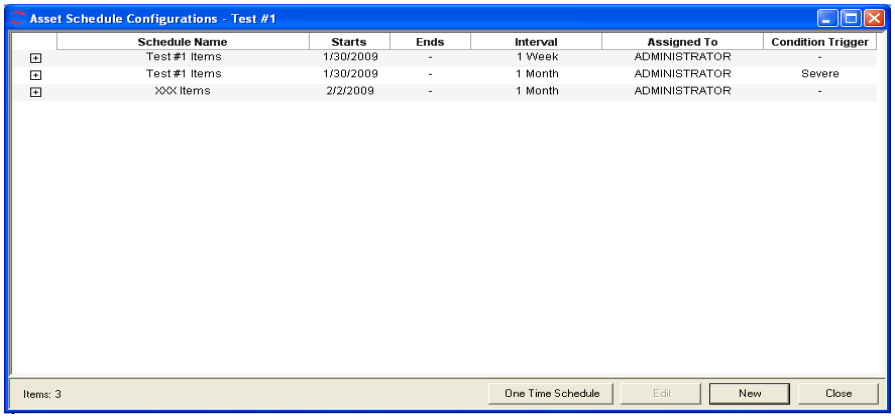
To create a reoccurring schedule

1. Highlight the asset on the Site Navigator, WatchList, or Asset Condition list reached through the Site Condition.

2. Select the Scheduler icon  on the toolbar.

3. The Asset Schedule Configurations window opens. The asset name displays on the title bar. The window will be blank if no test schedule has been set up for the asset. If a test schedule has been set up, it will contain a line for each different schedule.

   Note: If you do not have the correct Module Activation Key a message box will remind you that the Scheduler is not accessible under the current key. Contact PdMA Corporation Sales Department at pdma@pdma.com or 813-621-6463.

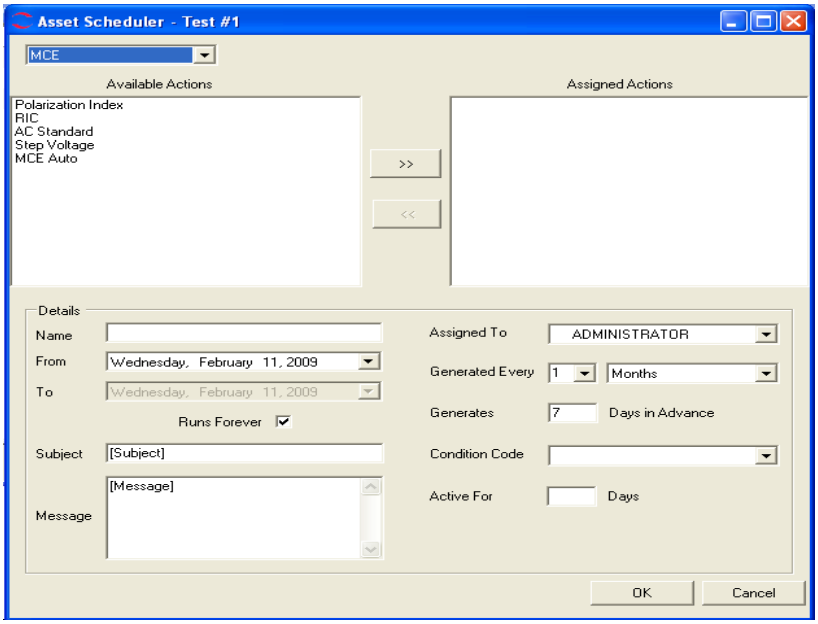


4. Click **New.**

   Note: To create a non-reoccurring schedule (One Time Schedule) see Schedule, Create in the To View Scheduled Jobs section for instructions.

5. A second Asset Scheduler window opens.

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Reoccurring Asset Schedule

6. Select either MCE or EMAX from the drop-down list. The appropriate tests are displayed in the Available Actions window.

7. Select the tests to be scheduled by highlighting the test name and clicking the right pointing arrow button (>>) to move the selection into the Assigned Actions box. Continue until all desired tests are selected. MCE and EMAX test may be scheduled together.

   To remove a test from the Assigned Actions box, highlight it and use the left pointing arrow (<<) button.

8. Enter a schedule name (required) in the Name text box.

9. The From text box is the starting date for the scheduled testing. Clicking the down arrow causes a calendar to display with the current date circled in red. Clicking a future date on the calendar highlights the date in blue and inserts the date in the text box.

10. If the Runs Forever box is checked (default) the To text box is inactive and the tests will be scheduled according to the selections made on the right side of the Details area with no end date for the scheduling.

11. If the Runs Forever box is unchecked a To selection indicates the end date of the reoccurring schedule. Select an end date by clicking the down arrow, which causes a calendar to display with the current date circled in red. Clicking a future date on the calendar highlights the date in blue and inserts the To date in the text box.

12. If desired enter a message in the Message area.

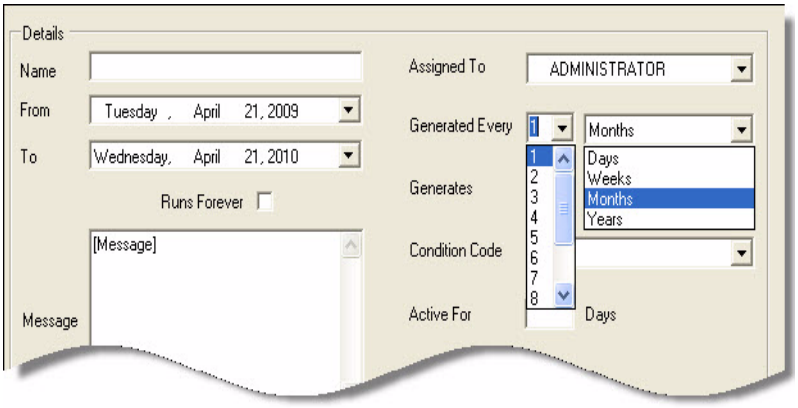
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13. Assign the schedule to a technician by selecting a name from the list in the Assigned To text box.

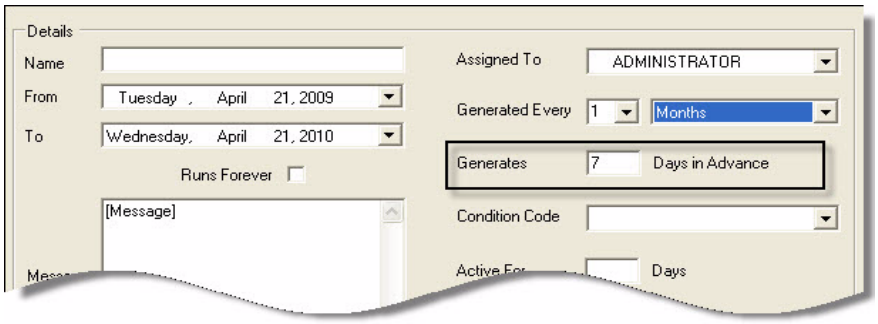
    Stand Alone users will only see the name Administrator in the text box.

    Network users will see a drop down list of users who have rights to the site.

14. The frequency that the schedule is generated is controlled by the Generated Every list boxes. Use the down arrow to select a number between 1 and 12. Your selection works with the selection made in the To and From list boxes on the left. Use the down arrow and select either Days, Weeks, Months, or Years.



15. Enter a number in the Generates text box to tell the software how many days in advance to generate the schedule.



16. To schedule testing when an asset reaches a specific condition assign a Condition Code using the drop down list. Choices are blank (none), Normal, Observe, Caution, Severe, or Any Severity Increase. Blank (none) is the default until a selection is made.

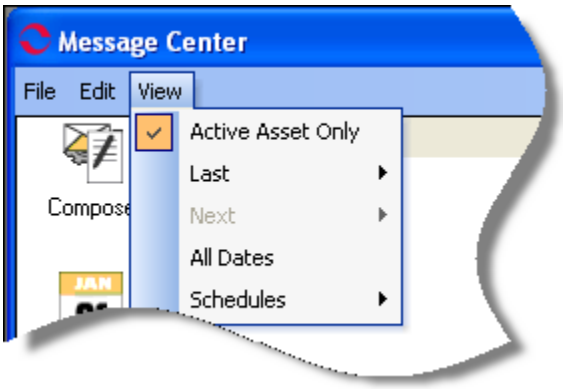
17. Enter a number in the Active For text box to indicate how many days the schedule will be active for from the first day of the condition code change. This text box is inactive until a selection is made in the Condition Code text box.

18. When your choices are complete, click **OK**.

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To view scheduled jobs

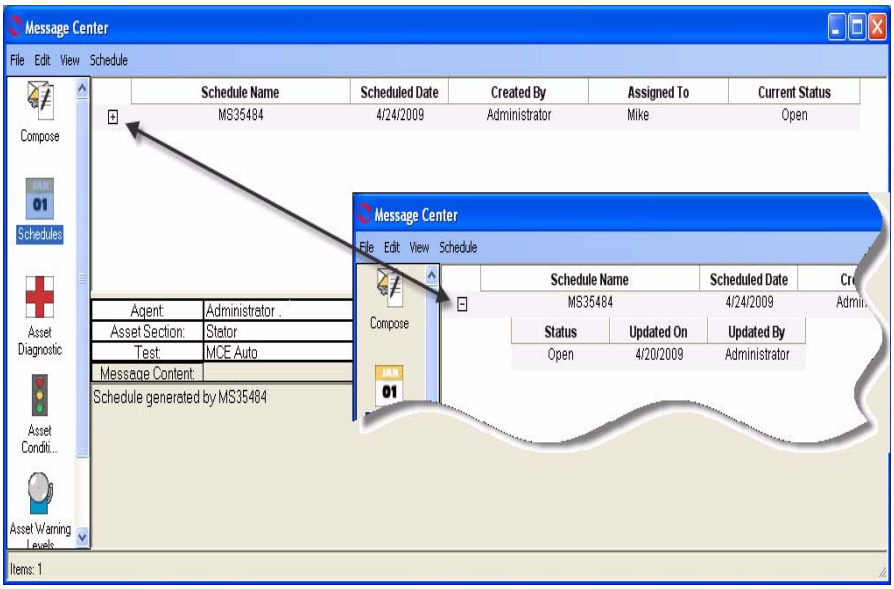
In the Message Center, the list of scheduled jobs can be displayed for either the single highlighted asset or for all assets. The default is to view schedules for a single highlighted asset (Active Asset Only). To view schedules for all assets, remove the check mark in front of Active Asset Only (View, Active Asset Only).



1. In the Message Center, click the Schedules icon.  This causes the Schedule menu to appear and list the schedules for the selected asset.

   Note: If View, Active Asset Only is selected and an asset is highlighted the testing schedule will appear for that asset only. If no asset is selected, a message informs you to select an active asset.

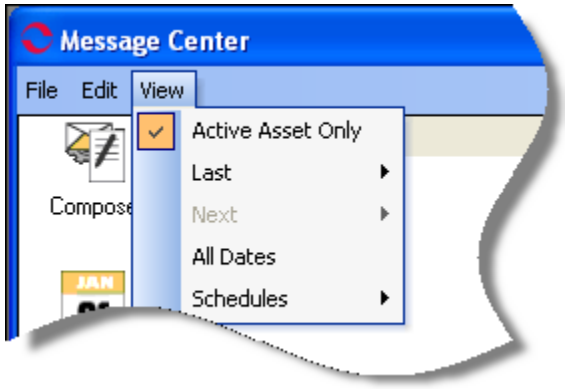
2. To view additional information about the schedule, click the + sign at the beginning of the line. The expanded view displays the Status, Updated On, and Updated by information. To close the expanded view click the - sign.



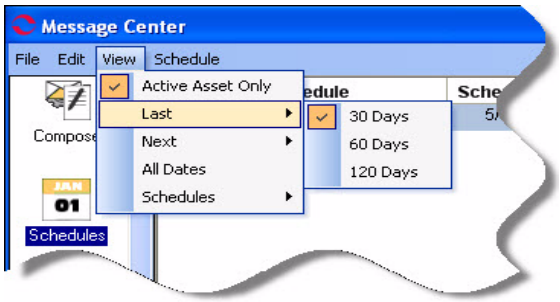
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View Menu

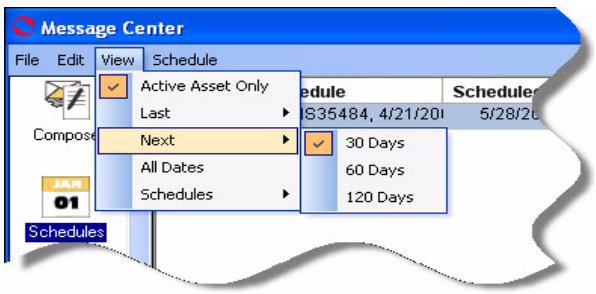
View, Active Asset Only - As previously mentioned a check mark in front of Active Asset Only causes the schedule for the highlighted asset to display. This is the default value. If the checkmark is removed then a list of all asset having schedules displays.



View, Last - This option allows you to select a prior time frame of 30, 60, or 120 days to display a list of schedules.



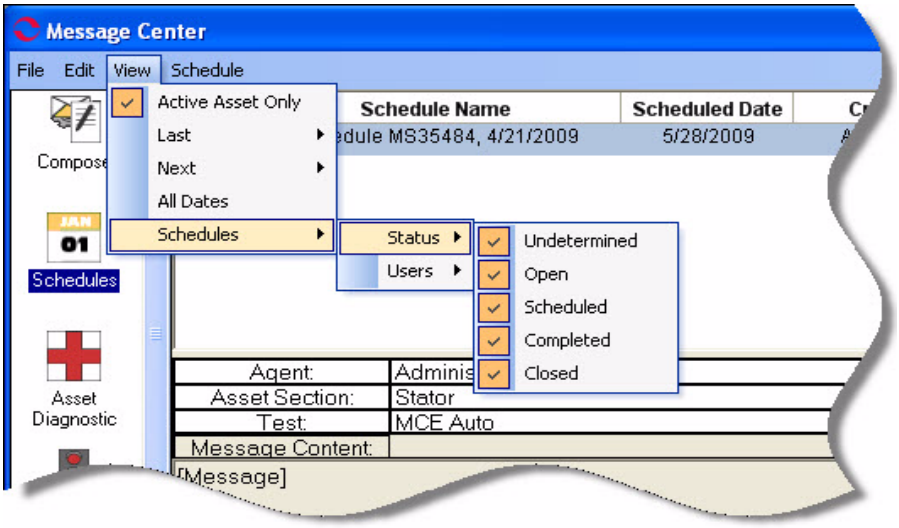
View, Next - The Next option is not active until a list has been generated. Then using the Next option and selecting either 30, 60, or 120 days will generate a list of schedules during that time frame.



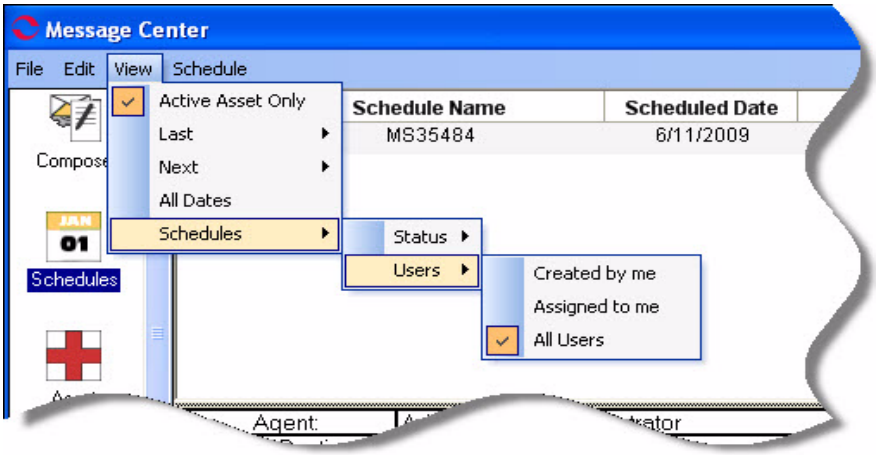
View, All Dates - The All Dates option causes all schedules that have been generated to display.

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View, Schedules, Status- Using the Status selections allows the schedule list to be refined. The default is to show all status categories. Deselecting (removing the check mark from in front of a option) removes a list meeting that criteria from the schedules list. Each time a check mark is deselected the list regenerates.

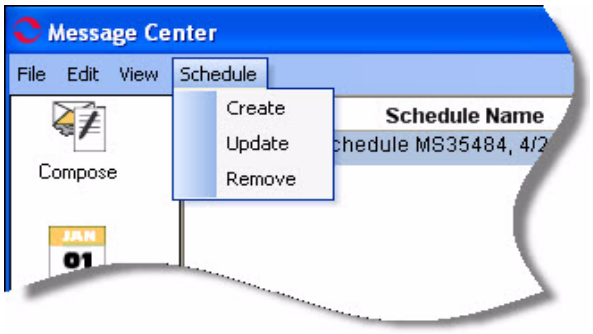


View, Schedules, Users - Using the Users selections allows the schedule list to be refined. The default is to show all users. Deselecting (removing the check mark from in front of a option) removes a list meeting that criteria from the schedules list. Each time a check mark is deselected the list regenerates. You cannot deselect All Users without selecting either Created by me or Assigned to me. If All Users is selected the Created by me and Assigned to me are deselected. You may have Created by me and Assigned to me selected at the same time, but not all three options.



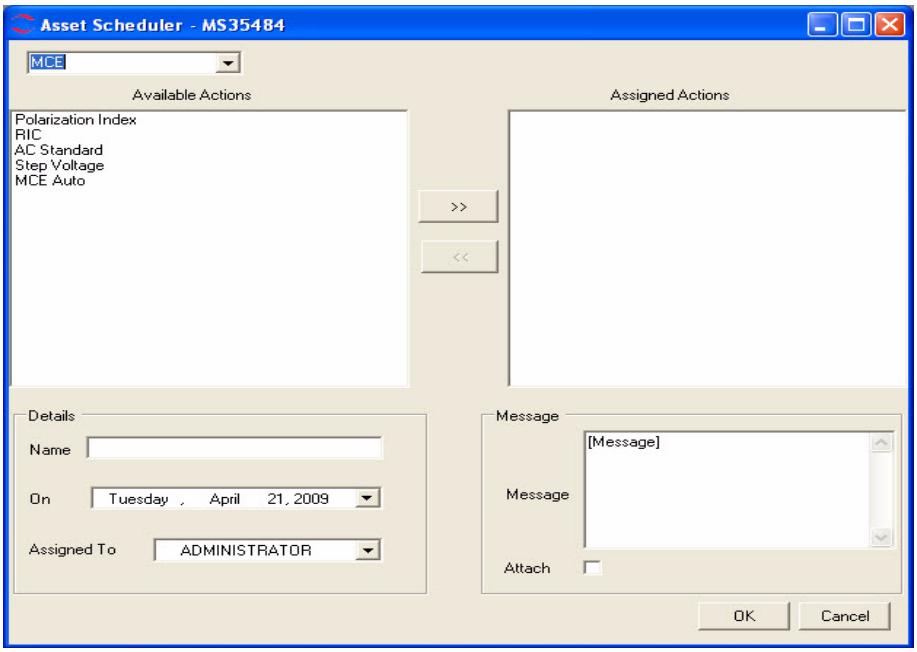
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Schedule Menu



Schedule, Create - This option is used to create a one time schedule. An asset must be selected. Selecting Schedule, Create opens the Asset Scheduler window. It is also accessible by right clicking on an existing schedule or selecting Schedule on the tool bar and clicking the One Time Schedule button on the Asset Schedule Configuration window.

Note: To create a reoccurring schedule it is necessary to use the Asset Schedule Configuration window reached by clicking the icon on the toolbar. Click the New button.



One-Time Schedule

Create a one-time schedule

1. In the Asset Scheduler window, select either MCE or EMAX from the drop-down list. The appropriate tests are displayed in the Available Actions window.

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2. Select the tests to be scheduled by highlighting the test name and clicking the right pointing arrow button (>>) to move the selection into the Assigned Actions box. Continue until all desired tests are selected. MCE and EMAX test may be scheduled together.

   To remove a test from the Assigned Actions box, highlight it and use the left pointing arrow (<<) button.

3. In the Details section fill in the Name, use the drop down calendar to select a test date and fill in the assigned to text box.

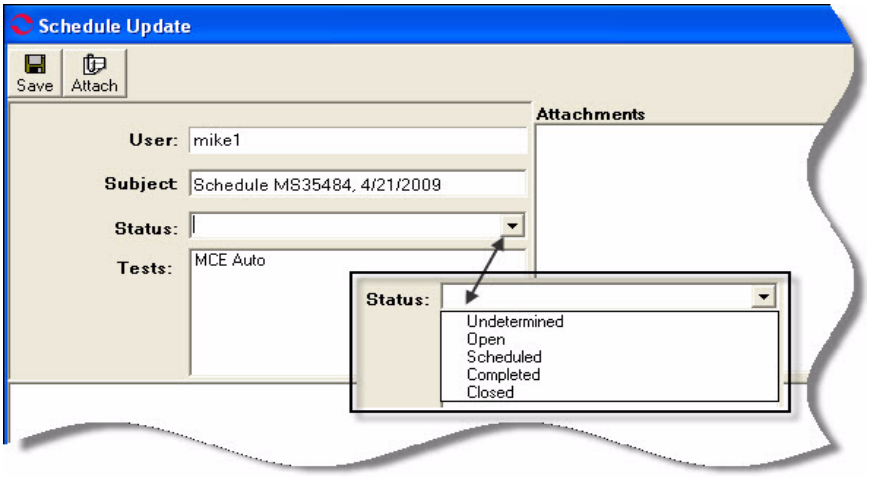
4. In the Message section enter a message if desired.

5. You may attach a file to the schedule by clicking on the Attach check box. When you click **OK** the File Attachment window opens, allowing you to search for the file you wish to attach. Locate the file, highlight it so that the name shows in the File name text box, then click **Open**. The file will be attached to this schedule.

   Note: The file name is limited to less than 50 characters, including the extension.

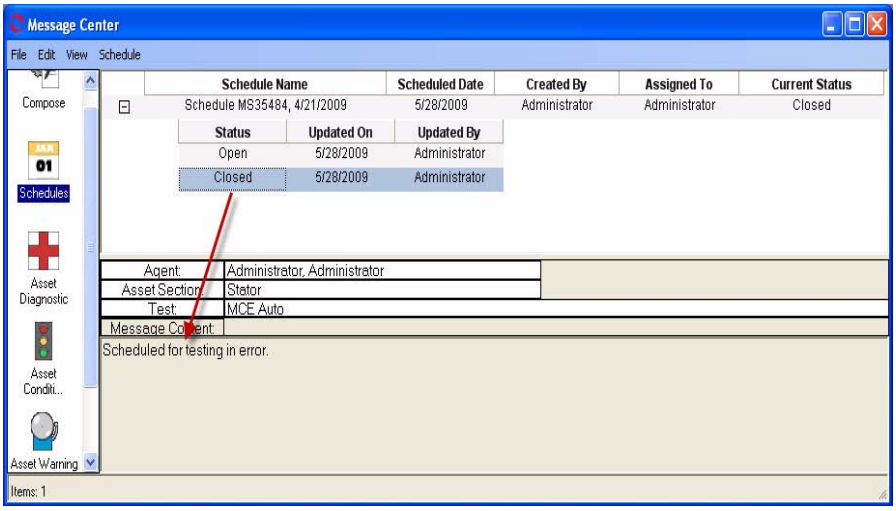
   To view the file highlight the schedule line in the Message Center. Do not click the + sign. The Attachment File text box displays in the lower area of the window. Click the down arrow to display attached files and click on the desired file name. The Open or Save file window opens giving you the choice to either open or save the file to a disk. Make your selection and click **OK**.

Schedule, Update - This option allows you to change the status of the scheduled testing. The Schedule Update window opens. Using the drop down list to change the Status to Undetermined, Open, Scheduled, Completed, or Closed. A message must be entered. Click **Save**. The status will be updated and the note will display in the Message Center.



To view the message that was associated with the update, click the + sign in front of the schedule, then highlight the changed status. The message appears in the Message Content area at the bottom of the window.

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Schedule, Remove - Highlight the schedule line and select Schedule, Remove. The schedule is permanently deleted.

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APPENDIX C: ENERGY COST ANALYSIS

DESCRIPTION

The Energy Cost Analysis Module analyzes operating and replacement cost for Design B AC Induction motors.

PROCEDURE

To perform energy cost analysis

Note: The asset being analyzed must have EMAX Power test data for accurate calculations. If there is no Power test data a Missing Data error message will appear. It will be possible to continue with the analysis by entering Service Factor, Power Factor, and Efficiency (%) manually. However, some calculations will not be accurate.

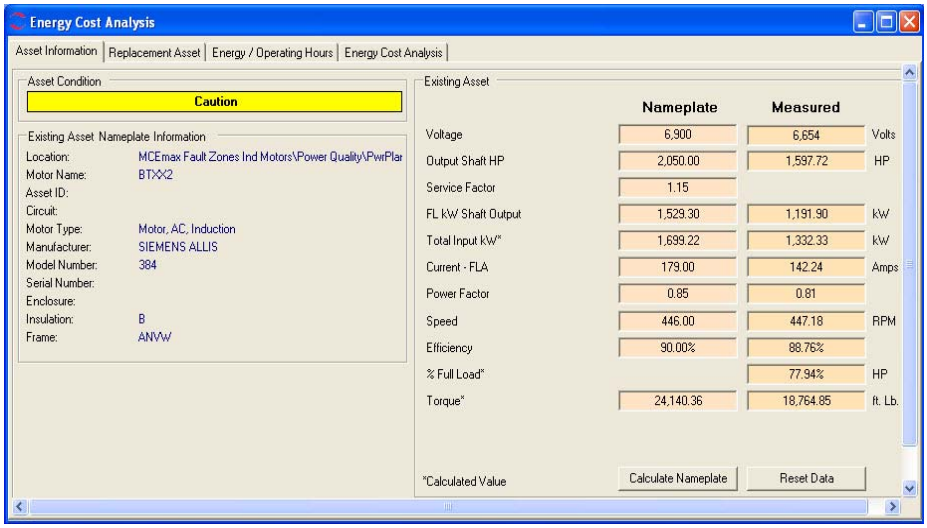
1. Highlight the asset on the Site Navigator, Watch List, or the list generated using the Site Condition.

2. Select the Energy Analysis icon  on the toolbar.

3. The Energy Cost Analysis window opens.

   Note: If you do not have the correct Module Activation Key a message box will remind you that the Energy Cost Analysis is not accessible under the current key. Contact PdMA Sales Department at pdma@pdma.com or 813-621-6463.

4. The Energy Cost Analysis window displays four tabs: Asset Information (default), Replacement Asset, Energy/Operating Hours, and Energy Cost Analysis.



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Asset Information Tab

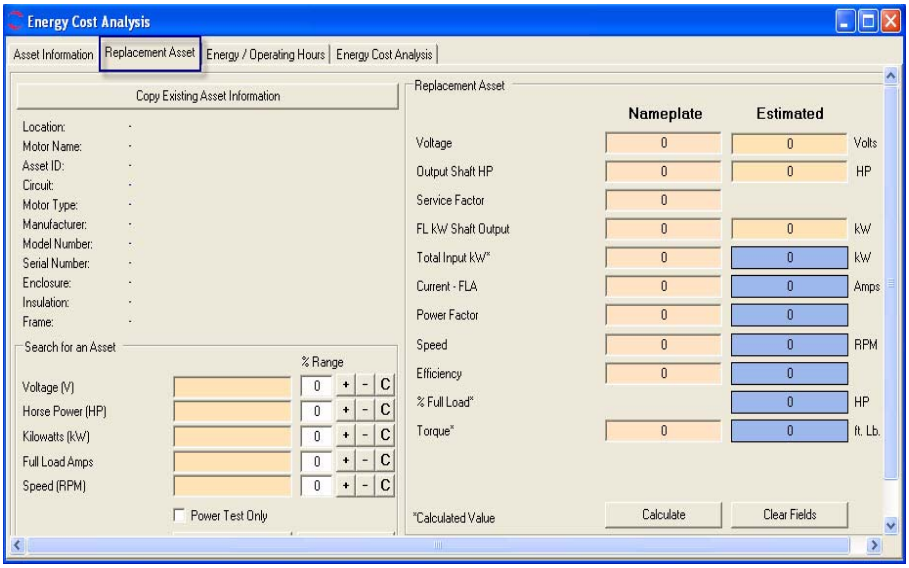
5. The left side of the window displays the asset condition and the nameplate information.

6. The right side of the window displays the Nameplate information compared to the Measured test results of the last power test taken. Changes may be made manually in these text boxes in order to answer the "what if" questions.

7. The **Calculate Nameplate** button is used to recalculate the nameplate values if a manual change was made.

8. The **Reset Data** button is used to return the values to the default values.

Replacement Asset Tab

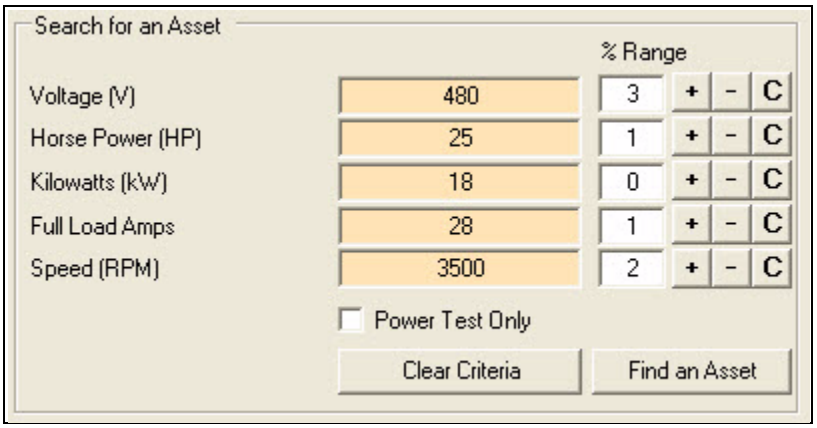


9. The values for a replacement asset are initially blank. You may enter the existing asset values by clicking **Copy Existing Asset Information** and then changing the fields that apply to the replacement asset.

   Or you may search for an asset using the Search for an Asset section to match specific criteria and use that asset's values.

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Search for an asset



10. In the Search for an Asset area, enter values in the desired fields. You may search on one, multiple, or all criteria.

11. If you want to search for an asset that falls in a range of values, enter a number in the % Range textbox. Use the + or - buttons to increase or decrease the value in single increments.

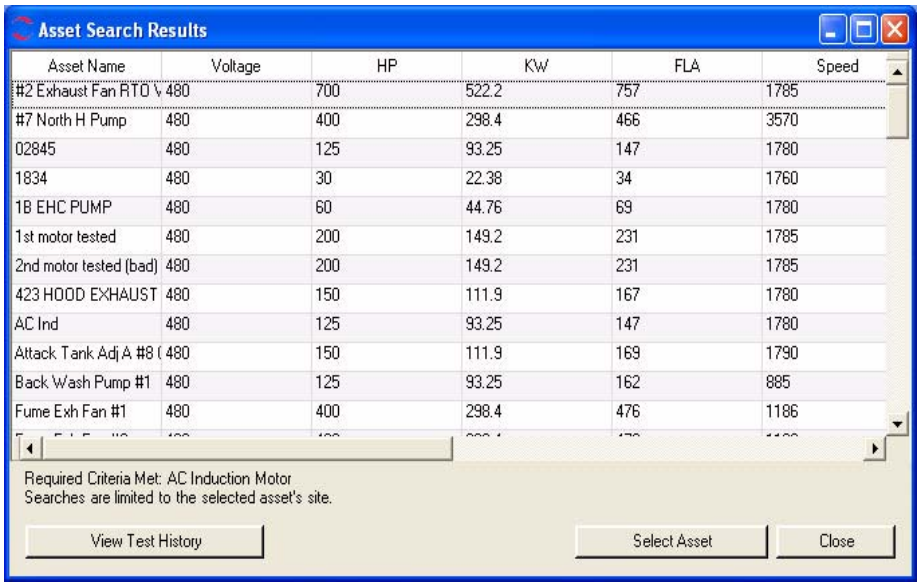
12. To search for assets that only have power test results, place a check in the check box before Power Test Only by clicking on it.

13. **C** clears all the values in the line.

14. **Clear Criteria** clears all the textboxes.

15. When you are satisfied with your criteria choices, click **Find an Asset**.

16. The Motor Search Results window opens with a list of motors that fit the search criteria.



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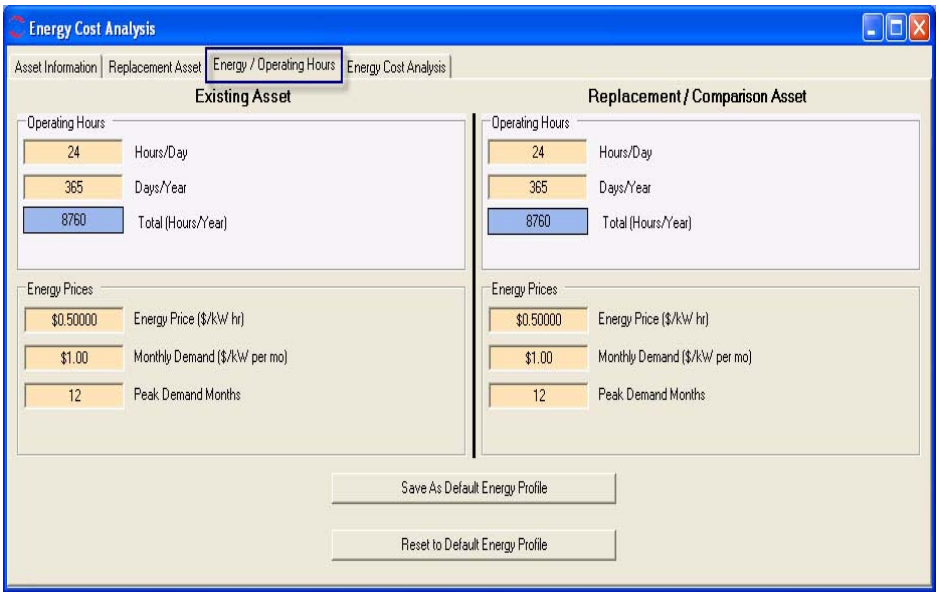
17. To view the Test History, if needed, highlight an asset and click **View Test History** to open the Power Test results in the Test History

18. To enter the selected asset information in the Replacement Asset text boxes, highlight the asset and click **Select Asset**.

19. To modify the Replacement Asset values enter the value in the Nameplate and/or Estimated text boxes. % Full Load and the blue text boxes may not be changed. Click **Calculate**.

20. **Clear Fields** removes all values and the asset information in the left side.

Energy/Operating Hours Tab



21. Values are determined by the default energy profile and automatically entered in the text boxes.

22. If needed for comparison purposes, change any values for the existing and replacement asset. To update the calculations press **Enter** or **Tab.** Tab updates the value and moves to the next text box.

    Note: Total (Hours/Year) is a calculated value and cannot be changed.

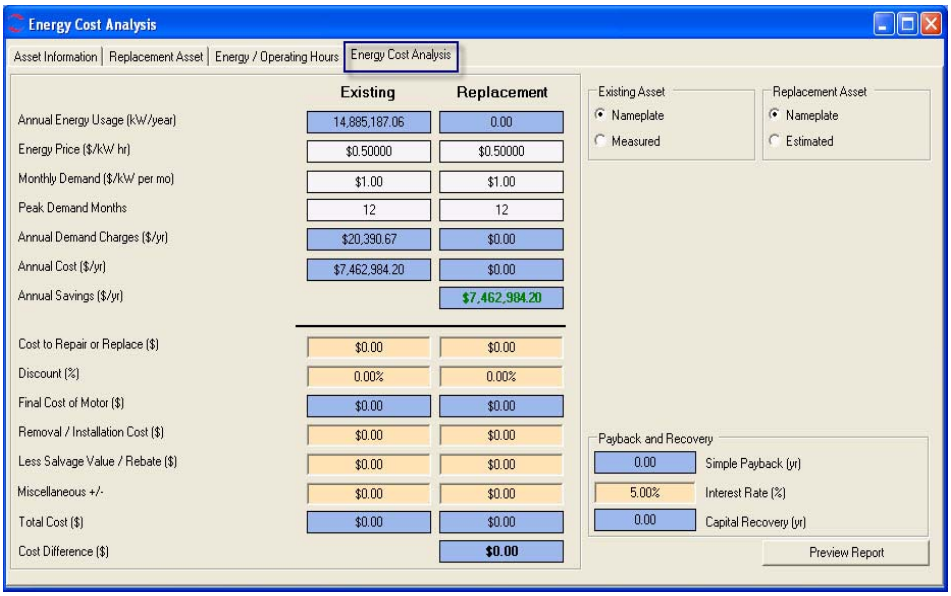
23. After changing the values, the profile may be saved as the default for future use by clicking **Save as Default Energy Profile**.

    Caution: Once you save the new values as the default it will not be possible to return to the original values **Using the Reset to Default Energy Profile** without manually entering them.

24. If after changing the values you wish to return to the default profile and you have **not** clicked **Save as Default Energy Profile**, click **Reset to Default Energy Profile** and the default values will be redisplayed.

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Energy Cost Analysis Tab



Note: Blue textboxes may not be manually changed as they are calculated values.

25. Existing and Replacement values are based on the nameplate, measured, or estimated values depending on which option is selected in the Existing and Replacement Asset boxes on the right.

    For Existing Asset, selecting Nameplate causes the nameplate values to be entered. Selecting Measured causes the measured values obtained as a result of testing to be entered. The nameplate and measured values are displayed also on the Asset Information tab.

    For Replacement Asset, selecting Nameplate causes the replacement nameplate values to be entered. Selecting Estimated causes the estimated values displayed on the Replacement Asset tab to be entered as the Replacement values.

26. The Annual Saving computes the potential energy savings by installing a replacement asset. No values may be changed in this section as they are calculated values.

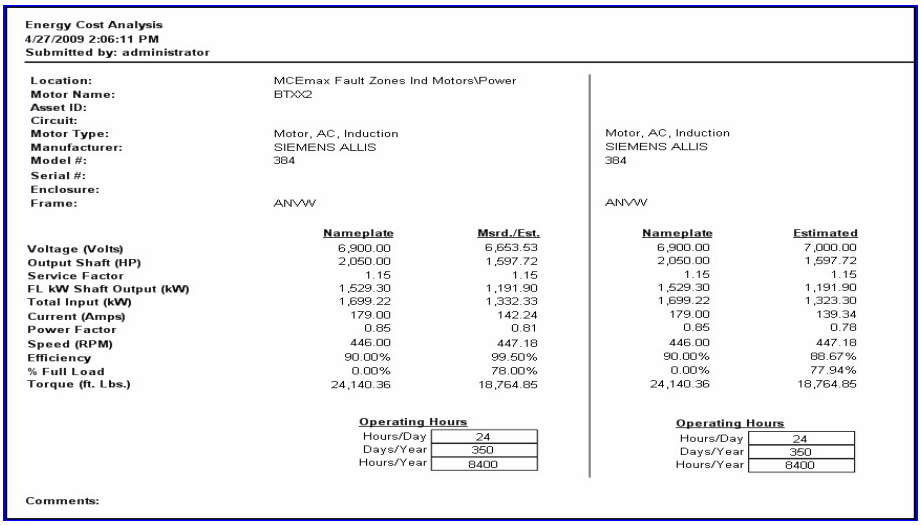
27. The Repair or Replace section, located on the lower left side, allows you to enter values and then uses those values to calculate the Cost Difference between repairing the existing asset or installing a replacement asset.

28. The Payback and Recovery section calculates the Simple Payback and Capital Recovery time in years based on the Cost Difference value. The only textbox that can be changed is the Interest Rate.

Report

29. When the Energy Cost Analysis has been completed, click **Preview Report** to view a two-page report summary.

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Energy Cost Analysis
4/27/2009 2:06:11 PM
Submitted by: administrator

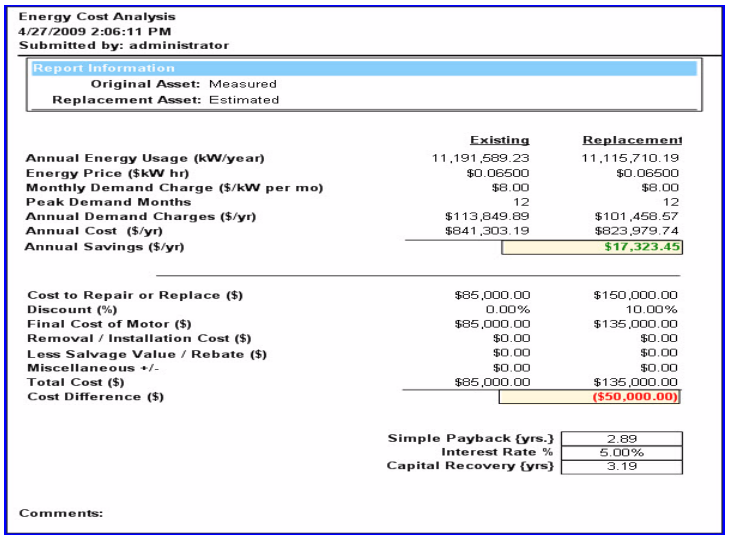
Location:	MCEmax Fault Zones Ind Motors\Power			
Motor Name:	BTXX2			
Asset ID:				
Circuit:				
Motor Type:	Motor, AC, Induction		Motor, AC, Induction	
Manufacturer:	SIEMENS ALLIS		SIEMENS ALLIS	
Model #:	384		384	
Serial #:				
Enclosure:				
Frame:	ANVW		ANVW	
	Nameplate	**Msrd./Est.**	**Nameplate**	**Estimated**
Voltage (Volts)	6,900.00	6,653.53	6,900.00	7,000.00
Output Shaft (HP)	2,050.00	1,597.72	2,050.00	1,597.72
Service Factor	1.15	1.15	1.15	1.15
FL kW Shaft Output (kW)	1,529.30	1,191.90	1,529.30	1,191.90
Total Input (kW)	1,699.22	1,332.33	1,699.22	1,323.30
Current (Amps)	179.00	142.24	179.00	139.34
Power Factor	0.85	0.81	0.85	0.78
Speed (RPM)	446.00	447.18	446.00	447.18
Efficiency	90.00%	99.50%	90.00%	88.67%
% Full Load	0.00%	78.00%	0.00%	77.94%
Torque (ft. Lbs.)	24,140.36	18,764.85	24,140.36	18,764.85

Operating Hours	
Hours/Day	24
Days/Year	350
Hours/Year	8400

Operating Hours	
Hours/Day	24
Days/Year	350
Hours/Year	8400

Comments:

Energy Cost Analysis Report Page One



Energy Cost Analysis
4/27/2009 2:06:11 PM
Submitted by: administrator

Report Information
Original Asset: Measured
Replacement Asset: Estimated

	Existing	**Replacement**
Annual Energy Usage (kW/year)	11,191,589.23	11,115,710.19
Energy Price ($kW hr)	$0.06500	$0.06500
Monthly Demand Charge ($/kW per mo)	$8.00	$8.00
Peak Demand Months	12	12
Annual Demand Charges ($/yr)	$113,849.89	$101,458.57
Annual Cost ($/yr)	$841,303.19	$823,979.74
Annual Savings ($/yr)		$17,323.45
Cost to Repair or Replace ($)	$85,000.00	$150,000.00
Discount (%)	0.00%	10.00%
Final Cost of Motor ($)	$85,000.00	$135,000.00
Removal / Installation Cost ($)	$0.00	$0.00
Less Salvage Value / Rebate ($)	$0.00	$0.00
Miscellaneous +/-	$0.00	$0.00
Total Cost ($)	$85,000.00	$135,000.00
Cost Difference ($)		($50,000.00)

Simple Payback (yrs.)	2.89
Interest Rate %	5.00%
Capital Recovery (yrs)	3.19

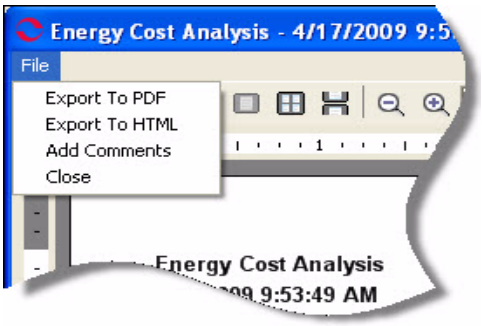
Comments:

Energy Cost Analysis Report Page Two

30. To move between the pages of the two-page print preview, click the down or up arrow on the tool bar or use the Backward and Forward arrows.



31. To add comments, select File, Add Comments and a window opens for you to type your comments. When complete click **Add**. The comments appear in the lower section of the print preview.



32. The report may be exported to PDF or HTML by using the appropriate command from the File menu.

33. To print the report, click the Print icon on the toolbar.

34. To close, select File, Close or click the close button (red "X") in the upper right corner.

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GLOSSARY

Active Filter – sophisticated power electronic device for eliminating harmonic distortion.

Air Gap – physical gap between rotor and stator; ideal conditions are that the air gap is of a uniform width around the entire circumference of the motor. See also *eccentricity.*

Aliasing – visual misrepresentation that occurs when an image or model contains more detail than the display device's resolution can present. Note: A result of aliasing is jagged stair stepping of slanted lines.

Asset – motors, generators

Balance of Inductance – indicates a mismatch in inductance between phases of a three phase motor. The % inductance imbalance is calculated using the three phase inductance measurements and the following equation: % I_{imb}= (max deviation from avg)/avg x 100.

Balance of Resistance – indicates a mismatch in resistance between phases of a three phase motor. The % resistance imbalance is calculated using the three phase resistance measurements and the following equation: % R_{imb}= (max deviation from avg)/avg x 100.

Baseline – reference test to which subsequent tests can be compared; it can be the first test performed on a motor or a test following refurbishment. See also *trending.*

Capacitance – characteristics of a circuit to resist a change in voltage.

Capacitance-to-Ground (CTG) – capacitance measurement between cables/motor windings and ground; indicates dirt buildup on cables/inside a motor; CTG values are best used for comparison.

CBEMA Curve – set of curves developed by the Computer Business Equipment Manufacturers Association which represent the withstand capabilities of computers in terms of the magnitude and duration of the voltage disturbance; de facto standard for measuring the performance of all types of equipment and power systems.

Common Mode Voltage – noise voltage that appears equally from current-carrying conductor to ground.

Comparison – comparison of data on one motor to data on a separate identical motor.

Coupling – circuit element, elements, or network that may be considered common to the input mesh and the output mesh and through which energy may be transferred from one to another.

Crest Factor – ratio of the peak of the measured waveform to the RMS value of the fundamental waveform; for example: crest factor of a sinusoidal wave is 1.414.

Critical Loads – devices and equipment whose failure to operate satisfactorily jeopardizes the health or safety of personnel, and/or results in loss of function, financial loss, or damage to property deemed critical by the user.

CTG – See *Capacitance-to-Ground.*

Current Analysis – measurement of current signals to motor; used to analyze rotor bars, eccentricity, in-rush/ start-up currents, and high frequency spectrums.

Current Distortion – distortion in the AC line current. See also *distortion.*

Current Imbalance – indicates a mismatch in current between phases of a three phase motor. The % current imbalance is calculated using the three phase current measurements and the following equation: % I_{imb}= (max deviation from avg)/avg x 100.

DA – See *Dielectric Absorption*.

DataSync – copying data between the network server and a tester.

DC Bar-to-Bar – test used to determine continuity of armature segments in a DC motor.

Derating – reduction of a motor's rated load due to current and voltage conditions to prevent overstress conditions.

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Dielectric Absorption (DA) – ratio of RTG reading at 60 seconds to RTG reading at 30 seconds; indicates condition of cable/motor insulation.

Differential Mode Voltage – voltage between any two of a specified set of active conductors.

Dip – See *Sag*.

Distortion – any deviation from the normal sinewave for an AC signal.

DownSync – syncing the data from the network server to the tester.

Drive Input – EMAX test on the AC supply side of the DC drive supplying a DC motor.

Dropout – loss of equipment operation (discrete data signals) due to noise, sag, or interruption.

Dropout Voltage – voltage at which a device releases to its deenergized position; the voltage at which a device fails to operate.

Eccentricity – non-uniformity of the air gap between the rotor and stator.

Eccentricity Frequency (F_{ecc}) – $F_{ecc} = B (F_{shaft})$ Where, F_{ecc} = Eccentricity Frequency, B = the number of rotor bars, F_{shaft} = Shaft frequency, Shaft Frequency = RPM/60.

Efficiency – the ratio of output power to input power.

EMAX – name for PdMA Corporation's energized electric motor tester.

Equipment Grounding Conductor – conductor used to connect the non-current carrying parts of conduits, raceways, and equipment enclosures to the grounded conductor (neutral) and the grounding electrode at the service equipment (main panel) or secondary of a separately derived system (i.e.: an isolation transformer); Refer to NFPA 70-1990, Section 100.

Failure Mode – effect by which failure is observed.

Fast Tripping – refers to the common utility protective relaying practice in which the circuit breaker or line recloser operates faster than a fuse can blow; also called fuse saving; effective for clearing transient faults without a sustained interruption, but is somewhat controversial because industrial loads are subjected to a momentary or temporary interruption.

Fault – generally refers to a short circuit on the power system.

Fault, Transient – short circuit on the power system, usually induced by lightning, tree branches, or animals; can be cleared by momentarily interrupting the current.

FFT – Fast Fourier Transform.

FLA – See *Full Load Amps*.

Frequency Deviation – increase or decrease in the power frequency; duration can be from several cycles to several hours.

Frequency Response – generally refers to the variation of impedance of the system, or a metering transducer, as a function of frequency.

Full Load Amps – the amount of current a motor draws at design load.

Fundamental (Component) – component of order 1 (50 or 60 Hz) of the Fourier series of a periodic quantity.

Ground – conducting connection, whether intentional or accidental, by which an electric circuit or equipment is connected to the earth, or to some conducting body of relatively large extent that serves in place of the earth; used for establishing and maintaining the potential of the earth (or of the conducting body) or approximately that potential on conductors connected to it and for conducting ground currents to and from earth (or the conducting body).

Harmonic (component) – component of order greater than 1 (50 or 60 Hz) of the Fourier series of a periodic quantity.

Harmonic Content – quantity obtained by subtracting the fundamental component from an alternating quantity.

Harmonic Distortion – periodic distortion of a sinewave. See also *distortion* and *total harmonic distortion* (THD).

Harmonic Filter – device on power systems for filtering one or more harmonics from the system; most filters are passive combinations of inductance,

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capacitance, and resistance; newer technologies include active filters which can also address reactive power needs.

Harmonic Number – integral number given by the ratio of the frequency of a harmonic to the fundamental frequency.

Harmonic Resonance – condition in which a power system is resonating near one of the major harmonics being produced by nonlinear elements in the system, thus exacerbating the harmonic distortion.

Harmonic Voltage Factor (HVF) – root mean square of the odd harmonics as ratioed to the fundamental frequency.

Hidden Tests – tests which are stored in the database, but do not appear on the History Chart; use the Show All Tests feature to have all tests appear on the History Chart.

Horsepower – unit of power equal to 745.7 watts, or 33,000 foot-pounds per minute.

Hotstick – insulated tool used to determine if voltage is present on circuits rated at > 600 volts.

HP – See *Horsepower.*

HVF – See *Harmonic Voltage Factor.*

IEEE – Institute of Electrical and Electronics Engineers, Inc.

Impedance – measure of the complex resistive and reactive attributes of a component in an alternating-current circuit (IEEE Std. 100-1992).

Inductance – characteristics of a circuit to resist a change in current.

Inductance Phase-to-Phase – measurement of inductance between phases 1-2, 2-3, and 3-1.

Instantaneous – refers to a time range from one-half cycle to 30 cycles of the power frequency when used to quantify the duration of a short duration variation as a modifier.

Interharmonic (component) – frequency component of a periodic quantity that is not an integer multiple of the frequency at which the supply system is designed to operate (50 or 60 Hz).

Isolated Ground – insulated equipment grounding conductor run in the same conduit or raceway as the supply conductors; insulated from the metallic raceway and all ground points throughout its length; originates at an isolated ground-type receptacle or equipment input terminal block and terminates at the point where neutral and ground are bonded at the power source. Refer to NFPA 70-1990, Section 250-74, Exception #4 and Section 250-75, Exception.

Isolation – separation of one section of a system from undesired influences of other sections.

kVA – kilovolt-amps; apparent power.

kVAR – kilovolt-amps; reactive power.

kW – kilowatts; real power.

LED Display – Light Emitting Diode Display; located on motor tester to indicate tester battery status.

Linear Load – electrical load device which, in steady state operation, presents an essentially constant load impedance to the power source throughout the cycle of applied voltage.

Line-to-Line – voltage measurement between two phases.

Line-to-Neutral – voltage measurement between one phase and a neutral (usually ground).

Low Influence Rotor (LIR) – a rotor that has a low permeability/retentivity and does not retain its magnetic signature once the rotor current is removed. The permeability and retentivity is a function of the rotor material. A LIR will not cause any measurable influence on the stator inductance.

MCE – Motor Circuit Evaluation; a predictive maintenance technology which provides comprehensive portable motor testing.

MCE™ – name for PdMA Corporation's deenergized electric motor tester.

MCEGold™ – software program used by MCEMAX™.

MCEGold Network - software designed to accommodate multiple sites/servers and multiple formats, i.e., desktops, field testers.

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MCEMAX™ – name for PdMA Corporation's combined deenergized and energized electric motor tester.

MCSA – Motor Current Signature Analysis; The analysis of motor current in the frequency and time domain.

Message Window – describes a window which appears prior to a function being carried out; it usually has a warning symbol or icon, the message, and control buttons (typically Yes, OK, No, Cancel).

Momentary – when used to quantify the duration of a short duration variation as a modifier, refers to a time range at the power frequency from 30 cycles to 3 seconds.

Multimeter – test equipment which can measure voltage, current, resistance, and continuity; used with MCE tester to determine if voltage is present on circuits rated at < 600 volts.

Mutual Impedance – values of Zab, Zbc, Zca in the impedance matrix given by [Vabc] = [Zabc][Iabc].

Negative Current – negative sequence component of current signal.

Negative Mutual Impedance Magnitude – negative sequence component of the values of Zab, Zbc, Zca in the impedance matrix given by [Vabc] = [Zabc][Iabc].

Negative Self Impedance Magnitude – negative sequence component of the values of Zaa, Zbb, Zcc in the impedance matrix given by [Vabc] = [Zabc][Iabc].

Negative Sequence – represents a balanced system of phases in the opposite direction of the original signal.

Negative Voltage – negative sequence component of voltage signal.

NEMA – National Electrical Manufacturers Association.

NFPA – National Fire Protection Association.

Noise – unwanted electrical signals which produce undesirable effects in the circuits of control systems (including sensitive electronic equipment in total or in part).

Nominal Voltage (Vn) – nominal value assigned to a circuit or system for the purpose of conveniently designating its voltage class (ie: 208/120, 480/277, 600).

Nonlinear Load – electrical load which draws current discontinuously or whose impedance varies throughout the cycle of the input AC voltage waveform.

Normal Mode Voltage – voltage that appears between or among active circuit conductors.

Notch – switching or other disturbance of the normal power voltage waveform, lasting less than a half cycle, which is initially of opposite polarity than the waveform, and is thus subtracted from the normal waveform in terms of the peak value of the disturbance voltage; includes complete loss of voltage for up to a half cycle.

Overvoltage – when used to describe a specific type of long duration variation, refers to a voltage having a value of at least 10% above the nominal voltage for a period of time greater than 1 minute.

Parallel Port – port on some tester laptop computers, which can be used to connect the laptop computer to the printer.

Passive Filter – combination of inductors, capacitors, and resistors designed to eliminate one or more harmonics; most common variety is an inductor in series with a shunt capacitor, which short-circuits the major distorting harmonic component from the system.

PC – personal computer; refers to the desktop computer that MCEGold is installed on.

PC/MCIA Port – port on tester laptop computer used to connect the computer to the P-Series EMAX circuit board.

Phase-to-Phase Inductance – See *Inductance Phase-to-Phase.*

Phase-to-Phase Resistance – See *Resistance Phase-to-Phase.*

Phase Shift – displacement in time of one voltage waveform relative to other voltage waveform(s).

PI – See *Polarization Index.*

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Polarization Index – ratio of RTG reading at 10 minutes to RTG reading at 1 minute; indicates condition of cable/motor insulation.

Pole Pass Frequency (Fp) – the synchronous magnetic pattern of the stator rotates faster than the squirrel-cage rotor. This implies that any given rotor bar is passed by all of the magnetic poles in one rotation of the slip frequency. The rate at which this occurs is termed the Pole Pass Frequency.

Positive Current – positive sequence component of current signal.

Positive Mutual Impedance Magnitude – positive sequence component of the values of Zab, Zbc, Zca in the impedance matrix given by [Vabc] = [Zabc][Iabc].

Positive Self Impedance Magnitude – positive sequence component of the values of Zaa, Zbb, Zcc in the impedance matrix given by [Vabc] = [Zabc][Iabc].

Positive Sequence – represents a balanced system of phases in the same direction of the original signal.

Positive Voltage – positive sequence component of voltage signal.

Power Analysis – measurement of current and voltage signals to motor; used to analyze indicated voltage imbalances and spikes, excessive harmonic distortion, and stator faults.

Power Factor (PF) – ratio of active power to arithmetic apparent power.

Power Factor (True) – ratio of active power (watts) to apparent power (voltamperes).

Power Sequence – calculations of power based on the sequence data.

QA – Quality Assurance; proactive actions which provide confidence that equipment and systems will perform satisfactorily when placed in service.

Real Impedance – the real component of the complex impedance value.

Resistance Phase-to-Phase – measurement of resistance between phases 1-2, 2-3, and 3-1; indicates condition of cable/motor wiring.

Resistance-to-Ground – resistance measurement between cables/motor windings and ground; indicates condition of conductor insulation.

RIC – See *Rotor Influence Check*.

RMS – See *Root Mean Square*.

Root Mean Square – RMS value of an alternating voltage or current is the square root of the mean value of the square of the values during a complete cycle; mean is an arithmetic average.

Rotor Evaluation – EMAX test, formerly known as Low Res/High Res.

Rotor Influence Check (RIC) – test used to determine condition of air gap between rotor and stator; also used to isolate faults to rotor or stator.

RTG – See *Resistance-to-Ground*.

Safety Ground – See *Equipment Grounding Conductor*.

Sag – decrease to between 0.1 and 0.9 pu in RMS voltage or current at the power frequency for durations of 0.5 cycles to one minute.

Self Impedance – values of Zaa, Zbb, Zcc in the impedance matrix given by [Vabc] = [Zabc][Iabc].

Serial Port – port on tester laptop computer used to connect laptop to the P-Series MCE circuit board.

Showing Tests – tests which appear on the History Chart.

Site – name given to the database created in the MCEGold stand-alone program that appears at the top of the tree and designates a facility in a particular geographical location.

Slip Frequency (Fs) – difference between the synchronous frequency of the stator and the rotor frequency.

Site Condition – displays information regarding the numbers and condition of the assets in the site.

Site Navigator – a graphical view of the sites (folders) and assets (motors) in the database.

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Software Key – device connected to PC which allows MCEGold to run on the PC; without the key MCEGold will not operate on the PC.

Temporary – when used to quantify the duration of a short duration variation as a modifier, refers to a time range from 3 seconds to 1 minute.

Total Demand Distortion (TDD) – ratio of the RMS of the harmonic current to the RMS value of the rated or maximum demand fundamental current, expressed as a percent.

Total Harmonic Distortion (THD) – ratio of the RMS value of the harmonic content to the RMS value of the fundamental quantity, expressed as a percent of the fundamental.

Transient – pertaining to or designating a phenomenon or a quantity which varies between two consecutive steady states during a time interval that is short compared to the time scale of interest; can be a unidirectional impulse of either polarity or a damped oscillatory wave with the first peak occurring in either polarity.

Transparent Software Key – See *Software Key.*

Tree – Term found in the software used to indicate the layout of the Site Navigator.

Trending – comparison over time of data on a motor to previous data on the same motor.

Triplen Harmonics – term frequently used to refer to the odd multiples of the third harmonic, which deserve special attention because of their natural tendency to be zero sequence.

Unbalance – maximum deviation of the signals divided by the average * 100%.

Undervoltage – when used to describe a specific type of long duration variation, refers to a measured voltage having a value at least 10% below the nominal voltage for a period of time greater than one minute.

UpSync – Synching the data from the tester to the network server.

Voltage Change – variation of the RMS or peak value of a voltage between two consecutive levels sustained for definite but unspecified durations.

Voltage Dip – See *Sag.*

Voltage Distortion – distortion of the AC line voltage. See also *distortion*.

Voltage Fluctuation – series of voltage changes or a cyclical variation of the voltage envelope.

Voltage Imbalance (Unbalance) – condition in which the three phase voltages differ in amplitude or are displaced from their normal 120 degree phase relationship, or both; frequently expressed as the ratio of the negative sequence or zero sequence voltage to the positive sequence voltage, in percent.

Voltage Interruption – disappearance of the supply voltage on one or more phases; usually qualified by an additional term indicating the duration of the interruption (ie: Momentary, Temporary, or Sustained).

WatchList – list of assets/motors that is set up to watch for criticality purposes or as a service route.

Waveform Distortion – steady state deviation from an ideal sine wave of power frequency principally characterized by the spectral content of the deviation.

Zero Mutual Impedance Magnitude – zero sequence component of the values of Zab, Zbc, Zca in the impedance matrix given by [Vabc] = [Zabc][Iabc].

Zero Self Impedance Magnitude – zero sequence component of the values of Zaa, Zbb, Zcc in the impedance matrix given by [Vabc] = [Zabc][Iabc].

Zero Sequence – represents a balanced system of phases with the same magnitude and angular displacement.

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TECHNOTE 0801

ISSUED

May, 2008

SUBJECT

Update from MCEGold 2.1.3 to MCEGold 2.1.4.

DESCRIPTION

TechNote 0801 describes the hardware configuration changes, installation procedures when upgrading from MCEGold 2.1.3 to MCEGold 2.1.4, and importing data from an external device.

Hardware Change

The software has been upgraded to support the new USB data acquisition capability. In the MCEGold Product Support Manual on page 2-4, Figure 2-4, the DAQ/216B cable is shown as number 9. The cable will not ship with new testers.

Installation Procedure

This procedure supersedes the procedure contained in the Getting Started Guide. Before beginning the installation process it is necessary to back up the database files and template folder, then uninstall two components.

Backup

Copy the MCECal.xml and EMAXCal.xml files and complete Templates folder to a safe location. These files are located in:

C:\Program Files\PdMA Corporation\MCEGold\Mce

C:\Program Files\PdMA Corporation\MCEGold\Emax

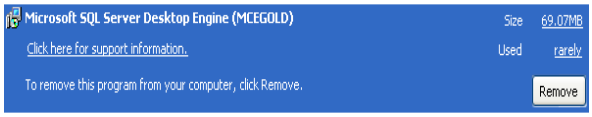
C:\Program Files\PdMA Corporation\MCEGold\Report

Uninstall

1. Click Start, Control Panel.

2. Double click the Add or Remove icon  in the Control Panel window.

3. In the Add or Remove Programs window scroll down to locate the Microsoft SQL Server Desktop Engine (MCEGOLD). Click on the file name to expand the information box.



4. Click **Remove**.

5. Locate the MCEGold Version 2.1.3 file and click on the file name to expand the information box.

6. Click **Change/Remove** and follow the on screen instructions.

Install MCEGold 2.1.4

Note: Installing MCEGold 2.1.4 may take quite a while depending on your computer configuration. During the process various windows will inform you of the installation progress. Not all windows are shown in these instructions. Depending on your computer configuration, the components being installed may vary from those shown in the sample screen captures.

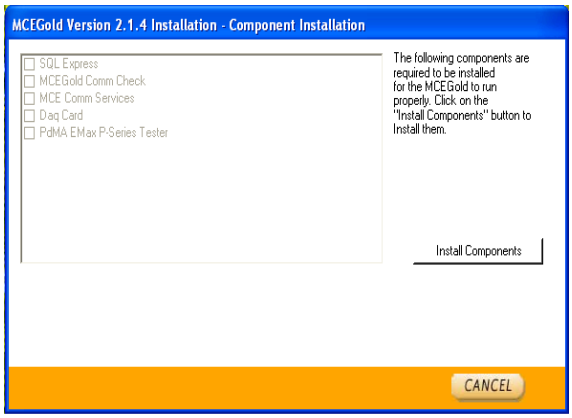
1. Insert the CD into the drive. If the installation does not begin automatically, run Setup.exe from the CD.

2. In the License Agreement window, read the PdMA license. Select the "I accept" option button. The Next button becomes visible. Click **Next**.
   Note: If you do not accept the terms, the Next button is not visible, you can only click Cancel, which closes the software.

3. In the License Key window enter your Company Name and License Key exactly as shown on the label located inside the front cover of the Getting Started Guide.
   Note: The Company name is case sensitive, however, the license key is not.

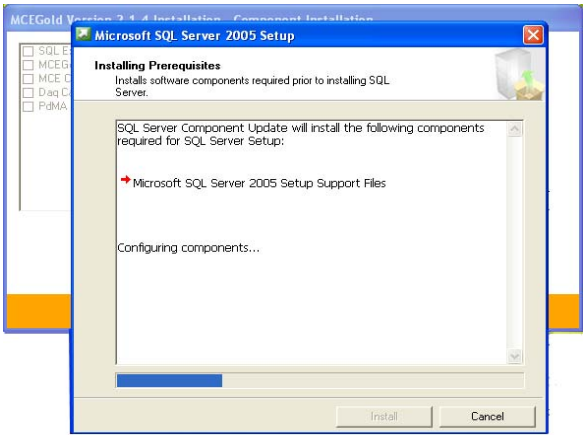
4. Click **Submit**. After the license has been verified the Next button appears. Click **Next**.

5. The MCEGold-Installation window opens. The installation software will scan your computer for the necessary programs to be added or upgraded and list them in the Component Installation window.

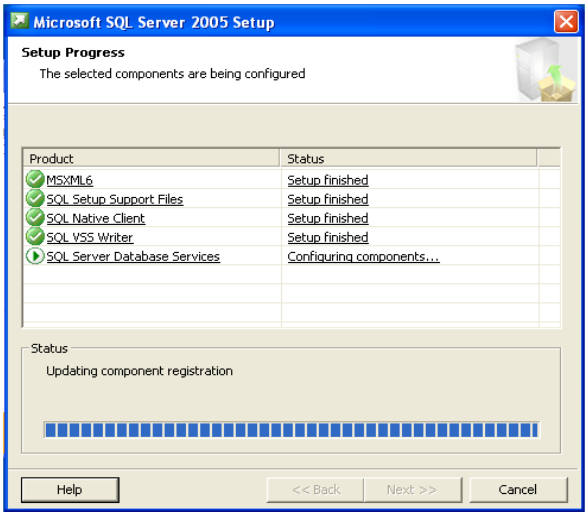


6. Click **Install Components**. On screen status windows will display the progress of the installation.

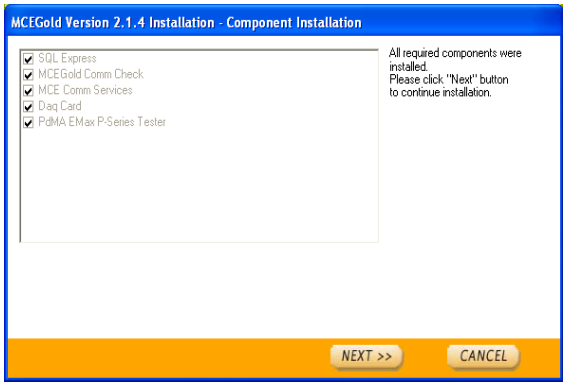
7. The software installs the prerequisites.



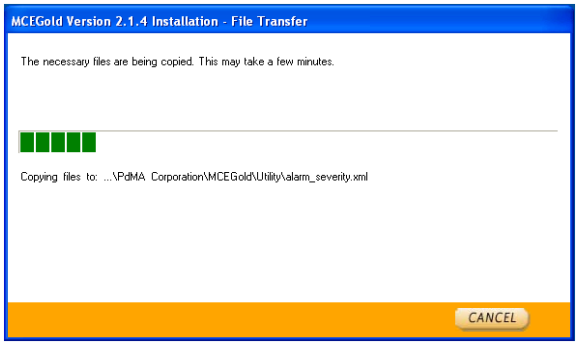
8. At the completion of installing the prerequisites, the components are installed. The Setup Progress window displays the components and their progress status.



9. When all components are installed the Component Installation window appears. Click **Next**.

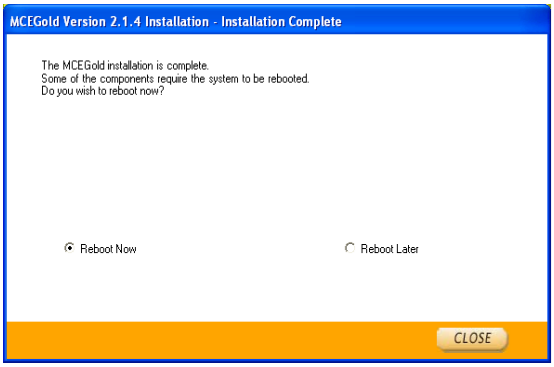


10. After clicking **Next,** the File Transfer window opens. Click **Next** when transfer is complete.



11. To update your system with the new files it is necessary to reboot your computer. The default is set to Reboot Now. Click **Close** to reboot. You will be reminded to save and close all open programs.

    Note: If you wish to restart your computer later, select Reboot Later and click **Close**.



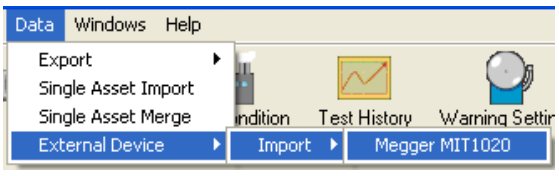
12. After rebooting the Utility window opens. This provides a opportunity for you to create a new database or perform other functions. Click **Exit** if you don't need to perform any tasks.

13. Copy the backup MCECal.xml and EMAXCal.xml files and the Template folder back into the appropriate location in C:\Program Files\PdMA Corporation\MCEGold. Answer Yes to the OK to overwrite existing folder inquiry.

14. Start MCEGold.

External Device

MCEGold 2.1.4 software makes it possible to import data collected using an external device, the Megger MIT1020 10kV insulation tester. For purchase specifications, installation, testing, and importing instructions contact PdMA Technical Support at (813) 621-6463 ext. 2 or techsupport@pdma.com.



TECHNOTE 0803

ISSUED

July, 2008

SUBJECT

Update from MCEGold 2.1.3 to MCEGold 2.1.5.

DESCRIPTION

TechNote 0803 describes the hardware configuration changes, installation procedures when upgrading from MCEGold 2.1.3 to MCEGold 2.1.5, and importing data from an external device.

Hardware Change

The software has been upgraded to support the new USB data acquisition capability. In the MCEGold Product Support Manual on page 2-4, Figure 2-4, the DAQ/216B cable is shown as number 9. The cable will not ship with new testers.

Installation Procedure

This procedure supersedes the procedure contained in the Getting Started Guide. Before beginning the installation process it is necessary to back up the database files and template folder, then uninstall two components.

Backup

Copy the MCECal.xml and EMAXCal.xml files and complete Templates folder to a safe location. These files are located in:

C:\Program Files\PdMA Corporation\MCEGold\Mce

C:\Program Files\PdMA Corporation\MCEGold\Emax

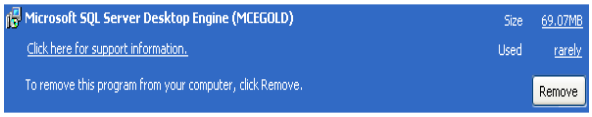
C:\Program Files\PdMA Corporation\MCEGold\Report

Uninstall

1. Click Start, Control Panel.

2. Double click the Add or Remove icon  in the Control Panel window.

3. In the Add or Remove Programs window scroll down to locate the Microsoft SQL Server Desktop Engine (MCEGOLD). Click on the file name to expand the information box.



4. Click **Remove**.

5. Locate the MCEGold Version 2.1.3 file and click on the file name to expand the information box.

6. Click **Remove** and follow the on screen instructions.

Install MCEGold 2.1.5

Note: Installing MCEGold 2.1.5 may take quite a while depending on your computer configuration. During the process various windows will inform you of the installation progress. Not all windows are shown in these instructions. Depending on your computer configuration, the components being installed may vary from those shown in the sample screen captures.

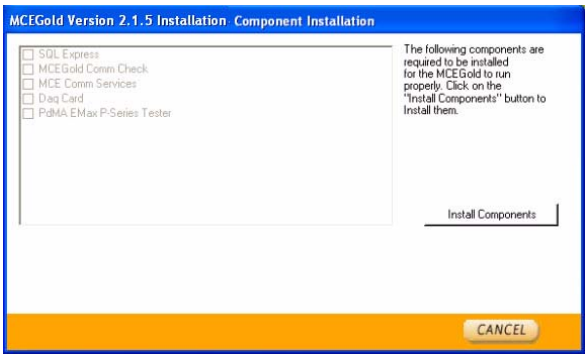
1. Insert the CD into the drive. If the installation does not begin automatically, run Setup.exe from the CD.

2. In the License Agreement window, read the PdMA license. Select the "I accept" option button. The Next button becomes visible. Click **Next**.
   Note: If you do not accept the terms, the Next button is not visible, you can only click Cancel, which closes the software.

3. In the License Key window enter your Company Name and License Key exactly as shown on the label located inside the front cover of the Getting Started Guide.

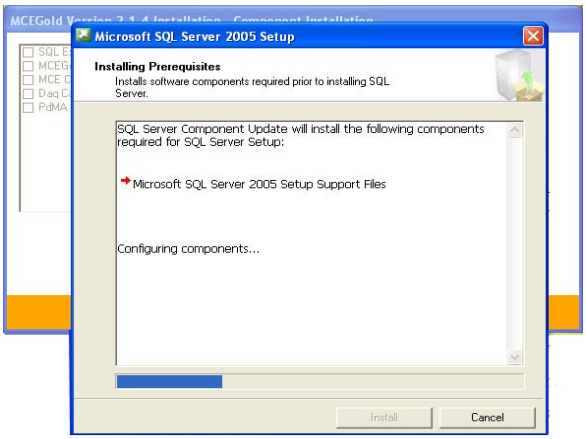
4. Click **Submit**. After the license has been verified the Next button appears. Click **Next**.

5. The MCEGold-Installation window opens. The installation software will scan your computer for the necessary programs to be added or upgraded and list them in the Component Installation window.

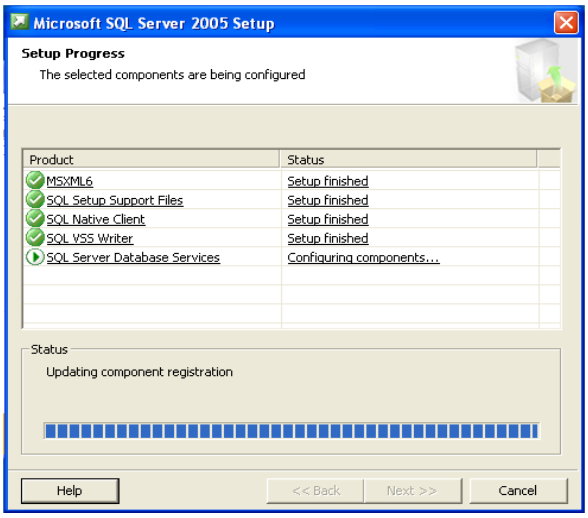


6. Click **Install Components**. On screen status windows will display the progress of the installation.

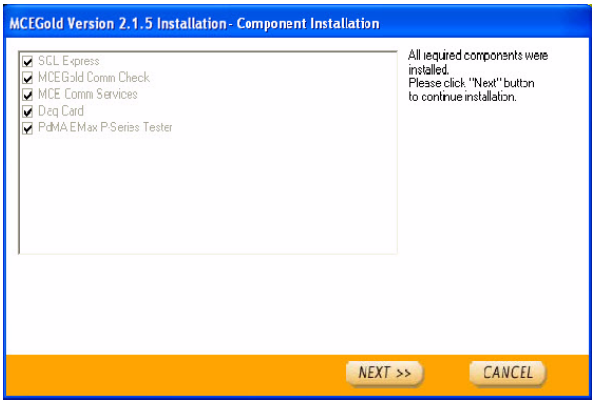
7. The software installs the prerequisites.



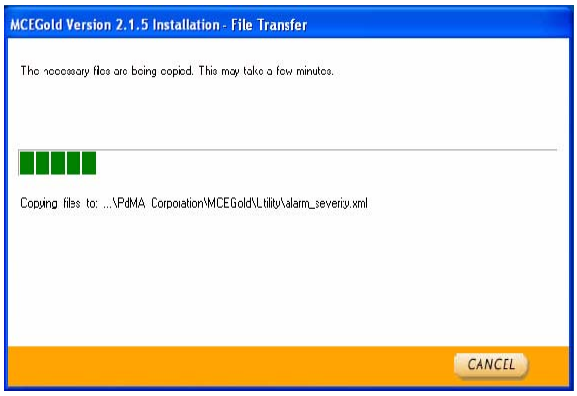
8. At the completion of installing the prerequisites, the components are installed. The Setup Progress window displays the components and their progress status.



9. When all components are installed the Component Installation window appears. Click **Next**.

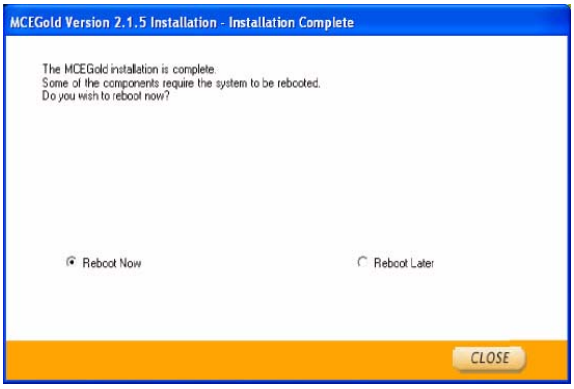


10. After clicking **Next,** the File Transfer window opens. Click **Next** when transfer is complete.



11. To update your system with the new files it is necessary to reboot your computer. The default is set to Reboot Now. Click **Close** to reboot. You will be reminded to save and close all open programs.

    Note: If you wish to restart your computer later, select Reboot Later and click **Close**.



12. After rebooting the computer the MCEGold Utility window opens. Selecting the Database button provides a opportunity for you to create a new database, convert an existing WinVis database, or perform other local database functions. Follow the Getting Started Guide to perform these operations. Complete any needed tasks and click **Exit**.

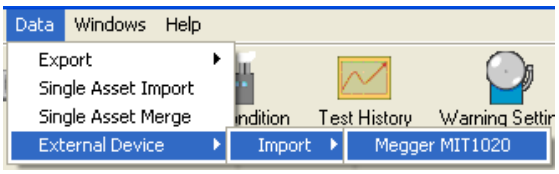
    Note: If you have not created a new database or converted an WinVis database the first time MCEGold opens you will receive a "Login Failed" error message.

13. Copy the backup MCECal.xml and EMAXCal.xml files and the Template folder back into their appropriate locations in C:\Program Files\PdMA Corporation\MCEGold. See the Backup section in this document for file locations. Answer Yes to the "OK to overwrite existing folder" inquiry.

14. Start MCEGold.

External Device

MCEGold 2.1.5 software makes it possible to import data collected using an external device, the Megger MIT1020 10kV insulation tester. For purchase specifications, installation, testing, and importing instructions contact PdMA Technical Support at (813) 621-6463 ext. 2 or techsupport@pdma.com.



TECHNOTE 0803

ISSUED

July, 2008

SUBJECT

Update from MCEGold 2.1.3 to MCEGold 2.1.5.

DESCRIPTION

TechNote 0803 describes the hardware configuration changes, installation procedures when upgrading from MCEGold 2.1.3 to MCEGold 2.1.5, and importing data from an external device.

Hardware Change

The software has been upgraded to support the new USB data acquisition capability. In the MCEGold Product Support Manual on page 2-4, Figure 2-4, the DAQ/216B cable is shown as number 9. The cable will not ship with new testers.

Installation Procedure

This procedure supersedes the procedure contained in the Getting Started Guide. Before beginning the installation process it is necessary to back up the database files and template folder, then uninstall two components.

Backup

Copy the MCECal.xml and EMAXCal.xml files and complete Templates folder to a safe location. These files are located in:

C:\Program Files\PdMA Corporation\MCEGold\Mce

C:\Program Files\PdMA Corporation\MCEGold\Emax

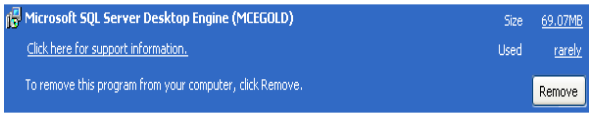
C:\Program Files\PdMA Corporation\MCEGold\Report

Uninstall

1. Click Start, Control Panel.

2. Double click the Add or Remove icon  in the Control Panel window.

3. In the Add or Remove Programs window scroll down to locate the Microsoft SQL Server Desktop Engine (MCEGOLD). Click on the file name to expand the information box.



4. Click **Remove**.

5. Locate the MCEGold Version 2.1.3 file and click on the file name to expand the information box.

6. Click **Remove** and follow the on screen instructions.

Install MCEGold 2.1.5

Note: Installing MCEGold 2.1.5 may take quite a while depending on your computer configuration. During the process various windows will inform you of the installation progress. Not all windows are shown in these instructions. Depending on your computer configuration, the components being installed may vary from those shown in the sample screen captures.

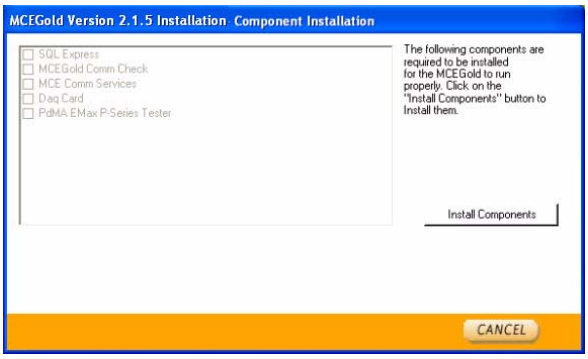
1. Insert the CD into the drive. If the installation does not begin automatically, run Setup.exe from the CD.

2. In the License Agreement window, read the PdMA license. Select the "I accept" option button. The Next button becomes visible. Click **Next**.
   Note: If you do not accept the terms, the Next button is not visible, you can only click Cancel, which closes the software.

3. In the License Key window enter your Company Name and License Key exactly as shown on the label located inside the front cover of the Getting Started Guide.

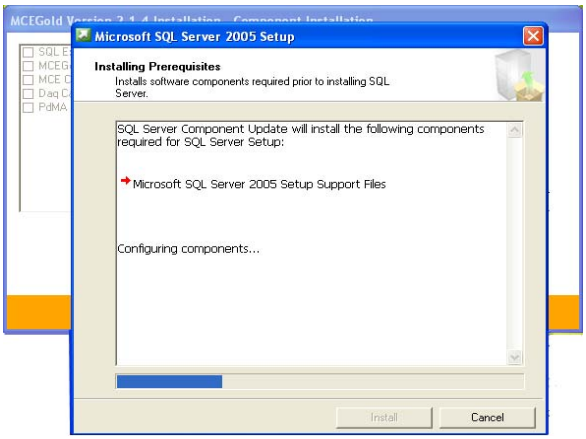
4. Click **Submit**. After the license has been verified the Next button appears. Click **Next**.

5. The MCEGold-Installation window opens. The installation software will scan your computer for the necessary programs to be added or upgraded and list them in the Component Installation window.

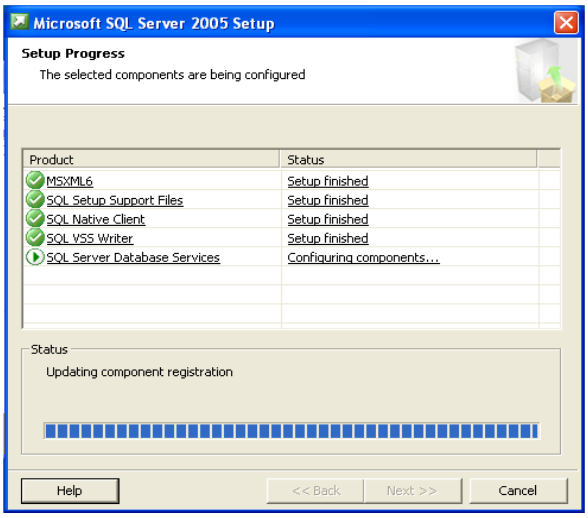


6. Click **Install Components**. On screen status windows will display the progress of the installation.

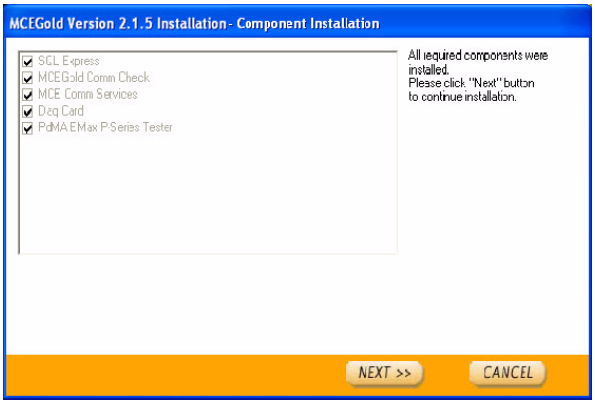
7. The software installs the prerequisites.



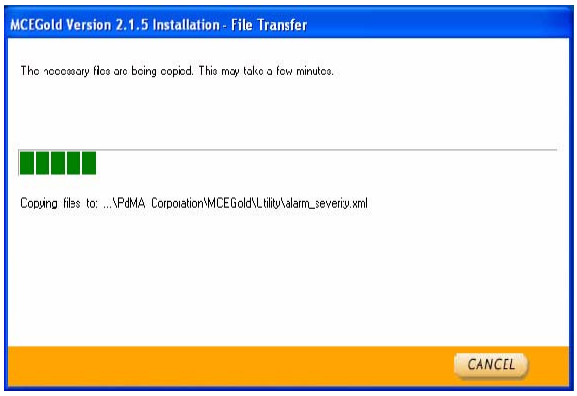
8. At the completion of installing the prerequisites, the components are installed. The Setup Progress window displays the components and their progress status.



9. When all components are installed the Component Installation window appears. Click **Next**.

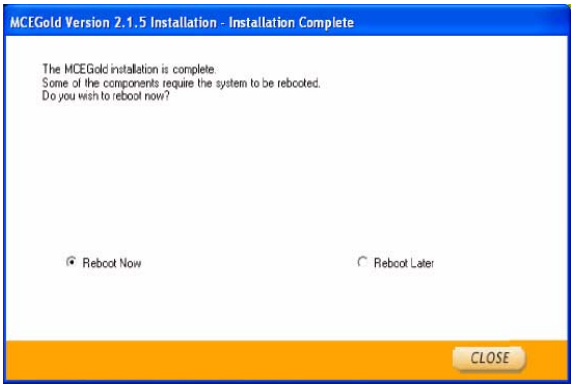


10. After clicking **Next,** the File Transfer window opens. Click **Next** when transfer is complete.



11. To update your system with the new files it is necessary to reboot your computer. The default is set to Reboot Now. Click **Close** to reboot. You will be reminded to save and close all open programs.

    Note: If you wish to restart your computer later, select Reboot Later and click **Close**.



12. After rebooting the computer the MCEGold Utility window opens. Selecting the Database button provides a opportunity for you to create a new database, convert an existing WinVis database, or perform other local database functions. Follow the Getting Started Guide to perform these operations. Complete any needed tasks and click **Exit**.

    Note: If you have not created a new database or converted an WinVis database the first time MCEGold opens you will receive a "Login Failed" error message.

13. Copy the backup MCECal.xml and EMAXCal.xml files and the Template folder back into their appropriate locations in C:\Program Files\PdMA Corporation\MCEGold. See the Backup section in this document for file locations. Answer Yes to the "OK to overwrite existing folder" inquiry.

Reconfigure the Daq Card

1. Click Start, Control Panel.

2. Double click the Daq* Configuration icon  .

   The Daq Configuration window appears.



3. Click **Add Device**. The Select Device Type window appears.



4. Select Daq216B and click **OK**. The Daq* Configuration window appears.



5. In the Device Name box, type online.

6. Click the Test Hardware tab, then click **Resource Test**.



7. A small dialog box appears, click **OK.**

8. Click **OK** when the test is finished.

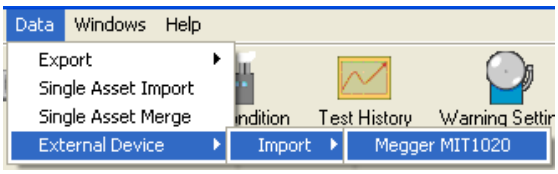
9. Click **Close** in the Daq Configuration window.

10. Close the Control Panel.

11. Start MCEGold.

External Device

MCEGold 2.1.5 software makes it possible to import data collected using an external device, the Megger MIT1020 10kV insulation tester. For purchase specifications, installation, testing, and importing instructions contact PdMA Technical Support at (813) 621-6463 ext. 2 or techsupport@pdma.com.



TECHNOTE 0901

ISSUED

June, 2009

SUBJECT

MCEGold update to MCEGold 2.2.

DESCRIPTION

TechNote 0901 describes the update installation procedure, a modification to the Step Voltage test, and an overview of the new Asset Scheduler and Energy Cost Analysis Modules. All users may not get the Asset Scheduler and/or Energy Cost Analysis Modules.

The installation procedure described in this TechNote supersedes the procedure in the Getting Started Guide.

MCEGold 2.2 Update Installation

Server for Network Users

There is a separate program on the CD to update the network database on the server. ***The database must be updated on the server first, then the desktop and field testers.***

If the update is installed on a network field tester before the server database is updated, a warning message appears informing you the database is an old version and to contact your system administrator. If the warning message is ignored, then when trying to connect to the network "Can't connect to the database. See your IT department." appears.

1. Insert the CD into the drive. It will not auto-run.
2. Locate the MCEGold Database Server Update folder.
3. Click on the MCEGold Database Server Update.exe file.
4. The Server Information window opens. Fill in the Server, Database, Login, and Password information.
5. Click **Run Update**. The progress status will display on the window.
6. When the update complete message displays, close the window.

Stand Alone Users/Field Tester

If you are updating from an MCEGold version older than 2.1.5 you must first uninstall MCEGold and the Microsoft SQL Server Desktop Engine (MCEGold) programs. Follow the *MCEGold prior to 2.1.5* instructions.

If you have an MCEGold 2.1.5 or later version follow the *MCEGold 2.1.5 and later* instructions.

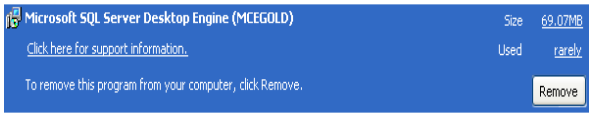
MCEGold Prior to 2.1.5

Backup

Copy the MCECal.xml and EMAXCal.xml files and complete Templates folder to a safe location. These files are located in:
C:\Program Files\PdMA Corporation\MCEGold\Mce
C:\Program Files\PdMA Corporation\MCEGold\Emax
C:\Program Files\PdMA Corporation\MCEGold\Report

Uninstall

1. Select Start, select Control Panel, and double click the Add or Remove icon.
2. In the Add or Remove Programs window scroll down to locate the Microsoft SQL Server Desktop Engine (MCEGold). Click on the program name to expand the information box.



3. Click **Remove**.
4. Locate the MCEGold Version x.x.x file and click on the program name to expand the information box.
5. Click **Remove** and follow the on screen instructions.

6. Click **Finish** when the "Uninstall Complete" message is received.

7. Close the Add or Remove Programs window.

Installation

1. Insert the MCEGold 2.2.0 CD into the drive. If the installation does not begin automatically, run Setup.exe from the CD.

2. In the License Agreement window, read the PdMA license. Select the "I accept" option button. The Next button becomes visible. Click **Next**.

   Note: If you do not accept the terms, the Next button is not visible, you can only click Cancel, which closes the software.

3. In the License Key window enter your Company Name and License Key exactly as provided from PdMA. The License Key is not the same as the Module Activation Key, which activates the Asset Scheduler and/or Energy Cost Analysis modules.

4. Click **Submit**. After the license has been verified the Next button appears. Click **Next**.

5. In the Installation Path window, select the location to install the MCEGold program folder using the drop-down list or accept the default shown in the textbox and click **Next**.

6. The installation software will scan your computer for the necessary programs to be added or upgraded and list them in the MCEGold Version 2.2.0-Component Installation window.

7. When prompted, click **Install Components.** Click **Next** when the installation is complete.

8. When the installation is complete you must reboot your system.

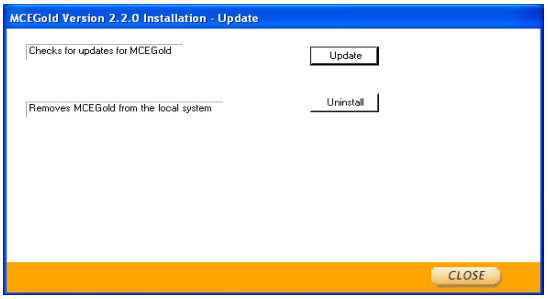
9. Copy the backup MCECal.xml and EMAXCal.xml files and the Template folder back into their appropriate locations in C:\Program Files\PdMA Corporation\MCEGold. See the Backup section in this document for file locations. Answer Yes to the "OK to overwrite existing folder" inquiry.

MCEGold 2.1.5 and Later

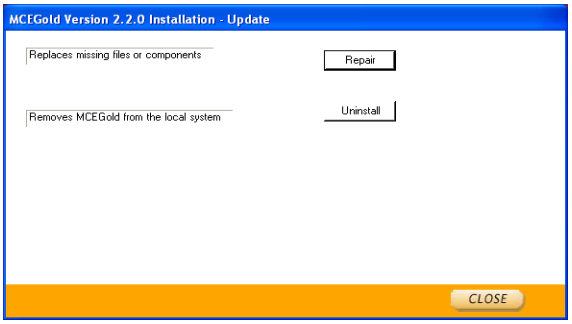
1. Insert CD into disk drive. It will auto-start to the InstallShield program.

2. The Installation Update Window opens.

   If you are updating from 2.1.5 the choices will be **Update** or **Uninstall**.



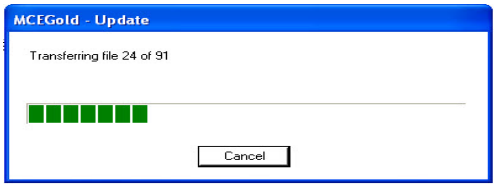
   If you are updating from 2.2.0 the choices will be **Repair** or **Uninstall**.



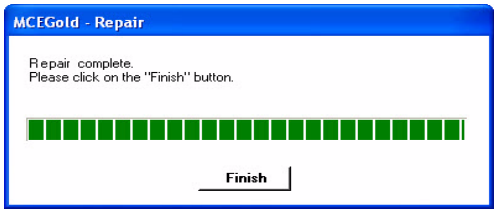
3. Select **Update** or **Repair,** depending on your software version.

   Note: Selecting **Uninstall** removes the existing MCEGold software from your system. That option is not necessary for this update.

4. The MCEGold Update window opens and displays a progress bar.



5. Click **Finish** when the update or repair complete message is received.



6. It may be necessary to restart your computer to finalize the installation. You will be prompted to restart if needed.

Step Voltage

The Step Voltage test now begins with a pre-charge (PI) before automatically running the Step Voltage test. The default time for the pre-charge (PI) is 600 seconds, however the pre-charge (PI) may be stopped and the Step Voltage test started by clicking the **Start Step Voltage** button. The pre-charge (PI) results are charted in the upper left pane. At the conclusion of a complete 600 seconds of testing, the pre-charge (PI) results are saved in the PI Test History and the Step Voltage results are saved in the Step Voltage Test History.

Other than beginning with the pre-charge (PI), the Step Voltage test operates as described in the Product Support Manual on page 4-24.

Asset Scheduler Module

The Asset Scheduler Module allows an asset to be set up for scheduled testing on a one-time or reoccurring basis. The following is a short overview of the program. A more detailed description is found in Appendix B of the Product Support Manual.

> **Note**: For Network the user must have assigned rights to create schedules.

Activating the Asset Scheduler Module

Prior to starting MCEGold, it is necessary to enter the Module Activation Key in the MCEGold Utility program located at C:\Program Files\PdMACorporation\MCEGold\Utility\Utility.exe.

In the Utility program click the **License Key** button and enter the Module Activation Key in the textboxes. Then click **Submit**.

Entering the Module Activation Key once will unlock all modules available to you.

If a Module Activation Key did not come with your CD contact PdMA Corporation at 813-621-6463.

Starting Asset Scheduler

1. Highlight the asset to be scheduled. This can be done from the Site Navigator, WatchList, or Site Condition list.
2. Click the Scheduler icon  on the toolbar.
3. In the Asset Schedule Configuration window click **New** for reoccurring schedules or **OneTime Schedule**. If there are previously created schedules for this asset they will be listed in the window.
4. In the Asset Scheduler window, highlight the Action desired and use the arrow button (>>) to move it to the Assigned Actions list.

   Note: The Available Actions items are displayed according to the selection made in the drop down list, i.e., MCE or EMAX. It is possible to select both MCE and EMAX items for one schedule.
5. Fill in appropriate text boxes. Some maybe filled in by typing in the box and some will be filled in by selecting from a drop down list. If the Runs Forever check box is checked the To text box will be inactive.
6. Click **OK**.
7. The schedule is displayed in Asset Schedule Configuration window. When it is time for a schedule to be generated it will appear in the Message Center.
8. Click **Close**.

View Scheduled Jobs

The schedules are viewed in the Message Center. There are two choices for viewing scheduled jobs: a single asset or all assets with scheduled jobs. The outcome is controlled by the Active Asset Only selection in the View menu.

If Active Asset Only is checked (default) then only the scheduled jobs for the selected asset will appear when the Schedules icon is clicked.

If Active Asset Only is unchecked then scheduled jobs for all assets will appear when the Schedules icon is clicked.

Click the + sign to expand the line and view the details. Click the - sign to collapse the lines.

Energy Cost Analysis Module

The Energy Cost Analysis Module analyzes operating and replacement cost for a specific AC Induction motor. The following is a short overview of the program. A more detailed description is found in Appendix C of the Product Support manual.

Activating the Energy Cost Analysis Module

Prior to starting MCEGold, it is necessary to enter the Module Activation Key in the MCEGold Utility program located at C:\Program Files\PdMACorporation\MCEGold\Utility\Utility.exe.

In the Utility program click the **License Key** button and enter the Module Activation Key in the textboxes. Then click **Submit**.

Entering the Module Activation Key once will unlock all modules available to you.

If a Module Activation Key did not come with your CD contact PdMA Corporation at 813-621-6463.

Starting Energy Cost Analysis

1. Highlight the asset to be analyzed. This can be done from the Site Navigator, WatchList, or Site Condition list. The asset being analyzed should have EMAX Power test data.

2. Click the Energy Analysis icon on the toolbar.

3. The Energy Cost Analysis window opens with four tabs providing access to areas for comparison.

Asset Information Tab

The existing asset nameplate information on the left side is automatically generated from the asset selected and may not be changed. The Nameplate and Measured text boxes located on the right side may be changed in order to answer the "what if" questions. To return to the original values, click the **Reset Data** button.

Replacement Asset Tab

There are three ways to add values to this section.

The first method is to copy the information from the asset being analyzed by clicking **Copy Existing Asset Information**.

The second method is to select another asset by searching. Enter values in the Search for an Asset area, then click **Find an Asset**. Make your selection from the list of assets. The values for the selected asset will populate the appropriate text boxes.

Third, enter the nameplate information manually.

While some of the values in the Replacement Asset section may be manually changed, the blue text boxes in the Estimated column cannot be changed.

Energy/Operating Hours Tab

Fill in the appropriate values in the text boxes for the existing and replacement asset for comparison purposes. Values in the blue text boxes are calculated values and cannot be changed.

The values entered in these text boxes are used to calculate the values in the Energy Cost Analysis area.

Energy Cost Analysis Tab

The energy and operating hours comparison is displayed for the existing and replacement asset. No values can be changed here. Use the Energy/Operating Hours tab to change values.

The section below the dark line regarding repair or replace can be changed to compare the cost of repairing the existing asset or replacing it. Enter values in the appropriate text boxes, with the exception of the blue text boxes.which are calculated values and cannot be manually changed.

The only value that can be manually changed in the Payback and Recovery area is the Interest Rate.

When the values have been entered, click **Preview Report** to display a two page preview that can be printed or saved to PDF or HTML format.

Network User Rights

In order to view or create WatchLists, use the Asset Scheduler program, or Sync assets, the user must be assigned those rights by the network administrator using the Account Manager program.

TECHNOTE 0901

ISSUED

June, 2009

SUBJECT

MCEGold update to MCEGold 2.2.

DESCRIPTION

TechNote 0901 describes the update installation procedure, a modification to the Step Voltage test, and an overview of the new Asset Scheduler and Energy Cost Analysis Modules. All users may not get the Asset Scheduler and/or Energy Cost Analysis Modules.

The installation procedure described in this TechNote supersedes the procedure in the Getting Started Guide.

MCEGold 2.2 Update Installation

Server for Network Users

There is a separate program on the CD to update the network database on the server. ***The database must be updated on the server first, then the desktop and field testers.***

If the update is installed on a network field tester before the server database is updated, a warning message appears informing you the database is an old version and to contact your system administrator. If the warning message is ignored, then when trying to connect to the network "Can't connect to the database. See your IT department." appears.

1. Insert the CD into the drive. It will not auto-run.
2. Locate the MCEGold Database Server Update folder.
3. Click on the MCEGold Database Server Update.exe file.
4. The Server Information window opens. Fill in the Server, Database, Login, and Password information.
5. Click **Run Update**. The progress status will display on the window.
6. When the update complete message displays, close the window.

Stand Alone Users/Field Tester

If you are updating from an MCEGold version older than 2.1.5 you must first uninstall MCEGold and the Microsoft SQL Server Desktop Engine (MCEGold) programs. Follow the *MCEGold prior to 2.1.5* instructions.

If you have an MCEGold 2.1.5 or later version follow the *MCEGold 2.1.5 and later* instructions.

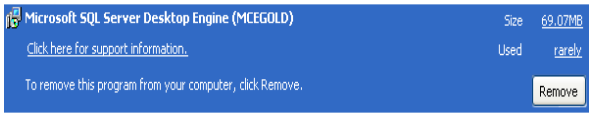
MCEGold Prior to 2.1.5

Backup

Copy the MCECal.xml and EMAXCal.xml files and complete Templates folder to a safe location. These files are located in:
C:\Program Files\PdMA Corporation\MCEGold\Mce
C:\Program Files\PdMA Corporation\MCEGold\Emax
C:\Program Files\PdMA Corporation\MCEGold\Report

Uninstall

1. Select Start, select Control Panel, and double click the Add or Remove icon.
2. In the Add or Remove Programs window scroll down to locate the Microsoft SQL Server Desktop Engine (MCEGold). Click on the program name to expand the information box.



3. Click **Remove**.
4. Locate the MCEGold Version x.x.x file and click on the program name to expand the information box.
5. Click **Remove** and follow the on screen instructions.

6. Click **Finish** when the "Uninstall Complete" message is received.

7. Close the Add or Remove Programs window.

Installation

1. Insert the MCEGold 2.2.0 CD into the drive. If the installation does not begin automatically, run Setup.exe from the CD.

2. In the License Agreement window, read the PdMA license. Select the "I accept" option button. The Next button becomes visible. Click **Next**.

   Note: If you do not accept the terms, the Next button is not visible, you can only click Cancel, which closes the software.

3. In the License Key window enter your Company Name and License Key exactly as provided from PdMA. The License Key is not the same as the Module Activation Key, which activates the Asset Scheduler and/or Energy Cost Analysis modules.

4. Click **Submit**. After the license has been verified the Next button appears. Click **Next**.

5. In the Installation Path window, select the location to install the MCEGold program folder using the drop-down list or accept the default shown in the textbox and click **Next**.

6. The installation software will scan your computer for the necessary programs to be added or upgraded and list them in the MCEGold Version 2.2.0-Component Installation window.

7. When prompted, click **Install Components.** Click **Next** when the installation is complete.

8. When the installation is complete you must reboot your system.

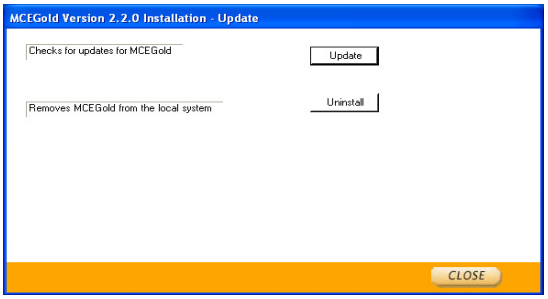
9. Copy the backup MCECal.xml and EMAXCal.xml files and the Template folder back into their appropriate locations in C:\Program Files\PdMA Corporation\MCEGold. See the Backup section in this document for file locations. Answer Yes to the "OK to overwrite existing folder" inquiry.

MCEGold 2.1.5 and Later

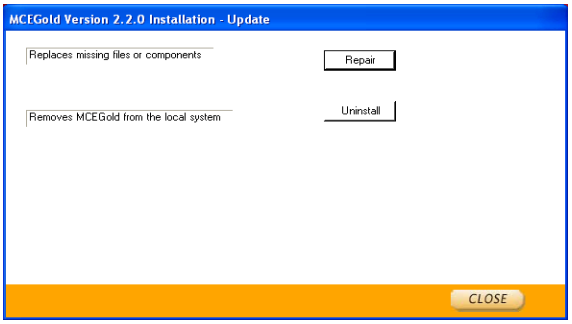
1. Insert CD into disk drive. It will auto-start to the InstallShield program.

2. The Installation Update Window opens.

   If you are updating from 2.1.5 the choices will be **Update** or **Uninstall**.



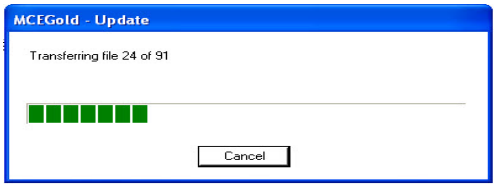
   If you are updating from 2.2.0 the choices will be **Repair** or **Uninstall**.



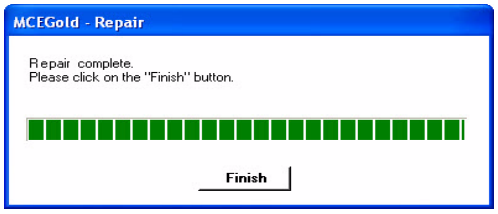
3. Select **Update** or **Repair,** depending on your software version.

   Note: Selecting **Uninstall** removes the existing MCEGold software from your system. That option is not necessary for this update.

4. The MCEGold Update window opens and displays a progress bar.



5. Click **Finish** when the update or repair complete message is received.



6. It may be necessary to restart your computer to finalize the installation. You will be prompted to restart if needed.

Step Voltage

The Step Voltage test now begins with a pre-charge (PI) before automatically running the Step Voltage test. The default time for the pre-charge (PI) is 600 seconds, however the pre-charge (PI) may be stopped and the Step Voltage test started by clicking the **Start Step Voltage** button. The pre-charge (PI) results are charted in the upper left pane. At the conclusion of a complete 600 seconds of testing, the pre-charge (PI) results are saved in the PI Test History and the Step Voltage results are saved in the Step Voltage Test History.

Other than beginning with the pre-charge (PI), the Step Voltage test operates as described in the Product Support Manual on page 4-24.

Asset Scheduler Module

The Asset Scheduler Module allows an asset to be set up for scheduled testing on a one-time or reoccurring basis. The following is a short overview of the program. A more detailed description is found in Appendix B of the Product Support Manual.

> **Note**: For Network the user must have assigned rights to create schedules.

Activating the Asset Scheduler Module

Prior to starting MCEGold, it is necessary to enter the Module Activation Key in the MCEGold Utility program located at C:\Program Files\PdMACorporation\MCEGold\Utility\Utility.exe.

In the Utility program click the **License Key** button and enter the Module Activation Key in the textboxes. Then click **Submit**.

Entering the Module Activation Key once will unlock all modules available to you.

If a Module Activation Key did not come with your CD contact PdMA Corporation at 813-621-6463.

Starting Asset Scheduler

1. Highlight the asset to be scheduled. This can be done from the Site Navigator, WatchList, or Site Condition list.
2. Click the Scheduler icon  on the toolbar.
3. In the Asset Schedule Configuration window click **New** for reoccurring schedules or **OneTime Schedule**. If there are previously created schedules for this asset they will be listed in the window.
4. In the Asset Scheduler window, highlight the Action desired and use the arrow button (>>) to move it to the Assigned Actions list.

   Note: The Available Actions items are displayed according to the selection made in the drop down list, i.e., MCE or EMAX. It is possible to select both MCE and EMAX items for one schedule.
5. Fill in appropriate text boxes. Some maybe filled in by typing in the box and some will be filled in by selecting from a drop down list. If the Runs Forever check box is checked the To text box will be inactive.
6. Click **OK**.
7. The schedule is displayed in Asset Schedule Configuration window. When it is time for a schedule to be generated it will appear in the Message Center.
8. Click **Close**.

View Scheduled Jobs

The schedules are viewed in the Message Center. There are two choices for viewing scheduled jobs: a single asset or all assets with scheduled jobs. The outcome is controlled by the Active Asset Only selection in the View menu.

If Active Asset Only is checked (default) then only the scheduled jobs for the selected asset will appear when the Schedules icon is clicked.

If Active Asset Only is unchecked then scheduled jobs for all assets will appear when the Schedules icon is clicked.

Click the + sign to expand the line and view the details. Click the - sign to collapse the lines.

Energy Cost Analysis Module

The Energy Cost Analysis Module analyzes operating and replacement cost for Design B AC Induction motors only. The following is a short overview of the program. A more detailed description is found in Appendix C of the Product Support manual.

Activating the Energy Cost Analysis Module

Prior to starting MCEGold, it is necessary to enter the Module Activation Key in the MCEGold Utility program located at C:\Program Files\PdMACorporation\MCEGold\Utility\Utility.exe.

In the Utility program click the **License Key** button and enter the Module Activation Key in the textboxes. Then click **Submit**.

Entering the Module Activation Key once will unlock all modules available to you.

If a Module Activation Key did not come with your CD contact PdMA Corporation at 813-621-6463.

Starting Energy Cost Analysis

1. Highlight the asset to be analyzed. This can be done from the Site Navigator, WatchList, or Site Condition list. The asset being analyzed should have EMAX Power test data.

2. Click the Energy Analysis icon on the toolbar.

3. The Energy Cost Analysis window opens with four tabs providing access to areas for comparison.

Asset Information Tab

The existing asset nameplate information on the left side is automatically generated from the asset selected and may not be changed. The Nameplate and Measured text boxes located on the right side may be changed in order to answer the "what if" questions. To return to the original values, click the **Reset Data** button.

Replacement Asset Tab

There are three ways to add values to this section.

The first method is to copy the information from the asset being analyzed by clicking **Copy Existing Asset Information**.

The second method is to select another asset by searching. Enter values in the Search for an Asset area, then click **Find an Asset**. Make your selection from the list of assets. The values for the selected asset will populate the appropriate text boxes.

Third, enter the nameplate information manually.

While some of the values in the Replacement Asset section may be manually changed, the blue text boxes in the Estimated column cannot be changed.

Energy/Operating Hours Tab

Fill in the appropriate values in the text boxes for the existing and replacement asset for comparison purposes. Values in the blue text boxes are calculated values and cannot be changed.

The values entered in these text boxes are used to calculate the values in the Energy Cost Analysis area.

Energy Cost Analysis Tab

The energy and operating hours comparison is displayed for the existing and replacement asset. No values can be changed here. Use the Energy/Operating Hours tab to change values.

The section below the dark line regarding repair or replace can be changed to compare the cost of repairing the existing asset or replacing it. Enter values in the appropriate text boxes, with the exception of the blue text boxes.which are calculated values and cannot be manually changed.

The only value that can be manually changed in the Payback and Recovery area is the Interest Rate.

When the values have been entered, click **Preview Report** to display a two page preview that can be printed or saved to PDF or HTML format.

Network User Rights

In order to view or create WatchLists, use the Asset Scheduler program, or Sync assets, the user must be assigned those rights by the network administrator using the Account Manager program.

TECHNOTE 0901

ISSUED

June, 2009

SUBJECT

MCEGold update to MCEGold 2.2.

DESCRIPTION

TechNote 0901 describes the update installation procedure, a modification to the Step Voltage test, and an overview of the new Asset Scheduler and Energy Cost Analysis Modules. All users may not get the Asset Scheduler and/or Energy Cost Analysis Modules.

The installation procedure described in this TechNote supersedes the procedure in the Getting Started Guide.

MCEGold 2.2 Update Installation

Server for Network Users

Note: Ensure the user account used to update the server has "sysadmin" permissions.

There is a separate program on the CD to update the network database on the server. ***The database must be updated on the server first, then the desktop and field testers.***

If the update is installed on a network field tester before the server database is updated, a warning message appears informing you the database is an old version and to contact your system administrator. If the warning message is ignored, then when trying to connect to the network "Can't connect to the database. See your IT department." appears.

1. Insert the CD into the drive. It will not auto-run.
2. Locate the MCEGold Database Server Update folder.
3. Click on the MCEGold Database Server Update.exe file.
4. The Server Information window opens. Fill in the Server, Database, Login, and Password information.
5. Click **Run Update**. The progress status will display on the window.
6. When the update complete message displays, close the window.

Stand Alone Users/Field Tester

If you are updating from an MCEGold version older than 2.1.5 you must first uninstall MCEGold and the Microsoft SQL Server Desktop Engine (MCEGold) programs. Follow the *MCEGold prior to 2.1.5* instructions.

If you have an MCEGold 2.1.5 or later version follow the *MCEGold 2.1.5 and later* instructions.

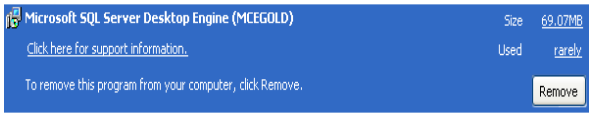
MCEGold Prior to 2.1.5

Backup

Copy the MCECal.xml and EMAXCal.xml files and complete Templates folder to a safe location. These files are located in:
C:\Program Files\PdMA Corporation\MCEGold\Mce
C:\Program Files\PdMA Corporation\MCEGold\Emax
C:\Program Files\PdMA Corporation\MCEGold\Report

Uninstall

1. Select Start, select Control Panel, and double click the Add or Remove icon.
2. In the Add or Remove Programs window scroll down to locate the Microsoft SQL Server Desktop Engine (MCEGold). Click on the program name to expand the information box.



3. Click **Remove**.
4. Locate the MCEGold Version x.x.x file and click on the program name to expand the information box.

5. Click **Remove** and follow the on screen instructions.

6. Click **Finish** when the "Uninstall Complete" message is received.

7. Close the Add or Remove Programs window.

Installation

1. Insert the MCEGold 2.2.0 CD into the drive. If the installation does not begin automatically, run Setup.exe from the CD.

2. In the License Agreement window, read the PdMA license. Select the "I accept" option button. The Next button becomes visible. Click **Next**.

   Note: If you do not accept the terms, the Next button is not visible, you can only click Cancel, which closes the software.

3. In the License Key window enter your Company Name and License Key exactly as provided from PdMA. The License Key is not the same as the Module Activation Key, which activates the Asset Scheduler and/or Energy Cost Analysis modules.

4. Click **Submit**. After the license has been verified the Next button appears. Click **Next**.

5. In the Installation Path window, select the location to install the MCEGold program folder using the drop-down list or accept the default shown in the textbox and click **Next**.

6. The installation software will scan your computer for the necessary programs to be added or upgraded and list them in the MCEGold Version 2.2.0-Component Installation window.

7. When prompted, click **Install Components.** Click **Next** when the installation is complete.

8. When the installation is complete you must reboot your system.

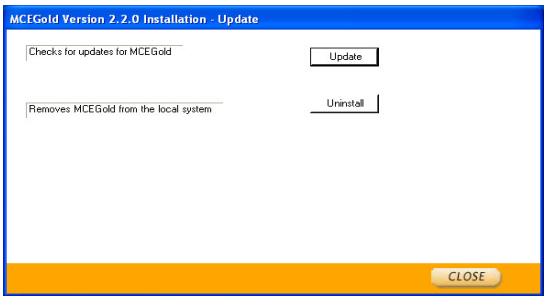
9. Copy the backup MCECal.xml and EMAXCal.xml files and the Template folder back into their appropriate locations in C:\Program Files\PdMA Corporation\MCEGold. See the Backup section in this document for file locations. Answer Yes to the "OK to overwrite existing folder" inquiry.

MCEGold 2.1.5 and Later

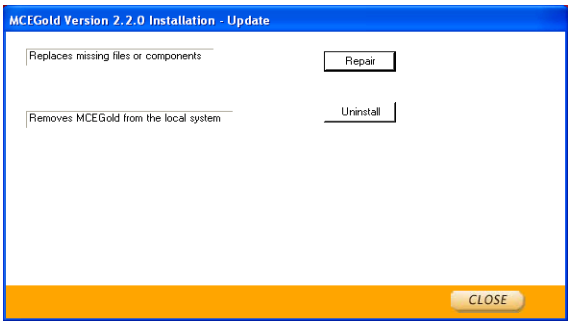
1. Insert CD into disk drive. It will auto-start to the InstallShield program.

2. The Installation Update Window opens.

   If you are updating from 2.1.5 the choices will be **Update** or **Uninstall**.



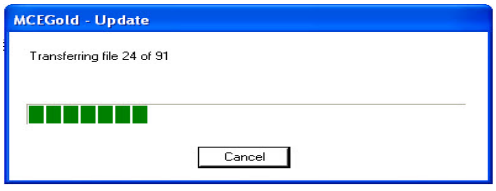
   If you are updating from 2.2.0 the choices will be **Repair** or **Uninstall**.



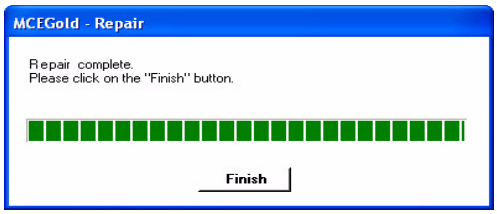
3. Select **Update** or **Repair,** depending on your software version.

   Note: Selecting **Uninstall** removes the existing MCEGold software from your system. That option is not necessary for this update.

4. The MCEGold Update window opens and displays a progress bar.



5. Click **Finish** when the update or repair complete message is received.



6. It may be necessary to restart your computer to finalize the installation. You will be prompted to restart if needed.

Step Voltage

The Step Voltage test now begins with a pre-charge (PI) before automatically running the Step Voltage test. The default time for the pre-charge (PI) is 600 seconds, however the pre-charge (PI) may be stopped and the Step Voltage test started by clicking the **Start Step Voltage** button. The pre-charge (PI) results are charted in the upper left pane. At the conclusion of a complete 600 seconds of testing, the pre-charge (PI) results are saved in the PI Test History and the Step Voltage results are saved in the Step Voltage Test History.

Other than beginning with the pre-charge (PI), the Step Voltage test operates as described in the Product Support Manual on page 4-24.

Asset Scheduler Module

The Asset Scheduler Module allows an asset to be set up for scheduled testing on a one-time or reoccurring basis. The following is a short overview of the program. A more detailed description is found in Appendix B of the Product Support Manual.

> **Note**: For Network the user must have assigned rights to create schedules.

Activating the Asset Scheduler Module

Prior to starting MCEGold, it is necessary to enter the Module Activation Key in the MCEGold Utility program located at C:\Program Files\PdMACorporation\MCEGold\Utility\Utility.exe.

In the Utility program click the **License Key** button and enter the Module Activation Key in the textboxes. Then click **Submit**.

Entering the Module Activation Key once will unlock all modules available to you.

If a Module Activation Key did not come with your CD contact PdMA Corporation at 813-621-6463.

Starting Asset Scheduler

1. Highlight the asset to be scheduled. This can be done from the Site Navigator, WatchList, or Site Condition list.

2. Click the Scheduler icon  on the toolbar.

3. In the Asset Schedule Configuration window click **New** for reoccurring schedules or **OneTime Schedule**. If there are previously created schedules for this asset they will be listed in the window.

4. In the Asset Scheduler window, highlight the Action desired and use the arrow button (>>) to move it to the Assigned Actions list.

   Note: The Available Actions items are displayed according to the selection made in the drop down list, i.e., MCE or EMAX. It is possible to select both MCE and EMAX items for one schedule.

5. Fill in appropriate text boxes. Some maybe filled in by typing in the box and some will be filled in by selecting from a drop down list. If the Runs Forever check box is checked the To text box will be inactive.

6. Click **OK**.

7. The schedule is displayed in Asset Schedule Configuration window. When it is time for a schedule to be generated it will appear in the Message Center.

8. Click **Close**.

View Scheduled Jobs

The schedules are viewed in the Message Center. There are two choices for viewing scheduled jobs: a single asset or all assets with scheduled jobs. The outcome is controlled by the Active Asset Only selection in the View menu.

If Active Asset Only is checked (default) then only the scheduled jobs for the selected asset will appear when the Schedules icon is clicked.

If Active Asset Only is unchecked then scheduled jobs for all assets will appear when the Schedules icon is clicked.

Click the + sign to expand the line and view the details. Click the - sign to collapse the lines.

Energy Cost Analysis Module

The Energy Cost Analysis Module analyzes operating and replacement cost for Design B AC Induction motors only. The following is a short overview of the program. A more detailed description is found in Appendix C of the Product Support manual.

Activating the Energy Cost Analysis Module

Prior to starting MCEGold, it is necessary to enter the Module Activation Key in the MCEGold Utility program located at C:\Program Files\PdMACorporation\MCEGold\Utility\Utility.exe.

In the Utility program click the **License Key** button and enter the Module Activation Key in the textboxes. Then click **Submit**.

Entering the Module Activation Key once will unlock all modules available to you.

If a Module Activation Key did not come with your CD contact PdMA Corporation at 813-621-6463.

Starting Energy Cost Analysis

1. Highlight the asset to be analyzed. This can be done from the Site Navigator, WatchList, or Site Condition list. The asset being analyzed should have EMAX Power test data.

2. Click the Energy Analysis icon on the toolbar.

3. The Energy Cost Analysis window opens with four tabs providing access to areas for comparison.

Asset Information Tab

The existing asset nameplate information on the left side is automatically generated from the asset selected and may not be changed. The Nameplate and Measured text boxes located on the right side may be changed in order to answer the "what if" questions. To return to the original values, click the **Reset Data** button.

Replacement Asset Tab

There are three ways to add values to this section.

The first method is to copy the information from the asset being analyzed by clicking **Copy Existing Asset Information**.

The second method is to select another asset by searching. Enter values in the Search for an Asset area, then click **Find an Asset**. Make your selection from the list of assets. The values for the selected asset will populate the appropriate text boxes.

Third, enter the nameplate information manually.

While some of the values in the Replacement Asset section may be manually changed, the blue text boxes in the Estimated column cannot be changed.

Energy/Operating Hours Tab

Fill in the appropriate values in the text boxes for the existing and replacement asset for comparison purposes. Values in the blue text boxes are calculated values and cannot be changed.

The values entered in these text boxes are used to calculate the values in the Energy Cost Analysis area.

Energy Cost Analysis Tab

The energy and operating hours comparison is displayed for the existing and replacement asset. No values can be changed here. Use the Energy/Operating Hours tab to change values.

The section below the dark line regarding repair or replace can be changed to compare the cost of repairing the existing asset or replacing it. Enter values in the appropriate text boxes, with the exception of the blue text boxes.which are calculated values and cannot be manually changed.

The only value that can be manually changed in the Payback and Recovery area is the Interest Rate.

When the values have been entered, click **Preview Report** to display a two page preview that can be printed or saved to PDF or HTML format.

Network User Rights

In order to view or create WatchLists, use the Asset Scheduler program, or Sync assets, the user must be assigned those rights by the network administrator using the Account Manager program.

TECHNOTE 1001

ISSUED

September, 2010

SUBJECT

Network update to MCEGold 2.3.1

DESCRIPTION

TechNote 1001 describes the network update installation procedure.

MCEGold 2.3.1 Update Installation

Server for Network Users

Note: Ensure the user account used to update the server has "sysadmin" permissions.

This update involves reference data changes only and does not make object level changes to the database.

There is a separate program on the CD to update the network database on the server. ***The database must be updated on the server first, then the desktop and field testers.***

If the update is installed on a network field tester before the server database is updated, a warning message appears informing you the database is an old version and to contact your system administrator. If the warning message is ignored, then when trying to connect to the network "Can't connect to the database. See your IT department." appears.

1. Prior to performing the update you must up synch all of the field testers.

2. Verify the data is upsynched and then clear the data from the field tester laptops.

3. Insert the MCEGold 2.3.1 CD into the drive. If it starts automatically select **Cancel** to stop the installation.

4. Locate the MCEGold Database Server Update folder (D:\MCEGold Database Server Update).

5. Click on the MCEGold Database Server Update.exe file.

6. The Server Information window opens. Fill in the Server, Database, Login, and Password information.

7. Click **Run Update**. The progress status will display on the window.

8. When the update complete message displays, close the window.

After the server database is updated run the update on the field tester laptops and desktop.

Field Tester

If you are updating from an MCEGold version older than 2.1.5 you must first uninstall MCEGold and the Microsoft SQL Server Desktop Engine (MCEGold) programs. Follow the *MCEGold prior to 2.1.5* instructions.

If you have an MCEGold 2.1.5 or later version follow the *MCEGold 2.1.5 and later* instructions.

MCEGold Prior to 2.1.5

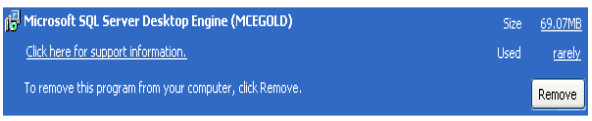
Backup

Copy the MCECal.xml and EMAXCal.xml or EMAXprb.xml files and complete Templates folder to a safe location. These files are located in:
C:\Program Files\PdMA Corporation\MCEGold\Mce
C:\Program Files\PdMA Corporation\MCEGold\Emax
C:\Program Files\PdMA Corporation\MCEGold\Report

Uninstall

1. Select Start, select Control Panel, and double click the Add or Remove icon.

2. In the Add or Remove Programs window scroll down to locate the Microsoft SQL Server Desktop Engine (MCEGold). Click on the program name to expand the information box.



3. Click **Remove**.

4. Locate the MCEGold Version x.x.x file and click on the program name to expand the information box.

5. Click **Remove** and follow the on screen instructions.

6. Click **Finish** when the "Uninstall Complete" message is received.

7. Close the Add or Remove Programs window.

Installation

1. Insert the MCEGold 2.3.1 CD into the drive. If the installation does not begin automatically, run Setup.exe from the CD.

2. In the License Agreement window, read the PdMA license. Select the "I accept" option button. The Next button becomes visible. Click **Next**.

   Note: If you do not accept the terms, the Next button is not visible, you can only click Cancel, which closes the software.

3. In the License Key window enter your Company Name and License Key exactly as provided from PdMA. The License Key is not the same as the Module Activation Key, which activates the Asset Scheduler and/or Energy Cost Analysis modules.

4. Click **Submit**. After the license has been verified the Next button appears. Click **Next**.

5. In the Installation Path window, select the location to install the MCEGold program folder using the search function or accept the default shown in the textbox and click **Next**.

6. The installation software will scan your computer for the necessary programs to be added or upgraded and list them in the MCEGold Version 2.3.1-Component Installation window.

7. When prompted, click **Install Components.** Click **Next** when the installation is complete.

8. When the installation is complete you must reboot your system.

9. Copy the backup MCECal.xml and EMAXCal.xml or EMAXprb.xml files and the Template folder back into their appropriate locations in C:\Program Files\PdMA Corporation\MCEGold. See the Backup section in this document for file locations. Answer Yes to the "OK to overwrite existing folder" inquiry.

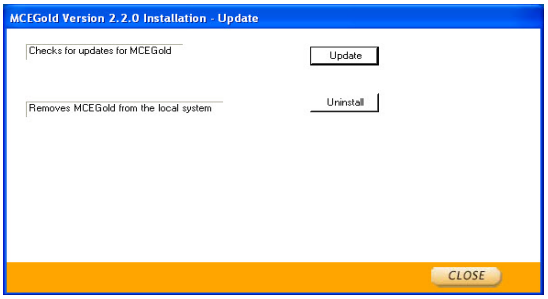
10. Using the Utility Program reenter all network information.

MCEGold 2.1.5 and Later

1. Insert MCEGold 2.3.1 CD into disk drive. It will auto-start to the InstallShield program.

2. The Installation Update Window opens.

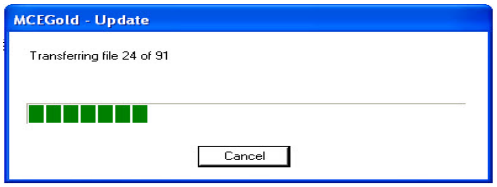
   If you are updating from 2.1.5 the choices will be **Update** or **Uninstall**.



3. Select **Update**.

   Note: Selecting **Uninstall** removes the existing MCEGold software from your system. That option is not necessary for this update.

4. The MCEGold Update window opens and displays a progress bar.



5. Click **Finish** when the update or repair complete message is received.

6. It may be necessary to restart your computer to finalize the installation. You will be prompted to restart if needed.

7. The local database must be cleared again using the Utility Program in order for it to be updated. Otherwise an incompatible database error will occur.

TECHNOTE 1101

ISSUED

February, 2011

SUBJECT

USB connection configuration

DESCRIPTION

The tester comes from PdMA with the software installed and COM port (USB connection) configured, however if the computer is reformatted or the MCE is connected to an newly installed operating system, it may be necessary to reinstall the COM Port (USB connection) configuration.

Installing the Software

From a CD

1. Insert the provided CD in the CD-ROM drive.

2. Use Windows Explorer to navigate to:D:\CP-US-03 Driver\CP-US-03 ALL VERSION DRIVER\PL2303 DRIVER4.0.100.1190 20050720\wd_pl2303h-hx-x_v20018v2020

3. Double click **PL-2303 Driver Installer.exe**.

4. The system will extract the files. The InstallShield Wizard window appears. Click **Next**.

5. When the installation is complete click **Finish**, then **Exit** the Installation window.

6. Go to *Installing the Adapter* section.

From a Zip File

1. Extract the files from the **CP-US-03.zip** file and navigate to CP-US-03\Windows.

2. Double click **PL-2303 Driver Installer.exe**.

3. The system will extract the files. The InstallShield Wizard window appears. Click **Next**.

4. When the installation is complete click **Finish**, then **Exit** the Installation window.

5. Go to *Installing the Adapter* section.

Installing the Adapter

Note: These instructions are based on the Dell computers supplied with the tester, longer cables may be required for other models. Call tech support (813-621-6463 ext. 2) for help if you have a different model.

1. Connect the 8-inch USB cable to the MCE port on the tester and to the bottom left USB port on the laptop. (Figure 1)

   Note: If using a model computer different than a Dell E64XX series then choose the most convenient USB port on the laptop.



Figure 1

2. Wait for the computer to recognize and install the adapter. The progress is displayed on the task bar located in the lower right of the screen. Watch for the USB icons to disappear, which indicates the installation is complete. (Figure 2)



Figure 2

3. Click **Start** (lower left corner on task bar) and select **Control Panel**. In the control panel window double click the **System** icon. (Figure 3)



Figure 3

4. In the System Properties window, select the **Hardware** tab, then click the **Device Manager** button. (Figure 4)



Figure 4

5. In the Device Manager window double click on **Ports (COM & LTP).**

6. Double click **Prolific USB-to-Serial Comm Port**. (Figure 5)

Note: If there is a device on COM1 then follow the procedure below to assign it to a different COM port first**.**

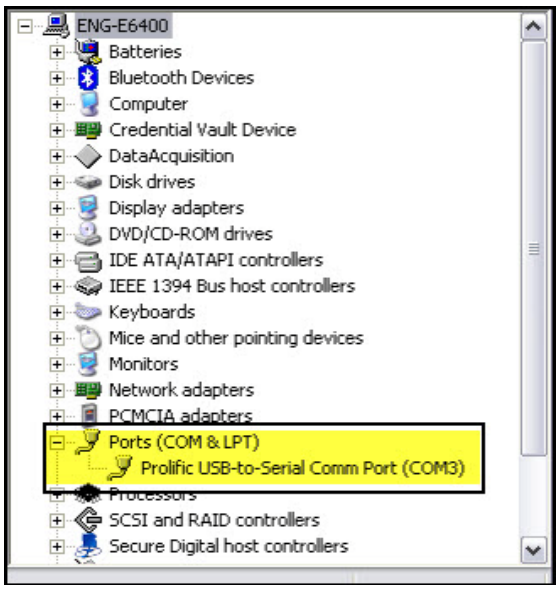


Figure 5

7. In the Properties window select the **Port Settings** tab and then click the **Advanced...** button. (Figure 6)

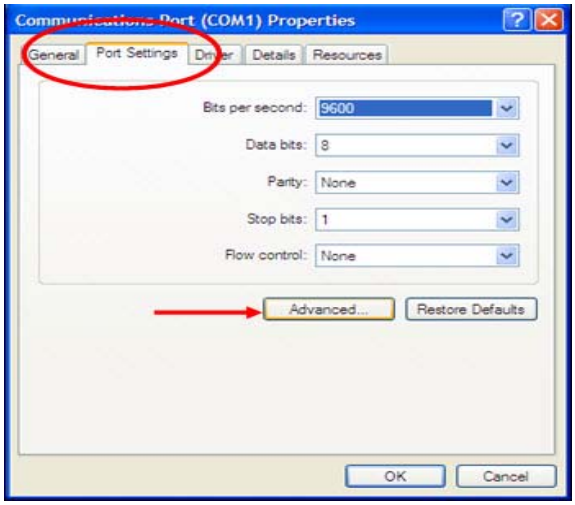


Figure 6

8. In the Advanced Settings window, click the down arrow on the **COM Port Number** box and select **COM1**. (Figure 7)

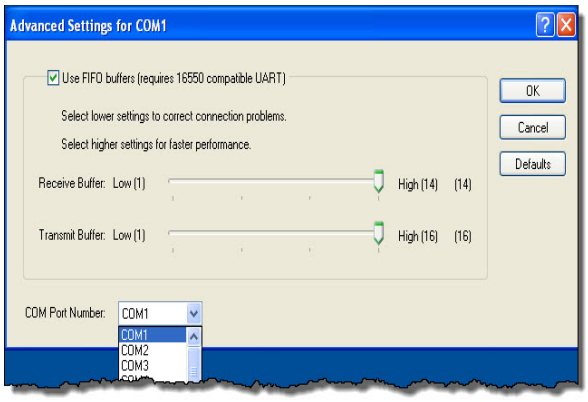


Figure 7

9. Click **OK**. Click **OK** on the next window, close the Device Manager (click the red "X"), click **OK** on the Device Manager window, and close the Control Panel window.

Stow USB Cable

Always stow the USB cable as shown in Figure 8, to prevent damage to the cable and the computer.



Figure 8

TECHNOTE 1101

ISSUED

February, 2011

SUBJECT

USB connection configuration

DESCRIPTION

The tester comes from PdMA with the software installed and COM port (USB connection) configured, however if the computer is reformatted or the MCE is connected to a newly installed operating system, it may be necessary to reinstall the COM Port (USB connection) configuration.

Installing the Software

From a CD

USB CD

1. Insert the USB CD in the CD-ROM drive.
2. Use Windows Explorer to navigate to:D:\CP-US-03 Driver\CP-US-03 ALL VERSION DRIVER\PL2303 DRIVER4.0.100.1190 20050720\wd_pl2303h-hx-x_v20018v2020
3. Double click **PL-2303 Driver Installer.exe**.
4. The system will extract the files. The InstallShield Wizard window appears. Click **Next**.
5. When the installation is complete click **Finish**, then **Exit** the Installation window.
6. Go to *Installing the Adapter* section

MCEGold 2.4 CD

1. Insert the MCEGold 2.4 CD in the CD-ROM drive.
2. Use Windows Explorer to navigate to the folder labeled USB-to-Serial_Port_Adapter_Drivers.

Windows XP Users

1. Locate the Windows_XP folder.
2. Double click **PL-2303 Driver Installer.exe.**
3. The system will extract the files. The InstallShield Wizard window appears. Click **Next**.
4. When the installation is complete click **Finish**, then **Exit** the Installation window.
5. Go to *Installing the Adapter* section

Windows 7 Users

1. Locate the Window7_32-Bit folder.
2. Double click **PL2303_Prolific_Vista_3301.exe.**
3. The system will extract the files. The InstallShield Wizard window appears. Click **Next**.
4. When the installation is complete click **Finish**, then **Exit** the Installation window.
5. Go to *Installing the Adapter* section

From a Zip File (Windows XP Only)

1. Extract the files from the **CP-US-03.zip** file and navigate to CP-US-03\Windows.
2. Double click **PL-2303 Driver Installer.exe**.
3. The system will extract the files. The InstallShield Wizard window appears. Click **Next**.
4. When the installation is complete click **Finish**, then **Exit** the Installation window.
5. Go to *Installing the Adapter* section.

Installing the Adapter

Note: These instructions are based on the Dell computers supplied with the tester, longer cables may be required for other models. Call tech support (813-621-6463 ext. 2) for help if you have a different model.

1. Connect the 8-inch USB cable to the MCE port on the tester and to the bottom left USB port on the laptop. (Figure 1)

Note: If using a model computer different than a Dell E64XX series then choose the most convenient USB port on the laptop.



Figure 1

2. Wait for the computer to recognize and install the adapter. The progress is displayed on the task bar located in the lower right of the screen. Watch for the USB icons to disappear, which indicates the installation is complete. (Figure 2)



Figure 2

3. Click **Start** (lower left corner on task bar) and select **Control Panel**. In the control panel window double click the **System** icon. (Figure 3)



Figure 3

4. In the System Properties window, select the **Hardware** tab, then click the **Device Manager** button. (Figure 4)



Figure 4

5. In the Device Manager window double click on **Ports (COM & LTP).**

6. Double click **Prolific USB-to-Serial Comm Port**. (Figure 5)

Note: If there is a device on COM1 then follow the procedure below to assign it to a different COM port first**.**

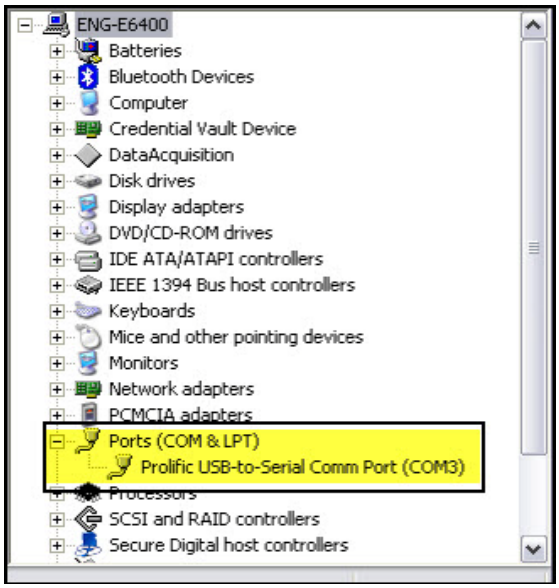


Figure 5

7. In the Properties window select the **Port Settings** tab and then click the **Advanced...** button. (Figure 6)

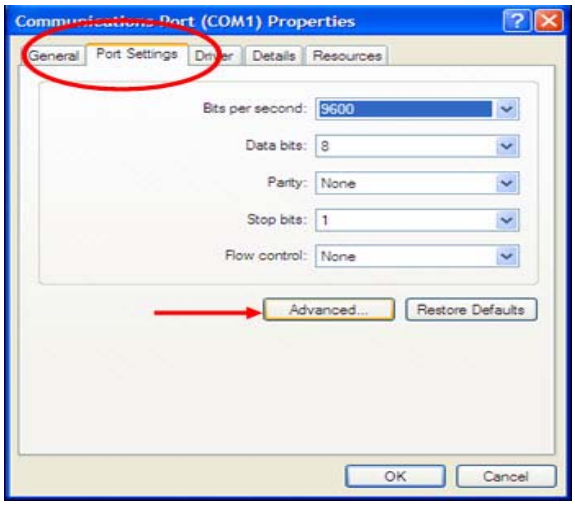


Figure 6

8. In the Advanced Settings window, click the down arrow on the **COM Port Number** box and select **COM1**. (Figure 7)

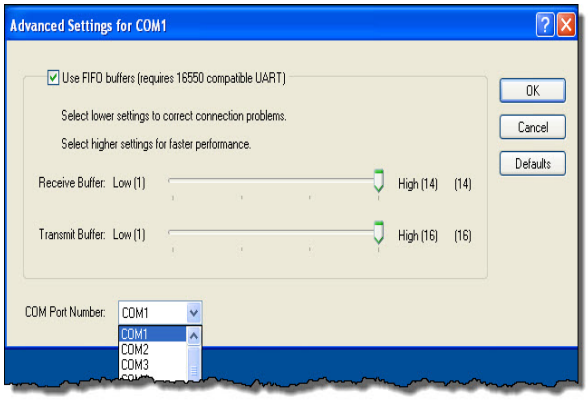


Figure 7

9. Click **OK**. Click **OK** on the next window, close the Device Manager (click the red "X"), click **OK** on the Device Manager window, and close the Control Panel window.

Stow USB Cable

Always stow the USB cable as shown in Figure 8, to prevent damage to the cable and the computer.



Figure 8

TECHNOTE 1102

ISSUED

March, 2011

SUBJECT

MCEGold update to MCEGold 2.4.

DESCRIPTION

TechNote 1102 describes the update installation procedure, changes to the program, and the new international language feature.

MCEGold 2.4 adds the Nameplate icon back to the toolbar, changes the wording of the Condition Code from "Good" to "Normal", and adds additional manufacturer names to the list in the Nameplate drop down list.

Titles have been removed from the icons in an effort to conserve space on the computer monitor. You may still see the title by hovering your mouse over the icon, the title will appear.

The search function has been upgraded to allow you to search on a partial name. Previously it was necessary to enter the name exactly as it was listed in the database. In MCEGold 2.4 you may enter part of the asset name and a list of every asset containing the search term will be displayed. Then highlight the desired asset to locate it in the database.

MCEGOLD 2.4 UPDATE INSTALLATION

Note: This update requires Microsoft .NET Framework 3.5. If you are connected to the Internet, the software will perform the update automatically. If you cannot connect to the Internet use the CD titled Microsoft .NET Framework 3.5 which is included with the MCEGold 2.4 update. Install Microsoft .NET Framework 3.5 **before** updating to MCEGold 2.4.

Server for Network Users

Note: Ensure the user account used to update the server has "sysadmin" permissions.

There is a separate program on the CD to update the network database on the server. ***The database must be updated on the server first, then the desktop and field testers.***

If the update is installed on a network field tester before the server database is updated, a warning message appears informing you the database is an old version and to contact your system administrator. If the warning message is ignored, when trying to connect to the network "Can't connect to the database. See your IT department." appears.

1. Insert the CD into the drive. It will not auto-run.
2. Locate the MCEGold Database Server Update folder.
3. Click on the MCEGold Database Server Update.exe file.
4. The Server Information window opens. Fill in the Server, Database, Login, and Password information.
5. Click **Run Update**. The progress status will display on the window.
6. When the update complete message displays, close the window.

Stand Alone Users/Field Tester

If you are updating from an MCEGold version older than 2.1.5 you must first uninstall MCEGold and the Microsoft SQL Server Desktop Engine (MCEGold) programs. Follow the *MCEGold prior to 2.1.5* instructions.

If you have an MCEGold 2.1.5 or later version follow the *MCEGold 2.1.5 and later* instructions.

MCEGold Prior to 2.1.5

Backup

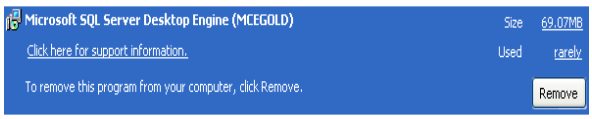
Copy the MCECal.xml and EMAXCal.xml files and complete Templates folder to a safe location. These files are located in:
C:\Program Files\PdMA Corporation\MCEGold\Mce
C:\Program Files\PdMA Corporation\MCEGold\Emax

C:\Program Files\PdMA Corporation\MCEGold\Report

Uninstall

1. Select Start, select Control Panel, and double click the Add or Remove icon.

2. In the Add or Remove Programs window scroll down to locate the Microsoft SQL Server Desktop Engine (MCEGold). Click on the program name to expand the information box.



3. Click **Remove**.

4. Locate the MCEGold Version x.x.x file and click on the program name to expand the information box.

5. Click **Remove** and follow the on screen instructions.

6. Click **Finish** when the "Uninstall Complete" message is received.

7. Close the Add or Remove Programs window.

Installation

1. Insert the MCEGold 2.4 CD into the drive. If the installation does not begin automatically, run Setup.exe from the CD.

2. In the License Agreement window, read the PdMA license. Select the "I accept" option button. The Next button becomes visible. Click **Next**.

   Note: If you do not accept the terms, the Next button is not visible, you can only click Cancel, which closes the software.

3. In the License Key window enter your Company Name and License Key exactly as provided from PdMA. The License Key is not the same as the Module Activation Key, which activates the Language Module.

4. Click **Submit**. After the license has been verified the Next button appears. Click **Next**.

5. In the Installation Path window, select the location to install the MCEGold program folder using the drop-down list or accept the default shown in the textbox and click **Next**.

6. The installation software will scan your computer for the necessary programs to be added or upgraded and list them in the MCEGold Version 2.4-Component Installation window.

7. When prompted, click **Install Components.** Click **Next** when the installation is complete.

8. When the installation is complete you must reboot your system.

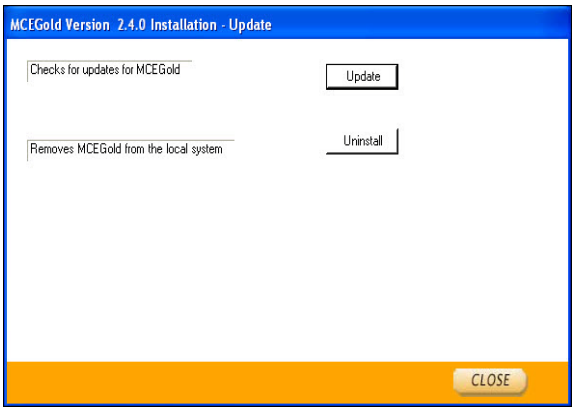
9. Copy the backup MCECal.xml and EMAXCal.xml files and the Template folder back into their appropriate locations in C:\Program Files\PdMA Corporation\MCEGold. See the Backup section in this document for file locations. Answer Yes to the "OK to overwrite existing folder" inquiry.

MCEGold 2.1.5 and Later

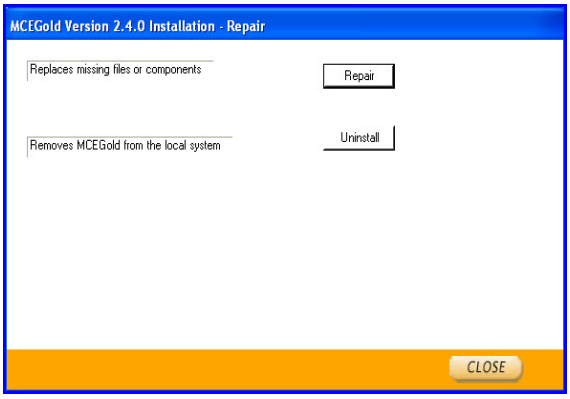
1. Insert CD into disk drive. It will auto-start to the InstallShield program.

2. The Installation Update Window opens.

   If you are updating from 2.1.5 the choices will be **Update** or **Uninstall**.



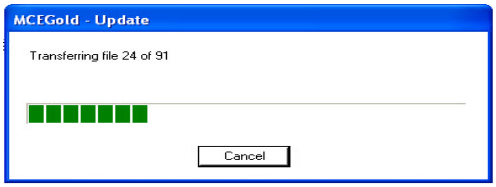
If you are updating from 2.2.0 the choices will be **Repair** or **Uninstall**.



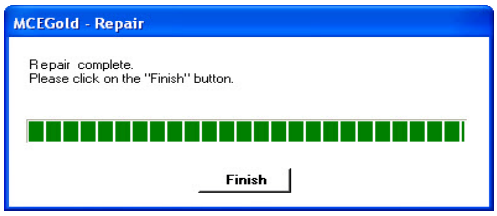
3. Select **Update** or **Repair,** depending on your software version.

   Note: Selecting **Uninstall** removes the existing MCEGold software from your system. That option is not necessary for this update.

4. The MCEGold Update window opens and displays a progress bar.



5. Click **Finish** when the update or repair complete message is received.



6. It may be necessary to restart your computer to finalize the installation. You will be prompted to restart if needed.

INTERNATIONAL LANGUAGE

Currently the only languages supported are English and Spanish. Plans are in process to add additional languages.

Activating Language Feature

In order to use the Language feature you must first enter the Module Activation Key and then install the Language Pack.

If a Module Activation Key did not come with your MCEGold 2.4 CD contact PdMA Corporation Technical Support at 813-621-6463 ext. 251.

The Language Pack file is available for download from our website (http://www.pdma.com/PdMA-downloads.php) or by contacting Technical Support at 813-621-6463 ext. 251.

Module Activation Key

Prior to starting MCEGold it is necessary to enter the Module Activation Key in the MCEGold Utility program. Entering the Module Activation Key once unlocks all language packs available.

1. Locate the Utility programs at: C:\ProgramFiles\PdMACorporation\MCEGold\Utility\Utility.exe

2. Double click the Utility.exe file.

3. In the Utility program click the **License Key** button.

4. Enter the Module Activation Key in the textboxes.

5. Click **Submit**, then **Exit**.

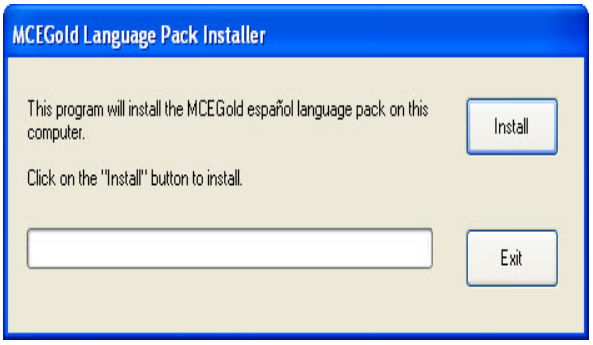
Install Language Pack

1. Double click the LP_spanish.exe file.

2. In the WinZip window click **Setup**.



3. In the MCEGold Language Pack Installer window verify you are installing MCEGold español language pack on your computer and click **Install**.



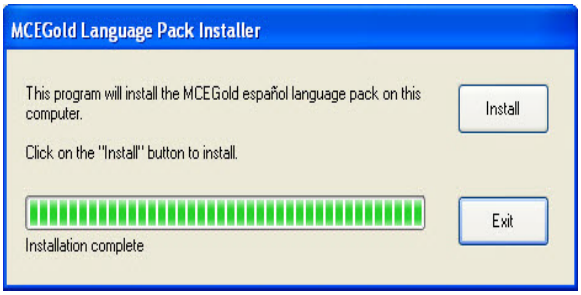
4. A second installation verification window asks you to verify the installation. Click **OK**.



5. Upon completion of the installation a Installation Successful window opens. Click **OK**.



6. Click **Exit** in the MCEGold Language Pack Installer window.



Starting Language Feature

1. Start MCEGold 2. 4.

2. In the Login window click the arrow on the right side of the Language box.

   Note: If you do not see the Language window you need to cancel MCEGold and go to the Utility window to enter your Module Activation Key. See Activating Language Feature in this TechNote for instructions.

3. Select the desired language and click **OK**.

It is possible to revert to English by exiting MCEGold, restarting, and selecting English from the Language box in the Login window.

TECHNOTE 1102

ISSUED

June, 2011

SUBJECT

MCEGold update to MCEGold 2.4.

DESCRIPTION

TechNote 1102 describes the update installation procedure, changes to the program, and the new international language feature.

MCEGold 2.4 adds the Nameplate icon back to the toolbar, changes the wording of the Condition Code from "Good" to "Normal", and adds additional manufacturer names to the list in the Nameplate drop down list.

Titles have been removed from the icons in an effort to conserve space on the computer monitor. You may still see the title by hovering your mouse over the icon, the title will appear.

The search function has been upgraded to allow you to search on a partial name. Previously it was necessary to enter the name exactly as it was listed in the database. In MCEGold 2.4 you may enter part of the asset name and a list of every asset containing the search term will be displayed. Then highlight the desired asset to locate it in the database.

MCEGOLD 2.4 UPDATE INSTALLATION

Note: This update requires Microsoft .NET Framework 3.5. If you are connected to the Internet, the software will perform the update automatically. If you cannot connect to the Internet locate the dotNet Package folder on the MCEGold 2.4.0 CD. Install Microsoft .NET Framework 3.5 **before** updating to MCEGold 2.4.

Server for Network Users

Note: Ensure the user account used to update the server has "sysadmin" permissions.

There is a separate program on the CD to update the network database on the server. ***The database must be updated on the server first, then the desktop and field testers.***

If the update is installed on a network field tester before the server database is updated, a warning message appears informing you the database is an old version and to contact your system administrator. If the warning message is ignored, when trying to connect to the network "Can't connect to the database. See your IT department." appears.

1. Insert the CD into the drive. If the CD starts automatically, click **Exit** and proceed to step 2.
2. Locate the MCEGold Database Server Update folder on the MCEGold 2.4.0 CD.
3. Click on the MCEGold Database Server Update.exe file.
4. The Server Information window opens. Fill in the Server, Database, Login, and Password information.
5. Click **Run Update**. The progress status will display on the window.
6. When the update complete message displays, close the window.

Stand Alone Users/Field Tester

If you are updating from an MCEGold version older than 2.1.5 you must first uninstall MCEGold, Microsoft SQL Server Desktop Engine (MCEGold), and Microsoft SQL Server 2005. Follow the *MCEGold prior to 2.1.5* instructions.

If you have an MCEGold 2.1.5 or later version you must first uninstall Microsoft SQL Server 2005. Follow the *MCEGold 2.1.5 and later* instructions.

MCEGold Prior to 2.1.5

Backup

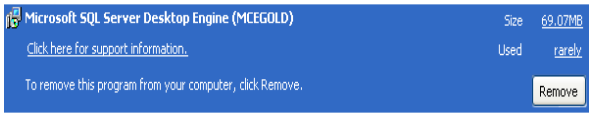
Copy the MCECal.xml and EMAXCal.xml files and complete Templates folder to a safe location. These files are located in:

C:\Program Files\PdMA Corporation\MCEGold\Mce
C:\Program Files\PdMA Corporation\MCEGold\Emax
C:\Program Files\PdMA Corporation\MCEGold\Report

Uninstall

1. Select Start, then Control Panel, and double click the Add or Remove icon.

2. In the Add or Remove Programs window scroll down to locate the Microsoft SQL Server Desktop Engine (MCEGold). Click on the program name to expand the information box.



3. Click **Remove** and follow the on screen instructions.

4. Click **Finish** when the "Uninstall Complete" message is received.

5. Locate the MCEGold Version x.x.x file and click on the program name to expand the information box.

6. Click **Remove** and follow the on screen instructions.

7. Click **Finish** when the "Uninstall Complete" message is received.

8. Locate Microsoft SQL Server 2005 and click on the program name to expand the information box.

9. Click **Remove** and follow the on screen instructions.

10. Click **Finish** when the "Uninstall Complete" message is received.

11. Close the Add or Remove Programs window.

Installation

1. Insert the MCEGold 2.4 CD into the drive. If the installation does not begin automatically, run Setup.exe from the CD.

2. In the License Agreement window, read the PdMA license. Select the "I accept" option button. The Next button becomes visible. Click **Next**.

   Note: If you do not accept the terms, the Next button is not visible, you can only click Cancel, which closes the software.

3. In the License Key window enter your Company Name and License Key exactly as provided from PdMA. The License Key is not the same as the Module Activation Key, which activates the Language Module.

4. Click **Submit**. After the license has been verified the Next button appears. Click **Next**.

5. In the Installation Path window, select the location to install the MCEGold program folder using the drop-down list or accept the default shown in the textbox and click **Next**.

6. The installation software will scan your computer for the necessary programs to be added or upgraded and list them in the MCEGold Version 2.4-Component Installation window.

7. When prompted, click **Install Components.** Click **Next** when the installation is complete.

8. When the installation is complete you must reboot your system.

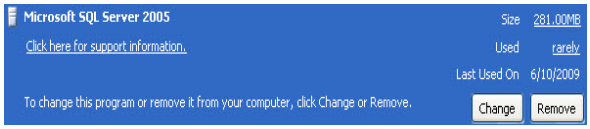
9. Copy the backup MCECal.xml and EMAXCal.xml files and the Template folder back into their appropriate locations in C:\Program Files\PdMA Corporation\MCEGold. See the Backup section in this document for file locations. Answer Yes to the "OK to overwrite existing folder" inquiry.

MCEGold 2.1.5 and Later

Uninstall

1. Select Start, then Control Panel, and double click the Add or Remove icon.

2. In the Add or Remove Programs window scroll down to locate Microsoft SQL Server 2005. Click on the program name to expand the information box.



3. Click **Remove** and follow the on screen instructions**.**

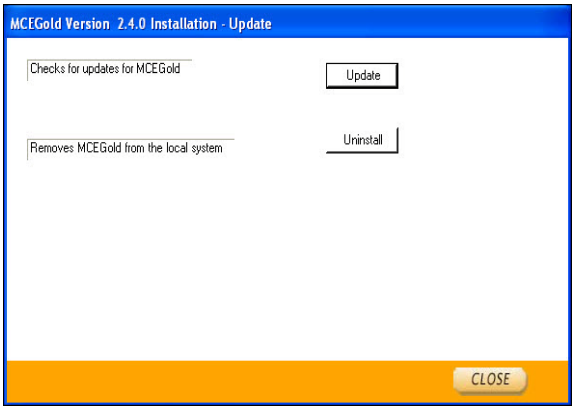
4. Click **Finish** when the "Uninstall Complete" message is received.

5. Close the Add or Remove Programs window.

Installation

1. Insert CD into disk drive. It will auto-start to the InstallShield program.

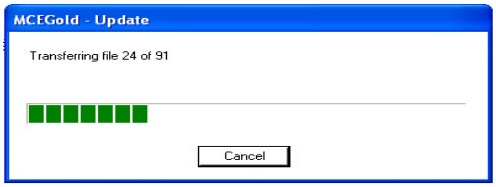
2. The Installation Update Window opens.



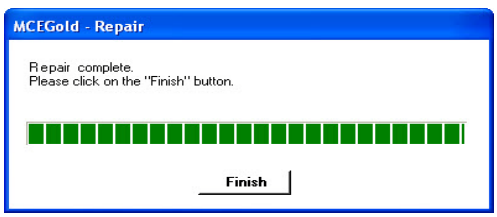
3. Select **Update.**

   Note: Selecting **Uninstall** removes the existing MCEGold software from your system. That option is not necessary for this update.

4. The MCEGold Update window opens and displays a progress bar.



5. Click **Finish** when the update or repair complete message is received.



6. It may be necessary to restart your computer to finalize the installation.

INTERNATIONAL LANGUAGE

Currently the languages supported are English, Spanish, and Chinese. Plans are in process to add additional languages.

Activating Language Feature

In order to use the Language feature you must first enter the Module Activation Key and then install the Language Pack.

If a Module Activation Key did not come with your MCEGold 2.4 CD or if your current Module Activation Key does not activate the Language package contact PdMA Corporation Technical Support at 813-621-6463 ext. 251.

The Language Pack file is available for download from our website (http://www.pdma.com/PdMA-downloads.php) or by contacting Technical Support at 813-621-6463 ext. 251.

Module Activation Key

Prior to starting MCEGold it is necessary to enter the Module Activation Key in the MCEGold Utility program. Entering the Module Activation Key once unlocks all language packs available.

1. Locate the Utility programs at: C:\ProgramFiles\PdMACorporation\MCEGold\Utility\Utility.exe

2. Double click the Utility.exe file.

3. In the Utility program click the **License Key** button.

4. Enter the Module Activation Key in the textboxes.

5. Click **Submit**, then **Exit**.

Install Language Pack

Language Pack downloads are found in the International Language Pack section on the download page of the PdMA website (http://www.pdma.com/PdMA-downloads.php).

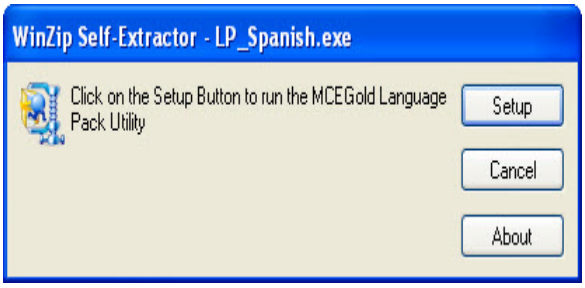
1. Click the language pack desired.

2. The File Download - Security Warning window opens. Click **Run**.

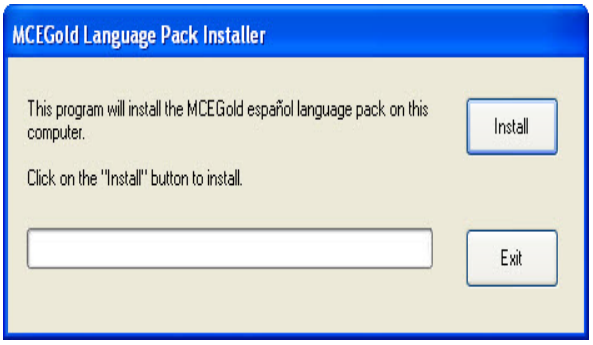
3. Click **Run** in the next File Download - Security Warning window.

4. A progress window appears. No action is required.

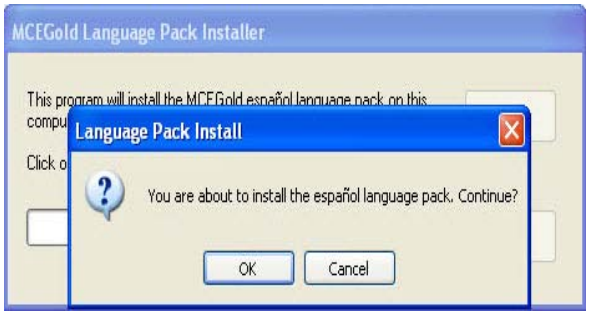
5. In the WinZip window click **Setup**.



6. In the MCEGold Language Pack Installer window verify you are installing the desired MCEGold language pack on your computer and click **Install**.



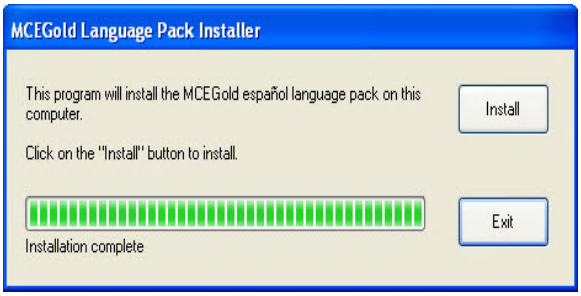
7. A second installation verification window asks you to verify the installation. Click **OK**.



8. Upon completion of the installation an Installation Successful window opens. Click **OK**.



9. To finish the installation, click **Exit** in the MCEGold Language Pack Installer window.



Starting Language Feature

1. Start MCEGold 2. 4.

2. In the Login window click the arrow on the right side of the Language box.

   Note: If you do not see the Language window you need to cancel MCEGold and go to the Utility window to enter your Module Activation Key. See Activating Language Feature in this TechNote for instructions.

3. Select the desired language and click **OK**.

It is possible to revert to English by exiting MCEGold, restarting, and selecting English from the Language box in the Login window.

TECHNOTE 1201

ISSUED

May, 2012

SUBJECT

MCEGold update to MCEGold 2.5.1

DESCRIPTION

TechNote 1201describes the update installation procedure and changes to the application.

MCEGold 2.5.1 adds new icons on the toolbar and throughout the application. Additionally Windows 7 64-bit compatibility was added, EMAX Auto Pre-Save Data Validation, the ability to Print and Export WatchLists, and more. A PDF document of the full MCEGold 2.5.1 release highlights is available for you to view on the Installation Disc in the Release Highlights Folder.

MCEGOLD 2.5.1 UPDATE INSTALLATION

Note:

- MCEGold 2.5.1 is not compatible with testers requiring a Data Acquisition Card (DAQ).

- Installing the MCEGold 2.5.1 update will require an upgrade of the Microsoft SQL Server 2005 to SQL Server 2008.

- If you have a Microsoft Windows XP operating system, contact PdMA Tech Support (813-621-6463 ext.251) prior to the 2.5.1 installation.

Minimum Requirements:

H-Series Tester, 2.0+GHz Intel i5 or equivalent processor, 2+ G RAM.

Server Update for Network Users

Note: Ensure the user account used to update the server has “sysadmin” permissions.

There is a separate application on the Installation Disc to update the network database on the server. ***The database must be updated on the server first, then the desktops and field testers.***

If the update is installed on a network field tester before the server database is updated, a warning message appears informing you the database is an old version and to contact your system administrator. If the warning message is ignored, when trying to connect to the network “Can’t connect to the database. See your IT department.” appears.

1. Insert the disc into the drive. If the disc starts automatically, click **Exit** and proceed to the next step

2. Locate the MCEGold Database Server Update folder on the MCEGold 2.5.1 Disc.

3. Click on the MCEGold Database Server Update.exe file.

4. The Server Information window opens. Fill in the Server, Database, Login, and Password information.

5. Click **Run Update**. The progress status will display on the window.

6. When the update complete message displays, close the window.

Stand Alone Users/Field Tester

Note: MCEGold 2.5.1 will require an upgrade of the Microsoft SQL Server 2005 to SQL Server 2008. Therefore, any standalone database opened will be updated to SQL Server 2008 and will no longer open with another machine running an older version of MCEGold using SQL Server 2005.

If you are updating from an MCEGold version older than 2.1.5 or Microsoft Windows XP operating system you must first call PdMA Tech Support (813-621-6463 ext. 251).

If you have MCEGold 2.1.5 or later version you must first uninstall Microsoft SQL Server 2005. Follow the *MCEGold 2.1.5 and Later* instructions.

MCEGold Prior to 2.1.5

Call Tech Support (813-621-6463 ext.251)

MCEGold 2.1.5 and Later

Uninstall

1. Select Start, then Control Panel, and double click the Add or Remove (Programs and Features in Windows 7) icon.

2. In the Add or Remove Programs (Uninstall or change a program in Windows 7) window scroll down to locate Microsoft SQL Server 2005. Click on the program name to expand the information box. (In Windows 7 select Microsoft SQL Server 2005 from the list.)

3. Click **Remove** (**Uninstall -** located above the list in Windows 7) and follow the on screen instructions.

4. Click **Finish** when the "Uninstall Complete" message is received.

5. Close the Add or Remove Programs window.

Installation

1. Insert the MCEGold 2.5.1 Disc into the drive. If the installation does not begin automatically, run Setup.exe from the disc.

2. The Installation Update Window opens.



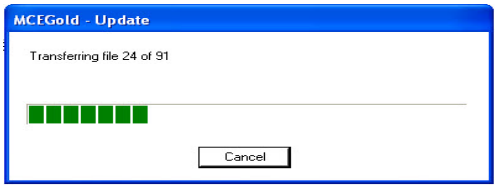
3. Select Update.

Note: Selecting Uninstall removes the existing MCEGold software from your system. That option is not necessary for this update.

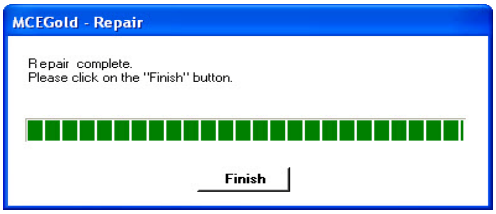
4. The installation software will scan your computer for the necessary programs to be added or upgraded and list them in the MCEGold 2.5.1-Component Installation window.

5. When prompted, click **Install Components**. Click **Next** when the installation is complete.

6. The MCEGold Update window opens and displays a progress bar.



7. Click **Finish** when the update or repair complete message is received.



8. When the installation is complete you must reboot your system.

INTERNATIONAL LANGUAGE

Currently the languages supported are English, Spanish, and Chinese. Plans are in process to add additional languages.

Activating Language Feature

In order to use the Language feature you must first enter the Module Activation Key and then install the Language Pack.

If a Module Activation Key did not come with your MCEGold 2.5.1 Disc or if your current Module

Activation Key does not activate the Language package contact PdMA Corporation Technical Support at 813-621-6463 ext. 251.

The Language Pack file is available for download from our website (http://www.pdma.com/PdMA-downloads.php) or by contacting Technical Support at 813-621-6463 ext. 251.

Module Activation Key

Prior to starting MCEGold it is necessary to enter the Module Activation Key in the MCEGold Utility program. Entering the Module Activation Key once unlocks all language packs available.

1. Locate the Utility programs at:

   C:\ProgramFiles\PdMACorporation\MCEGold\Utility\Utility.exe or Start\All Programs\PdMA Corporation\Utilities.

2. Double click the Utility.exe file.

3. In the Utility program click the License Key button.

4. Enter the Module Activation Key in the corresponding textboxes.

Click **Submit**, then **Exit**.

Install Language Pack

Language Pack downloads are found in the International Language Pack section on the download page of the PdMA website (http://www.pdma.com/PdMA-downloads.php).

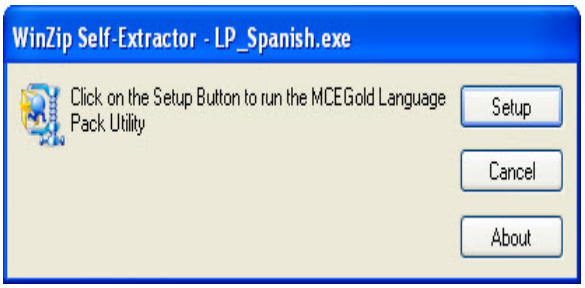
1. Click the language pack desired.

2. The File Download - Security Warning window opens. Click **Run**.

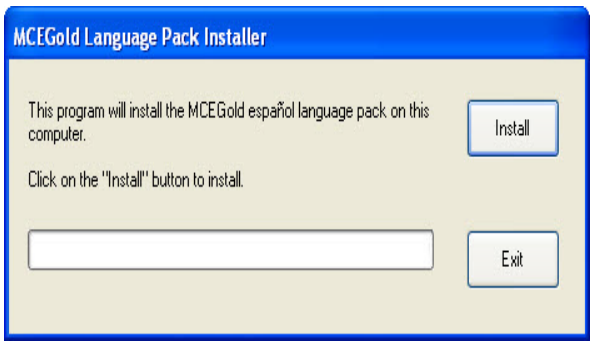
3. Click **Run** in the next File Download - Security Warning window.

4. A progress window appears. No action is required.

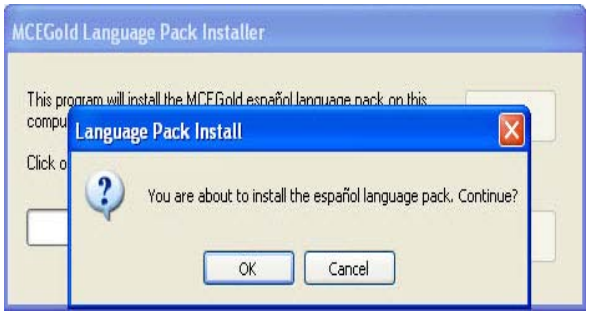
5. In the WinZip window click **Setup**.



6. In the MCEGold Language Pack Installer window verify you are installing the desired MCEGold language pack on your computer and click **Install**.



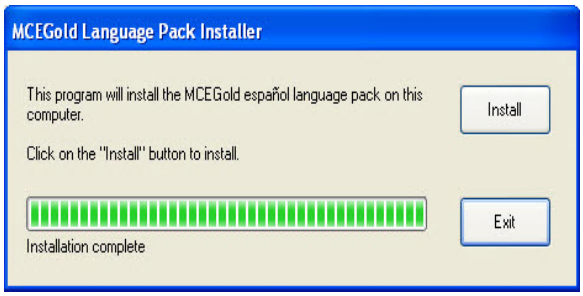
7. A second installation verification window asks you to verify the installation. Click **OK**.



8. Upon completion of the installation an Installation Successful window opens. Click **OK**.



9. To finish the installation, click **Exit** in the MCEGold Language Pack Installer window.



Starting Language Feature

1. Start MCEGold 2.5.1.

2. In the Login window click the arrow on the right side of the Language box.

   Note: If you do not see all of the installed languages you need to cancel MCEGold and go to the Utility window to enter your Module Activation Key. See *Activating Language Feature* in this TechNote for instructions.

3. Select the desired language and click **OK**.

It is possible to revert to English by exiting MCEGold, restarting, and selecting English from the Language box in the Login window.

TECHNOTE 1202

ISSUED

June, 2012

SUBJECT

MCEGold update to MCEGold 2.5.1 SP1

DESCRIPTION

TechNote 1202 supercedes TechNote 1201 and describes the update installation procedure and changes to the application.

MCEGold 2.5.1 SP1 adds new icons on the toolbar and throughout the application. Additionally Windows 7 64-bit compatibility was added, EMAX Auto Pre-Save Data Validation, the ability to Print and Export WatchLists, and more. A PDF document of the full MCEGold 2.5.1 SP1 release highlights is available for you to view on the Installation Disc in the Release Highlights Folder.

MCEGOLD 2.5.1 SP1 UPDATE INSTALLATION

Note:

- MCEGold 2.5.1 SP1 is not compatible with testers requiring a Data Acquisition Card (DAQ).

- Installing the MCEGold 2.5.1 SP1 update will require an upgrade of the Microsoft SQL Server 2005 to SQL Server 2008.

- If you have a Microsoft Windows XP operating system, contact PdMA Tech Support (813-621-6463 ext.251) prior to the 2.5.1 installation.

Minimum Requirements:

H-Series Tester, 2.0+GHz Intel i5 or equivalent processor, 2+ G RAM.

Server Update for Network Users

Note: Ensure the user account used to update the server has “sysadmin” permissions.

There is a separate application on the Installation Disc to update the network database on the server. ***The database must be updated on the server first, then the desktops and field testers.***

If the update is installed on a network field tester before the server database is updated, a warning message appears informing you the database is an old version and to contact your system administrator. If the warning message is ignored, when trying to connect to the network “Can’t connect to the database. See your IT department.” appears.

1. Insert the disc into the drive. If the disc starts automatically, click **Exit** and proceed to the next step

2. Locate the MCEGold Database Server Update folder on the MCEGold 2.5.1 SP1 Disc.

3. Click on the MCEGold Database Server Update.exe file.

4. The Server Information window opens. Fill in the Server, Database, Login, and Password information.

5. Click **Run Update**. The progress status will display on the window.

6. When the update complete message displays, close the window.

Stand Alone Users/Field Tester

Note: MCEGold 2.5.1 SP1 will require an upgrade of the Microsoft SQL Server 2005 to SQL Server 2008. Therefore, any stand alone database opened will be updated to SQL Server 2008 and will no longer open with another machine running an older version of MCEGold using SQL Server 2005.

If you are updating from an MCEGold version older than 2.1.5 or Microsoft Windows XP operating system you must first call PdMA Tech Support (813-621-6463 ext. 251).

If you have MCEGold 2.1.5 or later version you *may* need to uninstall Microsoft SQL Server 2005 and MCEGold before installing MCEGold 2.1.5 SP1. See the *MCEGold 2.1.5 and Later* instructions.

MCEGold Prior to 2.1.5

Call Tech Support (813-621-6463 ext.251)

MCEGold 2.1.5 and Later

When you initially insert the MCEGold 2.5.1 SP1 disc into the computer it will detect which version of Microsoft SQL Server is on your computer. You may receive a pop-up window alerting you that Microsoft SQL Server 2005 is installed on your computer. If that is the case you must uninstall Microsoft SQL Server 2005 **AND** MCEGold before installing MCEGold 2.5.1 SP1.

To uninstall Microsoft SQL Server 2005 see the *Uninstall SQL Server 2005* section below. To uninstall MCEGold see the *Uninstall MCEGold* section.

If the software detects Microsoft SQL Server 2008 on your computer you will be ready to install MCEGold 2.5.1 SP1. Go to the section titled *Update - MCEGold 2.5.1 SP1*.

Uninstall SQL Server 2005

1. Select Start, then Control Panel, and double click the Add or Remove (Programs and Features in Windows 7) icon.

2. In the Add or Remove Programs (Uninstall or change a program in Windows 7) window scroll down to locate Microsoft SQL Server 2005. Click on the program name to expand the information box. (In Windows 7 select Microsoft SQL Server 2005 from the list.)

3. Click **Remove** (**Uninstall** - located above the list in Windows 7) and follow the on screen instructions.

4. Click **Finish** when the "Uninstall Complete" message is received.

5. Close the Add or Remove Programs window.

Uninstall MCEGold

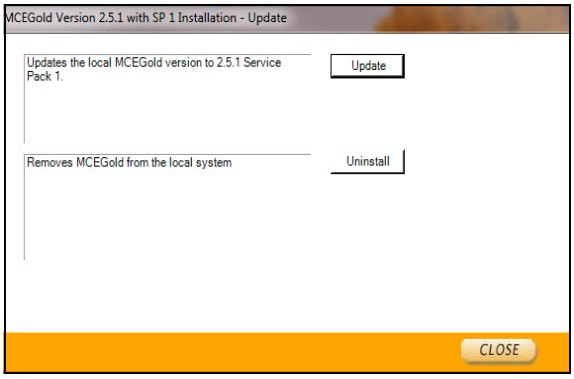
Backup

Before beginning the uninstall copy the MCECal.xml and Emaxprb.xml files and complete Templates folder to a safe location and make note of the location.

The files are located in:
C:\Program Files\PdMA Corporation\MCEGold\Mce
C:\Program Files\PdMA Corporation\MCEGold\Emax
C:\Program Files\PdMA Corporation\MCEGold\Report

1. Insert the MCEGold 2.5.1 SP1 Disc into the drive. If the installation does not begin automatically, run Setup.exe from the disc. (Select Run setup.exe from the AutoPlay window in Windows 7).

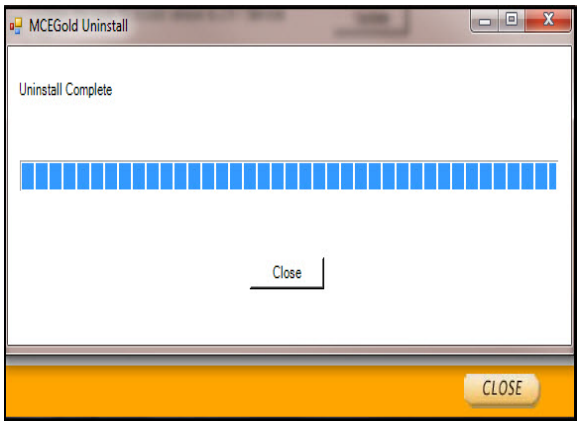
2. The Installation Update Window opens. Select **Uninstall.**



3. Answer **Yes** in the Uninstall MCEGold? window.

4. In the MCEGold Uninstall window click **Uninstall** to begin the process.

5. A progress bar is displayed. When the Uninstall Complete" message is received, click **Close.**



6. The software will automatically close. Remove the disc.

7. Go to step one in the Install - MCEGold 2.5.1 SP1 section.

Install MCEGold 2.5.1 SP1

1. Insert the MCEGold 2.5.1 SP1 Disc into the drive. If the installation does not begin automatically, run Setup.exe from the disc. (Select Run setup.exe from the AutoPlay window in Windows 7).

2. An Installer window displays the progress in preparing a guide for the setup process.

3. The License Agreement window opens. Read the PdMA license and select the "I Accept" option button. The **Next** button becomes visible. Click **Next**.
   Note: If you do not accept the terms, the **Next** button is not visible, you can only click **Cancel**, which closes the software.



4. In the License Key window enter your Company Name and License Key exactly as provided by PdMA. The License Key is not the same as the Module Activation Key, which activates various modules.

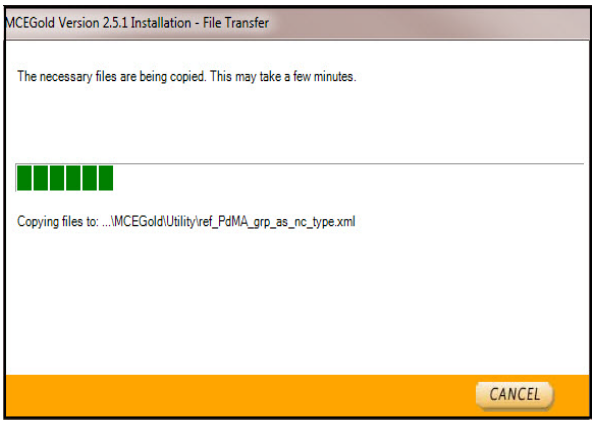
5. Click **Submit** (located to the right of the Company Name space). After the license has been verified the **Next** button appears. Click **Next**.

6. In the Installation Path window, select the location to install the MCEGold program folder using the drop-down list or accept the default shown in the textbox and click **Next**.

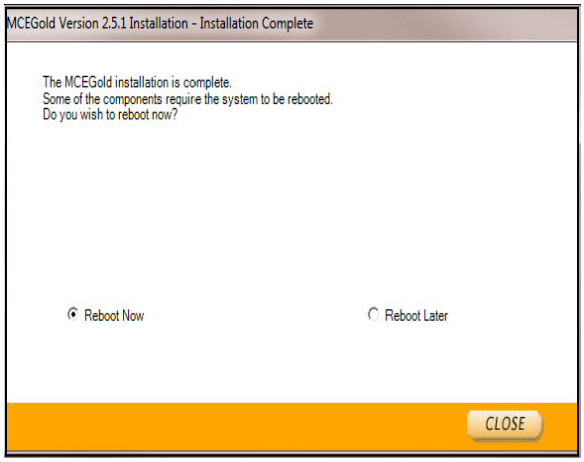
7. When prompted, click **Install Components**.

8. When the installation of components is complete the **Next** button appears. Click **Next**.

9. A progress bar shows the progress of copying files to your computer.



10. When the installation is complete you must reboot your system. Select the Reboot Now option and click **Close**.

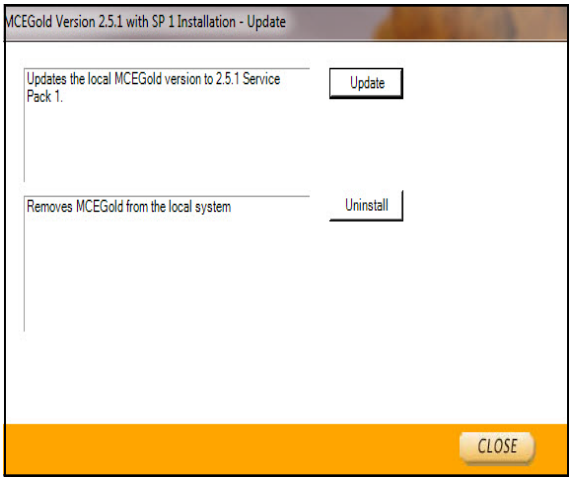


11. After rebooting, locate and copy the backup MCECal.xml and Emaxprb.xml files and the Template folder back into their appropriate locations in C:\Program Files\PdMA Corporation\MCEGold. See the Backup section in this document for file locations. Answer Yes to the "OK to overwrite existing folder" inquiry.

Update - MCEGold 2.5.1 SP1

1. Insert the MCEGold 2.5.1 SP1 Disc into the drive. If the installation does not begin automatically, run Setup.exe from the disc.

2. The Installation Update Window opens.

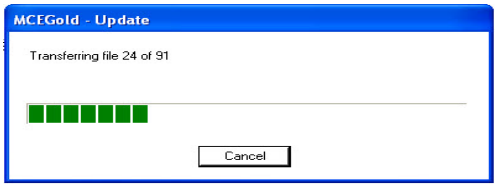


3. Select **Update**.
   Note: Selecting Uninstall removes the existing MCEGold software from your system. That option is not necessary for this update.

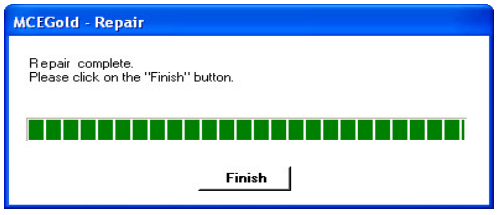
4. The installation software will scan your computer for the necessary programs to be added or upgraded and list them in the MCEGold 2.5.1 SP1-Component Installation window.

5. When prompted, click **Install Components**. Click **Next** when the installation is complete.

6. The MCEGold Update window opens and displays a progress bar.



7. Click **Finish** when the update or repair complete message is received.



8. When the installation is complete you must reboot your system.

INTERNATIONAL LANGUAGE

Currently the languages supported are English, Spanish, and Chinese. Plans are in process to add additional languages.

Activating Language Feature

In order to use the Language feature you must first enter the Module Activation Key and then install the Language Pack.

If a Module Activation Key did not come with your MCEGold 2.5.1 SP1 Disc or if your current Module Activation Key does not activate the Language package contact PdMA Corporation Technical Support at 813-621-6463 ext. 251.

The Language Pack file is available for download from our website (http://www.pdma.com/PdMA-downloads.php) or by contacting Technical Support at 813-621-6463 ext. 251.

Module Activation Key

Prior to starting MCEGold it is necessary to enter the Module Activation Key in the MCEGold Utility program. Entering the Module Activation Key once unlocks all language packs available.

1. Locate the Utility programs at:

   C:\ProgramFiles\PdMACorporation\MCEGold\Utility\Utility.exe or Start\All Programs\PdMA Corporation\Utilities.

2. Double click the Utility.exe file.

3. In the Utility program click the License Key button.

4. Enter the Module Activation Key in the corresponding textboxes.

Click **Submit**, then **Exit**.

Install Language Pack

Language Pack downloads are found in the International Language Pack section on the download page of the

PdMA website (http://www.pdma.com/PdMA-downloads.php).

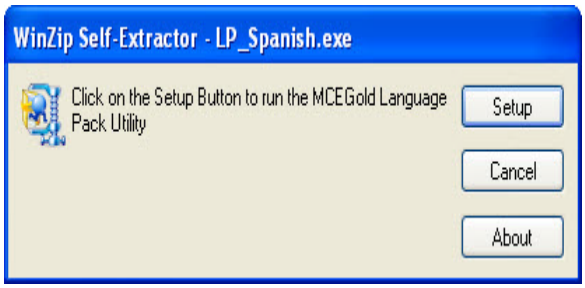
1. Click the language pack desired.

2. The File Download - Security Warning window opens. Click **Run**.

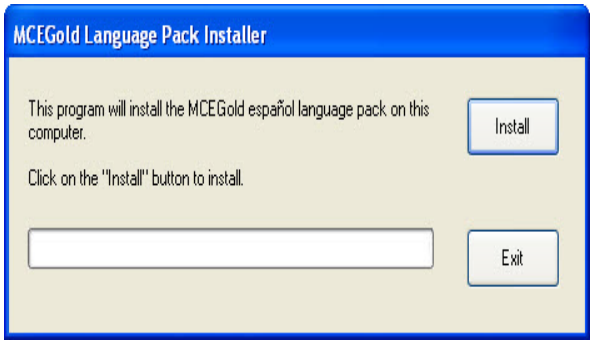
3. Click **Run** in the next File Download - Security Warning window.

4. A progress window appears. No action is required.

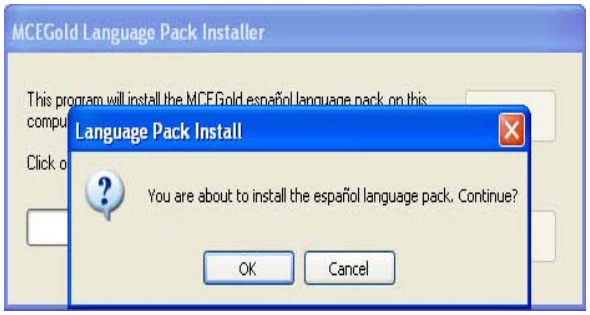
5. In the WinZip window click **Setup**.



6. In the MCEGold Language Pack Installer window verify you are installing the desired MCEGold language pack on your computer and click **Install**.



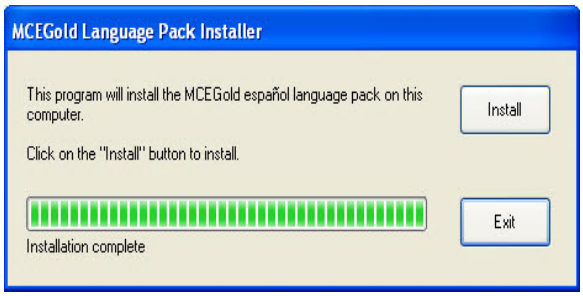
7. A second installation verification window asks you to verify the installation. Click **OK**.



8. Upon completion of the installation an Installation Successful window opens. Click **OK**.



9. To finish the installation, click **Exit** in the MCEGold Language Pack Installer window.



Starting Language Feature

1. Start MCEGold 2.5.1 SP1.

2. In the Login window click the arrow on the right side of the Language box.

   Note: If you do not see all of the installed languages you need to cancel MCEGold and go to the Utility window to enter your Module Activation Key. See *Activating Language Feature* in this TechNote for instructions.

3. Select the desired language and click **OK**.

It is possible to revert to English by exiting MCEGold, restarting, and selecting English from the Language box in the Login window.

TECHNOTE 1203

ISSUED

July, 2012

SUBJECT

Network update to MCEGold 2.5.1 SP1

DESCRIPTION

TechNote 1203 describes the MCEGold 2.5.1 SP1 update installation procedure for network users only. See TechNote 1202 for information regarding the changes MCEGold 2.5.1 SP1 makes to the software and the International Language Feature.

MCEGOLD 2.5.1 SP1 UPDATE INSTALLATION

Note:

- MCEGold 2.5.1 SP1 is not compatible with testers requiring a Data Acquisition Card (DAQ).

- Installing the MCEGold 2.5.1 SP1 update will require an upgrade of the Microsoft SQL Server 2005 to SQL Server 2008.

- If you have a Microsoft Windows XP operating system, contact PdMA Tech Support (813-621-6463 ext.251) prior to the 2.5.1 installation.

Minimum Requirements:

H-Series Tester, 2.0+GHz Intel i5 or equivalent processor, 2+ G RAM.

Server Update for Network Users

Note: Ensure the user account used to update the server has “sysadmin” permissions.

There is a separate application on the Installation Disc to update the network database on the server. ***The database must be updated on the server first, then the desktops and field testers.***

If the update is installed on a network field tester before the server database is updated, a warning message appears informing you the database is an old version and to contact your system administrator. If the warning message is ignored, when trying to connect to the network “Can’t connect to the database. See your IT department.” appears.

1. Prior to performing the update you must up synch all of the field testers.

2. Verify the data is upsynched and then clear the data from the field tester laptops.

3. Insert the disc into the drive. If the disc starts automatically, click **Exit** and proceed to the next step

4. Locate the MCEGold Database Server Update folder on the MCEGold 2.5.1 SP1 Disc.

5. Click on the MCEGold Database Server Update.exe file.

6. The Server Information window opens. Fill in the Server, Database, Login, and Password information.

7. Click **Run Update**. The progress status will display on the window.

8. When the update complete message displays, close the window.

Stand Alone Users/Field Tester

Note: MCEGold 2.5.1 SP1 will require an upgrade of the Microsoft SQL Server 2005 to SQL Server 2008. Therefore, any stand alone database opened will be updated to SQL Server 2008 and will no longer open with another machine running an older version of MCEGold using SQL Server 2005.

If you are updating from an MCEGold version older than 2.1.5 or Microsoft Windows XP operating system

you must first call PdMA Tech Support (813-621-6463 ext. 251).

If you have MCEGold 2.1.5 or later version you *may* need to uninstall Microsoft SQL Server 2005 and MCEGold before installing MCEGold 2.1.5 SP1. See the *MCEGold 2.1.5 and Later* instructions.

MCEGold Prior to 2.1.5

Call Tech Support (813-621-6463 ext.251)

MCEGold 2.1.5 and Later

When you initially insert the MCEGold 2.5.1 SP1 disc into the computer it will detect which version of Microsoft SQL Server is on your computer. You may receive a pop-up window alerting you that Microsoft SQL Server 2005 is installed on your computer. If that is the case you must uninstall Microsoft SQL Server 2005 **AND** MCEGold before installing MCEGold 2.5.1 SP1.

To uninstall Microsoft SQL Server 2005 see the *Uninstall SQL Server 2005* section below. To uninstall MCEGold see the *Uninstall MCEGold* section.

If the software detects Microsoft SQL Server 2008 on your computer you will be ready to install MCEGold 2.5.1 SP1. Go to the section titled *Update - MCEGold 2.5.1 SP1*.

Uninstall SQL Server 2005

1. Select Start, then Control Panel, and double click the Add or Remove (Programs and Features in Windows 7) icon.

2. In the Add or Remove Programs (Uninstall or change a program in Windows 7) window scroll down to locate Microsoft SQL Server 2005. Click on the program name to expand the information box. (In Windows 7 select Microsoft SQL Server 2005 from the list.)

3. Click **Remove** (**Uninstall** - located above the list in Windows 7) and follow the on screen instructions.

4. Click **Finish** when the "Uninstall Complete" message is received.

5. Close the Add or Remove Programs window.

Uninstall MCEGold

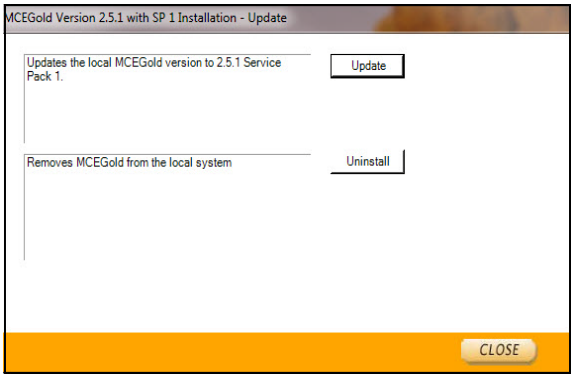
Backup

Before beginning the uninstall copy the MCECal.xml and Emaxprb.xml files and complete Templates folder to a safe location and make note of the location.

The files are located in:
C:\Program Files\PdMA Corporation\MCEGold\Mce
C:\Program Files\PdMA Corporation\MCEGold\Emax
C:\Program Files\PdMA Corporation\MCEGold\Report

1. Insert the MCEGold 2.5.1 SP1 Disc into the drive. If the installation does not begin automatically, run Setup.exe from the disc. (Select Run setup.exe from the AutoPlay window in Windows 7).

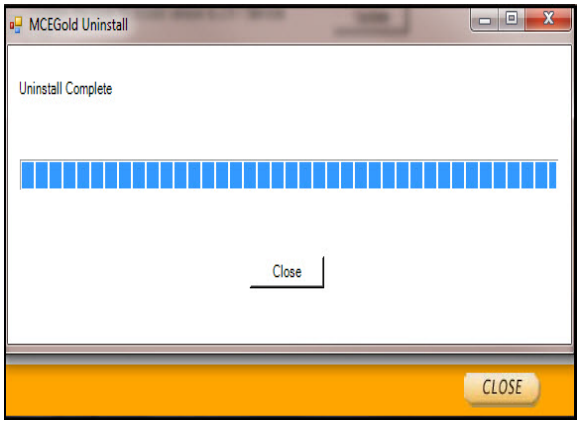
2. The Installation Update Window opens. Select **Uninstall.**



3. Answer **Yes** in the Uninstall MCEGold? window.

4. In the MCEGold Uninstall window click **Uninstall** to begin the process.

5. A progress bar is displayed. When the Uninstall Complete" message is received, click **Close.**



6. The software will automatically close. Remove the disc.

7. Go to step one in the Install - MCEGold 2.5.1 SP1 section.

Install MCEGold 2.5.1 SP1

1. Insert the MCEGold 2.5.1 SP1 Disc into the drive. If the installation does not begin automatically, run Setup.exe from the disc. (Select Run setup.exe from the AutoPlay window in Windows 7).

2. An Installer window displays the progress in preparing a guide for the setup process.

3. The License Agreement window opens. Read the PdMA license and select the "I Accept" option button. The **Next** button becomes visible. Click **Next**.
   Note: If you do not accept the terms, the **Next** button is not visible, you can only click **Cancel**, which closes the software.



4. In the License Key window enter your Company Name and License Key exactly as provided by PdMA. The License Key is not the same as the Module Activation Key, which activates various modules.

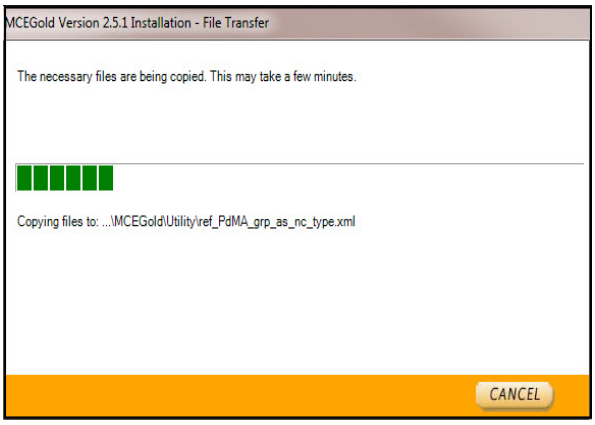
5. Click **Submit** (located to the right of the Company Name space). After the license has been verified the **Next** button appears. Click **Next**.

6. In the Installation Path window, select the location to install the MCEGold program folder using the drop-down list or accept the default shown in the textbox and click **Next**.

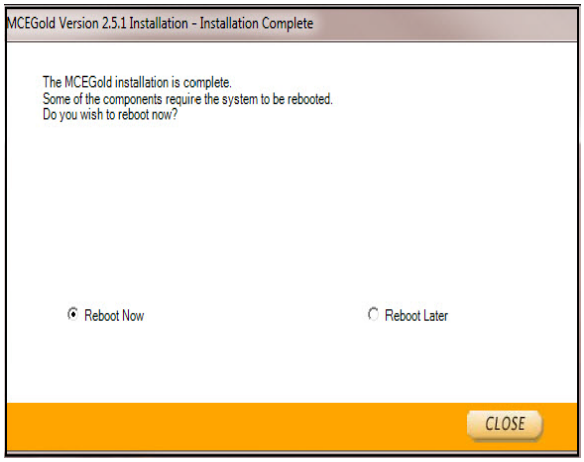
7. When prompted, click **Install Components**.

8. When the installation of components is complete the **Next** button appears. Click **Next**.

9. A progress bar shows the progress of copying files to your computer.



10. When the installation is complete you must reboot your system. Select the Reboot Now option and click **Close**.

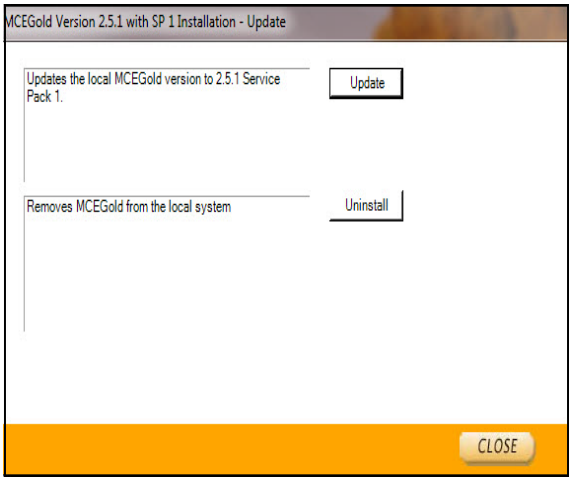


11. After rebooting, locate and copy the backup MCECal.xml and Emaxprb.xml files and the Template folder back into their appropriate locations in C:\Program Files\PdMA Corporation\MCEGold. See the Backup section in this document for file locations. Answer Yes to the "OK to overwrite existing folder" inquiry.

Update - MCEGold 2.5.1 SP1

1. Insert the MCEGold 2.5.1 SP1 Disc into the drive. If the installation does not begin automatically, run Setup.exe from the disc.

2. The Installation Update Window opens.

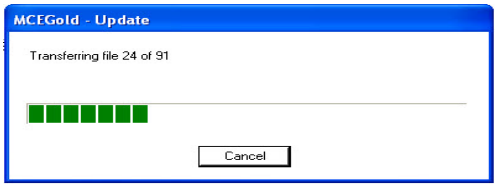


3. Select **Update**.
   Note: Selecting Uninstall removes the existing MCEGold software from your system. That option is not necessary for this update.

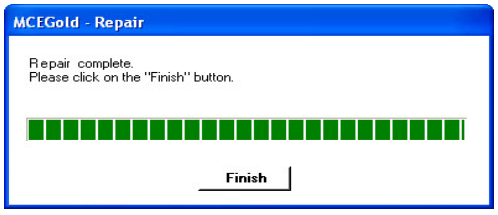
4. The installation software will scan your computer for the necessary programs to be added or upgraded and list them in the MCEGold 2.5.1 SP1-Component Installation window.

5. When prompted, click **Install Components**. Click **Next** when the installation is complete.

6. The MCEGold Update window opens and displays a progress bar.



7. Click **Finish** when the update or repair complete message is received.



8. When the installation is complete you must reboot your system.

TECHNOTE 1204A

ISSUED

March, 2013

SUBJECT

Installation of MCEGold 2.5.1 SP2. TechNote 2104A replaces TechNote 1204.

DESCRIPTION

MCEGold 2.5.1 SP2 adds new icons on the toolbar and throughout the application. Additionally Windows 7 64-bit compatibility was added, EMAX Auto Pre-Save Data Validation, the ability to Print and Export WatchLists, and more. A PDF document of the full MCEGold 2.5.1 SP2 release highlights is available for you to view on the Installation Disc in the Release Highlights Folder.

MCEGOLD 2.5.1 SP2 INSTALLATION

Note:

- MCEGold 2.5.1 SP2 required a full uninstall of Microsoft SQL Server 2005 and MCEGold.

- MCEGold 2.5.1 SP2 is not compatible with testers requiring a Data Acquisition Card (DAQ).

- Installing the MCEGold 2.5.1 SP2 update will require an upgrade of the Microsoft SQL Server 2005 to SQL Server 2008.

- If you have a Microsoft Windows XP operating system, contact PdMA Tech Support (813-621-6463 ext.251) prior to the 2.5.1 installation.

Minimum Requirements:

H-Series Tester, 2.0+GHz Intel i5 or equivalent processor, 2+ G RAM.

Server Database Update for Network Users

Note: Ensure the user account used to update the server has “sysadmin” permissions.

There is a separate application on the Installation Disc to update the network database on the server. ***The database must be updated on the server first, then the desktops and field testers.***

If the update is installed on a network field tester before the server database is updated, a warning message appears informing you the database is an old version and to contact your system administrator.

1. Back up the MCEGold database.

2. Insert the disc into the drive. If the disc starts automatically, click **Exit** and proceed to the next step

3. Locate the MCEGold Database Server Update folder on the MCEGold 2.5.1 SP2 Disc.

4. Click on the MCEGold Database Server Update.exe file.

5. The Server Information window opens. Fill in the Server, Database, Login, and Password information.

6. Click **Run Update**. The progress status will display on the window.

7. When the update complete message displays, close the window.

Stand Alone Users/Field Tester

Note: MCEGold 2.5.1 SP2 will require an upgrade of the Microsoft SQL Server 2005 to SQL Server 2008. Therefore, any stand alone database opened will be updated to SQL Server 2008 and will no longer open with another machine running an older version of MCEGold using SQL Server 2005.

If you are updating from an MCEGold version older than 2.1.5 or Microsoft Windows XP operating system you must first call PdMA Tech Support (813-621-6463 ext. 251).

If you have MCEGold 2.1.5 or later version you *will* need to uninstall Microsoft SQL Server 2005 and

MCEGold before installing MCEGold 2.1.5 SP2. See the *MCEGold 2.1.5 and Later* instructions.

MCEGold Prior to 2.1.5

Call Tech Support (813-621-6463 ext.251)

MCEGold 2.1.5 and Later

From your Control Panel/Add Remove Programs or Windows 7 Control Panel/Program and Features, verify which version of Microsoft SQL Server is installed on your computer.

If Microsoft SQL Server 2005 exists on your computer proceed to the *Uninstall SQL Server 2005* section followed by the *Uninstall MCEGold* section below. There are several components that begin with Microsoft SQL Server 2005, they should all be removed EXCEPT Microsoft SQL Server 2005 Compact Edition (ENU).

If Microsoft SQL Server 2008 and possibly Microsoft SQL Server 2005 Compact Edition (ENU) exists on your computer do not uninstall them. Go to the section *Uninstall MCEGold.*

Uninstall SQL Server 2005

1. Select Start, then Control Panel, and double click the Add or Remove (Programs and Features in Windows 7) icon.

2. In the Add or Remove Programs (Uninstall or change a program in Windows 7) window scroll down to locate Microsoft SQL Server 2005. Click on the program name to expand the information box. (In Windows 7 select Microsoft SQL Server 2005 from the list.)

3. Click **Remove** (**Uninstall** - located above the list in Windows 7) and follow the on screen instructions.

4. Click **Finish** when the "Uninstall Complete" message is received. Do not close the window.

5. Repeat from step 2 uninstalling all components that begin with Microsoft SQL Server 2005. DO NOT uninstall Microsoft SQL Server 2005 Compact Edition (ENU).

6. Close the Add or Remove Programs window when all components have been uninstalled.

7. Reboot the computer.

Uninstall MCEGold

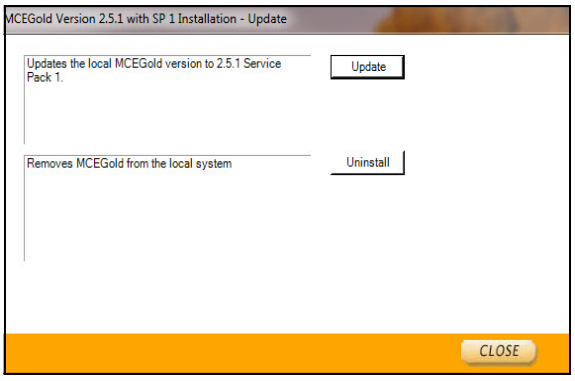
Backup

Before beginning the MCEGold uninstall copy the MCECal.xml and Emaxprb.xml files and complete Templates folder to a safe location and make note of the location.

The default location for the files is listed below, however you may have chosen a different location during the original installation.
C:\Program Files\PdMA Corporation\MCEGold\Mce
C:\Program Files\PdMA Corporation\MCEGold\Emax
C:\Program Files\PdMA Corporation\MCEGold\Report

1. Insert the MCEGold 2.5.1 SP2 Disc into the drive. If the installation does not begin automatically, run Setup.exe from the disc. (Select Run setup.exe from the AutoPlay window in Windows 7).

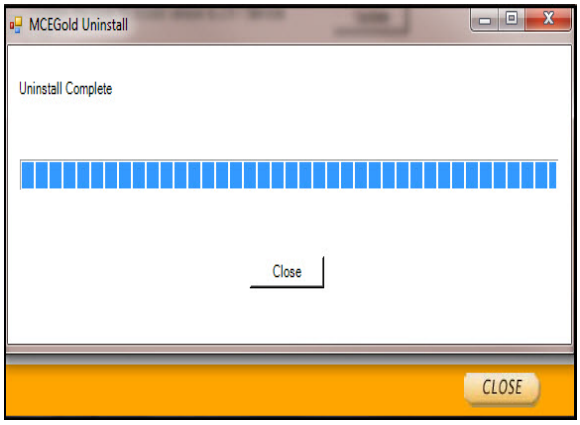
2. The Installation Update Window opens. Select **Uninstall.**



3. Answer **Yes** in the Uninstall MCEGold? window.

4. In the MCEGold Uninstall window click **Uninstall** to begin the process.

5. A progress bar is displayed. When the Uninstall Complete" message is received, click **Close.**



6. The software will automatically close. Remove the disc.

7. Go to step one in the *Install - MCEGold 2.5.1 SP2* section.

Install MCEGold 2.5.1 SP2

1. Insert the MCEGold 2.5.1 SP2 Disc into the drive. If the installation does not begin automatically, run Setup.exe from the disc. (Select Run setup.exe from the AutoPlay window in Windows 7).

2. An Installer window displays the progress in preparing a guide for the setup process.

3. The License Agreement window opens. Read the PdMA license and select the "I Accept" option button. The **Next** button becomes visible. Click **Next**.
   Note: If you do not accept the terms, the **Next** button is not visible, you can only click **Cancel**, which closes the software.



4. In the License Key window enter your Company Name and License Key exactly as provided by PdMA. The License Key is **NOT** the same as the Module Activation Key, which activates various modules.

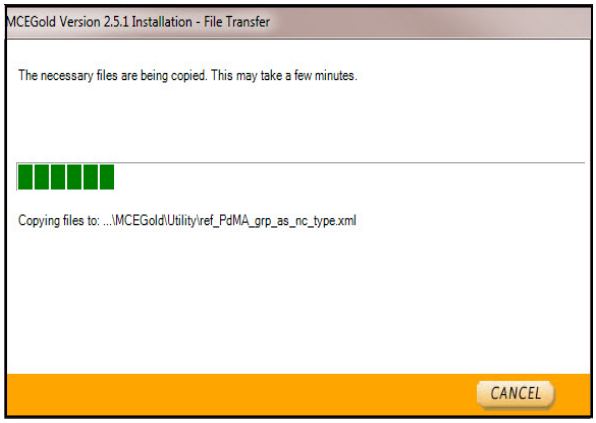
5. Click **Submit** (located to the right of the Company Name space). After the license has been verified the **Next** button appears. Click **Next**.

6. In the Installation Path window, select the location to install the MCEGold program folder using the drop-down list or accept the default shown in the textbox (recommended) and click **Next**.

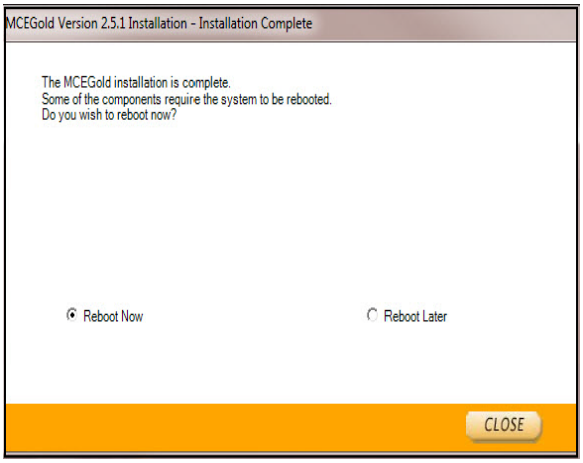
7. When prompted, click **Install Components**.

8. When the installation of components is complete the **Next** button appears. Click **Next**.

9. A progress bar shows the progress of copying files to your computer.



10. When the installation is complete you must reboot your system. Select the Reboot Now option and click **Close**.



11. After rebooting, locate and copy the backup MCECal.xml and Emaxprb.xml files and the Template folder back into their appropriate locations in C:\Program Files\PdMA Corporation\MCEGold. See the Backup section in this document for file locations. Answer Yes to the "OK to overwrite existing folder" inquiry.

INTERNATIONAL LANGUAGE

Currently the languages supported are English, Spanish, and Chinese. Plans are in process to add additional languages.

Activating Language Feature

In order to use the Language feature you must first enter the Module Activation Key and then install the Language Pack.

If a Module Activation Key did not come with your MCEGold 2.5.1 SP2 Disc or if your current Module Activation Key does not activate the Language package contact PdMA Corporation Technical Support at 813-621-6463 ext. 251.

The Language Pack file is available for download from our website (http://www.pdma.com/PdMA-downloads.php) or by contacting Technical Support at 813-621-6463 ext. 251.

Module Activation Key

Prior to starting MCEGold it is necessary to enter the Module Activation Key in the MCEGold Utility program. Entering the Module Activation Key once unlocks all language packs available.

1. Locate the Utility programs at:

   C:\ProgramFiles\PdMACorporation\MCEGold\Utility\Utility.exe or Start\All Programs\PdMA Corporation\Utilities.

2. Double click the Utility.exe file.

3. In the Utility program click the License Key button.

4. Enter the Module Activation Key in the corresponding textboxes.

Click **Submit**, then **Exit**.

Install Language Pack

Language Pack downloads are found in the International Language Pack section on the download page of the PdMA website (http://www.pdma.com/PdMA-downloads.php).

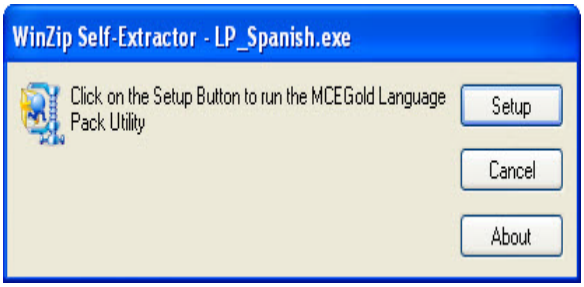
1. Click the language pack desired.

2. The File Download - Security Warning window opens. Click **Run**.

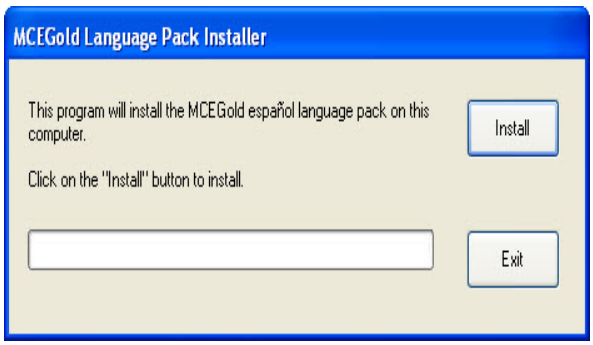
3. Click **Run** in the next File Download - Security Warning window.

4. A progress window appears. No action is required.

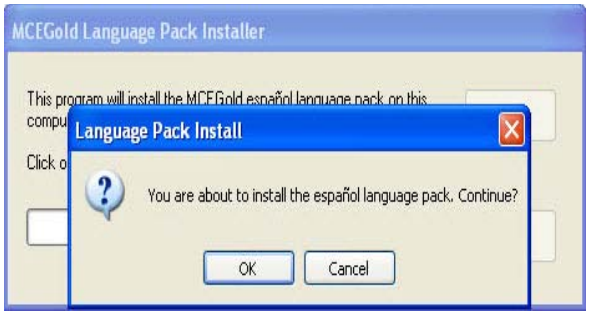
5. In the WinZip window click **Setup**.



6. In the MCEGold Language Pack Installer window verify you are installing the desired MCEGold language pack on your computer and click **Install**.



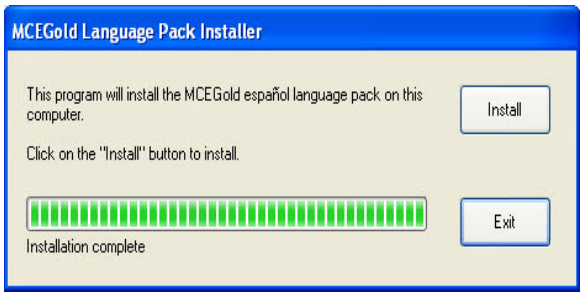
7. A second installation verification window asks you to verify the installation. Click **OK**.



8. Upon completion of the installation an Installation Successful window opens. Click **OK**.



9. To finish the installation, click **Exit** in the MCEGold Language Pack Installer window.



Starting Language Feature

1. Start MCEGold 2.5.1 SP2.

2. In the Login window click the arrow on the right side of the Language box.

   Note: If you do not see all of the installed languages you need to cancel MCEGold and go to the Utility window to enter your Module Activation Key. See *Activating Language Feature* in this TechNote for instructions.

3. Select the desired language and click **OK**.

It is possible to revert to English by exiting MCEGold, restarting, and selecting English from the Language box in the Login window.

TECHNOTE 1301

ISSUED

April, 2013

SUBJECT

Installation of MCEGold 2.6.1

DESCRIPTION

The complete highlights for MCEGold 2.6.1 are located on the installation disc. This release contains the following features: Power test retest button, Demod user adjustable peak search, Rotor Eval 5th harmonic button, Power Phasor data validation, Asset information pane, Site Condition update, M-Series compatibility, and Six Channel In-Rush test (M series only).

MCEGOLD 2.6.1 INSTALLATION

Note:

- If you have a Microsoft Windows XP operating system, contact PdMA Tech Support (813-621-6463 ext. 251) prior to the 2.6.1 installation.

- MCEGold 2.6.1 requires a full uninstall of MCEGold.

- MCEGold 2.6.1 is not compatible with testers requiring a Data Acquisition Card (DAQ).

- Installing the MCEGold 2.6.1 will require an upgrade of the Microsoft SQL Server 2005 to SQL Server 2008, if not already completed

- To ensure application accessibility, the new default installation location has been set to C:\PdMA Corporation.

- Databases attached to MCEGold 2.6.1 must be from MCEGold 2.4 or later.

- Assets exported from MCEGold 2.6.1 *will not* be compatible with older versions of MCEGold.

Minimum Requirements:

Computer	Dell Latitude E6430 Laptop*
Processor	2+ GHz Intel i5 or equivalent
Resolution	1600 x 900
Operating System	Microsoft Windows 7 SP1 32- or 64 bit**
Memory	2.0+ G RAM
Ports/Drives	(2) USB Ports in Rear or Side (M-Series tester has (1) USB Port)
Drives	24x CD-RW + DVD Drive
Hard Disk	20G Available

* Using any other computer manufacturer in conjunction with the PdMA software may result in erratic computer behavior; not limited to but including:

- Power Management Issues
- Lock-up
- Communication Port Malfunction
- Driver Incompatibility
- Display Errors
- SQL Database Incompatibility
- Network Synchronization Issues.

** For International Customers: Windows 7 Ultimate 32 or 64-bit.

Server Database Update for Network Users

Note: Ensure the user account used to update the server has “sysadmin” permissions.

There is a separate application on the Installation Disc to update the network database on the server. ***The database must be updated on the server first, then the desktops and field testers.***

If the update is installed on a network field tester before the server database is updated, a warning message appears informing you the database is an old version and to contact your system administrator.

1. Back up the MCEGold database.

2. Insert the disc into the drive. If the disc starts automatically, click **Exit** and proceed to the next step.

3. Locate the MCEGold Database Server Update folder on the MCEGold 2.6.1 Disc.

4. Click on the MCEGold Database Server Update.exe file.

5. The Server Information window opens. Fill in the Server, Database, Login, and Password information.

6. Click **Run Update**. The progress status will display on the window.

7. When the update complete message displays, close the window.

Stand Alone Users/Field Tester

Note: MCEGold 2.6.1 requires an upgrade of the Microsoft SQL Server 2005 to SQL Server 2008. Therefore, any stand alone database opened will be updated to SQL Server 2008 and will no longer open on another machine running an older version of MCEGold using SQL Server 2005.

MCEGold Prior to 2.4 or Windows XP

If you are updating from an MCEGold version older than 2.4 or Microsoft Windows XP operating system you must first call PdMA Tech Support (813-621-6463 ext. 251).

MCEGold 2.4 and Later

From your Control Panel/Program and Features, verify which version of Microsoft SQL Server is installed on your computer.

If Microsoft SQL Server 2005 exists on your computer proceed to the *Uninstall SQL Server 2005* section followed by the *Uninstall MCEGold* section below. There are several components that begin with Microsoft SQL Server 2005, they should all be removed EXCEPT Microsoft SQL Server 2005 Compact Edition (ENU).

If Microsoft SQL Server 2008 and possibly Microsoft SQL Server 2005 Compact Edition (ENU) exists on your computer do not uninstall them. Go to the section *Uninstall MCEGold.*

Uninstall SQL Server 2005

1. Select Start, Control Panel, and click the Programs and Features icon.

2. In the Uninstall or change a program window scroll down to locate and select Microsoft SQL Server 2005 from the list.

3. Click **Uninstall** - located above the list and follow the on screen instructions.

4. Click **Finish** when the "Uninstall Complete" message is received. Do not close the window.

5. Repeat from step 2 uninstalling all components that begin with Microsoft SQL Server 2005. DO NOT uninstall Microsoft SQL Server 2005 Compact Edition (ENU).

6. Close the Uninstall or change a program window when all components have been uninstalled.

7. Reboot the computer.

Uninstall MCEGold

Backup

Before beginning the MCEGold uninstall copy the MCECal.xml and Emaxprb.xml files and complete Templates folder to a safe location and make note of the location.

The default location for the files is listed below, however you may have chosen a different location during the original installation.
C:\Program Files\PdMA Corporation\MCEGold\Mce
C:\Program Files\PdMA Corporation\MCEGold\Emax
C:\Program Files\PdMA Corporation\MCEGold\Report

1. Select Start, Control Panel, click on the Programs and Features icon.

2. In the Uninstall or change a program window scroll down to locate and select the MCEGold version from the list.

3. Click Uninstall- located above the list and follow on screen prompts.

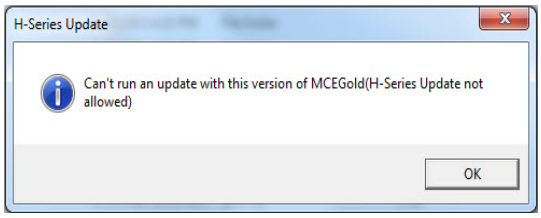
4. Click **Finish** when the "Uninstall Complete" message is received.

5. Go to step one in the *Install - MCEGold 2.6.1* section.

Install MCEGold 2.6.1

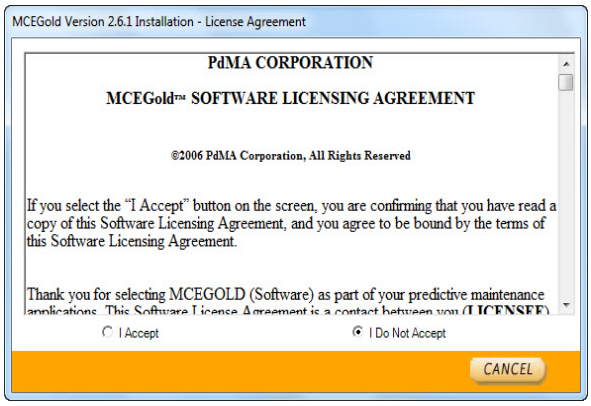
1. Insert the MCEGold 2.6.1 Disc into the drive. If the installation does not begin automatically, run Setup.exe from the disc. (Select Run setup.exe from the AutoPlay window).

   If the H-Series Update window shown below appears, the previous version of MCEGold has not been uninstalled. Click **OK**. Remove the MCEGold 2.6.1 disc. Go to *Stand Alone Users/Field Tester* and perform the necessary steps.



2. An Installer window displays the progress in preparing a guide for the setup process.

3. The License Agreement window opens. Read the PdMA license and select the "I Accept" option button. The **Next** button becomes visible. Click **Next**.
   Note: If you do not accept the terms, the **Next** button is not visible, you can only click **Cancel**, which closes the software.



4. In the License Key window enter your Company Name and License Key exactly as provided by PdMA. It is not case sensitive. The License Key is **NOT** the same as the Module Activation Key, which activates various modules.

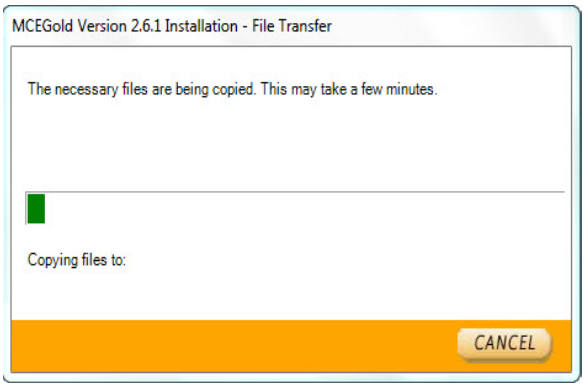
5. Click **Submit** (located to the right of the Company Name space). After the license has been verified the **Next** button appears. Click **Next**.

6. In the Installation Path window, accept the default shown in the textbox (recommended) for the location to install the MCEGold program folder or using the drop-down list select a alternate location, make a note of it for future use, and click **Next**.

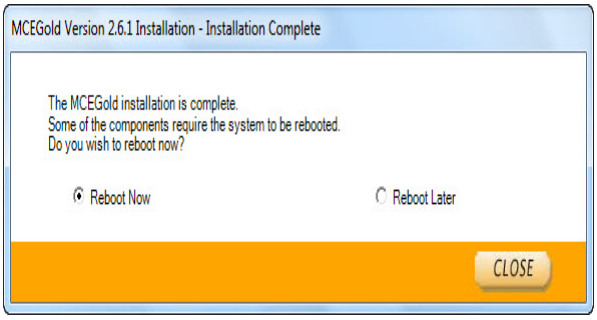
7. When prompted, click **Install Components**.

8. When the installation of components is complete the **Next** button appears. Click **Next**.

9. A progress bar shows the progress of copying files to your computer.



10. When the installation is complete you must reboot your system. Select the Reboot Now option and click **Close**.



After rebooting, locate and copy the backup MCECal.xml and Emaxprb.xml files and the Template folder back into their appropriate locations in
C:\PdMA Corporation\MCEGold\Mce
C:\PdMA Corporation\MCEGold\Emax
C:\PdMA Corporation\MCEGold\Report

11. Answer Yes to the "OK to overwrite existing folder" inquiry.

INTERNATIONAL LANGUAGE

Currently the languages supported are English, Spanish, Chinese, Russian, and Portuguese. Plans are in process to add additional languages.

Activating Language Feature

In order to use the Language feature you must first enter the Module Activation Key and then install the Language Pack.

If a Module Activation Key did not come with your MCEGold 2.6.1 Disc or if your current Module Activation Key does not activate the Language package contact PdMA Corporation Technical Support at 813-621-6463 ext. 251.

The Language Pack file is available for download from our website (http://www.pdma.com/PdMA-downloads.php) or by contacting Technical Support at 813-621-6463 ext. 251.

Module Activation Key

Prior to starting MCEGold it is necessary to enter the Module Activation Key in the MCEGold Utility program. Entering the Module Activation Key once unlocks all language packs available.

1. Locate the Utility programs at:

   C:\PdMACorporation\MCEGold\Utility\Utility.exe or Start\All Programs\PdMA Corporation\Utilities.

2. Double click the Utility.exe file.

3. In the Utility program click the License Key button.

4. Enter the Module Activation Key in the corresponding textboxes.

5. Click **Submit**, then **Exit**.

Installing Language Pack

Language Pack downloads are found in the International Language Pack section on the download page of the PdMA website (http://www.pdma.com/PdMA-downloads.php).

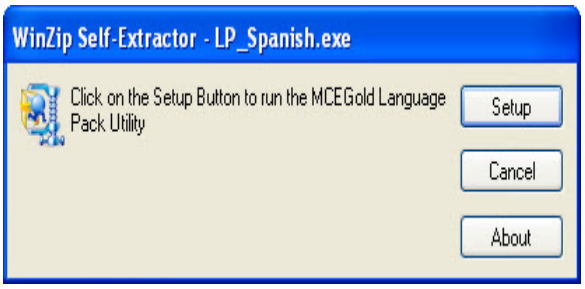
1. Click the language pack desired.

2. The File Download - Security Warning window opens. Click **Run**.

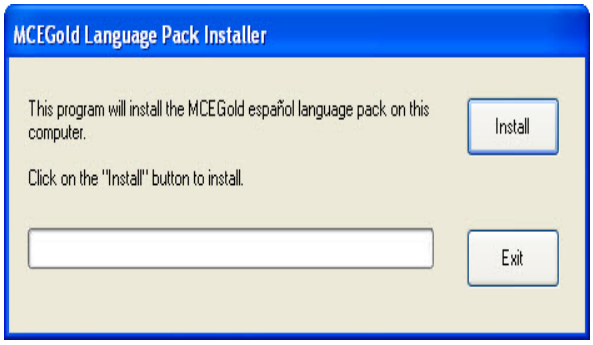
3. Click **Run** in the next File Download - Security Warning window.

4. A progress window appears. No action is required.

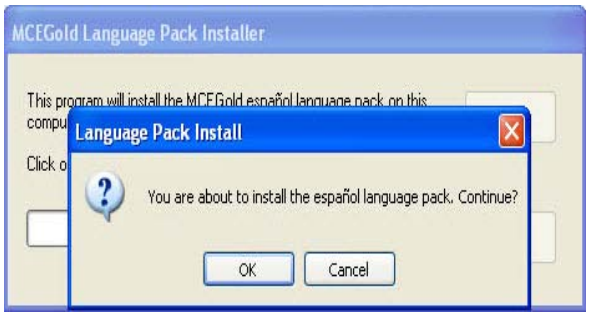
5. In the WinZip window click **Setup**.



6. In the MCEGold Language Pack Installer window verify you are installing the desired MCEGold language pack on your computer and click **Install**.



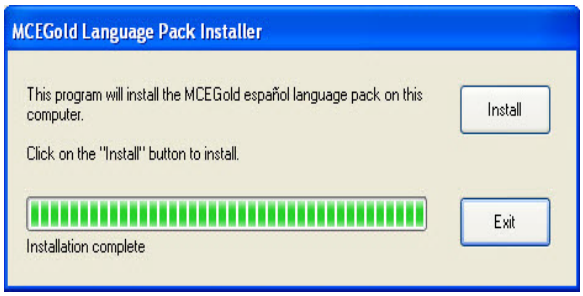
7. A second installation verification window asks you to verify the installation. Click **OK**.



8. Upon completion of the installation an Installation Successful window opens. Click **OK**.



9. To finish the installation, click **Exit** in the MCEGold Language Pack Installer window.



Starting Language Feature

1. Start MCEGold 2.6.1.

2. In the Login window click the arrow on the right side of the Language box.

   Note: If you do not see all of the installed languages you need to cancel MCEGold and go to the Utility window to enter your Module Activation Key. See *Activating Language Feature* in this TechNote for instructions.

3. Select the desired language and click **OK**.

It is possible to revert to English by exiting MCEGold, restarting, and selecting English from the Language box in the Login window.

TECHNOTE 1302

ISSUED

May, 2013

SUBJECT

Installation of MCEGold 2.6.1

DESCRIPTION

The complete highlights for MCEGold 2.6.1 are located on the installation disc. This release contains the following features: Power test retest button, Demod user adjustable peak search, Rotor Eval 5th harmonic button, Power Phasor data validation, Asset information pane, Site Condition update, M-Series compatibility, and Six Channel In-Rush test (M series only).

MCEGOLD 2.6.1 INSTALLATION

Note:

- If you have a Microsoft Windows XP operating system, contact PdMA Tech Support (813-621-6463 ext. 251) prior to the 2.6.1 installation.

- MCEGold 2.6.1 requires a full uninstall of MCEGold.

- MCEGold 2.6.1 is not compatible with testers requiring a Data Acquisition Card (DAQ).

- Installing the MCEGold 2.6.1 will require an upgrade of the Microsoft SQL Server 2005 to SQL Server 2008, if not already completed

- To ensure application accessibility, the new default installation location has been set to C:\PdMA Corporation.

- Databases attached to MCEGold 2.6.1 must be from MCEGold 2.4 or later.

- Assets exported from MCEGold 2.6.1 *will not* be compatible with older versions of MCEGold.

Minimum Requirements:

Computer	Dell Latitude E6430 Laptop*
Processor	2+ GHz Intel i5 or equivalent
Resolution	1600 x 900
Operating System	Microsoft Windows 7 SP1 32- or 64 bit**
Memory	2.0+ G RAM
Ports/Drives	(2) USB Ports in Rear or Side (M-Series tester has (1) USB Port)
Drives	24x CD-RW + DVD Drive
Hard Disk	20G Available

* Using any other computer manufacturer in conjunction with the PdMA software may result in erratic computer behavior; not limited to but including:

- Power Management Issues
- Lock-up
- Communication Port Malfunction
- Driver Incompatibility
- Display Errors
- SQL Database Incompatibility
- Network Synchronization Issues.

** For International Customers: Windows 7 Ultimate 32 or 64-bit.

Server Database Update for Network Users

Note: Ensure the user account used to update the server has “sysadmin” permissions.

There is a separate application on the Installation Disc to update the network database on the server. ***The database must be updated on the server first, then the desktops and field testers.***

If the update is installed on a network field tester before the server database is updated, a warning message appears informing you the database is an old version and to contact your system administrator.

1. Back up the MCEGold database.

2. Insert the disc into the drive. If the disc starts automatically, click **Exit** and proceed to the next step.

3. Locate the MCEGold Database Server Update folder on the MCEGold 2.6.1 Disc.

4. Click on the MCEGold Database Server Update.exe file.

5. The Server Information window opens. Fill in the Server, Database, Login, and Password information.

6. Click **Run Update**. The progress status will display on the window.

7. When the update complete message displays, close the window.

Stand Alone Users/Field Tester

Note: MCEGold 2.6.1 requires an upgrade of the Microsoft SQL Server 2005 to SQL Server 2008. Therefore, any stand alone database opened will be updated to SQL Server 2008 and will no longer open on another machine running an older version of MCEGold using SQL Server 2005.

MCEGold Prior to 2.4 or Windows XP

If you are updating from an MCEGold version older than 2.4 or Microsoft Windows XP operating system you must first call PdMA Tech Support (813-621-6463 ext. 251).

MCEGold 2.4 and Later

From your Control Panel/Program and Features, verify which version of Microsoft SQL Server is installed on your computer.

If Microsoft SQL Server 2005 exists on your computer proceed to the *Uninstall SQL Server 2005* section followed by the *Uninstall MCEGold* section below. There are several components that begin with Microsoft SQL Server 2005, they should all be removed EXCEPT Microsoft SQL Server 2005 Compact Edition (ENU).

If Microsoft SQL Server 2008 and possibly Microsoft SQL Server 2005 Compact Edition (ENU) exists on your computer do not uninstall them. Go to the section *Uninstall MCEGold.*

Uninstall SQL Server 2005

1. Select Start, Control Panel, and click the Programs and Features icon.

2. In the Uninstall or change a program window scroll down to locate and select Microsoft SQL Server 2005 from the list.

3. Click **Uninstall** - located above the list and follow the on screen instructions.

4. Click **Finish** when the "Uninstall Complete" message is received. Do not close the window.

5. Repeat from step 2 uninstalling all components that begin with Microsoft SQL Server 2005. DO NOT uninstall Microsoft SQL Server 2005 Compact Edition (ENU).

6. Close the Uninstall or change a program window when all components have been uninstalled.

7. Reboot the computer.

Uninstall MCEGold

Backup

Before beginning the MCEGold uninstall copy the MCECal.xml and Emaxprb.xml files and complete Templates folder to a safe location and make note of the location.

The default location for the files is listed below, however you may have chosen a different location during the original installation.
C:\Program Files\PdMA Corporation\MCEGold\Mce
C:\Program Files\PdMA Corporation\MCEGold\Emax
C:\Program Files\PdMA Corporation\MCEGold\Report

1. Select Start, Control Panel, click on the Programs and Features icon.

2. In the Uninstall or change a program window scroll down to locate and select the MCEGold version from the list.

3. Click Uninstall- located above the list and follow on screen prompts.

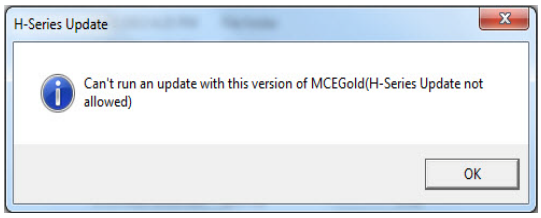
4. Click **Finish** when the "Uninstall Complete" message is received.

5. Go to step one in the *Install - MCEGold 2.6.1* section.

Install MCEGold 2.6.1

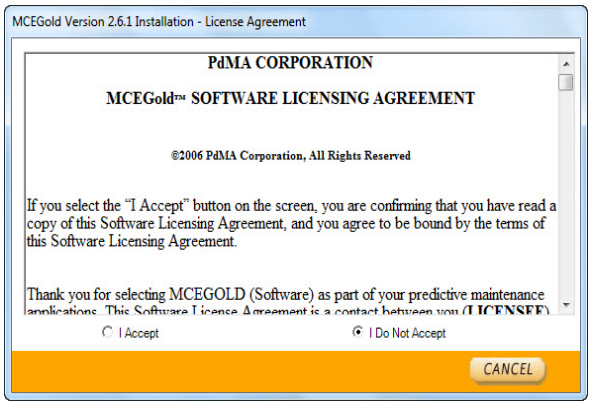
1. Insert the MCEGold 2.6.1 Disc into the drive. If the installation does not begin automatically, run Setup.exe from the disc. (Select Run setup.exe from the AutoPlay window).

   If the H-Series Update window shown below appears, the previous version of MCEGold has not been uninstalled. Click **OK**. Remove the MCEGold 2.6.1 disc. Go to *Stand Alone Users/Field Tester* and perform the necessary steps.



2. An Installer window displays the progress in preparing a guide for the setup process.

3. The License Agreement window opens. Read the PdMA license and select the "I Accept" option button. The **Next** button becomes visible. Click **Next**.
   Note: If you do not accept the terms, the **Next** button is not visible, you can only click **Cancel**, which closes the software.



4. In the License Key window enter your Company Name and License Key exactly as provided by PdMA. It is not case sensitive. The License Key is **NOT** the same as the Module Activation Key, which activates various modules.

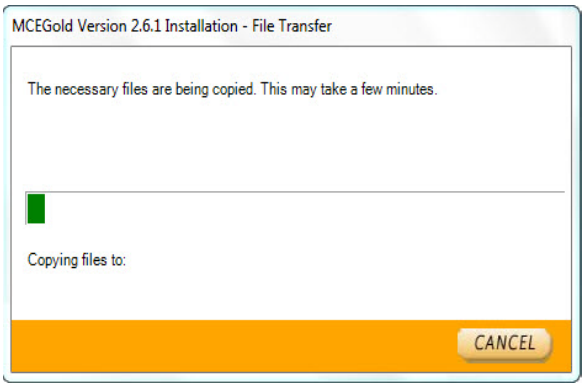
5. Click **Submit** (located to the right of the Company Name space). After the license has been verified the **Next** button appears. Click **Next**.

6. In the Installation Path window, accept the default shown in the textbox (recommended) for the location to install the MCEGold program folder or using the drop-down list select a alternate location, make a note of it for future use, and click **Next**.

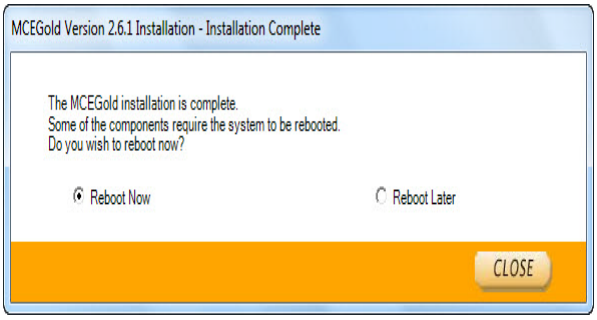
7. When prompted, click **Install Components**.

8. When the installation of components is complete the **Next** button appears. Click **Next**.

9. A progress bar shows the progress of copying files to your computer.



10. When the installation is complete you must reboot your system. Select the Reboot Now option and click **Close**.



After rebooting, locate and copy the backup MCECal.xml and Emaxprb.xml files and the Template folder back into their appropriate locations in
C:\PdMA Corporation\MCEGold\Mce
C:\PdMA Corporation\MCEGold\Emax
C:\PdMA Corporation\MCEGold\Report

11. Answer Yes to the "OK to overwrite existing folder" inquiry.

INTERNATIONAL LANGUAGE

Currently the languages supported are English, Spanish, Chinese, Russian, and Portuguese. Plans are in process to add additional languages.

Activating Language Feature

In order to use the Language feature you must first enter the Module Activation Key and then install the Language Pack.

If a Module Activation Key did not come with your MCEGold 2.6.1 Disc or if your current Module Activation Key does not activate the Language package contact PdMA Corporation Technical Support at 813-621-6463 ext. 251.

The Language Pack file is available for download from our website (http://www.pdma.com/PdMA-downloads.php) or by contacting Technical Support at 813-621-6463 ext. 251.

Module Activation Key

Prior to starting MCEGold it is necessary to enter the Module Activation Key in the MCEGold Utility program. Entering the Module Activation Key once unlocks all language packs available.

1. Locate the Utility programs at:

   C:\PdMACorporation\MCEGold\Utility\Utility.exe or Start\All Programs\PdMA Corporation\Utilities.

2. Double click the Utility.exe file.

3. In the Utility program click the License Key button.

4. Enter the Module Activation Key in the corresponding textboxes.

5. Click **Submit**, then **Exit**.

Installing Language Pack

Language Pack downloads are found in the International Language Pack section on the download page of the PdMA website (http://www.pdma.com/PdMA-downloads.php).

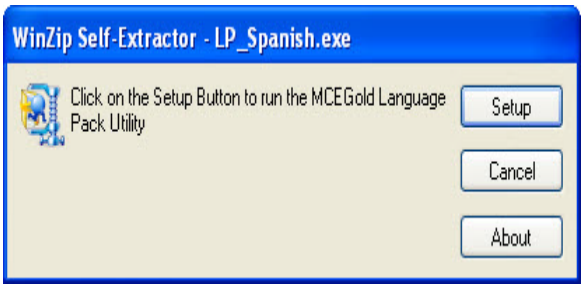
1. Click the language pack desired.

2. The File Download - Security Warning window opens. Click **Run**.

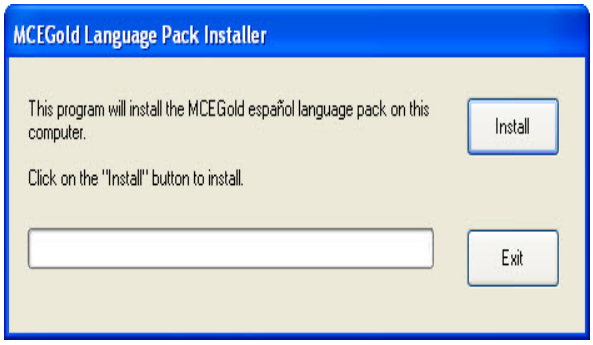
3. Click **Run** in the next File Download - Security Warning window.

4. A progress window appears. No action is required.

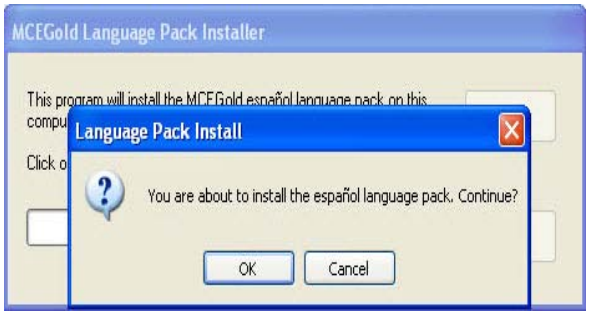
5. In the WinZip window click **Setup**.



6. In the MCEGold Language Pack Installer window verify you are installing the desired MCEGold language pack on your computer and click **Install**.



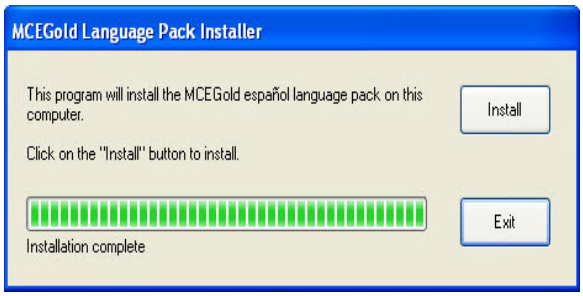
7. A second installation verification window asks you to verify the installation. Click **OK**.



8. Upon completion of the installation an Installation Successful window opens. Click **OK**.



9. To finish the installation, click **Exit** in the MCEGold Language Pack Installer window.



Starting Language Feature

1. Start MCEGold 2.6.1.

2. In the Login window click the arrow on the right side of the Language box.

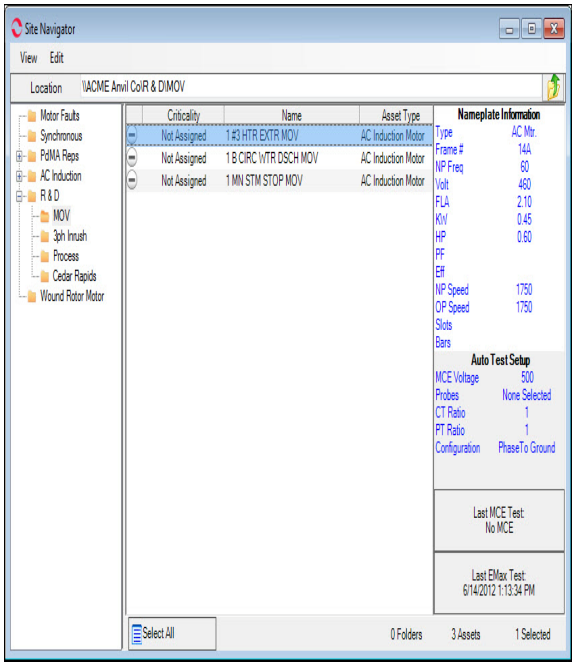
   Note: If you do not see all of the installed languages you need to cancel MCEGold and go to the Utility window to enter your Module Activation Key. See *Activating Language Feature* in this TechNote for instructions.

3. Select the desired language and click **OK**.

It is possible to revert to English by exiting MCEGold, restarting, and selecting English from the Language box in the Login window.

NEW FEATURES

Asset Overview Pane



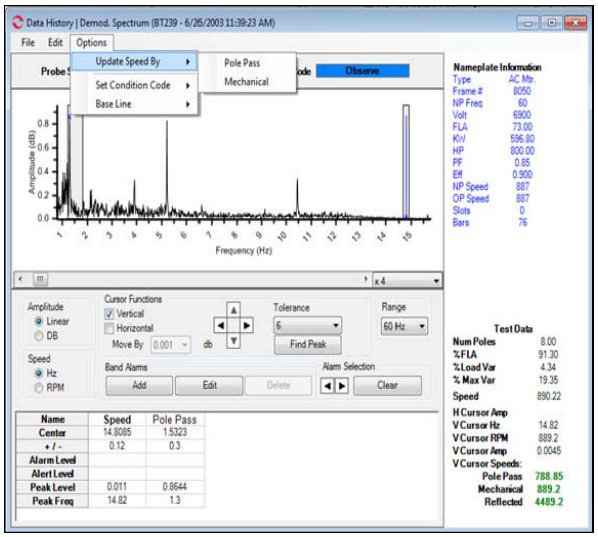
Selecting an asset in Site Navigator causes the asset's Nameplate Information, Auto Test Setup, Last MCE and EMAX Tests to display in the asset overview pane on the right side of the Site Navigator window.

To make nameplate changes, click anywhere in the Nameplate section.

To display the EMAX Test Selection, click anywhere in the AutoTest Setup section.

If the asset has MCE and/or EMAX test results the last test dates will be displayed at the bottom of the pane. Clicking on either test opens the appropriate Test History window.

User Adjustable Demod Speed Peak Envelope Search

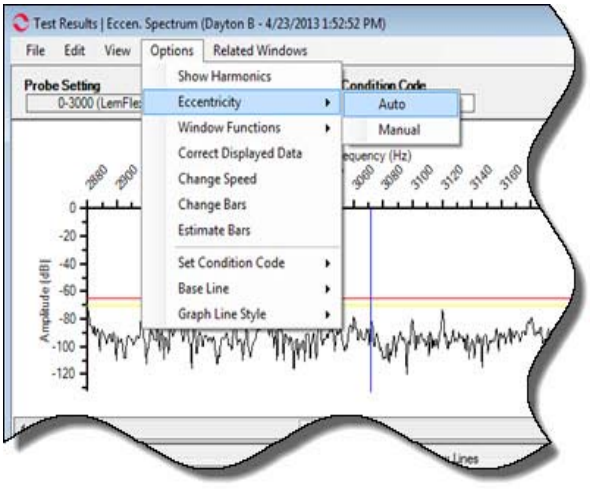


Nameplate now contains a section labeled OP (Operating) Speed. OP Speed is used in conjunction with Adjustable Demod Speed Peak Envelope Search. NP Speed and OP Speed remain the same until the user changes the Demod Speed Peak Envelope Search to a new peak. When a new speed peak is selected, a new OP Speed is calculated to set the new Demod Speed Peak Envelope Search location for future tests.

After a Demod test, if the correct speed peak is not found, a user may elect to manually select the correct speed peak. By selecting the correct speed peak, then clicking Options, Update Speed By, the user may select to update the speed by the Pole Pass or Mechanical peaks. By updating the speed to the desired peak, the OP Speed will calculate a new Operating Speed at full load and the Demod Speed Peak Envelope will center at the selected peak in the spectrum. Future Demod tests will use the new OP Speed to calculate the Demod Speed Peak Envelope.

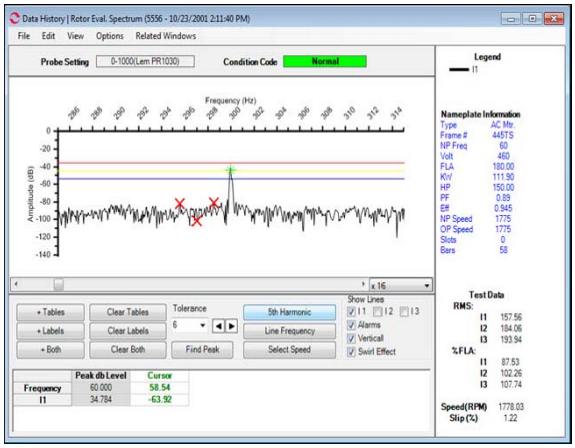
Once the OP Speed has been changed, the user has the option under the Options menu to recalculate the speed peak envelopes by the existing operating speed or to the original speed peak envelopes, which resets the OP Speed back to the NP Speed.

Eccentricity Auto Button



When the number of squirrel cage induction rotor bars are unknown, the Eccentricity, Auto option is available on the Eccentricity Spectrum Options menu. Selecting Eccentricity, Auto initiates a search for four consecutive peaks non-synchronous to line frequency between 600 Hz and 3500 Hz, above the caution line, and twice line frequency apart.

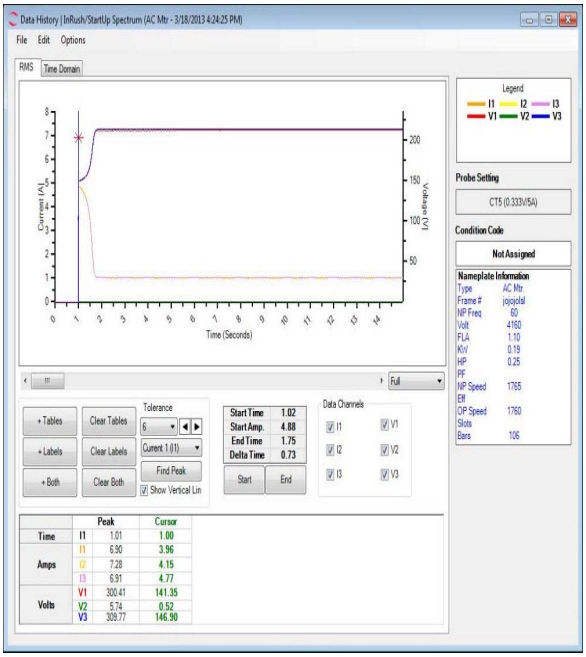
5th Harmonic Button



The Rotor Eval Spectrum now contains a 5th Harmonic button. Selecting the 5th Harmonic button will auto navigate the spectrum to the 5th Harmonic of the line frequency in order to investigate the Swirl Effect. Verify the Swirl Effect check box is selected (default) which marks the swirl effect peaks with three x's as seen in the example above.

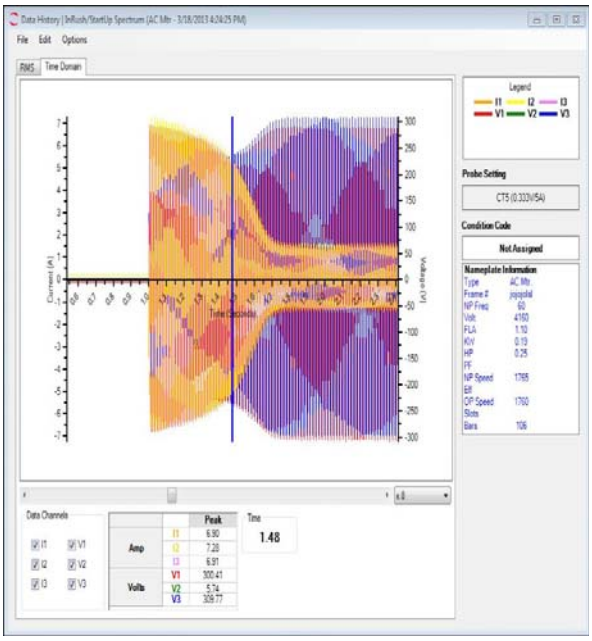
Six Channel In-Rush (M-Series Testers Only)

For the M-Series testers only, in the In-Rush test setup screen you can select either a Single Channel or Six Channel test from a drop down menu. Selecting the Single Channel executes a Single Current Channel In-Rush test. Selecting Six Channel captures all three currents and all three voltages throughout the test.



The Spectrum above shows the RMS Spectrum of a Six Channel In-Rush Test. The star on the RMS Spectrum indicates the highest true current peak amplitude (non-RMS).

Selecting the Time Domain tab displays a Six Channel Time Domain Spectrum, shown below.



TECHNOTE 1303

ISSUED

November, 2013

SUBJECT

Release of MCEGold® 2.6.2.

DESCRIPTION

The MCEGold® 2.6.2 release contains the following features: M*TAP* ID Link Configuration to assist in auto location of an asset, addition of a Asset Management Preferences function used to select the Default Detach Database Option, and the addition of Power Results and Time Domain buttons on the Power Phasor window.

MCEGold® 2.6.2 is available on M and H series testers only.

MCEGOLD® 2.6.2 INSTALLATION

Note:

- If you have a Microsoft Windows XP operating system, contact PdMA Tech Support (813-621-6463 ext. 251) prior to the 2.6.2 installation.

- If using MCEGold® 2.5.1 SP2 or earlier a full uninstall of MCEGold® is required. If using MCEGold® 2.6.1 the uninstall is not required; go to MCEGold® 2.6.1 Update on page 4.

- MCEGold® 2.6.2 is not compatible with testers requiring a Data Acquisition Card (DAQ).

- For Stand Alone and Field Testers, installing MCEGold® 2.6.2 will require an upgrade of the Microsoft SQL Server 2005 to SQL Server 2008, if not already completed. This does not apply to Servers on a Network.

- To ensure application accessibility, the new default installation location has been set to C:\PdMA Corporation.

- Databases attached to MCEGold® 2.6.2 must be from MCEGold ®2.4 or later and once updated with 2.6.2 *will not* be compatible with older versions of MCEGold®.

- Assets opened with MCEGold® 2.6.2 *will not* be compatible with older versions of MCEGold®.

Minimum Requirements:

Computer	Dell Latitude E6430 Laptop*
Processor	2+ GHz Intel i5 or equivalent
Resolution	1600 x 900
Operating System	Microsoft Windows 7 SP1 32- or 64 bit**
Memory	2.0+ G RAM
Ports/Drives	(2) USB Ports in Rear or Side (M-Series tester has (1) USB Port)
Drives	24x CD-RW + DVD Drive
Hard Disk	20G Available

* Using any other computer manufacturer in conjunction with the PdMA® software may result in erratic computer behavior; not limited to but including:

- Power Management Issues
- Lock-up
- Communication Port Malfunction
- Driver Incompatibility
- Display Errors
- SQL Database Incompatibility
- Network Synchronization Issues.

** For International Customers: Windows 7 Ultimate 32 or 64-bit.

Server Database Update for Network Users

Note: Ensure the user account used to update the server has “sysadmin” permissions.

There is a separate application on the Installation Disc to update the network database on the server. ***The database must be updated on the server first, then the desktops and field testers.***

If the update is installed on a network field tester before the server database is updated, a warning message

appears informing you the database is an old version and to contact your system administrator.

1. Back up the MCEGold® database.

2. Insert the disc into the drive. If the disc starts automatically, click **Exit** and proceed to the next step.

3. Locate the MCEGold® Database Server Update folder on the MCEGold® 2.6.2 Disc.

4. Click on the MCEGold® Database Server Update.exe file.

5. The Server Information window opens. Fill in the Server, Database, Login, and Password information.

6. Click **Run Update**. The progress status will display on the window.

7. When the update complete message displays, close the window.

Stand Alone Users/Field Tester

Note: MCEGold® 2.6.2 requires an upgrade of the Microsoft SQL Server 2005 to SQL Server 2008. Therefore, any stand alone database opened will be updated to SQL Server 2008 and will no longer open on another machine running an older version of MCEGold® using SQL Server 2005.

MCEGold® Prior to 2.4 or Windows XP

If you are updating from an MCEGold® version older than 2.4 or Microsoft Windows XP operating system you must first call PdMA Tech Support (813-621-6463 ext. 251).

MCEGold® 2.4 or 2.5.1

From your Control Panel/Program and Features, verify which version of Microsoft SQL Server is installed on your computer.

If Microsoft SQL Server 2005 exists on your computer proceed to the *Uninstall SQL Server 2005* section followed by the *Uninstall MCEGold ®* section below. There are several components that begin with Microsoft SQL Server 2005, they should all be removed EXCEPT Microsoft SQL Server 2005 Compact Edition (ENU).

If Microsoft SQL Server 2008 and possibly Microsoft SQL Server 2005 Compact Edition (ENU) exists on your computer do not uninstall them. Go to the section *Uninstall MCEGold®*.

Uninstall SQL Server 2005

1. Select Start, Control Panel, and click the Programs and Features icon.

2. In the Uninstall or change a program window scroll down to locate and select Microsoft SQL Server 2005 from the list.

3. Click **Uninstall** - located above the list and follow the on screen instructions.

4. Click **Finish** when the "Uninstall Complete" message is received. Do not close the window.

5. Repeat from step 2 uninstalling all components that begin with Microsoft SQL Server 2005. DO NOT uninstall Microsoft SQL Server 2005 Compact Edition (ENU).

6. Close the Uninstall or change a program window when all components have been uninstalled.

7. Reboot the computer.

Uninstall MCEGold®

Backup

Before beginning the MCEGold® uninstall, copy the MCECal.xml and Emaxprb.xml files and complete Templates folder to a safe location and make note of the location.

The default location for the files is listed below, however you may have chosen a different location during the original installation.
C:\Program Files\PdMA Corporation\MCEGold\Mce
C:\Program Files\PdMA Corporation\MCEGold\Emax
C:\Program Files\PdMA Corporation\MCEGold\Report

1. Select Start, Control Panel, click on the Programs and Features icon.

2. In the Uninstall or change a program window scroll down to locate and select the MCEGold® version from the list.

3. Click Uninstall located above the list and follow on screen prompts.

4. Click **Finish** when the "Uninstall Complete" message is received.

5. Locate the PdMA® MCEMAX® Tester (Driver Removal) file and click **Uninstall** located above the list and follow the on screen prompts.

6. Click **Finish** when the "Uninstall Complete" message is received.

7. Locate the C:\ProgramFiles\PdMACorporation\ folder and delete it. The subfolders will be deleted also. After the installation of MCEGold® 2.6.2 the new folder location will be C:\PdMA Corporation\....

8. Go to step one in the *Install - MCEGold® 2.6.2* section.

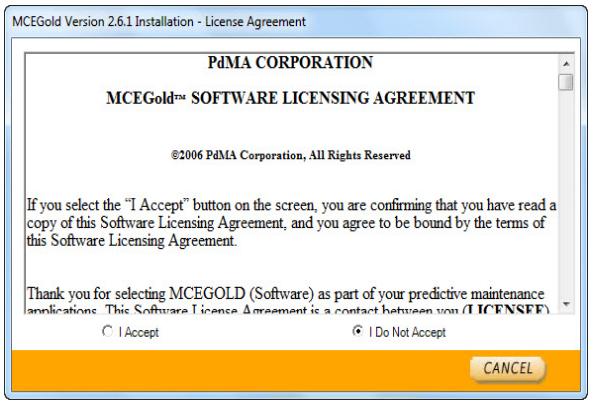
Install MCEGold® 2.6.2

Note: If you have MCEGold®2.6.1 go to MCEGold® 2.6.1 Update on the next page.

1. Insert the MCEGold® 2.6.2 Disc into the drive. If the installation does not begin automatically, run Setup.exe from the disc. (Select Run setup.exe from the AutoPlay window).

2. The License Agreement window opens. Read the PdMA® license and select the "I Accept" option button. The **Next** button becomes visible. Click **Next**.

   Note: If you do not accept the terms, the **Next** button is not visible, you can only click **Cancel**, which closes the software.



3. In the License Key window enter your Company Name and License Key exactly as provided by PdMA®. It is not case sensitive. The License Key is **NOT** the same as the Module Activation Key, which activates various modules.

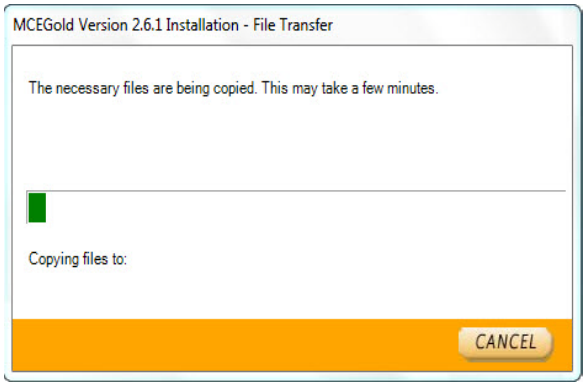
4. Click **Submit** (located to the right of the Company Name space). After the license has been verified the **Next** button appears. Click **Next**.

5. In the Installation Path window, accept the default shown in the textbox (recommended) for the location to install the MCEGold® program folder or using the drop-down list select a alternate location, make a note of it for future use, and click **Next**.

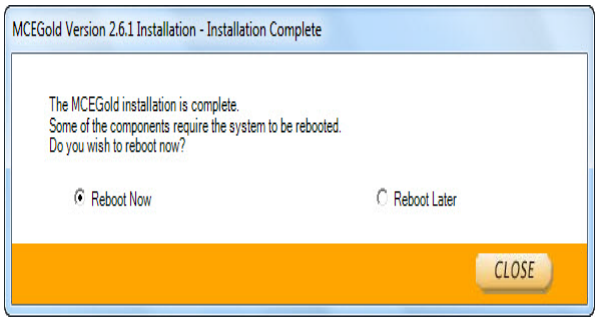
6. When prompted, click **Install Components**.

7. When the installation of components is complete the **Next** button appears. Click **Next**.

8. A progress bar shows the progress of copying files to your computer.



9. When the installation is complete you must reboot your system. Select the Reboot Now option and click **Close**.



After rebooting, locate and copy the backup MCECal.xml and Emaxprb.xml files and the Template folder back into their appropriate locations in
C:\PdMA Corporation\MCEGold\Mce
C:\PdMA Corporation\MCEGold\Emax
C:\PdMA Corporation\MCEGold\Report

10. Answer Yes to the "OK to overwrite existing folder" inquiry.

11. Remove the MCEGold® 2.6.2 Disc and reboot the computer.

MCEGold® 2.6.1 Update

Install MCEGold® 2.6.2

1. Insert the MCEGold® 2.6.2 Disc into the drive. It will auto-start to the InstallShield program. However, if does not begin automatically, run Setup.exe from the disc. (Select Run setup.exe from the AutoPlay window).

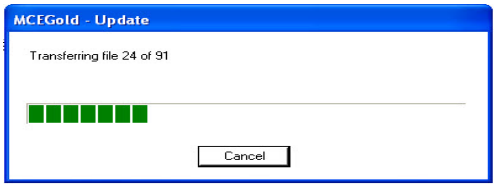
2. The Installation Update Window opens.



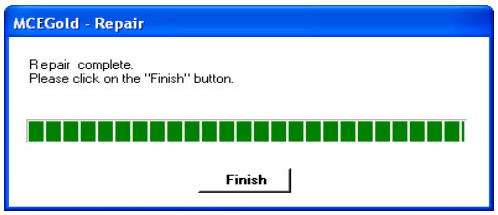
3. Select **Update.**

Note: Selecting **Uninstall** removes the existing MCEGold® software from your system. Uninstalling is not necessary for this update.

4. The MCEGold® Update window opens and displays a progress bar.



5. Click **Finish** when the update or repair complete message is received.



6. It may be necessary to restart your computer to finalize the installation.

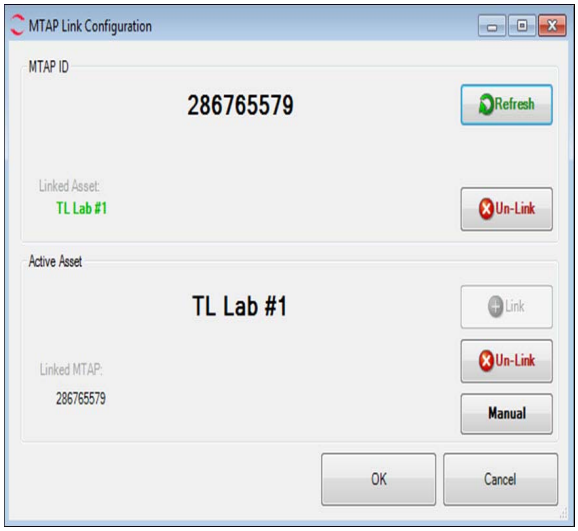
NEW FEATURES

M*TAP* Link Configuration (M-Series Tester Only)

The M*TAP* ID program functions when the tester is connected to the motor via an M*TAP*. It is used to link or verify that the M*TAP* and asset are linked so that testing can proceed. To open the M*TAP* ID Link Configuration window click the M*TAP* icon  on the toolbar.

MTAP ID Section

The M*TAP* Link Configuration window opens. The M*TAP* ID will be automatically read by the software and displayed in the M*TAP* ID section of the window.



If you unplug from the M*TAP* and plug into a different M*TAP*, click the Refresh button [Refresh] and the M*TAP* ID will update. This only works with a change of M*TAP*, to refresh an Active Asset you must close the M*TAP* Link Configuration window, select a new asset from the Site Navigator and click the M*TAP* icon on the toolbar.

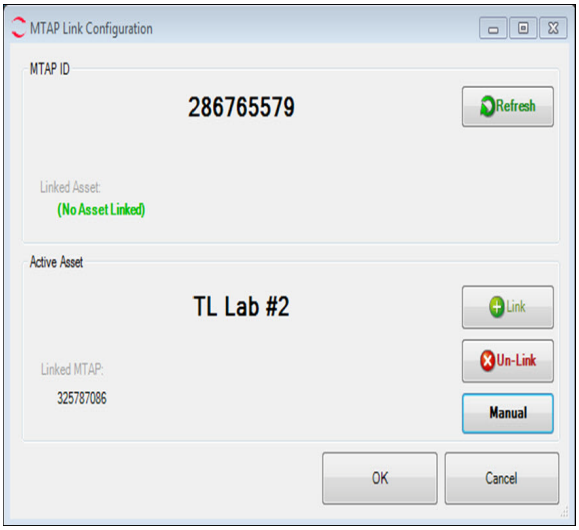
If an asset has been linked to the M*TAP* previously the Linked Asset identification will appear in the Linked Asset text box.

If the Linked Asset is not the asset you are going to test you need to unlink the asset and link the correct asset.

Un-Link an asset

1. Click the Un-Link button [Un-Link] on the right.
2. Click **OK** to close the Link Configuration window.
3. Select the correct asset.
4. Click the M*TAP* icon on the toolbar.
5. Click the Link button [Link] to link the current asset to the M*TAP* ID.

If no asset is currently linked to the MTAP ID then the Linked asset textbox will display “No Asset Linked”. Click **OK** or **Cancel** to close the MTAP Link Configuration window, select the correct asset, click the M*TAP* icon on the toolbar, and click the Link button [Link] to link the current asset to the M*TAP* ID.



Active Asset Section

The software automatically reads and displays the identification of the selected asset. As with the M*TAP* ID section, if there is a previously linked M*TAP* to this asset the identification appears in the *Linked MTAP* text box.

If the Linked M*TAP* is not the one that the tester is currently attached to, click the **Un-Link** button. [Un-Link] Then click the **Link** button [Link] to link to the current M*TAP*. The M*TAP* ID will display in the *Linked MTAP* textbox.

If for some reason it is necessary to manually enter the M*TAP* ID, click the **Manual** button and enter the ID number in the textbox.

Testing

After verifying the M*TAP* Link Configuration (the correct M*TAP* is linked to the correct Active Asset and the Active Asset is linked to the correct MTAP), click the **OK** button. The EMAX test screen appears.

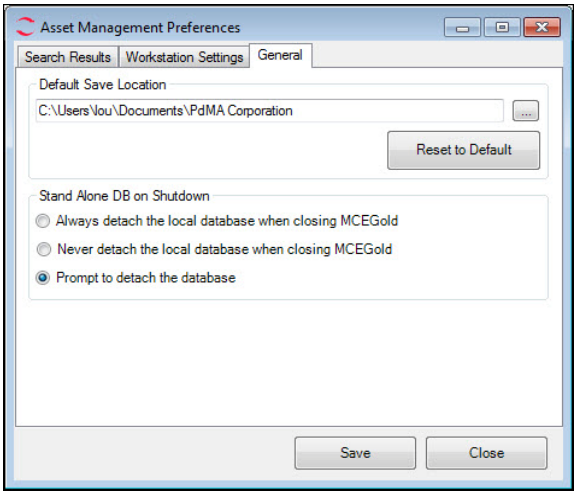
For all future tests of a linked M*TAP* and asset, the software will auto navigate to the proper asset when connected to the M*TAP* and then you select the test or EMAX Auto button on the toolbar is selected.

Detach Database Selection

The options for detaching the database on shutdown are available from the Options menu. Select Options, Preferences.

General

The selections on the General tab control the Default Save Location of the database and the disposition of the stand alone DB at shutdown.

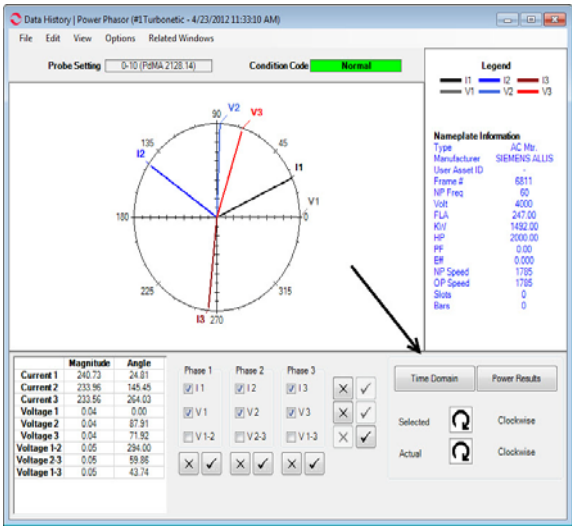


Change Option at Shutdown

There are three options for handling the database at shutdown: *Always detach the local database*, *Never detach the local database*, and *Prompt to detach the database*. Click the option button in front of your selection and click **Save**. In the future you may come back to this window and change your settings.

Power Phasor

In the Data History, Power Phasor window changes have been made to the lower right corner. Time Domain and Power Results buttons have been added.



Time Domain Button

Clicking the Time Domain button opens a window displaying the Power Time Domain spectrum.

Power Results Button

Clicking the Power Results button opens the Power Results window for the selected asset and Power test.

Rotation Indicators

No changes can be made using the Rotation indicators. They are displayed for informational uses only.

TECHNOTE 1401

ISSUED

March 2014

SUBJECT

Release of MCEGold® 2.6.2 SP2. TechNote 1401 supercedes TechNote 1303.

DESCRIPTION

The MCEGold 2.6.2 SP2 release contains the following features: M*TAP* ID Link Configuration to assist in auto location of an asset, addition of a Asset Management Preferences function used to select the Default Detach Database Option, an asset preview pane was added to the WatchList, and the addition of Power Results and Time Domain buttons on the Power Phasor window.

MCEGold 2.6.2 SP2 is available on M and H series testers only.

MCEGOLD 2.6.2 SP2 INSTALLATION

Note:

- If you have a Microsoft Windows XP operating system, contact PdMA Tech Support (813-621-6463 ext. 251) prior to the 2.6.2 SP2 installation.

- If you have MCEGold prior to 2.4, contact PdMA Tech Support (813-621-6463 ext. 251) prior to the 2.6.2 SP2 installation.

- If using MCEGold 2.5.1 SP2 or earlier a full uninstall of MCEGold is required. If using MCEGold 2.6.1 or MCEGold 2.6.2 the uninstall is not required; go to MCEGold 2.6.1 Update on page 4.

- MCEGold 2.6.2 SP2 is not compatible with testers requiring a Data Acquisition Card (DAQ).

- For Stand Alone and Field Testers, installing MCEGold 2.6.2 SP2 will require an upgrade of the Microsoft SQL Server 2005 to SQL Server 2008, if not already completed. This does not apply to Servers on a Network.

- To ensure application accessibility, the new default installation location has been set to C:\PdMA Corporation.

- Databases attached to MCEGold 2.6.2 SP2 must be from MCEGold 2.4 or later and once updated with 2.6.2 SP2 *will not* be compatible with older versions of MCEGold.

- Assets opened with MCEGold 2.6.2 SP2 *will not* be compatible with older versions of MCEGold.

Minimum Requirements:

Computer	Dell Latitude E6430 Laptop*
Processor	2+ GHz Intel i5 or equivalent
Resolution	1600 x 900
Operating System	Microsoft® Windows 7 SP1 32-or 64 bit**
Memory	2.0+ G RAM
Ports/Drives	(2) USB Ports in Rear or Side (M-Series tester has (1) USB Port)
Drives	24x CD-RW + DVD Drive
Hard Disk	20G Available

* Using any other computer manufacturer in conjunction with the PdMA software may result in erratic computer behavior; not limited to but including:

- Power Management Issues
- Lock-up
- Communication Port Malfunction
- Driver Incompatibility
- Display Errors
- SQL Database Incompatibility
- Network Synchronization Issues.

** For International Customers: Windows 7 Ultimate 32 or 64-bit.

Server Database Update for Network Users

Note: Ensure the user account used to update the server has “sysadmin” permissions.

There is a separate application on the Installation Disc to update the network database on the server. ***The database must be updated on the server first, then the desktops and field testers.***

If the update is installed on a network field tester before the server database is updated, a warning message appears informing you the database is an old version and to contact your system administrator.

1. Back up the MCEGold database.

2. Insert the disc into the drive. If the disc starts automatically, click **Exit** and proceed to the next step.

3. Locate the MCEGold Database Server Update folder on the MCEGold 2.6.2 SP2 Disc.

4. Click on the MCEGold Database Server Update.exe file.

5. The Server Information window opens. Fill in the Server, Database, Login, and Password information.

6. Click **Run Update**. The progress status will display on the window.

7. When the update complete message displays, close the window.

Stand Alone Users/Field Tester

Note: MCEGold 2.6.2 SP2 requires an upgrade of the Microsoft SQL Server 2005 to SQL Server 2008. Therefore, any stand alone database opened will be updated to SQL Server 2008 and will no longer open on another machine running an older version of MCEGold using SQL Server 2005.

MCEGold Prior to 2.4 or Windows XP

If you are updating from an MCEGold version older than 2.4 or Microsoft Windows XP operating system you must first call PdMA Tech Support (813-621-6463 ext. 251).

MCEGold 2.4 or 2.5.1

From your Control Panel/Program and Features, verify which version of Microsoft SQL Server is installed on your computer.

If Microsoft SQL Server 2005 exists on your computer proceed to the *Uninstall SQL Server 2005* section followed by the *Uninstall MCEGold* section below. There are several components that begin with Microsoft SQL Server 2005, they should all be removed EXCEPT Microsoft SQL Server 2005 Compact Edition (ENU).

If Microsoft SQL Server 2008 and possibly Microsoft SQL Server 2005 Compact Edition (ENU) exists on your computer do not uninstall them. Go to the section *Uninstall MCEGold.*

Uninstall SQL Server 2005

1. Select Start, Control Panel, and click the Programs and Features icon.

2. In the Uninstall or change a program window scroll down to locate and select Microsoft SQL Server 2005 from the list.

3. Click **Uninstall** - located above the list and follow the on screen instructions.

4. Click **Finish** when the "Uninstall Complete" message is received. Do not close the window.

5. Repeat from step 2 uninstalling all components that begin with Microsoft SQL Server 2005. DO NOT uninstall Microsoft SQL Server 2005 Compact Edition (ENU).

6. Close the Uninstall or change a program window when all components have been uninstalled.

7. Reboot the computer.

Uninstall MCEGold

Backup

Before beginning the MCEGold uninstall, copy the MCECal.xml and Emaxprb.xml files and complete Templates folder to a safe location and make note of the location.

The default location for the files is listed below, however you may have chosen a different location during the original installation.
C:\Program Files\PdMA Corporation\MCEGold\Mce
C:\Program Files\PdMA Corporation\MCEGold\Emax
C:\Program Files\PdMA Corporation\MCEGold\Report

1. Select Start, Control Panel, click on the Programs and Features icon.

2. In the Uninstall or change a program window scroll down to locate and select the MCEGold version from the list.

3. Click Uninstall located above the list and follow on screen prompts.

4. Click **Finish** when the "Uninstall Complete" message is received.

5. Locate the PdMA MCEMAX® Tester (Driver Removal) file and click **Uninstall** located above the list and follow the on screen prompts.

6. Click **Finish** when the "Uninstall Complete" message is received.

7. Locate the C:\ProgramFiles\PdMACorporation\ folder and delete it. The subfolders will be deleted also. After the installation of MCEGold 2.6.2 SP2 the new folder location will be C:\PdMA Corporation\....

8. Go to step one in the *Install - MCEGold 2.6.2 SP2* section.

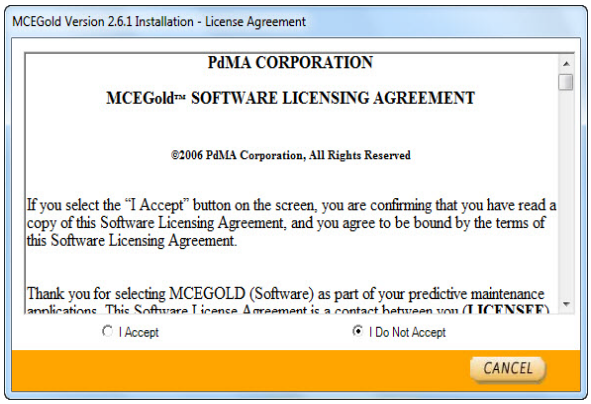
Install MCEGold 2.6.2 SP2

Note: If you have MCEGold 2.6.1 go to MCEGold 2.6.1 Update on the next page.

1. Insert the MCEGold 2.6.2 SP2 disc into the drive. If the installation does not begin automatically, run Setup.exe from the disc. (Select Run setup.exe from the AutoPlay window).

2. The License Agreement window opens. Read the PdMA license and select the "I Accept" option button. The **Next** button becomes visible. Click **Next**.

   Note: If you do not accept the terms, the **Next** button is not visible, you can only click **Cancel**, which closes the software.



3. In the License Key window enter your Company Name and License Key exactly as provided by PdMA. It is not case sensitive. The License Key is **NOT** the same as the Module Activation Key, which activates various modules.

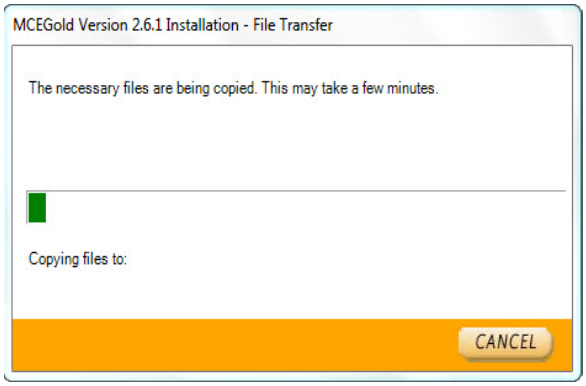
4. Click **Submit** (located to the right of the Company Name space). After the license has been verified the **Next** button appears. Click **Next**.

5. In the Installation Path window, accept the default shown in the textbox (recommended) for the location to install the MCEGold program folder or using the drop-down list select a alternate location, make a note of it for future use, and click **Next**.

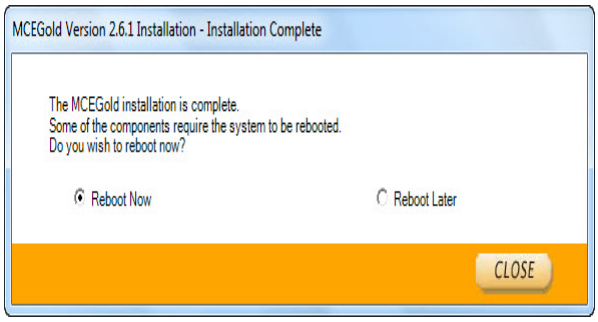
6. When prompted, click **Install Components**.

7. When the installation of components is complete the **Next** button appears. Click **Next**.

8. A progress bar shows the progress of copying files to your computer.



9. When the installation is complete you must reboot your system. Select the Reboot Now option and click **Close**.



After rebooting, locate and copy the backup MCECal.xml and Emaxprb.xml files and the Template folder back into their appropriate locations in
C:\PdMA Corporation\MCEGold\Mce
C:\PdMA Corporation\MCEGold\Emax
C:\PdMA Corporation\MCEGold\Report

10. Answer Yes to the "OK to overwrite existing folder" inquiry.

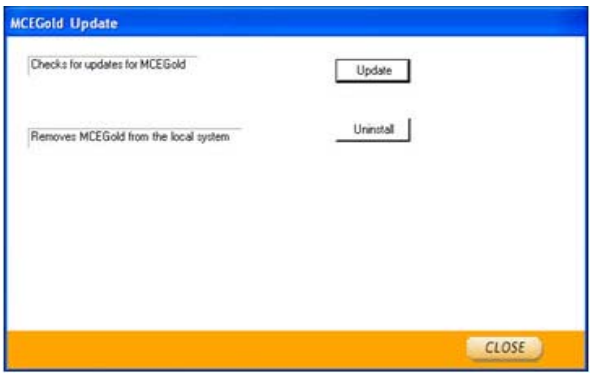
11. Remove the MCEGold 2.6.2 SP2 Disc and reboot the computer.

MCEGold 2.6.1 Update

Install MCEGold 2.6.2 SP2

1. Insert the MCEGold 2.6.2 SP2 disc into the drive. It will auto-start to the InstallShield program. However, if does not begin automatically, run Setup.exe from the disc. (Select Run setup.exe from the AutoPlay window).

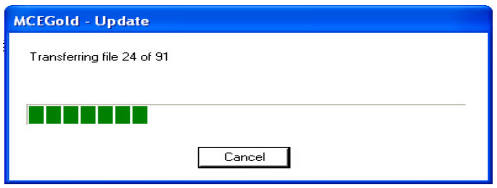
2. The Installation Update Window opens.



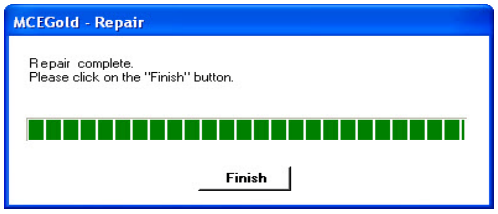
3. Select **Update.**

Note: Selecting **Uninstall** removes the existing MCEGold software from your system. Uninstalling is not necessary for this update.

4. The MCEGold Update window opens and displays a progress bar.



5. Click **Finish** when the update or repair complete message is received.



6. It may be necessary to restart your computer to finalize the installation.

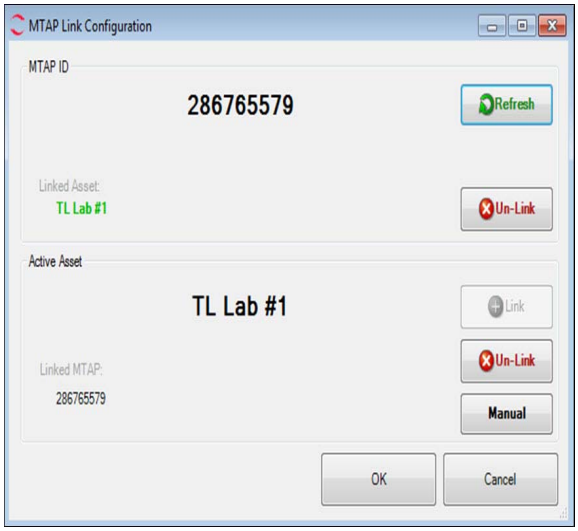
NEW FEATURES

M*TAP* Link Configuration (M-Series Tester Only)

The M*TAP* ID program functions when the tester is connected to the motor via an M*TAP*. It is used to link or verify that the M*TAP* and asset are linked so that testing can proceed. To open the M*TAP* ID Link Configuration window click the M*TAP* icon  on the toolbar.

MTAP ID Section

The M*TAP* Link Configuration window opens. The M*TAP* ID will be automatically read by the software and displayed in the M*TAP* ID section of the window.



If you unplug from the M*TAP* and plug into a different M*TAP*, click the Refresh button 

and the M*TAP* ID will update. This only works with a change of M*TAP*, to refresh an Active Asset you must close the M*TAP* Link Configuration window, select a new asset from the Site Navigator and click the M*TAP* icon on the toolbar.

If an asset has been linked to the M*TAP* previously the Linked Asset identification will appear in the Linked Asset text box.

If the Linked Asset is not the asset you are going to test you need to unlink the asset and link the correct asset.

Un-Link an asset

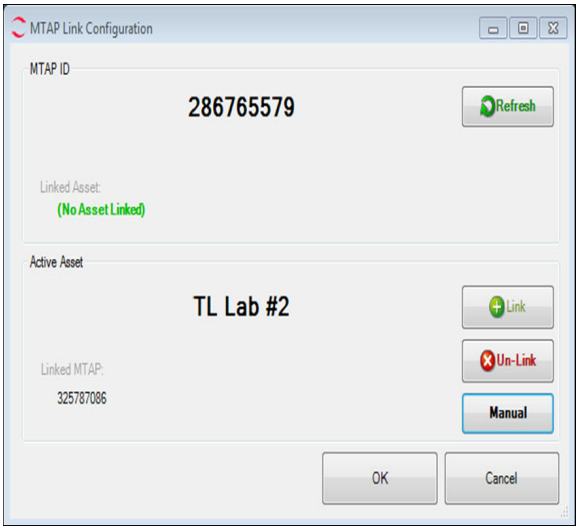
1. Click the Un-Link button 

on the right.
2. Click **OK** to close the Link Configuration window.
3. Select the correct asset.
4. Click the M*TAP* icon on the toolbar.
5. Click the Link button 

to link the current asset to the M*TAP* ID.

If no asset is currently linked to the MTAP ID then the Linked asset textbox will display “No Asset Linked”. Click **OK** or **Cancel** to close the MTAP Link Configuration window, select the correct asset, click the M*TAP* icon on the toolbar, and click the Link button 

to link the current asset to the M*TAP* ID.



Active Asset Section

The software automatically reads and displays the identification of the selected asset. As with the M*TAP* ID section, if there is a previously linked M*TAP* to this asset the identification appears in the *Linked MTAP* text box.

If the Linked M*TAP* is not the one that the tester is currently attached to, click the **Un-Link** button. 

Then click the **Link** button 

to link to the current M*TAP*. The M*TAP* ID will display in the *Linked MTAP* textbox.

If for some reason it is necessary to manually enter the M*TAP* ID, click the **Manual** button and enter the ID number in the textbox.

Testing

After verifying the M*TAP* Link Configuration (the correct M*TAP* is linked to the correct Active Asset and the Active Asset is linked to the correct MTAP), click the **OK** button. The EMAX test screen appears.

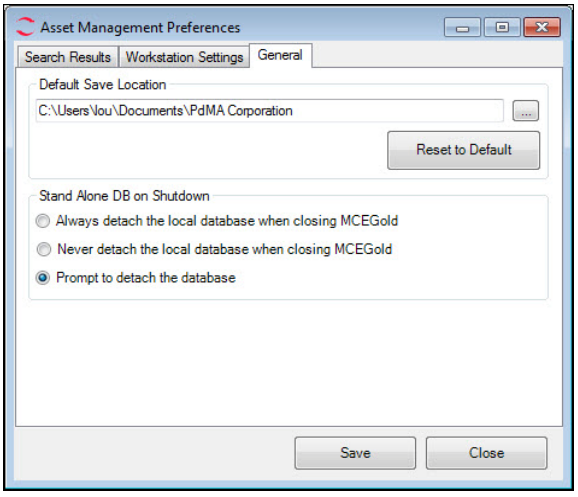
For all future tests of a linked M*TAP* and asset, the software will auto navigate to the proper asset when connected to the M*TAP* and then you select the test or EMAX Auto button on the toolbar is selected.

Detach Database Selection

The options for detaching the database on shutdown are available from the Options menu. Select Options, Preferences.

General

The selections on the General tab control the Default Save Location of the database and the disposition of the stand alone DB at shutdown.

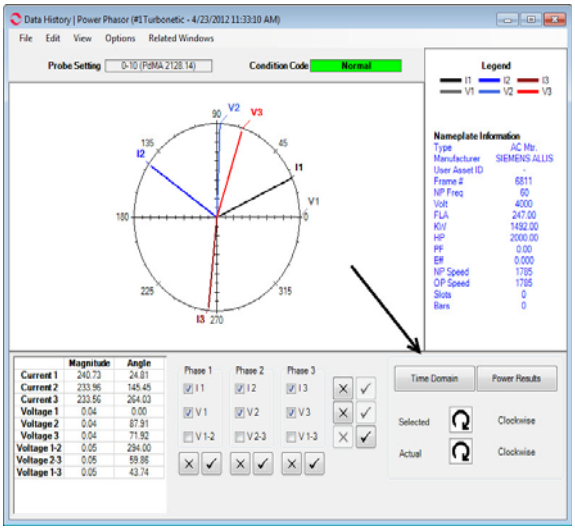


Change Option at Shutdown

There are three options for handling the database at shutdown: *Always detach the local database*, *Never detach the local database*, and *Prompt to detach the database*. Click the option button in front of your selection and click **Save**. In the future you may come back to this window and change your settings.

Power Phasor

In the Data History, Power Phasor window changes have been made to the lower right corner. Time Domain and Power Results buttons have been added.



Time Domain Button

Clicking the Time Domain button opens a window displaying the Power Time Domain spectrum.

Power Results Button

Clicking the Power Results button opens the Power Results window for the selected asset and Power test.

Rotation Indicators

No changes can be made using the Rotation indicators. They are displayed for informational uses only.

WatchList

In the MCEGold Network version an Asset Preview Pane has been added to the local WatchList.

TECHNOTE 1402

ISSUED

July 2014

SUBJECT

Release of MCEGold® 2.6.2 SP3.

DESCRIPTION

The MCEGold 2.6.2 SP3 release contains minor enhancements and fixes several bugs.

MCEGold 2.6.2 SP3 is available on M and H series testers only.

MCEGOLD 2.6.2 SP3 INSTALLATION

Note:

- If you have a Microsoft Windows XP operating system, contact PdMA Tech Support (813-621-6463 ext. 251) prior to the 2.6.2 SP3 installation.

- If you have MCEGold prior to 2.4, contact PdMA Tech Support (813-621-6463 ext. 251) prior to the 2.6.2 SP3 installation.

- If using MCEGold 2.5.1 SP2 or earlier a full uninstall of MCEGold is required. If using MCEGold 2.6.1 or MCEGold 2.6.2 the uninstall is not required; go to MCEGold 2.6.1 Update on page 4.

- MCEGold 2.6.2 SP3 is not compatible with testers requiring a Data Acquisition Card (DAQ).

- For Stand Alone and Field Testers, installing MCEGold 2.6.2 SP3 will require an upgrade of the Microsoft SQL Server 2005 to SQL Server 2008, if not already completed. This does not apply to Servers on a Network.

- To ensure application accessibility, the new default installation location has been set to C:\PdMA Corporation.

- Databases attached to MCEGold 2.6.2 SP3 must be from MCEGold 2.4 or later and once updated with 2.6.2 SP3 *will not* be compatible with older versions of MCEGold.

- Assets opened with MCEGold 2.6.2 SP3 *will not* be compatible with older versions of MCEGold.

Minimum Requirements:

Computer	Dell Latitude E6430 Laptop*
Processor	2+ GHz Intel i5 or equivalent
Resolution	1600 x 900
Operating System	Microsoft® Windows 7 SP1 32-or 64 bit**
Memory	2.0+ G RAM
Ports/Drives	(2) USB Ports in Rear or Side (M-Series tester has (1) USB Port)
Drives	24x CD-RW + DVD Drive
Hard Disk	20G Available

* Using any other computer manufacturer in conjunction with the PdMA software may result in erratic computer behavior; not limited to but including:

- Power Management Issues
- Lock-up
- Communication Port Malfunction
- Driver Incompatibility
- Display Errors
- SQL Database Incompatibility
- Network Synchronization Issues.

** For International Customers: Windows 7 Ultimate 32 or 64-bit.

Server Database Update for Network Users

Note: Ensure the user account used to update the server has “sysadmin” permissions.

There is a separate application on the Installation Disc to update the network database on the server. ***The database must be updated on the server first, then the desktops and field testers.***

If the update is installed on a network field tester before the server database is updated, a warning message

appears informing you the database is an old version and to contact your system administrator.

1. Back up the MCEGold database.

2. Insert the disc into the drive. If the disc starts automatically, click **Exit** and proceed to the next step.

3. Locate the MCEGold Database Server Update folder on the MCEGold 2.6.2 SP3 Disc.

4. Click on the MCEGold Database Server Update.exe file.

5. The Server Information window opens. Fill in the Server, Database, Login, and Password information.

6. Click **Run Update**. The progress status will display on the window.

7. When the update complete message displays, close the window.

Stand Alone Users/Field Tester

Note: MCEGold 2.6.2 SP3 requires an upgrade of the Microsoft SQL Server 2005 to SQL Server 2008. Therefore, any stand alone database opened will be updated to SQL Server 2008 and will no longer open on another machine running an older version of MCEGold using SQL Server 2005.

MCEGold Prior to 2.4 or Windows XP

If you are updating from an MCEGold version older than 2.4 or Microsoft Windows XP operating system you must first call PdMA Tech Support (813-621-6463 ext. 251).

MCEGold 2.4 or 2.5.1

From your Control Panel/Program and Features, verify which version of Microsoft SQL Server is installed on your computer.

If Microsoft SQL Server 2005 exists on your computer proceed to the *Uninstall SQL Server 2005* section followed by the *Uninstall MCEGold* section below. There are several components that begin with Microsoft SQL Server 2005, they should all be removed EXCEPT Microsoft SQL Server 2005 Compact Edition (ENU).

If Microsoft SQL Server 2008 and possibly Microsoft SQL Server 2005 Compact Edition (ENU) exists on your computer do not uninstall them. Go to the section *Uninstall MCEGold.*

Uninstall SQL Server 2005

1. Select Start, Control Panel, and click the Programs and Features icon.

2. In the Uninstall or change a program window scroll down to locate and select Microsoft SQL Server 2005 from the list.

3. Click **Uninstall** - located above the list and follow the on screen instructions.

4. Click **Finish** when the "Uninstall Complete" message is received. Do not close the window.

5. Repeat from step 2 uninstalling all components that begin with Microsoft SQL Server 2005. DO NOT uninstall Microsoft SQL Server 2005 Compact Edition (ENU).

6. Close the Uninstall or change a program window when all components have been uninstalled.

7. Reboot the computer.

Uninstall MCEGold

Backup

Before beginning the MCEGold uninstall, copy the MCECal.xml and Emaxprb.xml files and complete Templates folder to a safe location and make note of the location.

The default location for the files is listed below, however you may have chosen a different location during the original installation.
C:\Program Files\PdMA Corporation\MCEGold\Mce
C:\Program Files\PdMA Corporation\MCEGold\Emax
C:\Program Files\PdMA Corporation\MCEGold\Report

1. Select Start, Control Panel, click on the Programs and Features icon.

2. In the Uninstall or change a program window scroll down to locate and select the MCEGold version from the list.

3. Click **Uninstall** located above the list and follow on screen prompts.

4. Click **Finish** when the "Uninstall Complete" message is received.

5. Locate the PdMA MCEMAX® Tester (Driver Removal) file and click **Uninstall** located above the list and follow the on screen prompts.

6. Click **Finish** when the "Uninstall Complete" message is received.

7. Locate the C:\ProgramFiles\PdMACorporation\ folder and delete it. The subfolders will be deleted also. After the installation of MCEGold 2.6.2 SP3 the new folder location will be C:\PdMA Corporation\....

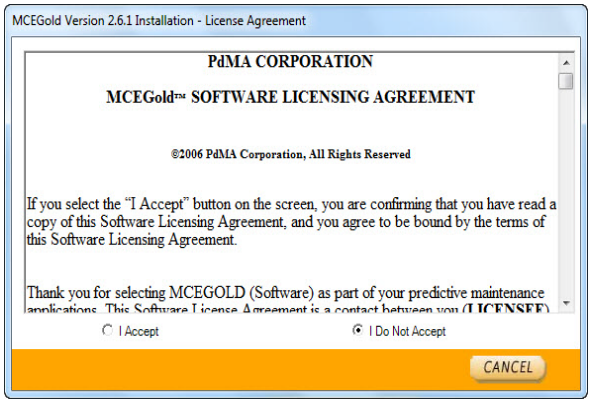
8. Go to step one in the *Install - MCEGold 2.6.2 SP3* section.

Install MCEGold 2.6.2 SP3

Note: If you have MCEGold 2.6.1 go to MCEGold 2.6.1 Update on the next page.

1. Insert the MCEGold 2.6.2 SP3 disc into the drive. If the installation does not begin automatically, run Setup.exe from the disc. (Select Run setup.exe from the AutoPlay window).

2. The License Agreement window opens. Read the PdMA license and select the "I Accept" option button. The **Next** button becomes visible. Click **Next**.
   Note: If you do not accept the terms, the **Next** button is not visible, you can only click **Cancel**, which closes the software.



3. In the License Key window enter your Company Name and License Key exactly as provided by PdMA. It is not case sensitive. The License Key is **NOT** the same as the Module Activation Key, which activates various modules.

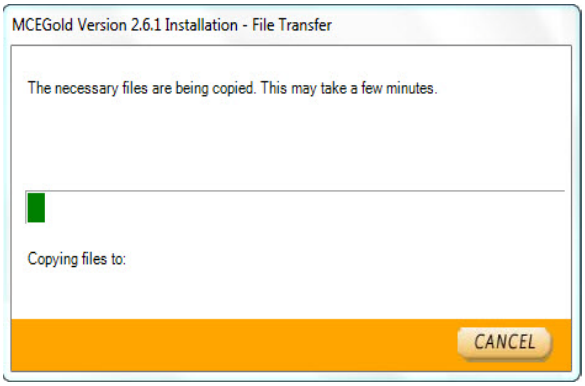
4. Click **Submit** (located to the right of the Company Name space). After the license has been verified the **Next** button appears. Click **Next**.

5. In the Installation Path window, accept the default shown in the textbox (recommended) for the location to install the MCEGold program folder or using the drop-down list select a alternate location, make a note of it for future use, and click **Next**.

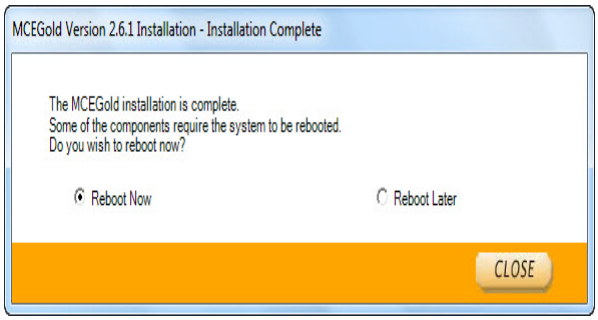
6. When prompted, click **Install Components**.

7. When the installation of components is complete the **Next** button appears. Click **Next**.

8. A progress bar shows the progress of copying files to your computer.



9. When the installation is complete you must reboot your system. Select the Reboot Now option and click **Close**.



After rebooting, locate and copy the backup MCECal.xml and Emaxprb.xml files and the Template folder back into their appropriate locations in
C:\PdMA Corporation\MCEGold\Mce
C:\PdMA Corporation\MCEGold\Emax
C:\PdMA Corporation\MCEGold\Report

10. Answer Yes to the "OK to overwrite existing folder" inquiry.

11. Remove the MCEGold 2.6.2 SP3 Disc and reboot the computer.

MCEGold 2.6.1 Update

Install MCEGold 2.6.2 SP3

1. Insert the MCEGold 2.6.2 SP3 disc into the drive. It will auto-start to the InstallShield program. However, if does not begin automatically, run Setup.exe from the disc. (Select Run setup.exe from the AutoPlay window).

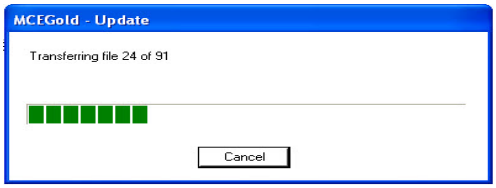
2. The Installation Update Window opens.



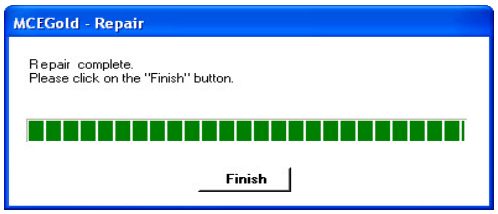
3. Select **Update.**

   Note: Selecting **Uninstall** removes the existing MCEGold software from your system. Uninstalling is not necessary for this update.

4. The MCEGold Update window opens and displays a progress bar.



5. Click **Finish** when the update or repair complete message is received.



6. It may be necessary to restart your computer to finalize the installation.

TECHNOTE 1403

ISSUED

July 2014

SUBJECT

Release of MCEGold® 2.6.2 SP4.

DESCRIPTION

The MCEGold 2.6.2 SP4 release contains minor enhancements and fixes several bugs. TechNote 1403 replaces TechNote 1402.

MCEGold 2.6.2 SP4 is available on M and H series testers only.

MCEGOLD 2.6.2 SP4 INSTALLATION

Note:

- If you have a Microsoft Windows XP operating system, contact PdMA Tech Support (813-621-6463 ext. 251) prior to the 2.6.2 SP4 installation.

- If you have MCEGold prior to 2.4, contact PdMA Tech Support (813-621-6463 ext. 251) prior to the 2.6.2 SP4 installation.

- If using MCEGold 2.5.1 SP2 or earlier a full uninstall of MCEGold is required. If using MCEGold 2.6.1 or MCEGold 2.6.2 the uninstall is not required; go to MCEGold 2.6.1 Update on page 4.

- MCEGold 2.6.2 SP4 is not compatible with testers requiring a Data Acquisition Card (DAQ).

- For Stand Alone and Field Testers, installing MCEGold 2.6.2 SP4 will require an upgrade of the Microsoft SQL Server 2005 to SQL Server 2008, if not already completed. This does not apply to Servers on a Network.

- To ensure application accessibility, the new default installation location has been set to C:\PdMA Corporation.

- Databases attached to MCEGold 2.6.2 SP4 must be from MCEGold 2.4 or later and once updated with 2.6.2 SP4 *will not* be compatible with older versions of MCEGold.

- Assets opened with MCEGold 2.6.2 SP4 *will not* be compatible with older versions of MCEGold.

Minimum Requirements:

Computer	Dell Latitude E6430 Laptop*
Processor	2+ GHz Intel i5 or equivalent
Resolution	1600 x 900
Operating System	Microsoft® Windows 7 SP1 32-or 64 bit**
Memory	2.0+ G RAM
Ports/Drives	(2) USB Ports in Rear or Side (M-Series tester has (1) USB Port)
Drives	24x CD-RW + DVD Drive
Hard Disk	20G Available

* Using any other computer manufacturer in conjunction with the PdMA software may result in erratic computer behavior; not limited to but including:

- Power Management Issues
- Lock-up
- Communication Port Malfunction
- Driver Incompatibility
- Display Errors
- SQL Database Incompatibility
- Network Synchronization Issues.

** For International Customers: Windows 7 Ultimate 32 or 64-bit.

Server Database Update for Network Users

Note: Ensure the user account used to update the server has “sysadmin” permissions.

There is a separate application on the Installation Disc to update the network database on the server. ***The database must be updated on the server first, then the desktops and field testers.***

If the update is installed on a network field tester before the server database is updated, a warning message

appears informing you the database is an old version and to contact your system administrator.

1. Back up the MCEGold database.

2. Insert the disc into the drive. If the disc starts automatically, click **Exit** and proceed to the next step.

3. Locate the MCEGold Database Server Update folder on the MCEGold 2.6.2 SP4 Disc.

4. Click on the MCEGold Database Server Update.exe file.

5. The Server Information window opens. Fill in the Server, Database, Login, and Password information.

6. Click **Run Update**. The progress status will display on the window.

7. When the update complete message displays, close the window.

Stand Alone Users/Field Tester

Note: MCEGold 2.6.2 SP4 requires an upgrade of the Microsoft SQL Server 2005 to SQL Server 2008. Therefore, any stand alone database opened will be updated to SQL Server 2008 and will no longer open on another machine running an older version of MCEGold using SQL Server 2005.

MCEGold Prior to 2.4 or Windows XP

If you are updating from an MCEGold version older than 2.4 or Microsoft Windows XP operating system you must first call PdMA Tech Support (813-621-6463 ext. 251).

MCEGold 2.4 or 2.5.1

From your Control Panel/Program and Features, verify which version of Microsoft SQL Server is installed on your computer.

If Microsoft SQL Server 2005 exists on your computer proceed to the *Uninstall SQL Server 2005* section followed by the *Uninstall MCEGold* section below. There are several components that begin with Microsoft SQL Server 2005, they should all be removed EXCEPT Microsoft SQL Server 2005 Compact Edition (ENU).

If Microsoft SQL Server 2008 and possibly Microsoft SQL Server 2005 Compact Edition (ENU) exists on your computer do not uninstall them. Go to the section *Uninstall MCEGold.*

Uninstall SQL Server 2005

1. Select Start, Control Panel, and click the Programs and Features icon.

2. In the Uninstall or change a program window scroll down to locate and select Microsoft SQL Server 2005 from the list.

3. Click **Uninstall** - located above the list and follow the on screen instructions.

4. Click **Finish** when the "Uninstall Complete" message is received. Do not close the window.

5. Repeat from step 2 uninstalling all components that begin with Microsoft SQL Server 2005. DO NOT uninstall Microsoft SQL Server 2005 Compact Edition (ENU).

6. Close the Uninstall or change a program window when all components have been uninstalled.

7. Reboot the computer.

Uninstall MCEGold

Backup

Before beginning the MCEGold uninstall, copy the MCECal.xml and Emaxprb.xml files and complete Templates folder to a safe location and make note of the location.

The default location for the files is listed below, however you may have chosen a different location during the original installation.
C:\Program Files\PdMA Corporation\MCEGold\Mce
C:\Program Files\PdMA Corporation\MCEGold\Emax
C:\Program Files\PdMA Corporation\MCEGold\Report

1. Select Start, Control Panel, click on the Programs and Features icon.

2. In the Uninstall or change a program window scroll down to locate and select the MCEGold version from the list.

3. Click **Uninstall** located above the list and follow on screen prompts.

4. Click **Finish** when the "Uninstall Complete" message is received.

5. Locate the PdMA MCEMAX® Tester (Driver Removal) file and click **Uninstall** located above the list and follow the on screen prompts.

6. Click **Finish** when the "Uninstall Complete" message is received.

7. Locate the C:\ProgramFiles\PdMACorporation\ folder and delete it. The subfolders will be deleted also. After the installation of MCEGold 2.6.2 SP4 the new folder location will be C:\PdMA Corporation\....

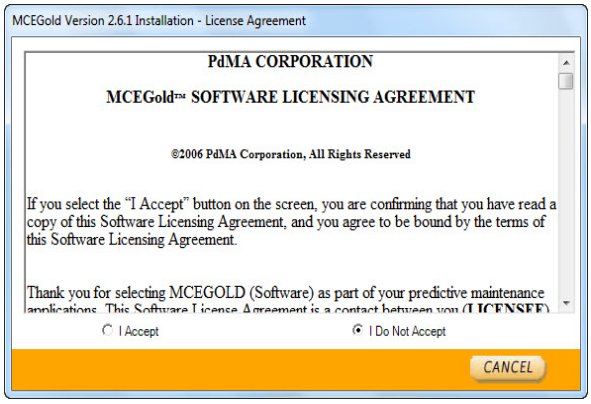
8. Go to step one in the *Install - MCEGold 2.6.2 SP4* section.

Install MCEGold 2.6.2 SP4

Note: If you have MCEGold 2.6.1 go to MCEGold 2.6.1 Update on the next page.

1. Insert the MCEGold 2.6.2 SP4 disc into the drive. If the installation does not begin automatically, run Setup.exe from the disc. (Select Run setup.exe from the AutoPlay window).

2. The License Agreement window opens. Read the PdMA license and select the "I Accept" option button. The **Next** button becomes visible. Click **Next**.
   Note: If you do not accept the terms, the **Next** button is not visible, you can only click **Cancel**, which closes the software.



3. In the License Key window enter your Company Name and License Key exactly as provided by PdMA. It is not case sensitive. The License Key is **NOT** the same as the Module Activation Key, which activates various modules.

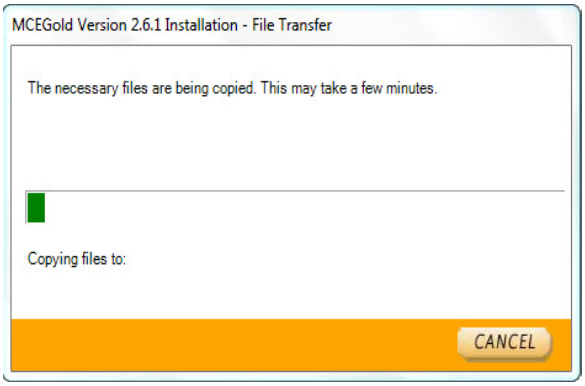
4. Click **Submit** (located to the right of the Company Name space). After the license has been verified the **Next** button appears. Click **Next**.

5. In the Installation Path window, accept the default shown in the textbox (recommended) for the location to install the MCEGold program folder or using the drop-down list select a alternate location, make a note of it for future use, and click **Next**.

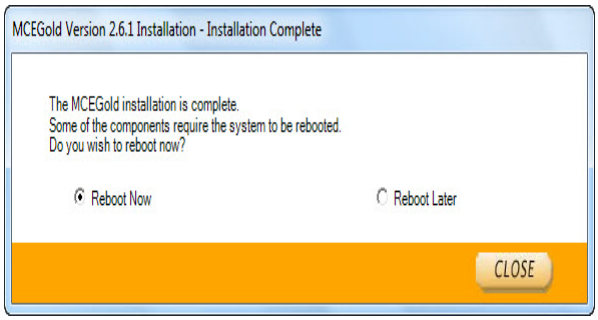
6. When prompted, click **Install Components**.

7. When the installation of components is complete the **Next** button appears. Click **Next**.

8. A progress bar shows the progress of copying files to your computer.



9. When the installation is complete you must reboot your system. Select the Reboot Now option and click **Close**.



After rebooting, locate and copy the backup MCECal.xml and Emaxprb.xml files and the Template folder back into their appropriate locations in
C:\PdMA Corporation\MCEGold\Mce
C:\PdMA Corporation\MCEGold\Emax
C:\PdMA Corporation\MCEGold\Report

10. Answer Yes to the "OK to overwrite existing folder" inquiry.

11. Remove the MCEGold 2.6.2 SP4 Disc and reboot the computer.

MCEGold 2.6.1 Update

Install MCEGold 2.6.2 SP4

1. Insert the MCEGold 2.6.2 SP4 disc into the drive. It will auto-start to the InstallShield program. However, if does not begin automatically, run Setup.exe from the disc. (Select Run setup.exe from the AutoPlay window).

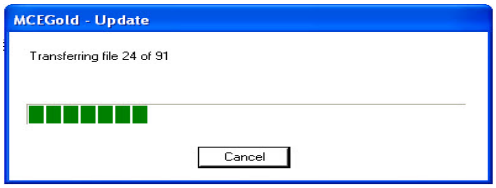
2. The Installation Update Window opens.



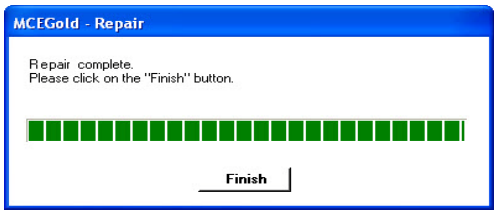
3. Select **Update.**

   Note: Selecting **Uninstall** removes the existing MCEGold software from your system. Uninstalling is not necessary for this update.

4. The MCEGold Update window opens and displays a progress bar.



5. Click **Finish** when the update or repair complete message is received.



6. It may be necessary to restart your computer to finalize the installation.

TECHNOTE 1501

ISSUED

March 2015

SUBJECT

Release of MCEGold® 2.6.2 SP5.

DESCRIPTION

The MCEGold 2.6.2 SP5 release contains minor enhancements and fixes several bugs.

MCEGold 2.6.2 SP5 is available on M and H series testers only.

MCEGOLD 2.6.2 SP5 INSTALLATION

Note:

- If you have a Microsoft Windows XP operating system, contact PdMA Tech Support (813-621-6463 ext. 251) prior to the 2.6.2 SP5 installation.

- If you have MCEGold prior to 2.4, contact PdMA Tech Support (813-621-6463 ext. 251) prior to the 2.6.2 SP5 installation.

- If using MCEGold 2.5.1 SP2 or earlier a full uninstall of MCEGold is required. If using MCEGold 2.6.1 or MCEGold 2.6.2 the uninstall is not required; go to MCEGold 2.6.1 Update on page 4.

- MCEGold 2.6.2 SP5 is not compatible with testers requiring a Data Acquisition Card (DAQ).

- For Stand Alone and Field Testers, installing MCEGold 2.6.2 SP5 will require an upgrade of the Microsoft SQL Server 2005 to SQL Server 2008, if not already completed. This does not apply to Servers on a Network.

- To ensure application accessibility, the new default installation location has been set to C:\PdMA Corporation.

- Databases attached to MCEGold 2.6.2 SP5 must be from MCEGold 2.4 or later and once updated with 2.6.2 SP5 *will not* be compatible with older versions of MCEGold.

- Assets opened with MCEGold 2.6.2 SP5 *will not* be compatible with older versions of MCEGold.

Minimum Requirements:

Computer	Dell Latitude E6430 Laptop*
Processor	2+ GHz Intel i5 or equivalent
Resolution	1600 x 900
Operating System	Microsoft® Windows 7 SP1 32-or 64 bit**
Memory	2.0+ G RAM
Ports/Drives	(2) USB Ports in Rear or Side (M-Series tester has (1) USB Port)
Drives	24x CD-RW + DVD Drive
Hard Disk	20G Available

* Using any other computer manufacturer in conjunction with the PdMA software may result in erratic computer behavior; not limited to but including:

- Power Management Issues
- Lock-up
- Communication Port Malfunction
- Driver Incompatibility
- Display Errors
- SQL Database Incompatibility
- Network Synchronization Issues.

** For International Customers: Windows 7 Ultimate 32 or 64-bit.

Server Database Update for Network Users

Note: Ensure the user account used to update the server has “sysadmin” permissions.

There is a separate application on the Installation Disc to update the network database on the server. ***The database must be updated on the server first, then the desktops and field testers.***

If the update is installed on a network field tester before the server database is updated, a warning message

appears informing you the database is an old version and to contact your system administrator.

1. Back up the MCEGold database.

2. Insert the disc into the drive. If the disc starts automatically, click **Exit** and proceed to the next step.

3. Locate the MCEGold Database Server Update folder on the MCEGold 2.6.2 SP5 Disc.

4. Click on the MCEGold Database Server Update.exe file.

5. The Server Information window opens. Fill in the Server, Database, Login, and Password information.

6. Click **Run Update**. The progress status will display on the window.

7. When the update complete message displays, close the window.

Stand Alone Users/Field Tester

Note: MCEGold 2.6.2 SP5 requires an upgrade of the Microsoft SQL Server 2005 to SQL Server 2008. Therefore, any stand alone database opened will be updated to SQL Server 2008 and will no longer open on another machine running an older version of MCEGold using SQL Server 2005.

MCEGold Prior to 2.4 or Windows XP

If you are updating from an MCEGold version older than 2.4 or Microsoft Windows XP operating system you must first call PdMA Tech Support (813-621-6463 ext. 251).

MCEGold 2.4 or 2.5.1

From your Control Panel/Program and Features, verify which version of Microsoft SQL Server is installed on your computer.

If Microsoft SQL Server 2005 exists on your computer proceed to the *Uninstall SQL Server 2005* section followed by the *Uninstall MCEGold* section below. There are several components that begin with Microsoft SQL Server 2005, they should all be removed EXCEPT Microsoft SQL Server 2005 Compact Edition (ENU).

If Microsoft SQL Server 2008 and possibly Microsoft SQL Server 2005 Compact Edition (ENU) exists on your computer do not uninstall them. Go to the section *Uninstall MCEGold.*

Uninstall SQL Server 2005

1. Select Start, Control Panel, and click the Programs and Features icon.

2. In the Uninstall or change a program window scroll down to locate and select Microsoft SQL Server 2005 from the list.

3. Click **Uninstall** - located above the list and follow the on screen instructions.

4. Click **Finish** when the "Uninstall Complete" message is received. Do not close the window.

5. Repeat from step 2 uninstalling all components that begin with Microsoft SQL Server 2005. DO NOT uninstall Microsoft SQL Server 2005 Compact Edition (ENU).

6. Close the Uninstall or change a program window when all components have been uninstalled.

7. Reboot the computer.

Uninstall MCEGold

Backup

Before beginning the MCEGold uninstall, copy the MCECal.xml and Emaxprb.xml files and complete Templates folder to a safe location and make note of the location.

The default location for the files is listed below, however you may have chosen a different location during the original installation.
C:\Program Files\PdMA Corporation\MCEGold\Mce
C:\Program Files\PdMA Corporation\MCEGold\Emax
C:\Program Files\PdMA Corporation\MCEGold\Report

1. Select Start, Control Panel, click on the Programs and Features icon.

2. In the Uninstall or change a program window scroll down to locate and select the MCEGold version from the list.

3. Click **Uninstall** located above the list and follow on screen prompts.

4. Click **Finish** when the "Uninstall Complete" message is received.

5. Locate the PdMA MCEMAX® Tester (Driver Removal) file and click **Uninstall** located above the list and follow the on screen prompts.

6. Click **Finish** when the "Uninstall Complete" message is received.

7. Locate the C:\ProgramFiles\PdMACorporation\ folder and delete it. The subfolders will be deleted also. After the installation of MCEGold 2.6.2 SP5 the new folder location will be C:\PdMA Corporation\....

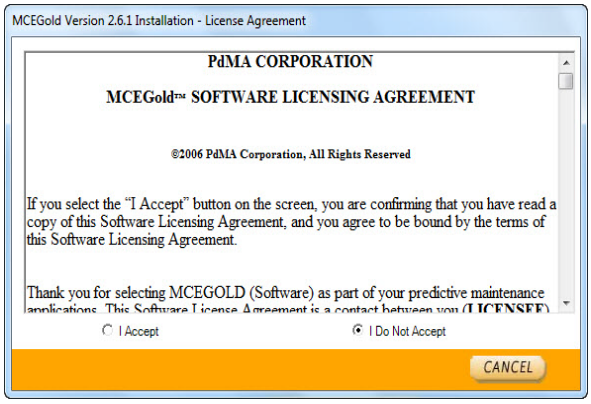
8. Go to step one in the *Install - MCEGold 2.6.2 SP5* section.

Install MCEGold 2.6.2 SP5

Note: If you have MCEGold 2.6.1 go to MCEGold 2.6.1 Update on the next page.

1. Insert the MCEGold 2.6.2 SP5 disc into the drive. If the installation does not begin automatically, run Setup.exe from the disc. (Select Run setup.exe from the AutoPlay window).

2. The License Agreement window opens. Read the PdMA license and select the "I Accept" option button. The **Next** button becomes visible. Click **Next**.
   Note: If you do not accept the terms, the **Next** button is not visible, you can only click **Cancel**, which closes the software.



3. In the License Key window enter your Company Name and License Key exactly as provided by PdMA. It is not case sensitive. The License Key is **NOT** the same as the Module Activation Key, which activates various modules.

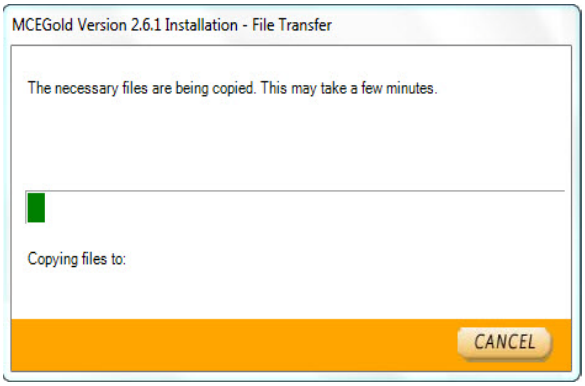
4. Click **Submit** (located to the right of the Company Name space). After the license has been verified the **Next** button appears. Click **Next**.

5. In the Installation Path window, accept the default shown in the textbox (recommended) for the location to install the MCEGold program folder or using the drop-down list select a alternate location, make a note of it for future use, and click **Next**.

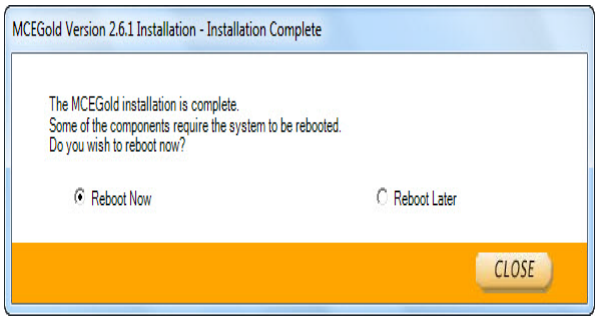
6. When prompted, click **Install Components**.

7. When the installation of components is complete the **Next** button appears. Click **Next**.

8. A progress bar shows the progress of copying files to your computer.



9. When the installation is complete you must reboot your system. Select the Reboot Now option and click **Close**.



After rebooting, locate and copy the backup MCECal.xml and Emaxprb.xml files and the Template folder back into their appropriate locations in

C:\PdMA Corporation\MCEGold\Mce
C:\PdMA Corporation\MCEGold\Emax
C:\PdMA Corporation\MCEGold\Report

10. Answer Yes to the "OK to overwrite existing folder" inquiry.

11. Remove the MCEGold 2.6.2 SP5 Disc and reboot the computer.

MCEGold 2.6.1 Update

Install MCEGold 2.6.2 SP5

1. Insert the MCEGold 2.6.2 SP5 disc into the drive. It will auto-start to the InstallShield program. However, if does not begin automatically, run Setup.exe from the disc. (Select Run setup.exe from the AutoPlay window).

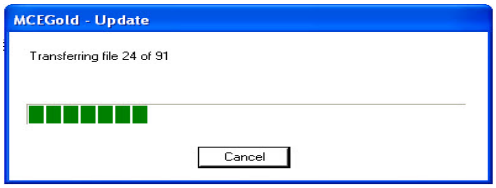
2. The Installation Update Window opens.



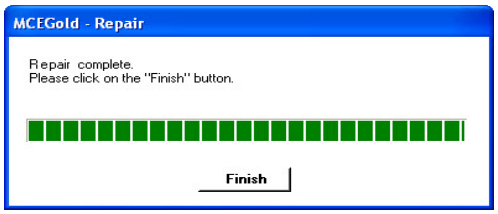
3. Select **Update.**

   Note: Selecting **Uninstall** removes the existing MCEGold software from your system. Uninstalling is not necessary for this update.

4. The MCEGold Update window opens and displays a progress bar.



5. Click **Finish** when the update or repair complete message is received.



6. It may be necessary to restart your computer to finalize the installation.

TECHNOTE 1502

ISSUED

September 2015

SUBJECT

Release of MCEGold® 2.6.2 SP6.

DESCRIPTION

The MCEGold 2.6.2 SP6 release contains minor enhancements and fixes several bugs.

MCEGold 2.6.2 SP6 is available on M and H series testers only.

MCEGOLD 2.6.2 SP6 INSTALLATION

Note:

- If you have a Microsoft Windows XP operating system, contact PdMA Tech Support (813-621-6463 ext. 251) prior to the 2.6.2 SP6 installation.

- If you have MCEGold prior to 2.4, contact PdMA Tech Support (813-621-6463 ext. 251) prior to the 2.6.2 SP6 installation.

- If using MCEGold 2.5.1 SP2 or earlier a full uninstall of MCEGold is required. If using MCEGold 2.6.1 or MCEGold 2.6.2 the uninstall is not required; go to MCEGold 2.6.1 Update on page 4.

- MCEGold 2.6.2 SP6 is not compatible with testers requiring a Data Acquisition Card (DAQ).

- For Stand Alone and Field Testers, installing MCEGold 2.6.2 SP6 will require an upgrade of the Microsoft SQL Server 2005 to SQL Server 2008, if not already completed. This does not apply to Servers on a Network.

- To ensure application accessibility, the new default installation location has been set to C:\PdMA Corporation.

- Databases attached to MCEGold 2.6.2 SP6 must be from MCEGold 2.4 or later and once updated with 2.6.2 SP6 *will not* be compatible with older versions of MCEGold.

- Assets opened with MCEGold 2.6.2 SP6 *will not* be compatible with older versions of MCEGold.

Minimum Requirements:

Computer	Dell Latitude E6430 Laptop*
Processor	2+ GHz Intel i5 or equivalent
Resolution	1600 x 900
Operating System	Microsoft® Windows 7 SP1 32-or 64 bit**
Memory	2.0+ G RAM
Ports/Drives	(2) USB Ports in Rear or Side (M-Series tester has (1) USB Port)
Drives	24x CD-RW + DVD Drive
Hard Disk	20G Available

* Using any other computer manufacturer in conjunction with the PdMA software may result in erratic computer behavior; not limited to but including:

- Power Management Issues
- Lock-up
- Communication Port Malfunction
- Driver Incompatibility
- Display Errors
- SQL Database Incompatibility
- Network Synchronization Issues.

** For International Customers: Windows 7 Ultimate 32 or 64-bit.

Server Database Update for Network Users

Note: Ensure the user account used to update the server has “sysadmin” permissions.

There is a separate application on the Installation Disc to update the network database on the server. ***The database must be updated on the server first, then the desktops and field testers.***

If the update is installed on a network field tester before the server database is updated, a warning message

appears informing you the database is an old version and to contact your system administrator.

1. Back up the MCEGold database.

2. Insert the disc into the drive. If the disc starts automatically, click **Exit** and proceed to the next step.

3. Locate the MCEGold Database Server Update folder on the MCEGold 2.6.2 SP6 Disc.

4. Click on the MCEGold Database Server Update.exe file.

5. The Server Information window opens. Fill in the Server, Database, Login, and Password information.

6. Click **Run Update**. The progress status will display on the window.

7. When the update complete message displays, close the window.

Stand Alone Users/Field Tester

Note: MCEGold 2.6.2 SP6 requires an upgrade of the Microsoft SQL Server 2005 to SQL Server 2008. Therefore, any stand alone database opened will be updated to SQL Server 2008 and will no longer open on another machine running an older version of MCEGold using SQL Server 2005.

MCEGold Prior to 2.4 or Windows XP

If you are updating from an MCEGold version older than 2.4 or Microsoft Windows XP operating system you must first call PdMA Tech Support (813-621-6463 ext. 251).

MCEGold 2.4 or 2.5.1

From your Control Panel/Program and Features, verify which version of Microsoft SQL Server is installed on your computer.

If Microsoft SQL Server 2005 exists on your computer proceed to the *Uninstall SQL Server 2005* section followed by the *Uninstall MCEGold* section below. There are several components that begin with Microsoft SQL Server 2005, they should all be removed EXCEPT Microsoft SQL Server 2005 Compact Edition (ENU).

If Microsoft SQL Server 2008 and possibly Microsoft SQL Server 2005 Compact Edition (ENU) exists on your computer do not uninstall them. Go to the section *Uninstall MCEGold.*

Uninstall SQL Server 2005

1. Select Start, Control Panel, and click the Programs and Features icon.

2. In the Uninstall or change a program window scroll down to locate and select Microsoft SQL Server 2005 from the list.

3. Click **Uninstall** - located above the list and follow the on screen instructions.

4. Click **Finish** when the "Uninstall Complete" message is received. Do not close the window.

5. Repeat from step 2 uninstalling all components that begin with Microsoft SQL Server 2005. DO NOT uninstall Microsoft SQL Server 2005 Compact Edition (ENU).

6. Close the Uninstall or change a program window when all components have been uninstalled.

7. Reboot the computer.

Uninstall MCEGold

Backup

Before beginning the MCEGold uninstall, copy the MCECal.xml and Emaxprb.xml files and complete Templates folder to a safe location and make note of the location.

The default location for the files is listed below, however you may have chosen a different location during the original installation.
C:\Program Files\PdMA Corporation\MCEGold\Mce
C:\Program Files\PdMA Corporation\MCEGold\Emax
C:\Program Files\PdMA Corporation\MCEGold\Report

1. Select Start, Control Panel, click on the Programs and Features icon.

2. In the Uninstall or change a program window scroll down to locate and select the MCEGold version from the list.

3. Click **Uninstall** located above the list and follow on screen prompts.

4. Click **Finish** when the "Uninstall Complete" message is received.

5. Locate the PdMA MCEMAX® Tester (Driver Removal) file and click **Uninstall** located above the list and follow the on screen prompts.

6. Click **Finish** when the "Uninstall Complete" message is received.

7. Locate the C:\ProgramFiles\PdMACorporation\ folder and delete it. The subfolders will be deleted also. After the installation of MCEGold 2.6.2 SP6 the new folder location will be C:\PdMA Corporation\....

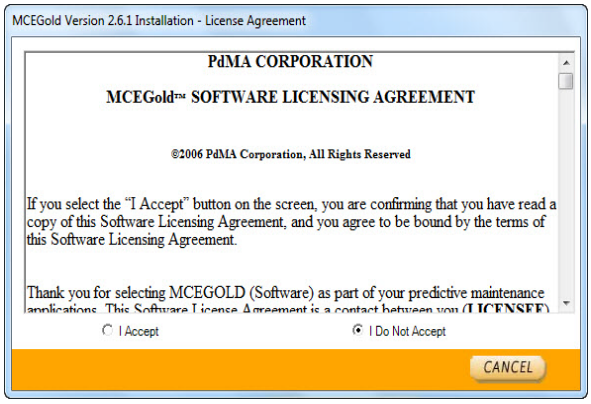
8. Go to step one in the *Install - MCEGold 2.6.2 SP6* section.

Install MCEGold 2.6.2 SP6

Note: If you have MCEGold 2.6.1 go to MCEGold 2.6.1 Update on the next page.

1. Insert the MCEGold 2.6.2 SP6 disc into the drive. If the installation does not begin automatically, run Setup.exe from the disc. (Select Run setup.exe from the AutoPlay window).

2. The License Agreement window opens. Read the PdMA license and select the "I Accept" option button. The **Next** button becomes visible. Click **Next**.
   Note: If you do not accept the terms, the **Next** button is not visible, you can only click **Cancel**, which closes the software.



3. In the License Key window enter your Company Name and License Key exactly as provided by PdMA. It is not case sensitive. The License Key is **NOT** the same as the Module Activation Key, which activates various modules.

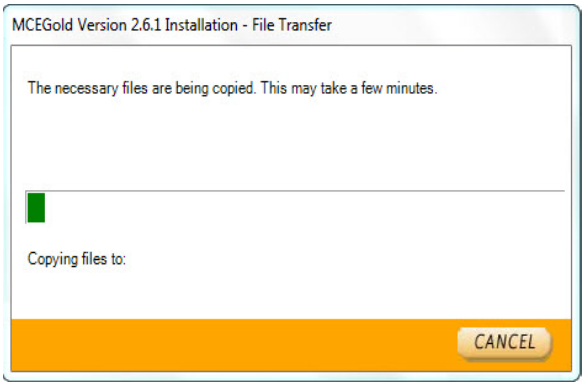
4. Click **Submit** (located to the right of the Company Name space). After the license has been verified the **Next** button appears. Click **Next**.

5. In the Installation Path window, accept the default shown in the textbox (recommended) for the location to install the MCEGold program folder or using the drop-down list select a alternate location, make a note of it for future use, and click **Next**.

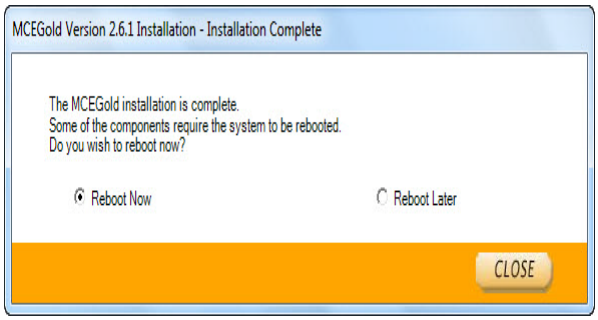
6. When prompted, click **Install Components**.

7. When the installation of components is complete the **Next** button appears. Click **Next**.

8. A progress bar shows the progress of copying files to your computer.



9. When the installation is complete you must reboot your system. Select the Reboot Now option and click **Close**.



After rebooting, locate and copy the backup MCECal.xml and Emaxprb.xml files and the Template folder back into their appropriate locations in
C:\PdMA Corporation\MCEGold\Mce
C:\PdMA Corporation\MCEGold\Emax
C:\PdMA Corporation\MCEGold\Report

10. Answer Yes to the "OK to overwrite existing folder" inquiry.

11. Remove the MCEGold 2.6.2 SP6 Disc and reboot the computer.

MCEGold 2.6.1 Update

Install MCEGold 2.6.2 SP6

1. Insert the MCEGold 2.6.2 SP6 disc into the drive. It will auto-start to the InstallShield program. However, if does not begin automatically, run Setup.exe from the disc. (Select Run setup.exe from the AutoPlay window).

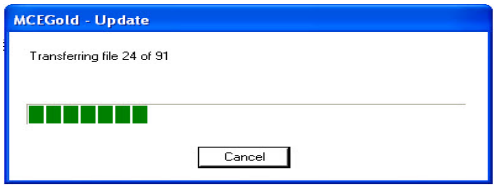
2. The Installation Update Window opens.



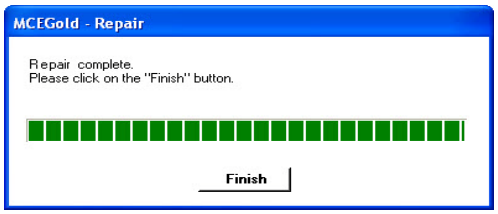
3. Select **Update.**

   Note: Selecting **Uninstall** removes the existing MCEGold software from your system. Uninstalling is not necessary for this update.

4. The MCEGold Update window opens and displays a progress bar.



5. Click **Finish** when the update or repair complete message is received.



6. It may be necessary to restart your computer to finalize the installation.

TECHNOTE 1601

ISSUED

April 2016

SUBJECT

Release of MCEGold® 3.0.

DESCRIPTION

MCEGold 3.0 is an upgrade from MCEGold 2.6.2.

MCEGOLD 3.0 INSTALLATION

Note:

- MCEGold 3.0 is only compatible with Windows 7.

- If you have a previous version of MCEGold a full uninstall is required prior to the 3.0 installation.

- MCEGold 3.0 is only compatible with M-Series testers.

- MCEGold 3.0 is currently available only for Stand Alone.

- To ensure application accessibility, the default installation location has been set to C:\PdMA Corporation.

- Databases attached to MCEGold 3.0 must be from MCEGold 2.5.1 or later and once updated with 3.0 *will not* be compatible with older versions of MCEGold.

- Assets exported with MCEGold 3.0 *will not* be compatible with older versions of MCEGold.

- If you have any questions, please contact PdMA Tech Support (813-621-6463 ext. 251).

Minimum Requirements:

Computer	Dell Latitude E6440 Laptop*
Processor	2+ GHz Intel i5 or equivalent
Resolution	1600 x 900/1920 x 1080 (small font)
Operating System	Microsoft® Windows 7 SP1 32-or 64 bit**
Memory	4.0+ G RAM***
Ports/Drives	(1) USB Port in Rear or Side
Hard Disk	20G Available

* Using any other computer manufacturer in conjunction with the PdMA software may result in erratic computer behavior; not limited to but including:

- Power Management Issues
- Lock-up
- Communication Port Malfunction
- Driver Incompatibility
- Display Errors
- SQL Database Incompatibility
- Network Synchronization Issues.

** For International Customers: Windows 7 Ultimate 32 or 64-bit.

***If you are upgrading from MCEGold 2.6.1 - 2.6.2 verify that your computer has at least 4G of RAM.

Stand Alone Users

NOTE; MCEGold 3.0 requires a full uninstall of existing MCEGold before installing version 3.0.

Uninstall MCEGold

Backup

Before beginning the MCEGold uninstall, copy the Emaxprb.xml files and complete Templates folder to a safe location and make note of the location.

The default location for the files is listed below, however you may have chosen a different location during the original installation.
C:\PdMA Corporation\MCEGold\Emax
C:\PdMA Corporation\MCEGold\Report

1. Select Start, Control Panel, click on the Programs and Features icon.

2. In the Uninstall or change a program window scroll down to locate and select the MCEGold version from the list.

3. Click **Uninstall** located above the list and follow on screen prompts.

4. Click **Finish** when the "Uninstall Complete" message is received.

5. Locate the PdMA MCEMAX® Tester (Driver Removal) file and click **Uninstall** located above the list and follow the on screen prompts.

6. Click **Finish** when the "Uninstall Complete" message is received.

7. Locate the C:\PdMACorporation folder and delete it. The subfolders will be deleted also. After the installation of MCEGold 3.0 the new folder location will be C:\PdMA Corporation\....

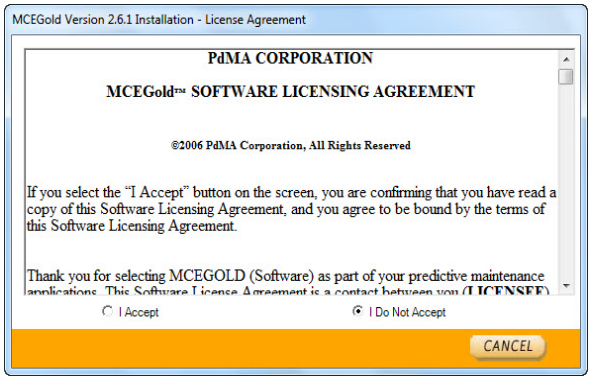
8. Reboot your computer.

9. Go to step one in the *Install - MCEGold 3.0* section.

Install MCEGold 3.0

1. Insert the MCEGold 3.0 USB flash drive into the USB port. If the installation does not begin automatically, run Setup.exe from the USB flash drive. (Select Run setup.exe from the AutoPlay window).

2. The License Agreement window opens. Read the PdMA license and select the "I Accept" option button. The **Next** button becomes visible. Click **Next**.
   Note: If you do not accept the terms, the **Next** button is not visible, you can only click **Cancel**, which closes the software.



3. In the License Key window enter your Company Name and License Key exactly as provided by PdMA. It is not case sensitive. You may copy and paste the license key using the paste button.

4. Click **Submit** (located to the right of the Company Name space). When the license has been verified a green check appears. The **Next** button appears. Click **Next**.

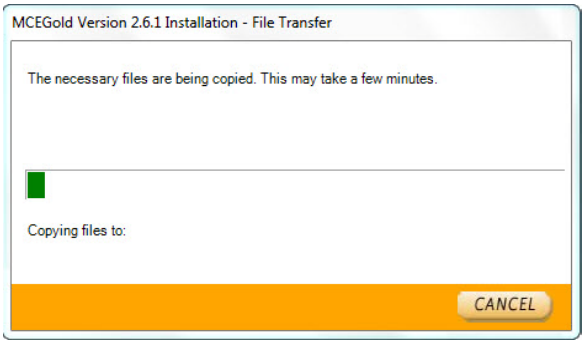
5. In the Installation Path window, accept the default shown in the text box (recommended) for the location to install the MCEGold program folder or using the drop-down list select a alternate location, make a note of it for future use, and click **Next**.

6. When prompted, click **Install Components**. Some components may require additional prompts.

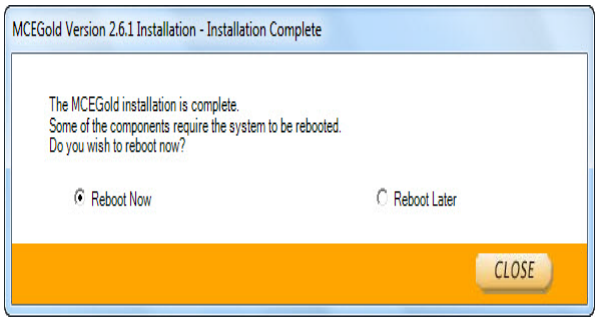
   Note: When installing MCEGold, a Word Add-in driver is installed. You may receive a message informing you that "Windows can't verify the publisher of this driver software." Select "Install this driver software anyway".

7. When the installation of components is complete the **Next** button appears. Click **Next**.

8. A progress bar shows the progress of copying files to your computer.



9. When the installation is complete you must reboot your system. Select the Reboot Now option and click **Close**.



After rebooting, locate and copy the backup Emaxprb.xml files and the Template folder back into their appropriate locations in

C:\PdMA Corporation\MCEGold\Emax
C:\PdMA Corporation\MCEGold\Report

10. Answer Yes to “Merge the folder?” inquiry.

11. Remove the MCEGold 3.0 USB flash drive from the computer.

TECHNOTE 1602

ISSUED

October 2016

SUBJECT

Release of MCEGold® 3.0.3 SP1 Network Version

DESCRIPTION

MCEGold 3.0.3 SP1 Network Version is an upgrade from MCEGold 2.6.2.

PdMA Cloud Services

The network edition of MCEGold 3.0.3 SP1 supports access to PdMA Cloud Services. Please contact PdMA Technical Support (813-6216-6463 ext. 251) to discuss this option.

MCEGOLD 3.0.3 SP1 NETWORK INSTALLATION

Note:

- MCEGold 3.0.3 SP1 Network Version is only compatible with Windows 7 and M-series testers.

- MCEGold Word Add-in is only compatible with MS Word 2007 and 2013. MCEGold Word Add-in is NOT compatible with MS Word 2010. Templates created with other versions of MS Word may not be functional and can cause conflicts with the MCEGold software.

- To ensure application accessibility, the default installation location has been set to C:\PdMA Corporation.

- Databases attached to MCEGold 3.0.3 SP1 Network Version must be from MCEGold 2.6.1 or later and once updated with 3.0.3 SP1*will not* be compatible with older versions of MCEGold.

- Assets exported with MCEGold 3.0.3 SP1 Network Version *will not* be compatible with older versions of MCEGold.

- If you have any questions, please contact PdMA Tech Support (813-621-6463 ext. 251).

Minimum Requirements:

Computer	Dell Latitude E6440 Laptop*
Processor	2+ GHz Intel i5 or equivalent
Resolution	1600 x 900/1920 x 1080 (small font)
Operating System	Microsoft® Windows 7 SP1 32 or 64 bit**
Memory	4.0+ G RAM***
Ports/Drives	(1) USB Port in Rear or Side
Hard Disk	20G Available

* Using any other computer manufacturer in conjunction with the PdMA software may result in erratic computer behavior; not limited to but including:

- Power Management Issues
- Lock-up
- Communication Port Malfunction
- Driver Incompatibility
- Display Errors
- SQL Database Incompatibility
- Network Synchronization Issues.

** For International Customers: Windows 7 Ultimate 32 or 64-bit.

***If you are upgrading from MCEGold 2.6.1 - 2.6.2 verify that your computer has at least 4G of RAM.

Server Database Update for Network Users

Note: Ensure the user account being used to update the server has “sysadmin” permissions.

There is a separate application on the Installation flash drive to update the network database on the server. ***The database must be updated on the server first, then the desktops and field testers.***

If the update is installed on a network field tester before the server database is updated, a warning message appears informing you the database is an old version and to contact your system administrator.

1. Back up the MCEGold database.

2. Insert the MCEGold 3.0.3 SP1 Network Version flash drive into the USB port. If the drive starts automatically, click **Exit** and proceed to the next step.

3. Locate the MCEGold Database Server Update folder on the MCEGold 3.0.3 Network Version SP1 flash drive.

4. Click on the MCEGold Database Server Update.exe file.

5. The Server Information window opens. Fill in the Server, Database, Login, and Password information.The Login and Password will depend on your authentication (Windows/SQL).

6. Click **Run Update**. The progress status will display on the window.

7. When the update complete message displays, close the window.

Uninstall MCEGold

NOTE: MCEGold 3.0.3 SP1 Network Version requires a full uninstall of existing MCEGold before installing version 3.0.3 SP1.

Backup

Before beginning the MCEGold uninstall, copy the Emaxprb.xml file (not the folder) and complete Templates folder to a safe location and make note of the location.

The default location for the files is listed below, however you may have chosen a different location during the original installation.
C:\PdMA Corporation\MCEGold\Emax
C:\PdMA Corporation\MCEGold\Report

1. Select Start, Control Panel, select Programs, then Programs and Features.

2. In the Uninstall or change a program window scroll down to locate and highlight the MCEGold Version XX.X on the list.

3. Click **Uninstall/Change** located above the list and follow on screen prompts.

4. Click **Finish** when the "Uninstall Complete" message is received.

5. Locate the PdMA MCEMAX Tester (Driver Removal) file. Highlight it and click **Uninstall/ Change** located above the list and follow the on screen prompts.

6. Click **Finish** when the "Uninstall Complete" message is received.

7. Locate the C:\PdMA Corporation folder and delete it. The subfolders will be deleted also. After the installation of MCEGold 3.0.3 SP1 the new folder location will be C:\PdMA Corporation\....

8. Reboot your computer.

9. Go to step one in the *Install - MCEGold 3.0.3* SP1 Network Version section.

Install MCEGold 3.0.3 SP1 Network Version

1. Insert the MCEGold 3.0.3 SP1 Network Version USB flash drive into the USB port. If the installation does not begin automatically, run setup.exe from the USB flash drive. (Select Run setup.exe from the AutoPlay window).

2. The License Agreement window opens. Read the PdMA license and select the "I Accept" option button. The **Next** button becomes visible. Click **Next**.
   Note: If you do not accept the terms, the **Next** button is not visible, you can only click **Cancel**, which closes the software without installing it.



3. In the License Key window enter your Company Name and License Key exactly as provided by PdMA. You may copy and paste the license key using the paste button.

4. Click **Submit** (located to the right of the Company Name). When the license has been verified a green check appears. The **Next** button appears. Click **Next**.

5. In the Installation Path window, accept the default shown in the text box (recommended) for the location to install the MCEGold program folder or using the drop-down list select a alternate location, make a note of it for your future use, and click **Next**. Note: It is not suggested using an alternate location as that can cause conflict and Windows rights problems.

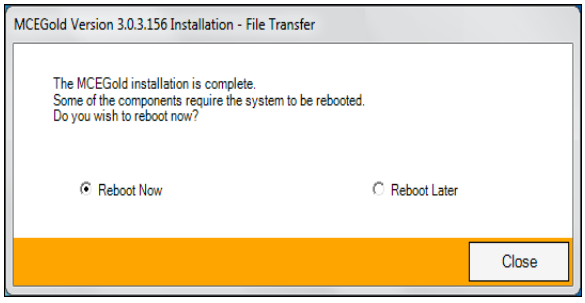
6. When prompted, click **Install Components**. Some components may require additional prompts.

   Note: When installing MCEGold, a Word Add-in driver is installed. You may receive a message informing you that "Windows can't verify the publisher of this driver software." Select "Install this driver software anyway".

7. When the installation of components is complete the **Next** button appears. Click **Next**.

8. A progress bar shows the progress of copying files to your computer.

9. When the installation is complete you must reboot your system. Select the Reboot Now option and click **Close**.



After rebooting, locate and copy the backup Emaxprb.xml files and the Template folder back into their appropriate locations in
C:\PdMA Corporation\MCEGold\Emax
C:\PdMA Corporation\MCEGold\Report

10. Answer Yes to "Merge the folder?" inquiry.

11. Remove the MCEGold 3.0.3 SP1 Network Version USB flash drive from the computer.

Field Tester Database Setup

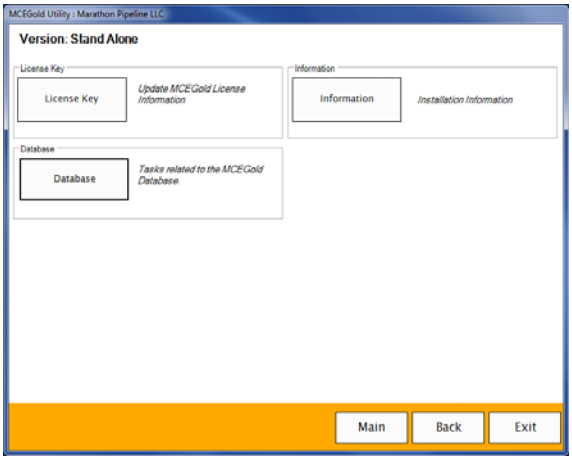
Note: For the following, please use the information provided by your IT department.

Field testers utilize a local database for storage of assets. These assets can then be synchronized with the Network database. In order to perform field testing in local tester mode, assets must be down-syncd to the local database. In order to perform testing using MCEGold Lite, assets must be in a WatchList and down-syncd to the local database.

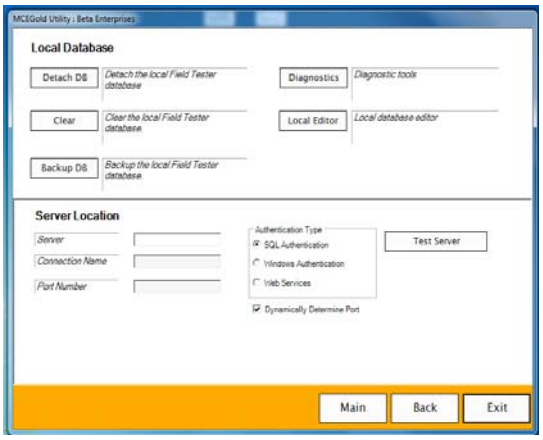
To connect to the existing network database, please follow the instructions below.

1. Open the MCEGold Utility program.

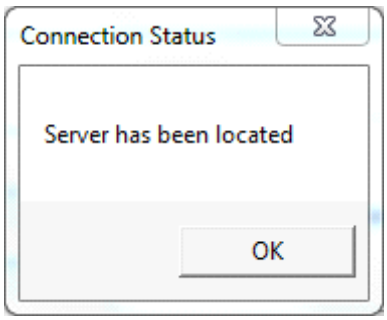
2. Click the **Database** button.



3. Enter the server information provided by your IT department.

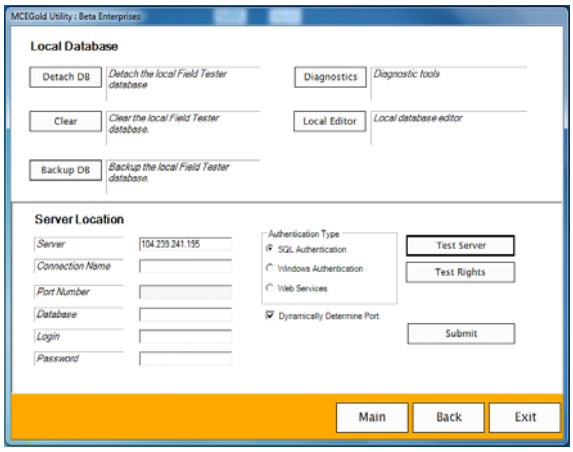


4. Once the server information has been entered, click **Test Server**. You should receive a message indicating "Server has been located".

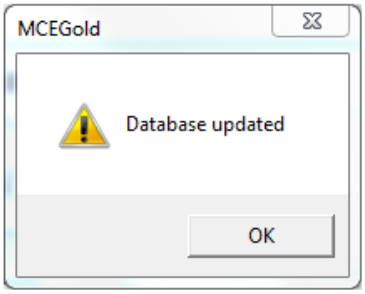


5. Click **OK** on the Connection Status window.

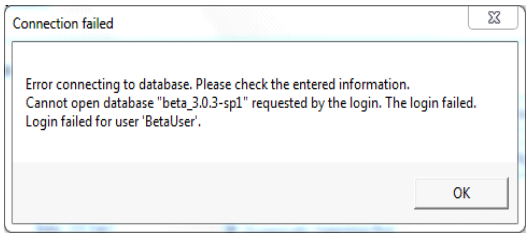
6. Enter the following connection information provided by your either your Administrator or your IT Department: Connection Name, Database Information, Login Information, and Password.



7. Click **Submit**. You should receive a message indicating "Database updated". Click **OK**.



8. If you receive an error as shown below, verify the information you entered is correct. If it is correct, click **OK** and contact your Administrator.



9. If you do not receive an error message, click **Exit** on the Utility window.

10. Start MCEGold and enter the name and password for the tester. Select the Field Tester Network mode.

11. Once you have opened MCEGold and you have verified MCEGold is correctly communicating with the database. You are now ready to perform testing.

TECHNOTE 1603

ISSUED

October 2016

SUBJECT

Release of MCEGold® 3.0.3 SP1 - Stand Alone.

DESCRIPTION

MCEGold 3.0.3 SP1 is an upgrade from MCEGold 3.0.3.

MCEGOLD 3.0.3 SP1 INSTALLATION

Note:

- MCEGold 3.0.3 SP1 is only compatible with Windows 7 and M-Series testers.

- MCEGold Word Add-in is only compatible with MS Word 2007 and 2013. MCEGold Word Add-in is NOT compatible with MS Word 2010. Templates created with other versions of MS Word may not be functional and may cause conflicts with the MCEGold software.

- To ensure application accessibility, the default installation location has been set to C:\PdMA Corporation.

- Databases attached to MCEGold 3.0.3 SP1 must be from MCEGold 2.6.1 or later and once updated with 3.0.3 SP1*will not* be compatible with older versions of MCEGold.

- Assets opened with MCEGold 3.0.3 SP1 *will not* be compatible with older versions of MCEGold.

- If you have any questions, please contact PdMA Technical Support (813-621-6463 ext. 251).

Minimum Requirements:

Computer	Dell Latitude E6430 Laptop*
Processor	2+ GHz Intel i5 or equivalent
Resolution	1600 x 900/1920 x 180 (small font)
Operating System	Microsoft® Windows 7 SP1 32 or 64 bit**
Memory	4.0+ G RAM***
Ports/Drives	(1) USB Port in Rear or Side
Hard Disk	20G Available

* Using any other computer manufacturer in conjunction with the PdMA software may result in erratic computer behavior; not limited to but including:

- Power Management Issues
- Lock-up
- Communication Port Malfunction
- Driver Incompatibility
- Display Errors
- SQL Database Incompatibility
- Network Synchronization Issues.

** For International Customers: Windows 7 Ultimate 32 or 64-bit.

***If you are upgrading from MCEGold 2.6.1 - 2.6.2 verify that your computer has at least 4G of RAM.

Uninstall MCEGold

NOTE: MCEGold 3.0.3 SP1 requires a full uninstall of any version prior to MCEGold 3.0.3 before installing version 3.0.3 SP1.

Backup

Before beginning the MCEGold uninstall, copy the Emaxprb.xml file only (not the folder) and the complete Templates folder to a safe location and make note of the location.

The default location for the files is listed below, however you may have chosen a different location during the original installation.
C:\PdMA Corporation\MCEGold\Emax
C:\PdMA Corporation\MCEGold\Report

1. Select Start, Control Panel, select Programs, then Programs and Features.

2. In the Uninstall or change a program window scroll down to locate and highlight the MCEGold Version XX.X on the list.

3. Click **Uninstall/Change** located above the list and follow on screen prompts.

4. Click **Finish** when the "Uninstall Complete" message is received.

5. Locate the PdMA MCEMAX Tester (Driver Removal) file. Highlight it and click **Uninstall/ Change** located above the list and follow the on screen prompts.

6. Click **Finish** when the "Uninstall Complete" message is received.

7. Locate the C:\PdMACorporation folder and delete it. The subfolders will be deleted also. After the installation of MCEGold 3.0.3 SP1 the new folder location will be C:\PdMA Corporation\....

8. Reboot your computer.

9. Go to step one in the *Install - MCEGold 3.0.3* SP1 Network Version section.

Install MCEGold 3.0.3 SP1

1. Insert the MCEGold 3.0.3 SP1 USB flash drive into the USB port. If the installation does not begin automatically, run setup.exe from the USB flash drive. (Select Run, setup.exe from the AutoPlay window).

2. The License Agreement window opens. Read the PdMA license and select the "I Accept" option button. The **Next** button becomes visible. Click **Next**.
   Note: If you do not accept the terms, the **Next** button is not visible, you can only click **Cancel**, which closes the software without installing it.



3. In the License Key window enter your Company Name and License Key exactly as provided by PdMA. You may copy and paste the license key using the paste button.

4. Click **Submit** (located to the right of the Company Name). When the license has been verified a green check appears. The **Next** button appears. Click **Next**.

5. In the Installation Path window, accept the default shown in the text box (recommended) for the location to install the MCEGold program folder or using the drop-down list select a alternate location, make a note of it for your future use, and click **Next**. Note: It is not suggested to use an alternate location because that can cause conflict and Windows rights problems.

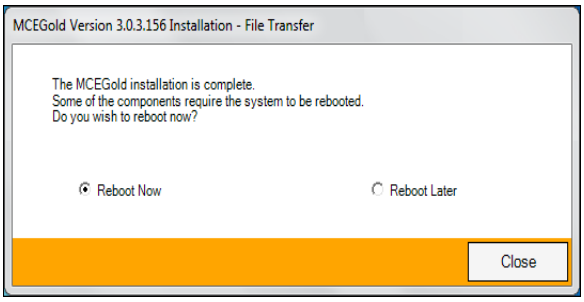
6. When prompted, click **Install Components**. Some components may require additional prompts.

   Note: When installing MCEGold, a Word Add-in driver is installed. You may receive a message informing you that "Windows can't verify the publisher of this driver software." Select "Install this driver software anyway".

7. When the installation of components is complete the **Next** button appears. Click **Next**.

8. A progress bar shows the progress of copying files to your computer.

9. When the installation is complete you must reboot your system. Select the Reboot Now option and click **Close**.



10. After rebooting, locate and copy the backup Emaxprb.xml file and the Template folder back into their appropriate locations in

    C:\PdMA Corporation\MCEGold\Emax
    C:\PdMA Corporation\MCEGold\Report

11. Answer Yes to “Merge the folder?” inquiry.

12. Remove the MCEGold 3.0.3 SP1 USB flash drive from the computer.

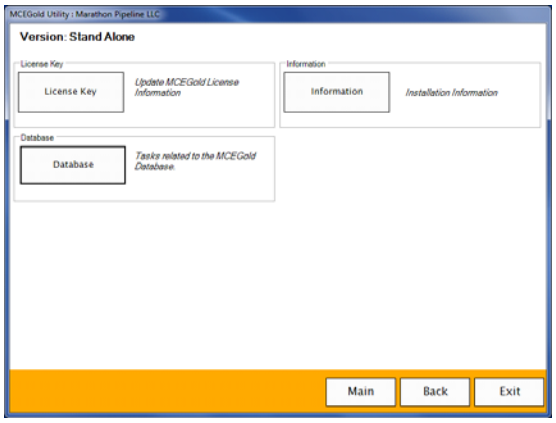
Database Setup

Note: This procedure is for connecting to an existing database that is to be upgraded to MCEGold 3.0.3 SP1.

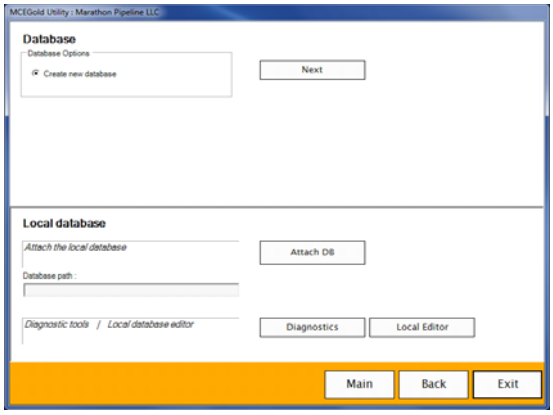
To connect to an existing database, please following the instructions below.

1. Ensure you have properly backed up the database you are converting.

2. Open the Utility program and click the **Database** button.

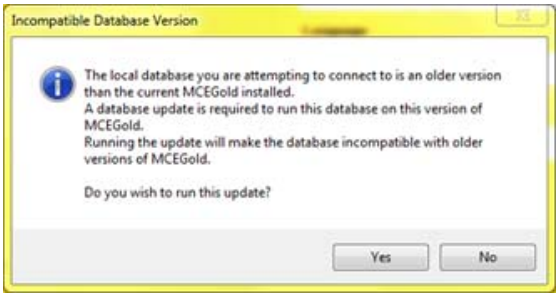


3. Click **Attach DB** as shown in the below.

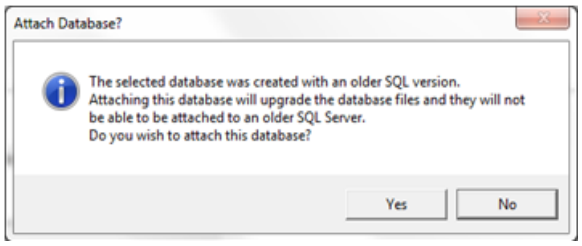


4. Navigate to the database location on your computer and select the desired database.

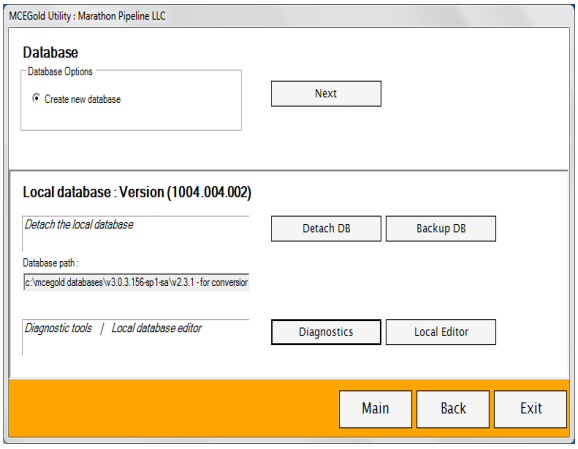
5. If you are attaching a database that is older than V3.0.3-SP1, you will receive a incompatible database version message. If you have properly backed up your existing database, click **Yes** to run the update. If you have not backed up your existing database, click **No**, backup the database, and then perform the Database Setup procedure.



6. If you receive the following message: “The database you selected was created with an older SQL version”, the database needs to be upgraded to SQL 2008 using the MCEGold Utility program. It may require multiple conversions to upgrade to MCEGold 3.0.3 SP1. Click **Yes** to proceed.

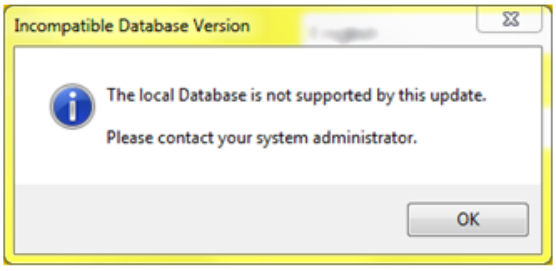


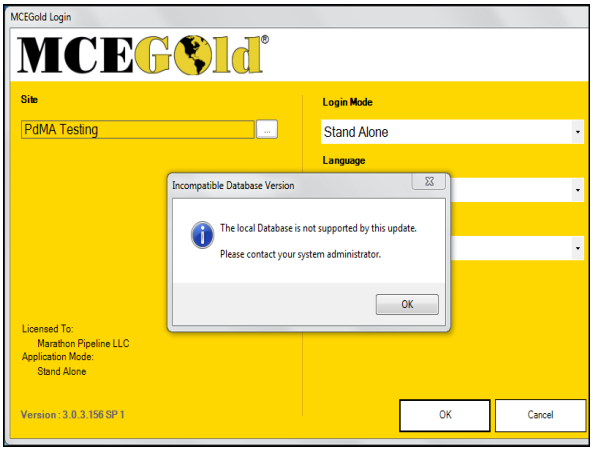
7. The MCEGold Utility Database Window opens. Click **Exit**.



8. Start MCEGold.

9. If you receive the following message when trying to start MCEGold, the attached database is too old for conversion and needs to be updated to MCEGold 2.6.1 or later prior to updating to MCEGold 3.0.3 SP1.





10. Click **OK** on the message window. The message window closes, leaving the MCEGold Login window open.

11. If there is another database available, click on **Search** (the three dots on the right of Site) to bring up the navigator to search for the other database. If none are available, click **Cancel** to exit out of MCEGold, and contact PdMA Technical Support at 813-621-6463 ext. 251.

TECHNOTE 1603A

ISSUED

March 2017

SUBJECT

Release of MCEGold® 3.0.3 SP1 - Stand Alone. TechNote 1603A replaces TechNote 1603.

DESCRIPTION

MCEGold 3.0.3 SP1 is an upgrade from MCEGold 3.0.3.

MCEGOLD 3.0.3 SP1 INSTALLATION

Note:

- MCEGold 3.0.3 SP1 is only compatible with Windows 7 and M-Series testers.

- MCEGold Word Add-in is only compatible with MS Word 2007 and 2013. MCEGold Word Add-in is NOT compatible with MS Word 2010. Templates created with other versions of MS Word may not be functional and may cause conflicts with the MCEGold software.

- To ensure application accessibility, the default installation location has been set to C:\PdMA Corporation.

- Databases attached to MCEGold 3.0.3 SP1 must be from MCEGold 2.6.1 or later and once updated with 3.0.3 SP1*will not* be compatible with older versions of MCEGold.

- Assets opened with MCEGold 3.0.3 SP1 *will not* be compatible with older versions of MCEGold.

- If you have any questions, please contact PdMA Technical Support (813-621-6463 ext. 251).

Minimum Requirements:

Computer	Dell Latitude E6440 Laptop*
Processor	2+ GHz Intel i5 or equivalent
Resolution	1600 x 900/1920 x 1080 (small font)
Operating System	Microsoft® Windows 7 SP1 32 or 64 bit**
Memory	4.0+ G RAM***
Ports/Drives	(1) USB Port in Rear or Side
Hard Disk	20G Available

* Using any other computer manufacturer in conjunction with the PdMA software may result in erratic computer behavior; not limited to but including:

- Power Management Issues
- Lock-up
- Communication Port Malfunction
- Driver Incompatibility
- Display Errors
- SQL Database Incompatibility
- Network Synchronization Issues.

** For International Customers: Windows 7 Ultimate 32 or 64-bit.

***If you are upgrading from MCEGold 2.6.1 - 2.6.2 verify that your computer has at least 4G of RAM.

Uninstall MCEGold

NOTE: MCEGold 3.0.3 SP1 requires a full uninstall of any version prior to MCEGold 3.0.3 before installing version 3.0.3 SP1.

Backup

Before beginning the MCEGold uninstall, copy the Emaxprb.xml file only (not the folder) and the complete Templates folder to a safe location and make note of the location.

The default location for the files is listed below, however you may have chosen a different location during the original installation.
C:\PdMA Corporation\MCEGold\Emax
C:\PdMA Corporation\MCEGold\Report

1. Select Start, Control Panel, select Programs, then Programs and Features.

2. In the Uninstall or change a program window scroll down to locate and highlight the MCEGold Version X.X.X on the list.

3. Click **Uninstall/Change** located above the list and follow on screen prompts.

4. Click **Finish** when the "Uninstall Complete" message is received.

5. Locate the PdMA MCEMAX Tester (Driver Removal) file. Highlight it and click **Uninstall/ Change** located above the list and follow the on screen prompts.

6. Click **Finish** when the "Uninstall Complete" message is received.

7. Locate the C:\PdMACorporation folder and delete it. The subfolders will be deleted also. After the installation of MCEGold 3.0.3 SP1 the new folder location will be C:\PdMA Corporation\....

8. Reboot your computer.

9. Go to step one in the *Install - MCEGold 3.0.3* SP1 section.

Install MCEGold 3.0.3 SP1

1. Insert the MCEGold 3.0.3 SP1 USB flash drive into the USB port. If the installation does not begin automatically, run setup.exe from the USB flash drive. (Select Run, setup.exe from the AutoPlay window).

2. The License Agreement window opens. Read the PdMA license and select the "I Accept" option button. The **Next** button becomes visible. Click **Next**.
   Note: If you do not accept the terms, the **Next** button is not visible, you can only click **Cancel**, which closes the software without installing it.



3. In the License Key window enter your Company Name and License Key exactly as provided by PdMA. You may copy and paste the license key using the paste button.

4. Click **Submit** (located to the right of the Company Name). When the license has been verified a green check appears. The **Next** button appears. Click **Next**.

5. In the Installation Path window, accept the default shown in the text box (recommended) for the location to install the MCEGold program folder or using the drop-down list select a alternate location, make a note of it for your future use, and click **Next**. Note: It is not suggested to use an alternate location because that can cause conflict and Windows rights problems.

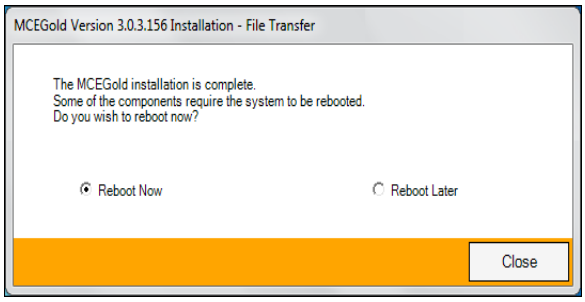
6. When prompted, click **Install Components**. Some components may require additional prompts.

   Note: When installing MCEGold, a Word Add-in driver is installed. You may receive a message informing you that "Windows can't verify the publisher of this driver software." Select "Install this driver software anyway".

7. When the installation of components is complete the **Next** button appears. Click **Next**.

8. A progress bar shows the progress of copying files to your computer.

9. When the installation is complete you must reboot your system. Select the Reboot Now option and click **Close**.



10. After rebooting, locate and copy the backup Emaxprb.xml file and the Template folder back into their appropriate locations in

    C:\PdMA Corporation\MCEGold\Emax
    C:\PdMA Corporation\MCEGold\Report

11. Answer Yes to “Merge the folder?” inquiry.

12. Remove the MCEGold 3.0.3 SP1 USB flash drive from the computer.

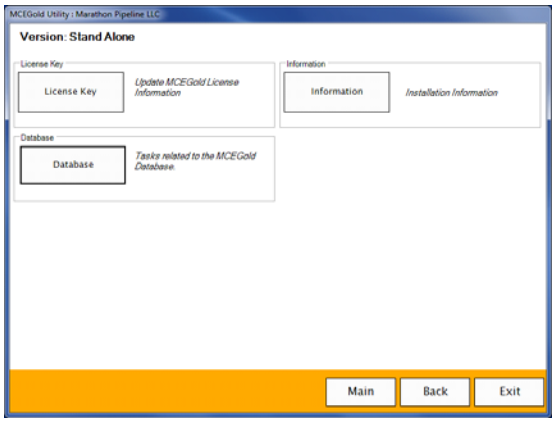
Database Setup

Note: This procedure is for connecting to an existing database that is to be upgraded to MCEGold 3.0.3 SP1.

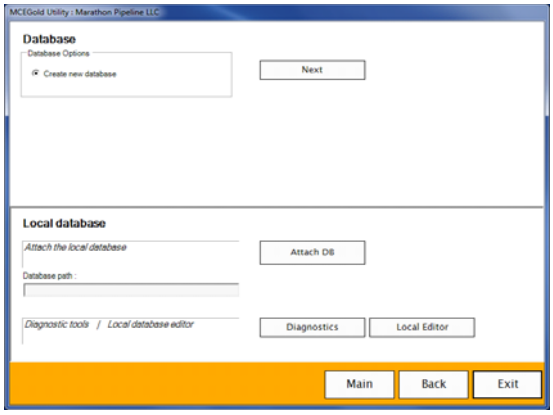
To connect to an existing database, please following the instructions below.

1. Ensure you have properly backed up the database you are converting.

2. Open the Utility program and click the **Database** button.

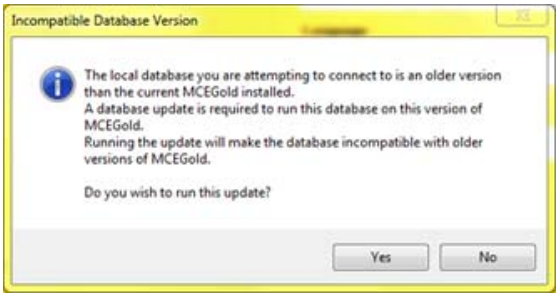


3. Click **Attach DB** as shown in the below.

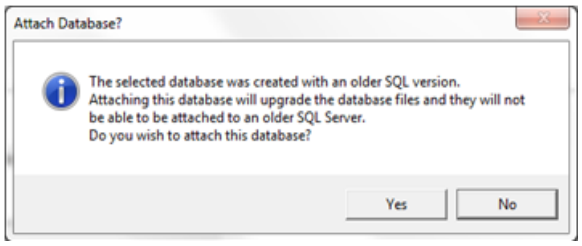


4. Navigate to the database location on your computer and select the desired database.

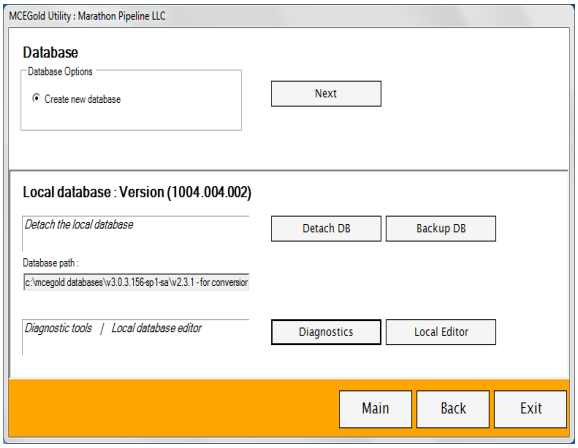
5. If you are attaching a database that is older than V3.0.3-SP1, you will receive a incompatible database version message. If you have properly backed up your existing database, click **Yes** to run the update. If you have not backed up your existing database, click **No**, backup the database, and then perform the Database Setup procedure.



6. If you receive the following message: “The database you selected was created with an older SQL version”, the database needs to be upgraded to SQL 2008 using the MCEGold Utility program. It may require multiple conversions to upgrade to MCEGold 3.0.3 SP1. Click **Yes** to proceed.

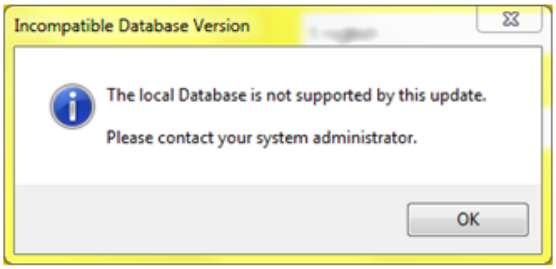


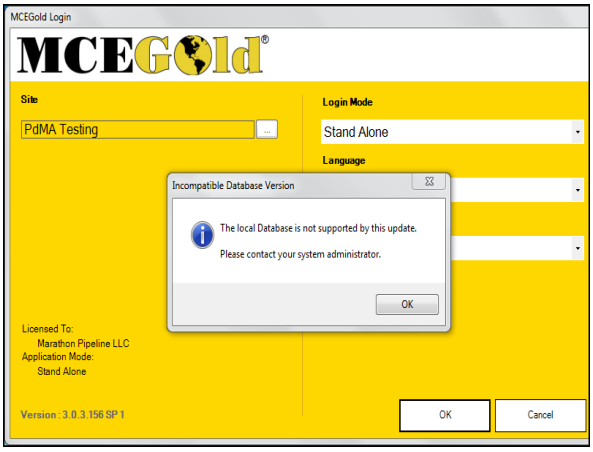
7. The MCEGold Utility Database Window opens. Click **Exit**.



8. Start MCEGold.

9. If you receive the following message when trying to start MCEGold, the attached database is too old for conversion and needs to be updated to MCEGold 2.6.1 or later prior to updating to MCEGold 3.0.3 SP1.





10. Click **OK** on the message window. The message window closes, leaving the MCEGold Login window open.

11. If there is another database available, click on **Search** (the three dots on the right of Site) to bring up the navigator to search for the other database. If none are available, click **Cancel** to exit out of MCEGold, and contact PdMA Technical Support at 813-621-6463 ext. 251.

TECHNOTE 1604

ISSUED

October 2016

SUBJECT

Release of MCEGold® 2.6.2 SP7.

DESCRIPTION

The MCEGold 2.6.2 SP7 release contains minor enhancements and fixes several bugs.

MCEGold 2.6.2 SP7 is available on M and H series testers only.

MCEGOLD 2.6.2 SP7 INSTALLATION

Note:

- If you have a Microsoft Windows XP operating system, contact PdMA Tech Support (813-621-6463 ext. 251) prior to the 2.6.2 SP7 installation.

- If you have MCEGold prior to 2.4, contact PdMA Tech Support (813-621-6463 ext. 251) prior to the 2.6.2 SP7 installation.

- If using MCEGold 2.5.1 SP2 or earlier a full uninstall of MCEGold is required. If using MCEGold 2.6.1 or MCEGold 2.6.2 the uninstall is not required; go to MCEGold 2.6.1 Update on page 4.

- MCEGold 2.6.2 SP7 is not compatible with testers requiring a Data Acquisition Card (DAQ).

- For Stand Alone and Field Testers, installing MCEGold 2.6.2 SP7 will require an upgrade of the Microsoft SQL Server 2005 to SQL Server 2008, if not already completed. This does not apply to Servers on a Network.

- To ensure application accessibility, the new default installation location has been set to C:\PdMA Corporation.

- Databases attached to MCEGold 2.6.2 SP7 must be from MCEGold 2.4 or later and once updated with 2.6.2 SP7 *will not* be compatible with older versions of MCEGold.

- Assets opened with MCEGold 2.6.2 SP7 *will not* be compatible with older versions of MCEGold.

Minimum Requirements:

Computer	Dell Latitude E6430 Laptop*
Processor	2+ GHz Intel i5 or equivalent
Resolution	1600 x 900
Operating System	Microsoft® Windows 7 SP1 32-or 64 bit**
Memory	2.0+ G RAM
Ports/Drives	(2) USB Ports in Rear or Side (M-Series tester has (1) USB Port)
Drives	24x CD-RW + DVD Drive
Hard Disk	20G Available

* Using any other computer manufacturer in conjunction with the PdMA software may result in erratic computer behavior; not limited to but including:

- Power Management Issues
- Lock-up
- Communication Port Malfunction
- Driver Incompatibility
- Display Errors
- SQL Database Incompatibility
- Network Synchronization Issues.

** For International Customers: Windows 7 Ultimate 32 or 64-bit.

Server Database Update for Network Users

Note: Ensure the user account used to update the server has “sysadmin” permissions.

There is a separate application on the Installation Disc to update the network database on the server. ***The database must be updated on the server first, then the desktops and field testers.***

If the update is installed on a network field tester before the server database is updated, a warning message

appears informing you the database is an old version and to contact your system administrator.

1. Back up the MCEGold database.

2. Insert the flash drive into the USB port. If the drive starts automatically, click **Exit** and proceed to the next step.

3. Locate the MCEGold Database Server Update folder on the MCEGold 2.6.2 SP7 flash drive.

4. Click on the MCEGold Database Server Update.exe file.

5. The Server Information window opens. Fill in the Server, Database, Login, and Password information.

6. Click **Run Update**. The progress status will display on the window.

7. When the update complete message displays, close the window.

Stand Alone Users/Field Tester

Note: MCEGold 2.6.2 SP7 requires an upgrade of the Microsoft SQL Server 2005 to SQL Server 2008. Therefore, any stand alone database opened will be updated to SQL Server 2008 and will no longer open on another machine running an older version of MCEGold using SQL Server 2005.

MCEGold Prior to 2.4 or Windows XP

If you are updating from an MCEGold version older than 2.4 or Microsoft Windows XP operating system you must first call PdMA Tech Support (813-621-6463 ext. 251).

MCEGold 2.4 or 2.5.1

From your Control Panel/Program and Features, verify which version of Microsoft SQL Server is installed on your computer.

If Microsoft SQL Server 2005 exists on your computer proceed to the *Uninstall SQL Server 2005* section followed by the *Uninstall MCEGold* section below. There are several components that begin with Microsoft SQL Server 2005, they should all be removed EXCEPT Microsoft SQL Server 2005 Compact Edition (ENU).

If Microsoft SQL Server 2008 and possibly Microsoft SQL Server 2005 Compact Edition (ENU) exists on your computer do not uninstall them. Go to the section *Uninstall MCEGold.*

Uninstall SQL Server 2005

1. Select Start, Control Panel, and click the Programs and Features icon.

2. In the Uninstall or change a program window scroll down to locate and select Microsoft SQL Server 2005 from the list.

3. Click **Uninstall** - located above the list and follow the on screen instructions.

4. Click **Finish** when the "Uninstall Complete" message is received. Do not close the window.

5. Repeat from step 2 uninstalling all components that begin with Microsoft SQL Server 2005. DO NOT uninstall Microsoft SQL Server 2005 Compact Edition (ENU).

6. Close the Uninstall or change a program window when all components have been uninstalled.

7. Reboot the computer.

Uninstall MCEGold

Backup

Before beginning the MCEGold uninstall, copy the MCECal.xml and Emaxprb.xml files and complete Templates folder to a safe location and make note of the location.

The default location for the files is listed below, however you may have chosen a different location during the original installation.
C:\Program Files\PdMA Corporation\MCEGold\Mce
C:\Program Files\PdMA Corporation\MCEGold\Emax
C:\Program Files\PdMA Corporation\MCEGold\Report

1. Select Start, Control Panel, click on the Programs and Features icon.

2. In the Uninstall or change a program window scroll down to locate and select the MCEGold version from the list.

3. Click **Uninstall** located above the list and follow on screen prompts.

4. Click **Finish** when the "Uninstall Complete" message is received.

5. Locate the PdMA MCEMAX® Tester (Driver Removal) file and click **Uninstall** located above the list and follow the on screen prompts.

6. Click **Finish** when the "Uninstall Complete" message is received.

7. Locate the C:\ProgramFiles\PdMACorporation\ folder and delete it. The subfolders will be deleted also. After the installation of MCEGold 2.6.2 SP7 the new folder location will be C:\PdMA Corporation\....

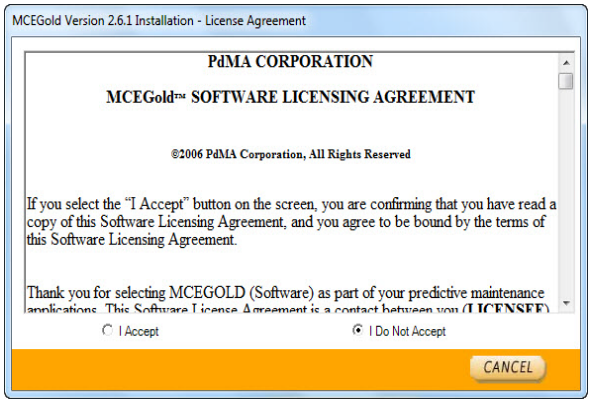
8. Go to step one in the *Install - MCEGold 2.6.2 SP7* section.

Install MCEGold 2.6.2 SP7

Note: If you have MCEGold 2.6.1 go to MCEGold 2.6.1 Update on the next page.

1. Insert the MCEGold 2.6.2 SP7 flash drive into the USB port. If the installation does not begin automatically, run Setup.exe from the disc. (Select Run setup.exe from the AutoPlay window).

2. The License Agreement window opens. Read the PdMA license and select the "I Accept" option button. The **Next** button becomes visible. Click **Next**.
   Note: If you do not accept the terms, the **Next** button is not visible, you can only click **Cancel**, which closes the software.



3. In the License Key window enter your Company Name and License Key exactly as provided by PdMA. It is not case sensitive. The License Key is **NOT** the same as the Module Activation Key, which activates various modules.

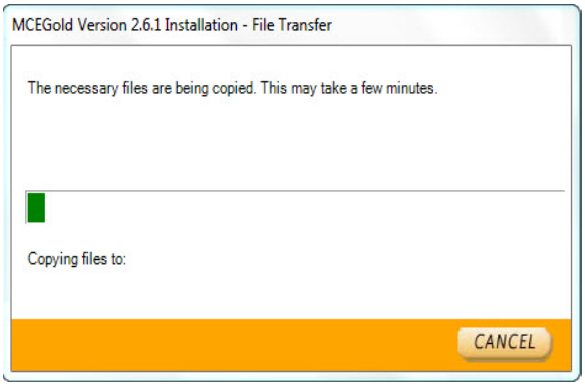
4. Click **Submit** (located to the right of the Company Name space). After the license has been verified the **Next** button appears. Click **Next**.

5. In the Installation Path window, accept the default shown in the textbox (recommended) for the location to install the MCEGold program folder or using the drop-down list select a alternate location, make a note of it for future use, and click **Next**.

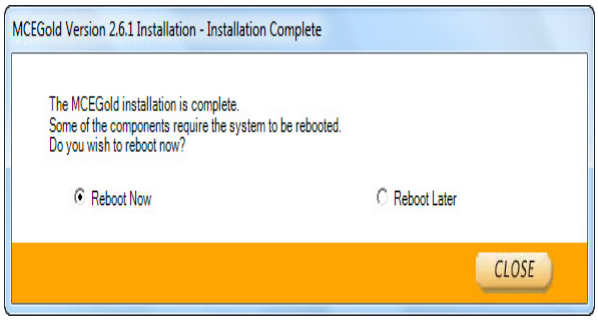
6. When prompted, click **Install Components**.

7. When the installation of components is complete the **Next** button appears. Click **Next**.

8. A progress bar shows the progress of copying files to your computer.



9. When the installation is complete you must reboot your system. Select the Reboot Now option and click **Close**.



After rebooting, locate and copy the backup MCECal.xml and Emaxprb.xml files and the Template folder back into their appropriate locations in

C:\PdMA Corporation\MCEGold\Mce
C:\PdMA Corporation\MCEGold\Emax
C:\PdMA Corporation\MCEGold\Report

10. Answer Yes to the "OK to overwrite existing folder" inquiry.

11. Remove the MCEGold 2.6.2 SP7 flash drive and reboot the computer.

MCEGold 2.6.1 Update

Install MCEGold 2.6.2 SP7

1. Insert the MCEGold 2.6.2 SP7 f;ash drive into the USB port. It will auto-start to the InstallShield program. However, if does not begin automatically, run Setup.exe from the disc. (Select Run setup.exe from the AutoPlay window).

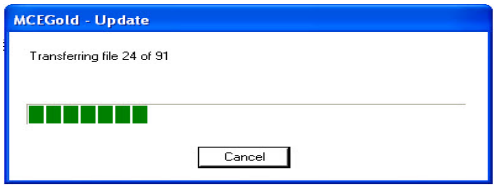
2. The Installation Update Window opens.



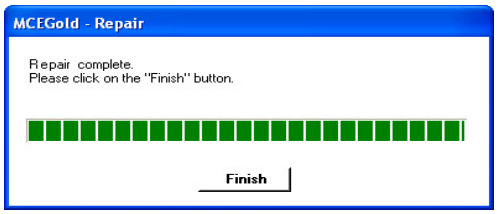
3. Select **Update.**

   Note: Selecting **Uninstall** removes the existing MCEGold software from your system. Uninstalling is not necessary for this update.

4. The MCEGold Update window opens and displays a progress bar.



5. Click **Finish** when the update or repair complete message is received.



6. It may be necessary to restart your computer to finalize the installation.

TECHNOTE 1605

ISSUED

November 2016

SUBJECT

Release of MCEGold® 2.6.2 SP7.

DESCRIPTION

The MCEGold 2.6.2 SP7 release contains minor enhancements and fixes several bugs.

MCEGold 2.6.2 SP7 is available on M and H series testers only.

MCEGOLD 2.6.2 SP7 INSTALLATION

Note:

- MCEGold 2.6.2 SP7 is only compatible with M and H-series testers and Windows 7.

- If using MCEGold 2.5.1 SP2 or earlier a full uninstall of MCEGold is required. If using MCEGold 2.6.1 or MCEGold 2.6.2 the uninstall is not required; go to MCEGold Update on page 4.

- MCEGold 2.6.2 SP7 is not compatible with testers requiring a Data Acquisition Card (DAQ).

- For Stand Alone and Field Testers, installing MCEGold 2.6.2 SP7 will require an upgrade of the Microsoft SQL Server 2005 to SQL Server 2008, if not already completed. This does not apply to Servers on a Network.

- To ensure application accessibility, the new default installation location has been set to C:\PdMA Corporation.

- Databases attached to MCEGold 2.6.2 SP7 must be from MCEGold 2.4 or later and once updated with 2.6.2 SP7 *will not* be compatible with older versions of MCEGold.

- Assets opened with MCEGold 2.6.2 SP7 *will not* be compatible with older versions of MCEGold.

Minimum Requirements:

Computer	Dell Latitude E6440 Laptop*
Processor	2+ GHz Intel i5 or equivalent
Resolution	1600 x 900/1920 x 1080 (small font)
Operating System	Microsoft® Windows 7 SP1 32 or 64 bit**
Memory	4.0+ GB RAM***
Ports/Drives	(2) USB Ports in Rear or Side
Hard Disk	20GB Available

* Using any other computer manufacturer in conjunction with the PdMA software may result in erratic computer behavior; not limited to but including:

- Power Management Issues
- Lock-up
- Communication Port Malfunction
- Driver Incompatibility
- Display Errors
- SQL Database Incompatibility
- Network Synchronization Issues.

** For International Customers: Windows 7 Ultimate 32 or 64-bit.

***If you are upgrading from MCEGold 2.6.1 - 2.6.2 verify that your computer has at least 4G of RAM.

Server Database Update for Network Users

Note:

- If updating from 2.6.2 SPX then a server update *is not* required.

- Ensure the user account used to update the server has “sysadmin” permissions.

There is a separate application on the Installation flash drive to update the network database on the server. ***The database must be updated on the server first, then the desktops and field testers.***

If the update is installed on a network field tester before the server database is updated, a warning message

appears informing you the database is an old version and to contact your system administrator.

1. Back up the MCEGold database.

2. Insert the flash drive into the USB drive. If the disc starts automatically, click **Exit** and proceed to the next step.

3. Locate the MCEGold Database Server Update folder on the MCEGold 2.6.2 SP7 flash drive.

4. Click on the MCEGold Database Server Update.exe file.

5. The Server Information window opens. Fill in the Server, Database, Login, and Password information. The Login and Password will depend on your authentication (Windows/SQL).

6. Click **Run Update**. The progress status will display on the window.

7. When the update complete message displays, close the window.

Stand Alone Users/Field Tester

Note: MCEGold 2.6.2 SP7 requires an upgrade of the Microsoft SQL Server 2005 to SQL Server 2008. Therefore, any stand alone database opened will be updated to SQL Server 2008 and will no longer open on another machine running an older version of MCEGold using SQL Server 2005.

MCEGold Prior to 2.4 or Windows XP

If you are updating from an MCEGold version older than 2.4 or Microsoft Windows XP operating system you must first call PdMA Tech Support (813-621-6463 ext. 251).

MCEGold 2.4 or 2.5.1

From your Control Panel/Program and Features, verify which version of Microsoft SQL Server is installed on your computer.

If Microsoft SQL Server 2005 exists on your computer proceed to the *Uninstall SQL Server 2005* section followed by the *Uninstall MCEGold* section below. There are several components that begin with Microsoft SQL Server 2005, they should all be removed EXCEPT Microsoft SQL Server 2005 Compact Edition (ENU).

If Microsoft SQL Server 2008 and possibly Microsoft SQL Server 2005 Compact Edition (ENU) exists on your computer do not uninstall them. Go to the section *Uninstall MCEGold.*

Uninstall SQL Server 2005

1. Select Start, Control Panel, and click the Programs and Features icon.

2. In the Uninstall or change a program window scroll down to locate and select Microsoft SQL Server 2005 from the list.

3. Click **Uninstall** - located above the list and follow the on screen instructions.

4. Click **Finish** when the "Uninstall Complete" message is received. Do not close the window.

5. Repeat from step 2 uninstalling all components that begin with Microsoft SQL Server 2005. DO NOT uninstall Microsoft SQL Server 2005 Compact Edition (ENU).

6. Close the Uninstall or change a program window when all components have been uninstalled.

7. Reboot the computer.

Uninstall MCEGold

Backup

Before beginning the MCEGold uninstall, copy the MCECal.xml and Emaxprb.xml files (not the folders) and the complete Templates folder to a safe location and make note of the location.

The default location for the files is listed below, however you may have chosen a different location during the original installation.
C:\Program Files\PdMA Corporation\MCEGold\Mce
C:\Program Files\PdMA Corporation\MCEGold\Emax
C:\Program Files\PdMA Corporation\MCEGold\Report

1. Select Start, Control Panel, click on the Programs and Features icon.

2. In the Uninstall or change a program window scroll down to locate and select the MCEGold version from the list.

3. Click **Uninstall** located above the list and follow on screen prompts.

4. Click **Finish** when the "Uninstall Complete" message is received.

5. Locate the PdMA MCEMAX® Tester (Driver Removal) file and click **Uninstall** located above the list and follow the on screen prompts.

6. Click **Finish** when the "Uninstall Complete" message is received.

7. Locate the C:\ProgramFiles\PdMACorporation\ folder and delete it. The subfolders will be deleted also. After the installation of MCEGold 2.6.2 SP7 the new folder location will be C:\PdMA Corporation\....

8. Reboot the computer.

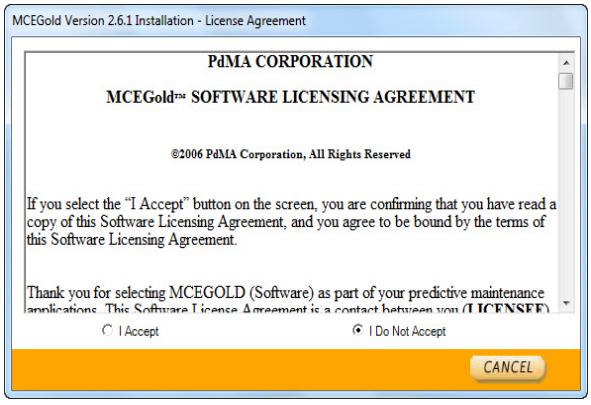
9. Go to step one in the *Install - MCEGold 2.6.2 SP7* section.

Install MCEGold 2.6.2 SP7

Note: If you have MCEGold 2.6.1 go to MCEGold 2.6.1 Update on the next page.

1. Insert the MCEGold 2.6.2 SP7 flash drive into the USB port. If the installation does not begin automatically, run Setup.exe from the disc. (Select Run setup.exe from the AutoPlay window).

2. The License Agreement window opens. Read the PdMA license and select the "I Accept" option button. The **Next** button becomes visible. Click **Next**.
   Note: If you do not accept the terms, the **Next** button is not visible, you can only click **Cancel**, which closes the software.



3. In the License Key window enter your Company Name and License Key exactly as provided by PdMA. The License Key is **NOT** the same as the Module Activation Key, which activates various modules.

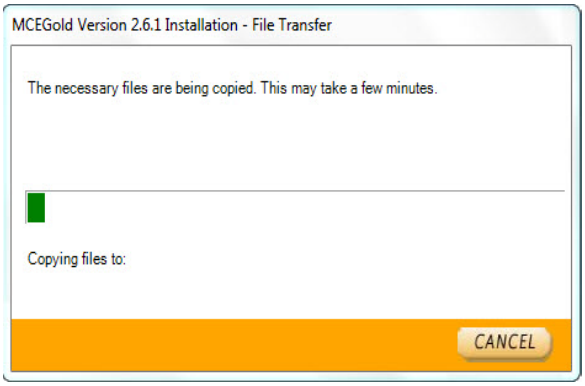
4. Click **Submit** (located to the right of the Company Name). After the license has been verified the **Next** button appears. Click **Next**.

5. In the Installation Path window, accept the default shown in the text box (recommended) for the location to install the MCEGold program folder or using the drop-down list select a alternate location, make a note of it for future use, and click **Next**.

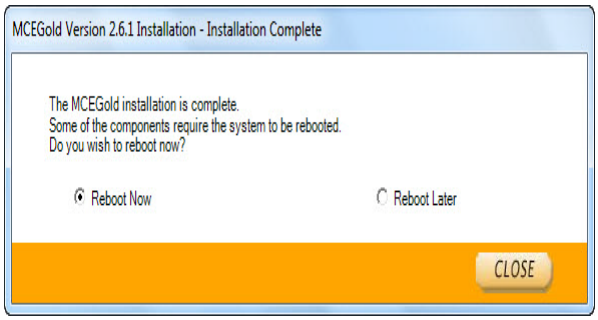
6. When prompted, click **Install Components**.

7. When the installation of components is complete the **Next** button appears. Click **Next**.

8. A progress bar shows the progress of copying files to your computer.



9. When the installation is complete you must reboot your system. Select the Reboot Now option and click **Close**.



After rebooting, locate and copy the backup MCECal.xml and Emaxprb.xml files and the Template folder back into their appropriate locations in

C:\PdMA Corporation\MCEGold\Mce
C:\PdMA Corporation\MCEGold\Emax
C:\PdMA Corporation\MCEGold\Report

10. Answer Yes to the "OK to overwrite existing folder" inquiry.

11. Remove the MCEGold 2.6.2 SP7 flash drive and reboot the computer.

MCEGold Update

Install MCEGold 2.6.2 SP7

1. Insert the MCEGold 2.6.2 SP7 flash drive into the USB drive. It will auto-start to the InstallShield program. However, if does not begin automatically, run Setup.exe from the disc. (Select Run setup.exe from the AutoPlay window).

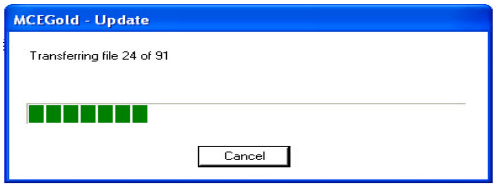
2. The Installation Update Window opens.



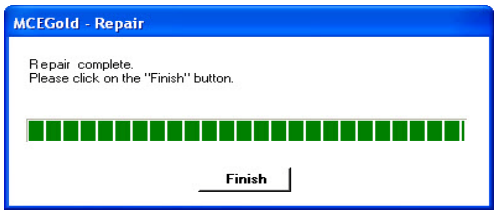
3. Select **Update.**

   Note: Selecting **Uninstall** removes the existing MCEGold software from your system. Uninstalling is not necessary for this update.

4. The MCEGold Update window opens and displays a progress bar.



5. Click **Finish** when the update or repair complete message is received.



6. Reboot the computer.

TECHNOTE 1701

ISSUED

May 2017

SUBJECT

Release of MCEGold® 3.0.3 SP2 Network Version

DESCRIPTION

MCEGold 3.0.3 SP2 Network Version is an upgrade from MCEGold 3.0.3 SP1**.**

PdMA Cloud Services

The network edition of MCEGold 3.0.3 SP2 supports access to PdMA Cloud Services. Please contact PdMA Technical Support (813-6216-6463 ext. 251) to discuss this option.

MCEGOLD 3.0.3 SP2 NETWORK INSTALLATION

Note:

- MCEGold 3.0.3 SP2 Network Version is only compatible with Windows 7 and M-series testers.

- MCEGold Word Add-in is only compatible with MS Word 2007 and 2013. MCEGold Word Add-in is NOT compatible with MS Word 2010. Templates created with other versions of MS Word may not be functional and can cause conflicts with the MCEGold software.

- To ensure application accessibility, the default installation location has been set to C:\PdMA Corporation.

- Databases attached to MCEGold 3.0.3 SP2 Network Version must be from MCEGold 2.6.1 or later and once updated with 3.0.3 SP1*will not* be compatible with older versions of MCEGold.

- Assets exported with MCEGold 3.0.3 SP2 Network Version *will not* be compatible with older versions of MCEGold.

- If you have any questions, please contact PdMA Tech Support (813-621-6463 ext. 251).

Minimum Requirements:

Computer	Dell Latitude E6440 Laptop*
Processor	2+ GHz Intel i5 or equivalent
Resolution	1600 x 900/1920 x 1080 (small font)
Operating System	Microsoft® Windows 7 SP1 32 or 64 bit**
Memory	4.0+ G RAM***
Ports/Drives	(1) USB Port in Rear or Side
Hard Disk	20G Available

* Using any other computer manufacturer in conjunction with the PdMA software may result in erratic computer behavior; not limited to but including:

- Power Management Issues
- Lock-up
- Communication Port Malfunction
- Driver Incompatibility
- Display Errors
- SQL Database Incompatibility
- Network Synchronization Issues.

** For International Customers: Windows 7 Ultimate 32 or 64-bit.

***If you are upgrading from MCEGold 2.6.1 - 2.6.2 verify that your computer has at least 4G of RAM.

Server Database Update for Network Users

Note: Ensure the user account being used to update the server has “sysadmin” permissions.

There is a separate application on the Installation flash drive to update the network database on the server. ***The database must be updated on the server first, then the desktops and field testers.***

If the update is installed on a network field tester before the server database is updated, a warning message appears informing you the database is an old version and to contact your system administrator.

1. Back up the MCEGold database.

2. Insert the MCEGold 3.0.3 SP2 Network Version flash drive into the USB port. If the drive starts automatically, click **Exit** and proceed to the next step.

3. Locate the MCEGold Database Server Update folder on the MCEGold 3.0.3 Network Version SP2 flash drive.

4. Click on the MCEGold Database Server Update.exe file.

5. The Server Information window opens. Fill in the Server, Database, Login, and Password information.The Login and Password will depend on your authentication (Windows/SQL).

6. Click **Run Update**. The progress status will display on the window.

7. When the update complete message displays, close the window.

Uninstall MCEGold

NOTE: MCEGold 3.0.3 SP2 Network Version requires a full uninstall of existing MCEGold before installing version 3.0.3 SP2.

Backup

Before beginning the MCEGold uninstall, copy the Emaxprb.xml file (not the folder) and complete Templates folder to a safe location and make note of the location.

The default location for the files is listed below, however you may have chosen a different location during the original installation.
C:\PdMA Corporation\MCEGold\Emax
C:\PdMA Corporation\MCEGold\Report

1. Select Start, Control Panel, select Programs, then Programs and Features.

2. In the Uninstall or change a program window scroll down to locate and highlight the MCEGold Version XX.X on the list.

3. Click **Uninstall/Change** located above the list and follow on screen prompts.

4. Click **Finish** when the "Uninstall Complete" message is received.

5. Locate the PdMA MCEMAX Tester (Driver Removal) file. Highlight it and click **Uninstall/ Change** located above the list and follow the on screen prompts.

6. Click **Finish** when the "Uninstall Complete" message is received.

7. Locate the C:\PdMA Corporation folder and delete it. The subfolders will be deleted also. After the installation of MCEGold 3.0.3 SP2 the new folder location will be C:\PdMA Corporation\....

8. Reboot your computer.

9. Go to step one in the *Install - MCEGold 3.0.3* SP2 Network Version section.

Install MCEGold 3.0.3 SP2 Network Version

1. Insert the MCEGold 3.0.3 SP2 Network Version USB flash drive into the USB port. If the installation does not begin automatically, run setup.exe from the USB flash drive. (Select Run setup.exe from the AutoPlay window).

2. The License Agreement window opens. Read the PdMA license and select the "I Accept" option button. The **Next** button becomes visible. Click **Next**.
   Note: If you do not accept the terms, the **Next** button is not visible, you can only click **Cancel**, which closes the software without installing it.



3. In the License Key window enter your Company Name and License Key exactly as provided by PdMA. You may copy and paste the license key using the paste button.

4. Click **Submit** (located to the right of the Company Name). When the license has been verified a green check appears. The **Next** button appears. Click **Next**.

5. In the Installation Path window, accept the default shown in the text box (recommended) for the location to install the MCEGold program folder or using the drop-down list select a alternate location, make a note of it for your future use, and click **Next**. Note: It is not suggested using an alternate location as that can cause conflict and Windows rights problems.

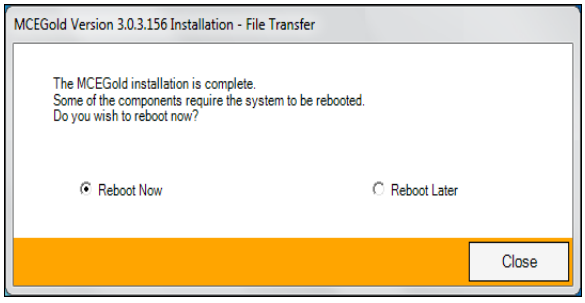
6. When prompted, click **Install Components**. Some components may require additional prompts.

   Note: When installing MCEGold, a Word Add-in driver is installed. You may receive a message informing you that "Windows can't verify the publisher of this driver software." Select "Install this driver software anyway".

7. When the installation of components is complete the **Next** button appears. Click **Next**.

8. A progress bar shows the progress of copying files to your computer.

9. When the installation is complete you must reboot your system. Select the Reboot Now option and click **Close**.



After rebooting, locate and copy the backup Emaxprb.xml files and the Template folder back into their appropriate locations in
C:\PdMA Corporation\MCEGold\Emax
C:\PdMA Corporation\MCEGold\Report

10. Answer Yes to "Merge the folder?" inquiry.

11. Remove the MCEGold 3.0.3 SP2 Network Version USB flash drive from the computer.

Field Tester Database Setup

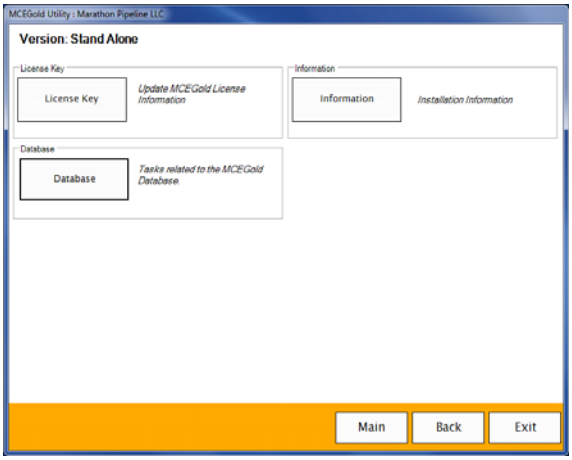
Note: For the following, please use the information provided by your IT department.

Field testers utilize a local database for storage of assets. These assets can then be synchronized with the Network database. In order to perform field testing in local tester mode, assets must be down-syncd to the local database. In order to perform testing using MCEGold Lite, assets must be in a WatchList and down-syncd to the local database.

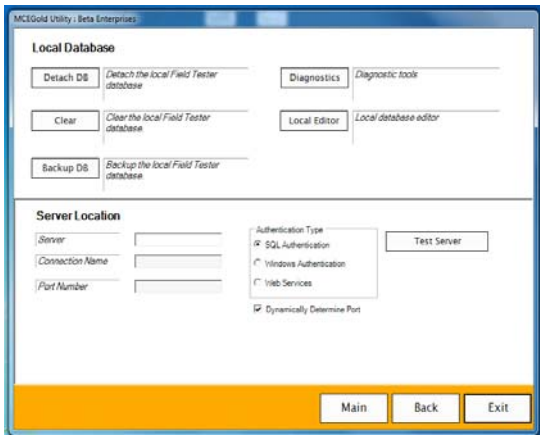
To connect to the existing network database, please follow the instructions below.

1. Open the MCEGold Utility program.

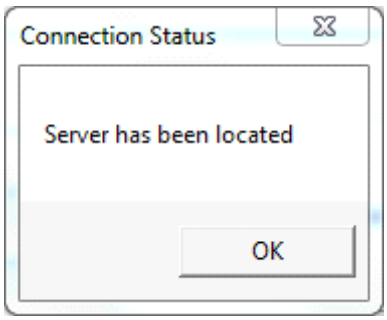
2. Click the **Database** button.



3. Enter the server information provided by your IT department.

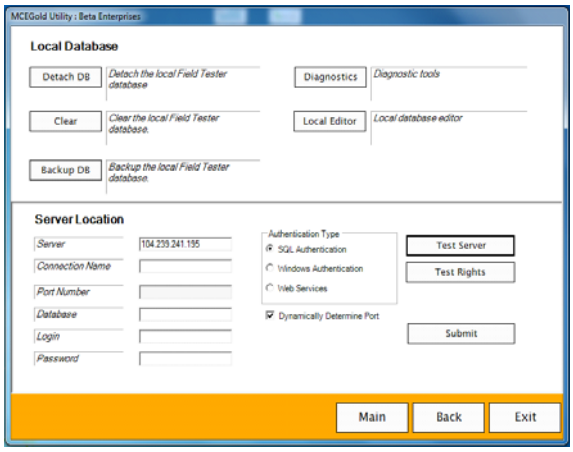


4. Once the server information has been entered, click **Test Server**. You should receive a message indicating "Server has been located".

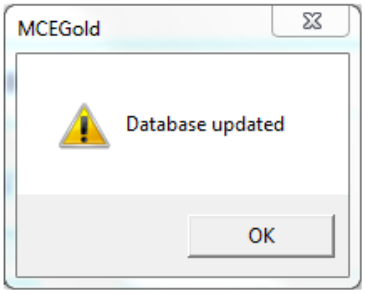


5. Click **OK** on the Connection Status window.

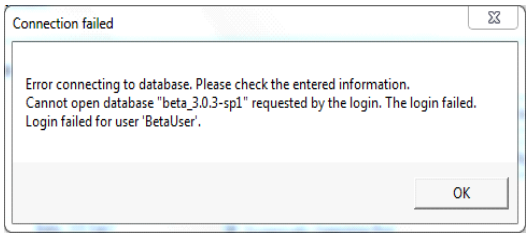
6. Enter the following connection information provided by your either your Administrator or your IT Department: Connection Name, Database Information, Login Information, and Password.



7. Click **Submit**. You should receive a message indicating "Database updated". Click **OK**.



8. If you receive an error as shown below, verify the information you entered is correct. If it is correct, click **OK** and contact your Administrator.



9. If you do not receive an error message, click **Exit** on the Utility window.

10. Start MCEGold and enter the name and password for the tester. Select the Field Tester Network mode.

11. Once you have opened MCEGold and you have verified MCEGold is correctly communicating with the database. You are now ready to perform testing.

TECHNOTE 1702

ISSUED

May 2017

SUBJECT

Release of MCEGold® 3.0.3 SP2 - Stand Alone.

DESCRIPTION

MCEGold 3.0.3 SP2 is an upgrade from MCEGold 3.0.3 SP1.

MCEGOLD 3.0.3 SP2 INSTALLATION

Note:

- MCEGold 3.0.3 SP2 is only compatible with Windows 7 and M-Series testers.

- MCEGold Word Add-in is only compatible with MS Word 2007 and 2013. MCEGold Word Add-in is NOT compatible with MS Word 2010. Templates created with other versions of MS Word may not be functional and may cause conflicts with the MCEGold software.

- To ensure application accessibility, the default installation location has been set to C:\PdMA Corporation.

- Databases attached to MCEGold 3.0.3 SP2 must be from MCEGold 2.6.1 or later and once updated with 3.0.3 SP2 *will not* be compatible with older versions of MCEGold.

- Assets opened with MCEGold 3.0.3 SP2 *will not* be compatible with older versions of MCEGold.

- If you have any questions, please contact PdMA Technical Support (813-621-6463 ext. 251).

Minimum Requirements:

Computer	Dell Latitude E6440 Laptop*
Processor	2+ GHz Intel i5 or equivalent
Resolution	1600 x 900/1920 x 1080 (small font)
Operating System	Microsoft® Windows 7 SP1 32 or 64 bit**
Memory	4.0+ G RAM***
Ports/Drives	(1) USB Port in Rear or Side
Hard Disk	20G Available

* Using any other computer manufacturer in conjunction with the PdMA software may result in erratic computer behavior; not limited to but including:

- Power Management Issues
- Lock-up
- Communication Port Malfunction
- Driver Incompatibility
- Display Errors
- SQL Database Incompatibility
- Network Synchronization Issues.

** For International Customers: Windows 7 Ultimate 32 or 64-bit.

***If you are upgrading from MCEGold 2.6.1 - 2.6.2 verify that your computer has at least 4G of RAM.

Uninstall MCEGold

NOTE: MCEGold 3.0.3 SP2 requires a full uninstall of any version prior to MCEGold 3.0.3 before installing version 3.0.3 SP2.

Backup

Before beginning the MCEGold uninstall, copy the Emaxprb.xml file only (not the folder) and the complete Templates folder to a safe location and make note of the location.

The default location for the files is listed below, however you may have chosen a different location during the original installation.
C:\PdMA Corporation\MCEGold\Emax
C:\PdMA Corporation\MCEGold\Report

1. Select Start, Control Panel, select Programs, then Programs and Features.

2. In the Uninstall or change a program window scroll down to locate and highlight the MCEGold Version X.X.X on the list.

3. Click **Uninstall/Change** located above the list and follow on screen prompts.

4. Click **Finish** when the "Uninstall Complete" message is received.

5. Locate the PdMA MCEMAX Tester (Driver Removal) file. Highlight it and click **Uninstall/ Change** located above the list and follow the on screen prompts.

6. Click **Finish** when the "Uninstall Complete" message is received.

7. Locate the C:\PdMACorporation folder and delete it. The subfolders will be deleted also. After the installation of MCEGold 3.0.3 SP2 the new folder location will be C:\PdMA Corporation\....

8. Reboot your computer.

9. Go to step one in the *Install - MCEGold 3.0.3* SP2 section.

Install MCEGold 3.0.3 SP2

1. Insert the MCEGold 3.0.3 SP2 USB flash drive into the USB port. If the installation does not begin automatically, run setup.exe from the USB flash drive. (Select Run, setup.exe from the AutoPlay window).

2. The License Agreement window opens. Read the PdMA license and select the "I Accept" option button. The **Next** button becomes visible. Click **Next**.
   Note: If you do not accept the terms, the **Next** button is not visible, you can only click **Cancel**, which closes the software without installing it.



3. In the License Key window enter your Company Name and License Key exactly as provided by PdMA. You may copy and paste the license key using the paste button.

4. Click **Submit** (located to the right of the Company Name). When the license has been verified a green check appears. The **Next** button appears. Click **Next**.

5. In the Installation Path window, accept the default shown in the text box (recommended) for the location to install the MCEGold program folder or using the drop-down list select a alternate location, make a note of it for your future use, and click **Next**. Note: It is not suggested to use an alternate location because that can cause conflict and Windows rights problems.

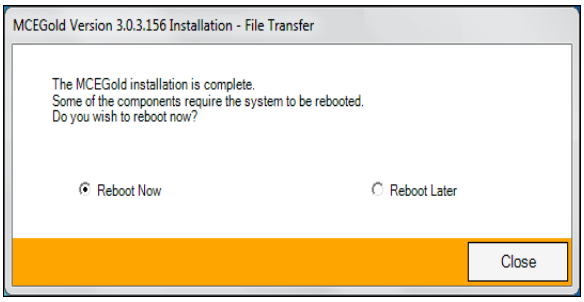
6. When prompted, click **Install Components**. Some components may require additional prompts.

   Note: When installing MCEGold, a Word Add-in driver is installed. You may receive a message informing you that "Windows can't verify the publisher of this driver software." Select "Install this driver software anyway".

7. When the installation of components is complete the **Next** button appears. Click **Next**.

8. A progress bar shows the progress of copying files to your computer.

9. When the installation is complete you must reboot your system. Select the Reboot Now option and click **Close**.



10. After rebooting, locate and copy the backup Emaxprb.xml file and the Template folder back into their appropriate locations in

    C:\PdMA Corporation\MCEGold\Emax
    C:\PdMA Corporation\MCEGold\Report

11. Answer Yes to “Merge the folder?” inquiry.

12. Remove the MCEGold 3.0.3 SP2 USB flash drive from the computer.

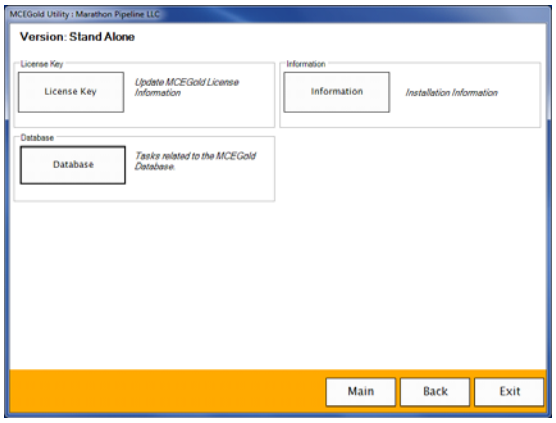
Database Setup

Note: This procedure is for connecting to an existing database that is to be upgraded to MCEGold 3.0.3 SP1.

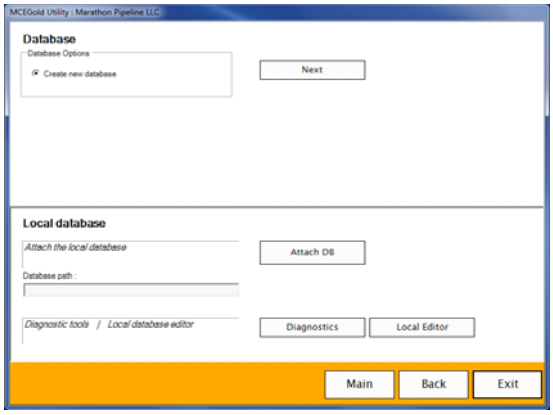
To connect to an existing database, please following the instructions below.

1. Ensure you have properly backed up the database you are converting.

2. Open the Utility program and click the **Database** button.

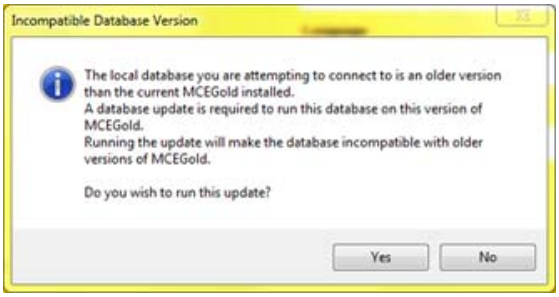


3. Click **Attach DB** as shown in the below.

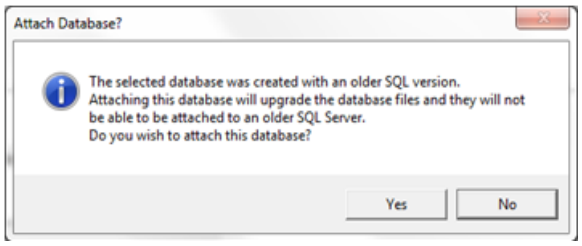


4. Navigate to the database location on your computer and select the desired database.

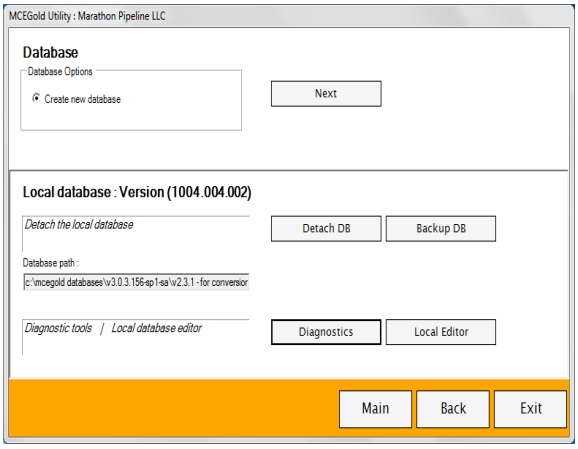
5. If you are attaching a database that is older than V3.0.3-SP2, you will receive a incompatible database version message. If you have properly backed up your existing database, click **Yes** to run the update. If you have not backed up your existing database, click **No**, backup the database, and then perform the Database Setup procedure.



6. If you receive the following message: “The database you selected was created with an older SQL version”, the database needs to be upgraded to SQL 2008 using the MCEGold Utility program. It may require multiple conversions to upgrade to MCEGold 3.0.3 SP2. Click **Yes** to proceed.

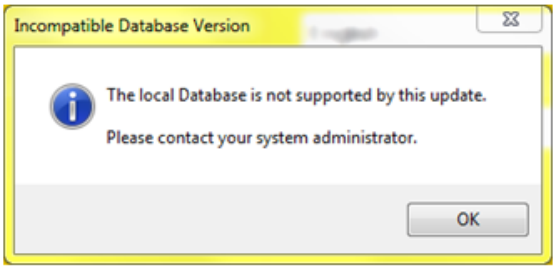


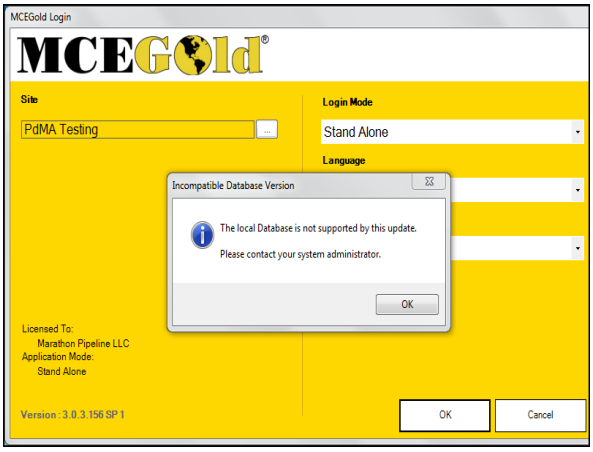
7. The MCEGold Utility Database Window opens. Click **Exit**.



8. Start MCEGold.

9. If you receive the following message when trying to start MCEGold, the attached database is too old for conversion and needs to be updated to MCEGold 2.6.1 or later prior to updating to MCEGold 3.0.3 SP2.





10. Click **OK** on the message window. The message window closes, leaving the MCEGold Login window open.

11. If there is another database available, click on **Search** (the three dots on the right of Site) to bring up the navigator to search for the other database. If none are available, click **Cancel** to exit out of MCEGold, and contact PdMA Technical Support at 813-621-6463 ext. 251.

TECHNOTE 1703

ISSUED

July 2017

SUBJECT

Release of MCEGold® 2.6.2 SP8.

DESCRIPTION

The MCEGold 2.6.2 SP8 release contains minor enhancements and fixes several bugs.

MCEGold 2.6.2 SP8 is available on M and H series testers only.

MCEGOLD 2.6.2 SP8 INSTALLATION

Note:

- MCEGold 2.6.2 SP8 is only compatible with M and H-series testers and Windows 7.

- To fully utilize improved resistance and RTG filters in SP8, a tester calibration is required.

- If using MCEGold 2.5.1 SP2 or earlier a full uninstall of MCEGold is required. If using MCEGold 2.6.1 or MCEGold 2.6.2 the uninstall is not required; go to MCEGold Update on page 4.

- MCEGold 2.6.2 SP8 is not compatible with testers requiring a Data Acquisition Card (DAQ).

- For Stand Alone and Field Testers, installing MCEGold 2.6.2 SP8 will require an upgrade of the Microsoft SQL Server 2005 to SQL Server 2008, if not already completed. This does not apply to Servers on a Network.

- To ensure application accessibility, the new default installation location has been set to C:\PdMA Corporation.

- Databases attached to MCEGold 2.6.2 SP8 must be from MCEGold 2.4 or later and once updated with 2.6.2 SP8 *will not* be compatible with older versions of MCEGold.

- Assets opened with MCEGold 2.6.2 SP8 *will not* be compatible with older versions of MCEGold.

Minimum Requirements:

Computer	Dell Latitude E6440 Laptop*
Processor	2+ GHz Intel i5 or equivalent
Resolution	1600 x 900/1920 x 1080 (small font)
Operating System	Microsoft® Windows 7 SP1 32 or 64 bit**
Memory	4.0+ GB RAM***
Ports/Drives	(2) USB Ports in Rear or Side
Hard Disk	20GB Available

* Using any other computer manufacturer in conjunction with the PdMA software may result in erratic computer behavior; not limited to but including:

- Power Management Issues
- Lock-up
- Communication Port Malfunction
- Driver Incompatibility
- Display Errors
- SQL Database Incompatibility
- Network Synchronization Issues.

** For International Customers: Windows 7 Ultimate 32 or 64-bit.

***If you are upgrading from MCEGold 2.6.1 - 2.6.2 verify that your computer has at least 4GB of RAM.

Server Database Update for Network Users

Note:

- Ensure the user account used to update the server has “sysadmin” permissions.

There is a separate application on the Installation flash drive to update the network database on the server. ***The database must be updated on the server first, then the desktops and field testers.***

If the update is installed on a network field tester before the server database is updated, a warning message

appears informing you the database is an old version and to contact your system administrator.

1. Back up the MCEGold database.

2. Insert the flash drive into the USB drive. If the disc starts automatically, click **Exit** and proceed to the next step.

3. Locate the MCEGold Database Server Update folder on the MCEGold 2.6.2 SP8 flash drive.

4. Click on the MCEGold Database Server Update.exe file.

5. The Server Information window opens. Fill in the Server, Database, Login, and Password information. The Login and Password will depend on your authentication (Windows/SQL).

6. Click **Run Update**. The progress status will display on the window.

7. When the update complete message displays, close the window.

Stand Alone Users/Field Tester

Note: MCEGold 2.6.2 SP8 requires an upgrade of the Microsoft SQL Server 2005 to SQL Server 2008. Therefore, any stand alone database opened will be updated to SQL Server 2008 and will no longer open on another machine running an older version of MCEGold using SQL Server 2005.

MCEGold Prior to 2.4 or Windows XP

If you are updating from an MCEGold version older than 2.4 or Microsoft Windows XP operating system you must first call PdMA Tech Support (813-621-6463 ext. 251).

MCEGold 2.4 or 2.5.1

From your Control Panel/Program and Features, verify which version of Microsoft SQL Server is installed on your computer.

If Microsoft SQL Server 2005 exists on your computer proceed to the *Uninstall SQL Server 2005* section followed by the *Uninstall MCEGold* section below. There are several components that begin with Microsoft SQL Server 2005, they should all be removed EXCEPT Microsoft SQL Server 2005 Compact Edition (ENU).

If Microsoft SQL Server 2008 and possibly Microsoft SQL Server 2005 Compact Edition (ENU) exists on your computer do not uninstall them. Go to the section *Uninstall MCEGold.*

Uninstall SQL Server 2005

1. Select Start, Control Panel, and click the Programs and Features icon.

2. In the Uninstall or change a program window scroll down to locate and select Microsoft SQL Server 2005 from the list.

3. Click **Uninstall** - located above the list and follow the on-screen instructions.

4. Click **Finish** when the "Uninstall Complete" message is received. Do not close the window.

5. Repeat from step 2 uninstalling all components that begin with Microsoft SQL Server 2005. DO NOT uninstall Microsoft SQL Server 2005 Compact Edition (ENU).

6. Close the Uninstall or change a program window when all components have been uninstalled.

7. Reboot the computer.

Uninstall MCEGold

Backup

Before beginning the MCEGold uninstall, copy the MCECal.xml and Emaxprb.xml files (not the folders) and the complete Templates folder to a safe location and make note of the location.

The default location for the files is listed below, however you may have chosen a different location during the original installation.
C:\Program Files\PdMA Corporation\MCEGold\Mce
C:\Program Files\PdMA Corporation\MCEGold\Emax
C:\Program Files\PdMA Corporation\MCEGold\Report

1. Select Start, Control Panel, click on the Programs and Features icon.

2. In the Uninstall or change a program window scroll down to locate and select the MCEGold version from the list.

3. Click **Uninstall** located above the list and follow on screen prompts.

4. Click **Finish** when the "Uninstall Complete" message is received.

5. Locate the PdMA MCEMAX® Tester (Driver Removal) file and click **Uninstall** located above the list and follow the on-screen prompts.

6. Click **Finish** when the "Uninstall Complete" message is received.

7. Locate the C:\ProgramFiles\PdMACorporation\ folder and delete it. The subfolders will be deleted also. After the installation of MCEGold 2.6.2 SP8 the new folder location will be C:\PdMA Corporation\....

8. Reboot the computer.

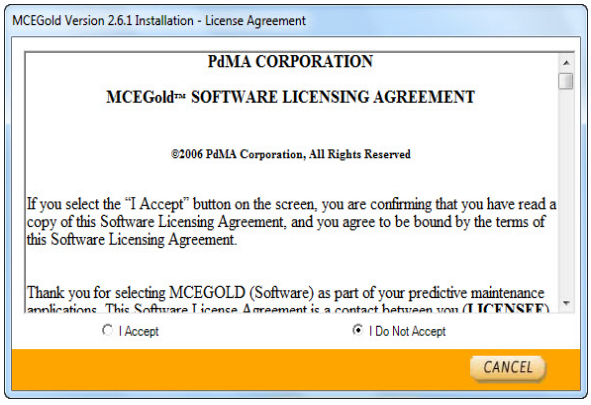
9. Go to step one in the *Install - MCEGold 2.6.2 SP8* section.

Install MCEGold 2.6.2 SP8

Note: If you have MCEGold 2.6.1 go to MCEGold 2.6.1 Update on the next page.

1. Insert the MCEGold 2.6.2 SP8 flash drive into the USB port. If the installation does not begin automatically, run Setup.exe from the disc. (Select Run setup.exe from the AutoPlay window).

2. The License Agreement window opens. Read the PdMA license and select the "I Accept" option button. The **Next** button becomes visible. Click **Next**.
   Note: If you do not accept the terms, the **Next** button is not visible, you can only click **Cancel**, which closes the software.



3. In the License Key window enter your Company Name and License Key exactly as provided by PdMA. The License Key is **NOT** the same as the Module Activation Key, which activates various modules.

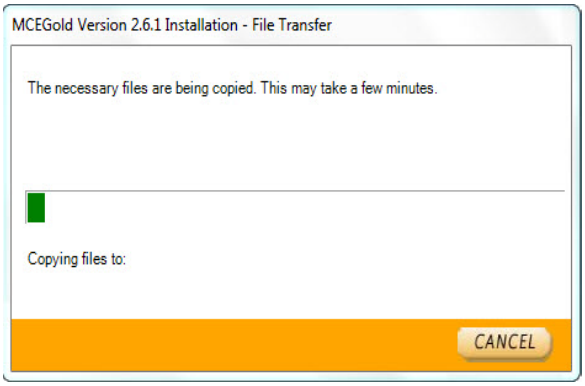
4. Click **Submit** (located to the right of the Company Name). After the license has been verified the **Next** button appears. Click **Next**.

5. In the Installation Path window, accept the default shown in the text box (recommended) for the location to install the MCEGold program folder or using the drop-down list select an alternate location, make a note of it for future use, and click **Next**.

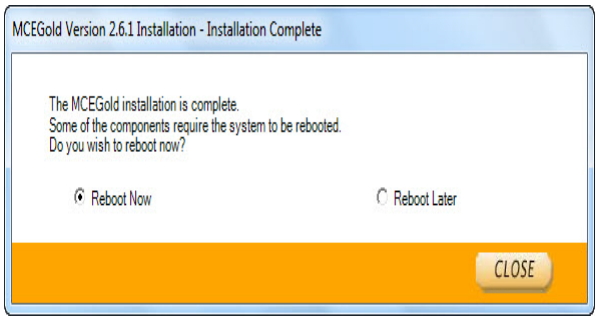
6. When prompted, click **Install Components**.

7. When the installation of components is complete the **Next** button appears. Click **Next**.

8. A progress bar shows the progress of copying files to your computer.



9. When the installation is complete you must reboot your system. Select the Reboot Now option and click **Close**.



After rebooting, locate and copy the backup MCECal.xml and Emaxprb.xml files and the Template folder back into their appropriate locations in

C:\PdMA Corporation\MCEGold\Mce
C:\PdMA Corporation\MCEGold\Emax
C:\PdMA Corporation\MCEGold\Report

10. Answer Yes to the "OK to overwrite existing folder" inquiry.

11. Remove the MCEGold 2.6.2 SP8 flash drive and reboot the computer.

MCEGold Update

Install MCEGold 2.6.2 SP8

1. Insert the MCEGold 2.6.2 SP8 flash drive into the USB drive. It will auto-start to the InstallShield program. However, if does not begin automatically, run Setup.exe from the disc. (Select Run setup.exe from the AutoPlay window).

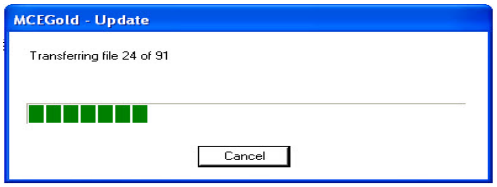
2. The Installation Update Window opens.



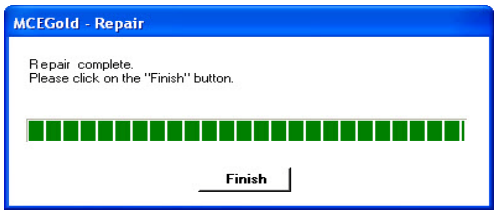
3. Select **Update.**

   Note: Selecting **Uninstall** removes the existing MCEGold software from your system. Uninstalling is not necessary for this update.

4. The MCEGold Update window opens and displays a progress bar.



5. Click **Finish** when the update or repair complete message is received.



6. Reboot the computer.

TECHNOTE 1704-N7

ISSUED

August 2017

SUBJECT

Release of MCEGold® 3.0.3 SP3 - Network Version for Windows 7.

DESCRIPTION

MCEGold 3.0.3 SP3 Network Version is an upgrade from MCEGold 3.0.3. SP1.

PDMA CLOUD SERVICES

The network edition of MCEGold 3.0.3 SP3 supports access to PdMA Cloud Services. Please contact PdMA Technical Support (813-6216-6463 ext. 251) to discuss this option.

NOTES

- MCEGold 3.0.3 SP3 is only compatible with Windows 10 and Windows 7 and M-Series testers.

- Installation of MCEGold 3.0.3 SP3 on a Windows 10 computer uses a special installation procedure. Refer to TechNote 1704 - S10 (Standalone) or 1704-N10 (Network).

- MCEGold Word Add-in is only compatible with MS Word 2007 and 2013. MCEGold Word Add-in is NOT compatible with MS Word 2010. Templates created with other versions of MS Word may not be functional and may cause conflicts with the MCEGold software.

- To ensure application accessibility, the default installation location has been set to C:\PdMA Corporation.

- Databases attached to MCEGold 3.0.3 SP3 must be from MCEGold 2.6.1 or later and once updated with 3.0.3 SP3 *will not* be compatible with older versions of MCEGold.

- Assets opened or exported with MCEGold 3.0.3 SP3 *will not* be compatible with older versions of MCEGold.

- If you have any questions, please contact PdMA Technical Support (813-621-6463 ext. 251).

Minimum Requirements

Computer	Dell Latitude E5470 Laptop*
Processor	2+ GHz Intel i5 or equivalent
Resolution	1600 x 900/1920 x 1080 (small font)
Operating System	Microsoft® Windows 7 SP1 (32 or 64 bit)**
Memory	4.0+ G RAM***
Ports/Drives	(1) USB Port in Rear or Side
Hard Disk	20G Available

* Using any other computer manufacturer in conjunction with the PdMA software may result in erratic computer behavior; not limited to but including:

- Power Management Issues
- Lock-up
- Communication Port Malfunction
- Driver Incompatibility
- Display Errors
- SQL Database Incompatibility
- Network Synchronization Issues.

** For International Customers: Windows 7 Ultimate (32 or 64-bit).

*** If you are upgrading from MCEGold 2.6.1 - 2.6.2 verify that your computer has at least 4G of RAM.

UPDATE SERVER DATABASE FOR NETWORK USERS

NOTE: Ensure the user account being used to update the server has “sysadmin” permissions.

There is a separate application on the Installation USB flash drive to update the network database on the server. ***The database must be updated on the server first, then the desktops and finally field testers.***

If the update is installed on a network field tester before the server database is updated, a warning message appears informing you the database is an old version and to contact your system administrator.

1. Fully Sync all field testers.
   NOTE: Before proceeding ensure all local database synchronization has been performed.

2. Back up the MCEGold server database.

3. Insert the MCEGold 3.0.3 SP3 USB flash drive into the USB port. If the drive starts automatically, click **Exit** and proceed to the next step.

4. Locate the MCEGold Database Server Update folder on the MCEGold 3.0.3 SP3 USB flash drive.

5. Click on the MCEGold Database Server Update.exe file.

6. The Server Information window opens. Fill in the Server, Database, Login, and Password information.The Login and Password will depend on your authentication (Windows/SQL).

7. Click **Run Update**. The progress status will display on the window.

8. When the update complete message displays, close the window.

PREPARE FIELD TESTERS FOR MCEGOLD 3.0.3 SP3

Backup

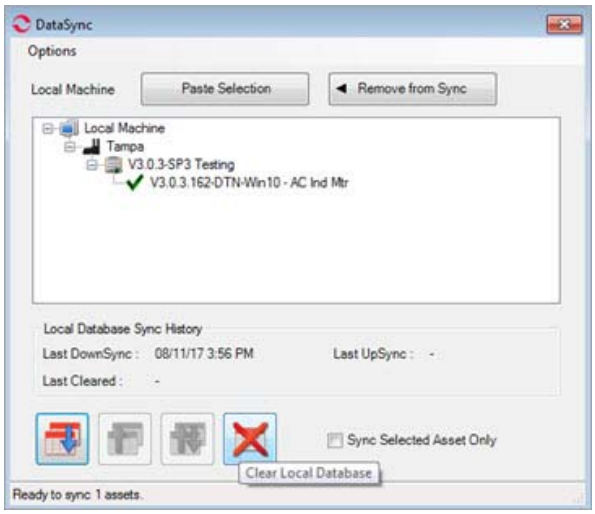
Before beginning the MCEGold uninstall, copy the Emaxprb.xml file only (not the folder) and the complete Templates folder to a safe location and make note of the location.

The default location for the files is listed below, however you may have chosen a different location during the original installation.
C:\PdMA Corporation\MCEGold\Emax
C:\PdMA Corporation\MCEGold\Report

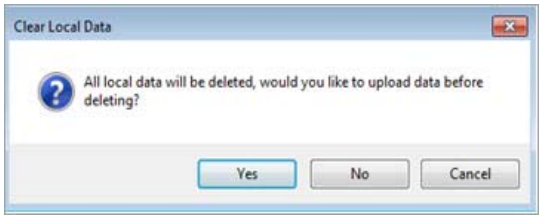
Clear Local Database

NOTE: Before proceeding ensure all local database synchronization has been performed. Failure to synchronize before clearing the local database will result in loss of data.

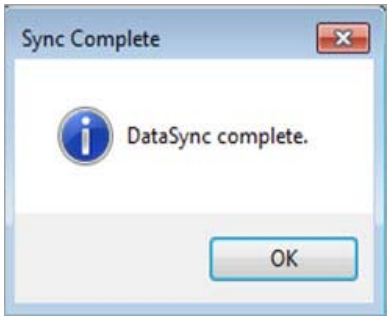
1. From the DataSync window, click **Clear Local Database**.



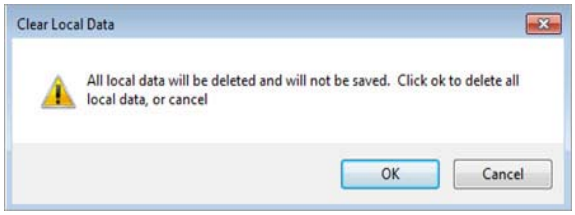
2. From the Clear Local Data window, click **Yes** to upload (UpSync) data, click **No** if you have already synchronized the data.



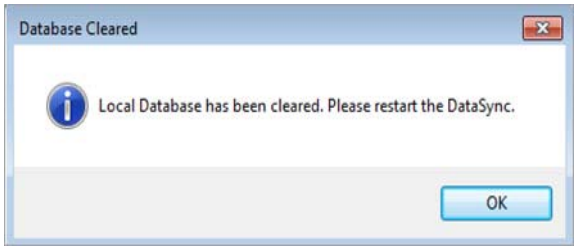
3. From the Sync Complete window, click **OK**.



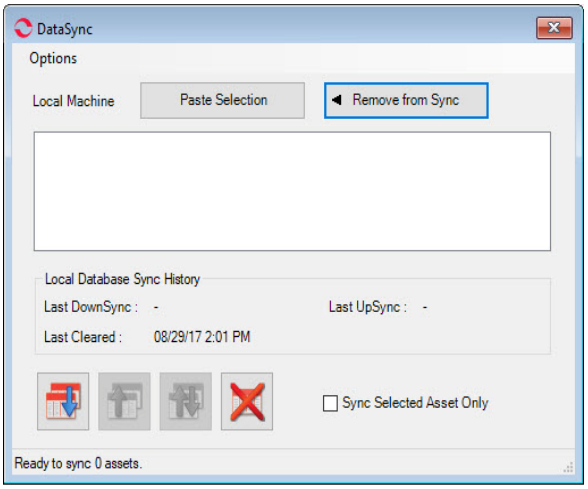
4. From the next Clear Local Data window, click **OK** to delete all local data.



5. From the Database Cleared window, click **OK.**



6. Reopen the DataSync window to ensure the database has been cleared, as shown in figure below. If it did not clear contact Technical Support.



UPGRADE FROM MCEGOLD 3.0.3 OR LATER

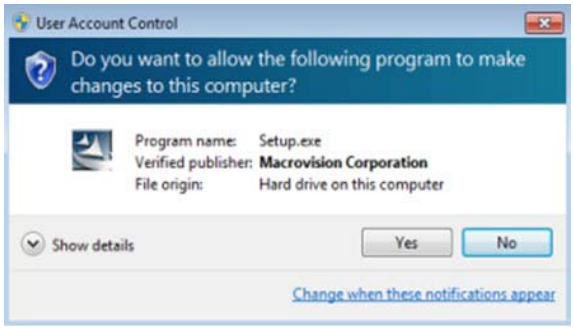
NOTE: If you have any version prior to MCEGold 3.0.3 a full uninstall is required before installing version 3.0.3 SP3. Go to the Upgrading From a Version Previous to MCEGold 3.0.3 Section.

MCEGold 3.0.3 SP3 Update

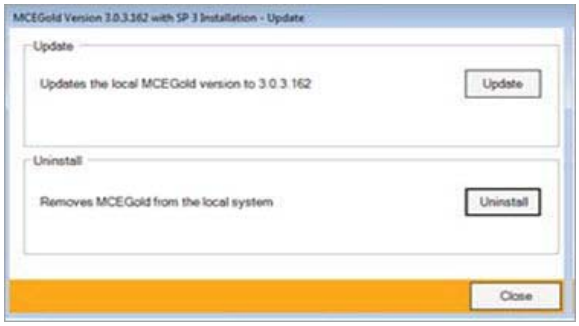
NOTE: Some on screen prompts and messages during the installation process are controlled by the Windows operating system and are out of PdMA's control. Every effort has been made to include their possible appearance and the action you should take. However, if you are unsure please contact our technical support department for help.

1. Insert the MCEGold 3.0.3 SP3 USB flash drive into the USB port. If the installation does not begin automatically, run setup.exe from the USB flash drive. (Select Run, setup.exe from the AutoPlay window).

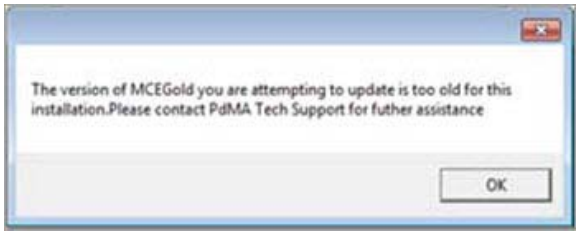
2. If you see the User Account Control screen, click **Yes**.



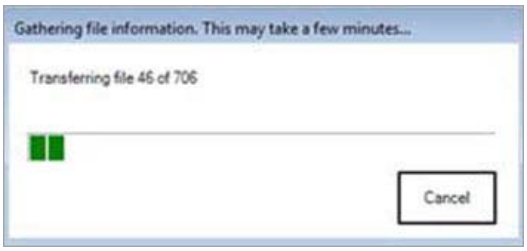
3. If there is an existing MCEGold version installed on your computer, you will see the MCEGold Update screen. click **Update**.



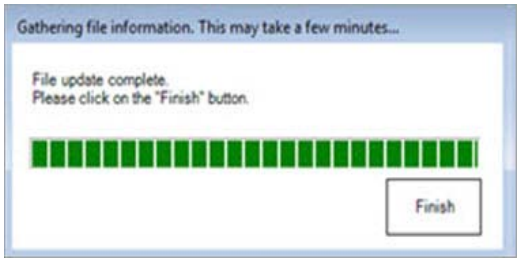
NOTE: If you have a version prior to MCEGold3.0.3 you will receive the error message shown below. Do **NOT** proceed. Contact technical support.



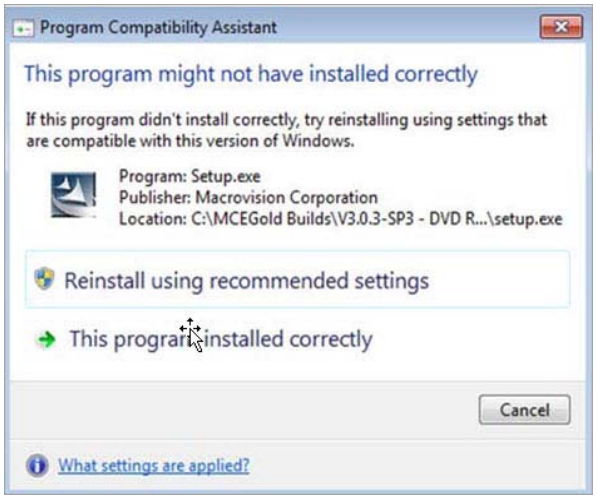
4. The status update window displays.



5. When the update is complete, click **Finish**.



6. If the Program Compatibility Assistant screen displays, select *This program installed correctly.*



Clear Local Database

1. Open the MCEGold Utility Program.

2. Click the Database button.

3. Click Clear and follow the prompts. This will ensure the local database is updated.

4. Go to the Start MCEGold Section.

UPGRADING FROM A VERSION PRIOR TO MCEGOLD 3.0.3

Uninstall

NOTE: Before beginning the MCEGold uninstall you must back up the Emaxprb.xml and Templates folder. See the Backup and Clear Local Database sections on page 2.

1. Select Start, Control Panel, select Programs, then Programs and Features.

2. In the Uninstall or change a program window scroll down to locate and highlight the MCEGold Version X.X.X on the list.

3. Click **Uninstall/Change** located above the list and follow on screen prompts.

4. Click **Finish** when the "Uninstall Complete" message is received.

5. Locate the PdMA MCEMAX Tester (Driver Removal) file. Highlight it and click **Uninstall/ Change** located above the list and follow the on screen prompts.

6. Click **Finish** when the "Uninstall Complete" message is received.

7. Locate the C:\PdMACorporation folder and delete it. The subfolders will be deleted also. After the installation of MCEGold 3.0.3 SP3 the new folder location will be C:\PdMA Corporation\....

8. Reboot your computer.

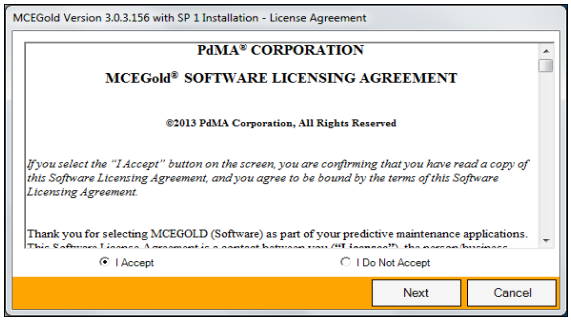
9. Go to step one in the MCEGold 3.0.3 SP3 Installation.

MCEGOLD 3.0.3 SP3 INSTALLATION

1. Insert the MCEGold 3.0.3 SP3 USB flash drive into the USB port. If the installation does not begin automatically, run setup.exe from the USB flash drive. (Select Run setup.exe from the AutoPlay window).

2. The License Agreement window opens. Read the PdMA license and select the "I Accept" option button. The **Next** button becomes visible. Click **Next**.

   NOTE: If you do not accept the terms, the **Next** button is not visible, you can only click **Cancel**, which closes the software without installing it.



3. In the License Key window enter your Company Name and License Key exactly as provided by PdMA. You may copy and paste the license key using the paste button.

4. Click **Submit** (located to the right of the Company Name). When the license has been verified a green check appears. The **Next** button appears. Click **Next**.

5. In the Installation Path window, accept the default shown in the text box (recommended) for the location to install the MCEGold program folder or using the drop-down list select an alternate location, make a note of it for your future use, and click **Next**. Note: It is not suggested to use an alternate location because that can cause conflict and Windows rights problems.

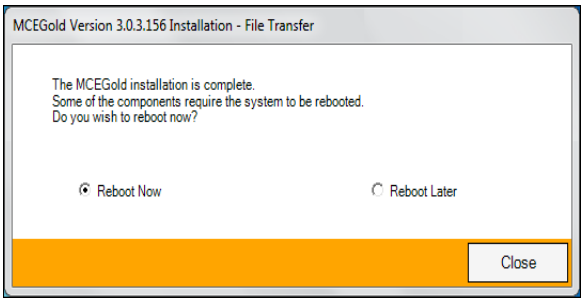
6. When prompted, click **Install Components**. Some components may require additional prompts.

   NOTE: When installing MCEGold, a Word Add-in driver is installed. You may receive a message informing you that "Windows can't verify the publisher of this driver software." Select "Install this driver software anyway".

7. When the installation of components is complete the **Next** button appears. Click **Next**.

8. A progress bar shows the progress of copying files to your computer.

9. When the installation is complete you must reboot your system. Select the Reboot Now option and click **Close**.



10. After rebooting, locate and copy the backup Emaxprb.xml file and the Template folder back into their appropriate locations in

    C:\PdMA Corporation\MCEGold\Emax
    C:\PdMA Corporation\MCEGold\Report

11. Answer Yes to "Merge the folder?" inquiry.

12. Remove the MCEGold 3.0.3 SP3 Network Version USB flash drive from the computer.

Field Tester Database Setup

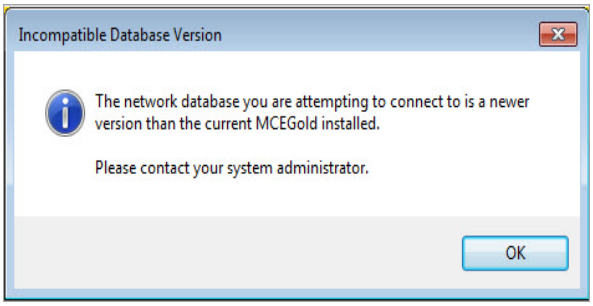
NOTE: For the following, please use the information provided by your IT department.

Field testers utilize a local database for storage of assets. These assets can then be synchronized with the Network database. In order to perform field testing in local tester mode, assets must be down-synced to the local database. In order to perform testing using MCEGold Lite, assets must be in a WatchList and down-synced to the local database.

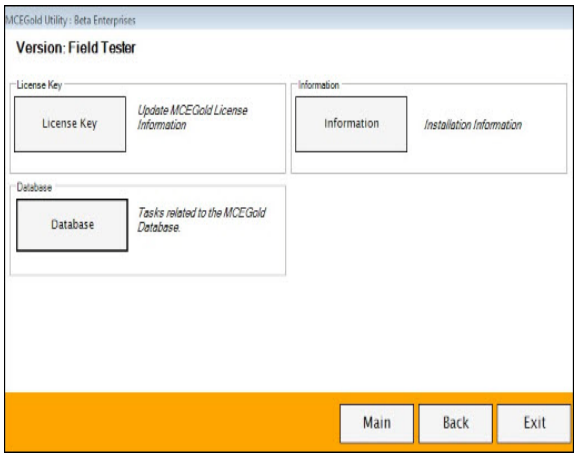
To connect to the existing network database, please follow the instructions below.

1. Open the MCEGold Utility program.

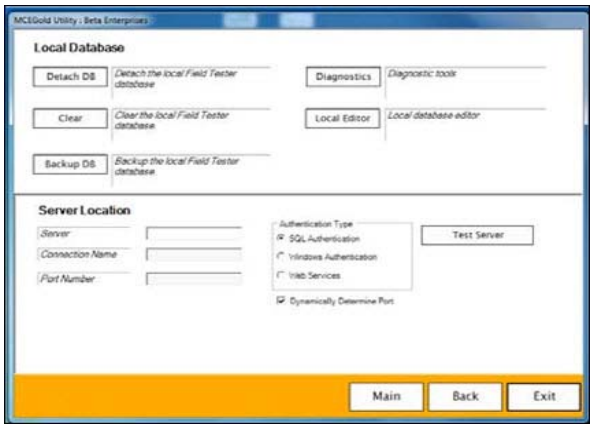
2. If you see the Incompatible Database Version window, you have not properly updated MCEGold. Return to the section MCEGold 3.0.3 SP3 Installation. If you have properly updated MCEGold, and are receiving this message contact Technical Support.



3. Click the **Database** button.

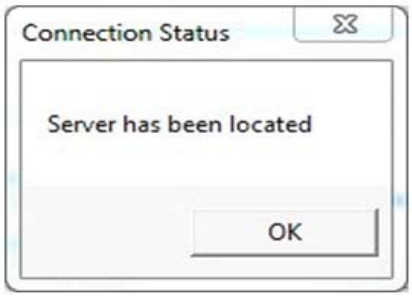


4. Enter the server information provided by your IT department.

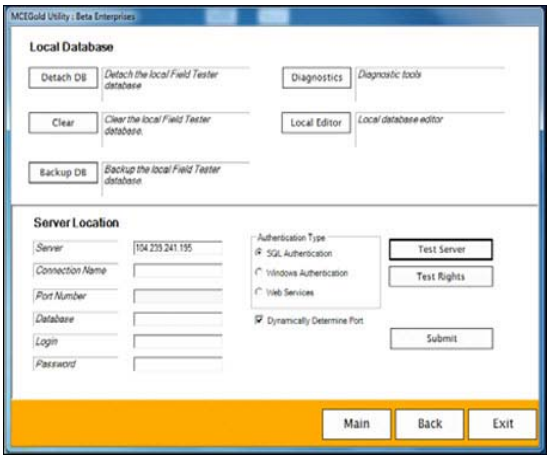


5. Once the server information has been entered, click **Test Server**.

6. The Connection Status window indicates *Server has been located.* Click **OK**.

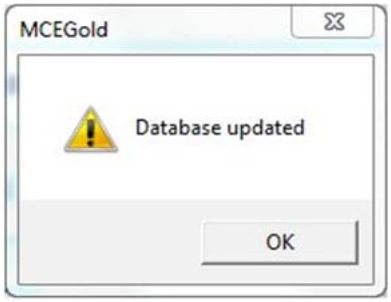


7. In the Server Location section of the MCEGold Utility window enter Connection Name, Database Information, Login Information, and Password as provided by your either your Administrator or your IT Department.

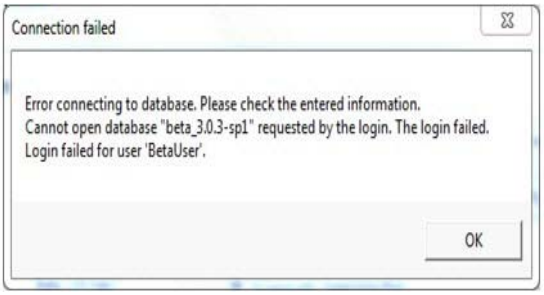


8. Click **Submit**.

9. You will receive a message indicating *Database updated*. Click **OK.**



10. If you receive an error as shown below, verify the information you entered is correct. If it is correct, click **OK** and contact your Administrator.

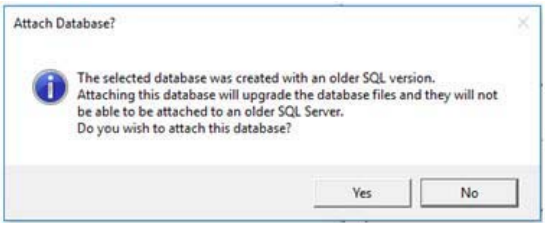


11. If you do not receive an error message, click **Exit** on the Utility window.

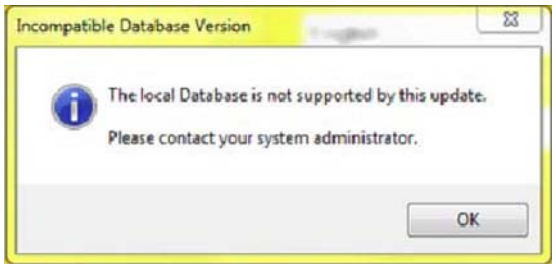
START MCEGOLD

1. When MCEGold starts:

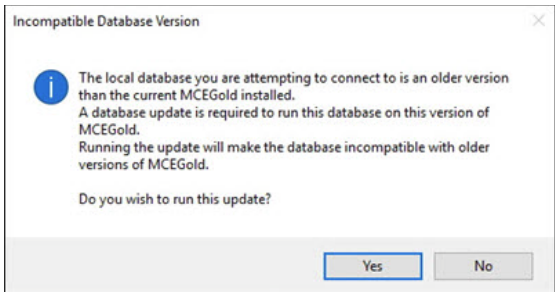
   If you receive the following message: "The database you selected was created with an older SQL version", the database needs to be upgraded to SQL 2008. **Stop!** Click **No**. Do **NOT** proceed! Contact Technical Support.



   If you receive the following "The local database is not supported by this update" message when trying to start MCEGold, the attached database is too old for conversion and needs to be updated to MCEGold 2.6.1 or later prior to updating to MCEGold 3.0.3 SP3.



   If you receive the following *Incompatible Database Version* message when trying to start MCEGold, you are attempting to run MCEGold with a database that is older than V3.0.3-SP3. You will be prompted to update the database. If you have properly backed up your existing database, click **Yes** to run the update. If you have not backed up your existing database, click **No**, backup the database, and then perform the Database Setup procedure.



2. Click **OK** on the message window. The message window closes, leaving the MCEGold Login window open.

3. Enter your name and password.

   NOTE: For a tester, select the Field Tester Network mode. Verify MCEGold is correctly communication with the database. You are ready to perform testing.

TECHNOTE 1704-N10

ISSUED

August 2017

SUBJECT

Release of MCEGold® 3.0.3 SP3 - Network Version for Windows 10.

DESCRIPTION

MCEGold 3.0.3 SP3 Network Version is an upgrade from MCEGold 3.0.3**.** SP1.

PDMA CLOUD SERVICES

The network edition of MCEGold 3.0.3 SP3 supports access to PdMA Cloud Services. Please contact PdMA Technical Support (813-6216-6463 ext. 251) to discuss this option.

NOTES

- MCEGold 3.0.3 SP3 is only compatible with Windows 10 and Windows 7 and M-Series testers.

-Installation of MCEGold 3.0.3 SP3 on a Windows 10 computer uses a special installation procedure. For a Windows 7 installation refer to TechNote 1704-S7 (Stand Alone) or TechNote 1704-N7 (Network) as applicable.

- MCEGold Word Add-in is only compatible with MS Word 2007 and 2013. MCEGold Word Add-in is NOT compatible with MS Word 2010. Templates created with other versions of MS Word may not be functional and may cause conflicts with the MCEGold software.

- To ensure application accessibility, the default installation location has been set to C:\PdMA Corporation.

- Databases attached to MCEGold 3.0.3 SP3 must be from MCEGold 2.6.1 or later and once updated with 3.0.3 SP3 *will not* be compatible with older versions of MCEGold.

- Assets exported with MCEGold 3.0.3 SP3 *will not* be compatible with older versions of MCEGold.

- If you have any questions, please contact PdMA Technical Support (813-621-6463 ext. 251).

Minimum Requirements

Computer	Dell Latitude E5470 Laptop*
Processor	2+ GHz Intel i5 or equivalent
Resolution	1600 x 900/1920 x 1080 (small font)
Operating System	Microsoft® Windows 10 (32 or 64 bit)**
Memory	4.0+ G RAM***
Ports/Drives	(1) USB Port in Rear or Side
Hard Disk	20G Available

* Using any other computer manufacturer in conjunction with the PdMA software may result in erratic computer behavior; not limited to but including:

- Power Management Issues
- Lock-up
- Communication Port Malfunction
- Driver Incompatibility
- Display Errors
- SQL Database Incompatibility
- Network Synchronization Issues.

** For International Customers: Windows 10 (32 or 64-bit)

*** If you are upgrading from MCEGold 2.6.1 - 2.6.2 verify that your computer has at least 4G of RAM.

UPDATE SERVER DATABASE FOR NETWORK USERS

NOTE: Ensure the user account being used to update the server has “sysadmin” permissions.

There is a separate application on the Installation USB flash drive to update the network database on the server. ***The database must be updated on the server first, then the desktops and field testers.***

If the update is installed on a network field tester before the server database is updated, a warning message appears informing you the database is an old version and to contact your system administrator.

1. Backup the MCEGold server database.

2. Insert the MCEGold 3.0.3 SP3 USB flash drive into the USB port. If the drive starts automatically, click **Exit** and proceed to the next step.

3. Locate the MCEGold Database Server Update folder on the MCEGold 3.0.3 SP3 USB flash drive.

4. Click on the MCEGold Database Server Update.exe file.

5. The Server Information window opens. Fill in the Server, Database, Login, and Password information. The Login and Password will depend on your authentication (Windows/SQL).

6. Click **Run Update**. The progress status will display on the window.

7. When the update complete message displays, close the window.

PREPARE WINDOWS 10 FOR MCEGOLD 3.0.3 SP3 INSTALLATION

NOTE: If you have updated to Windows 10 from a previous version of Windows, you must perform a full uninstall of MCEGold regardless of the version. If you have not previously installed MCEGold on your Windows 10 computer, it is not necessary to uninstall MCEGold. Go to the Disable Driver Signature Enforcement section.

Backup

Before beginning the MCEGold uninstall, copy the Emaxprb.xml file only (not the folder) and the complete Templates folder to a safe location and make note of the location.

The default location for the files is listed below, however you may have chosen a different location during the original installation.
C:\PdMA Corporation\MCEGold\Emax
C:\PdMA Corporation\MCEGold\Report

Uninstall

1. Select Start, Control Panel, select Programs, then Programs and Features.

2. In the Uninstall or change a program window scroll down to locate and highlight the MCEGold Version X.X.X on the list.

3. Click **Uninstall/Change** located above the list and follow on-screen prompts.

4. Click **Finish** when the "Uninstall Complete" message is received.

5. Locate the PdMA MCEMAX Tester (Driver Removal) file. Highlight it and click **Uninstall/ Change** located above the list and follow the on-screen prompts.

6. Click **Finish** when the "Uninstall Complete" message is received.

7. Locate the C:\PdMACorporation folder and delete it. The subfolders will be deleted also. After the installation of MCEGold 3.0.3 SP3 the new folder location will be C:\PdMA Corporation\....

8. Reboot your computer.

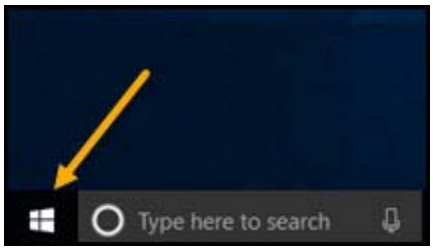
9. Go to step one in Disable Driver Signature Enforcement section.

Disable Driver Signature Enforcement

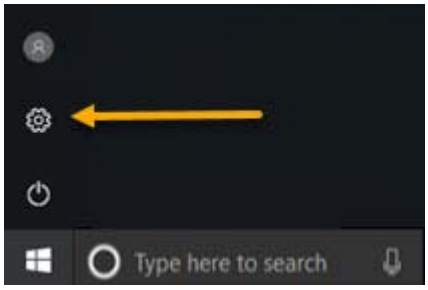
NOTE: To install MCEGold 3.0.3 SP3 on a Windows 10 operating system, the operating system must be in the "Disable driver signature enforcement" mode.

Use the following steps to enter the Disable Driver Signature Enforcement mode.

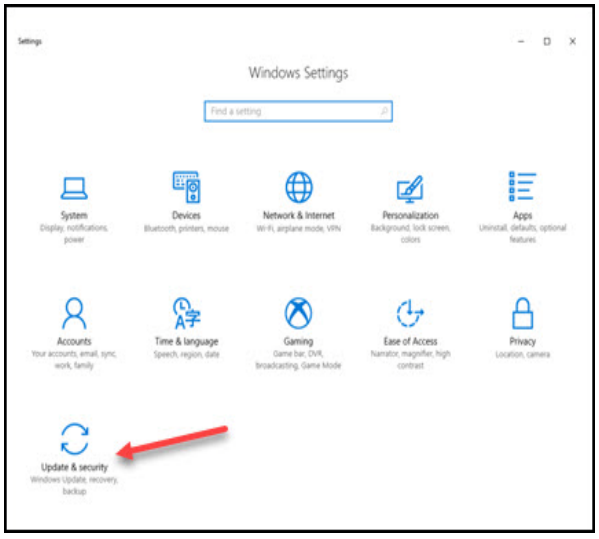
1. From the main Windows 10 screen, click the **Start** button in the lower left corner of the computer screen.



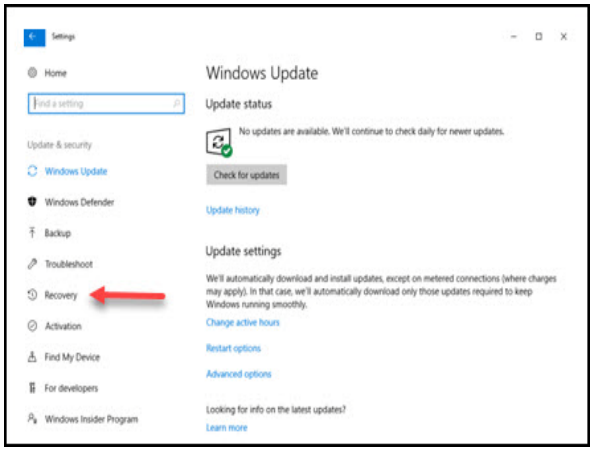
2. Click **Settings**.



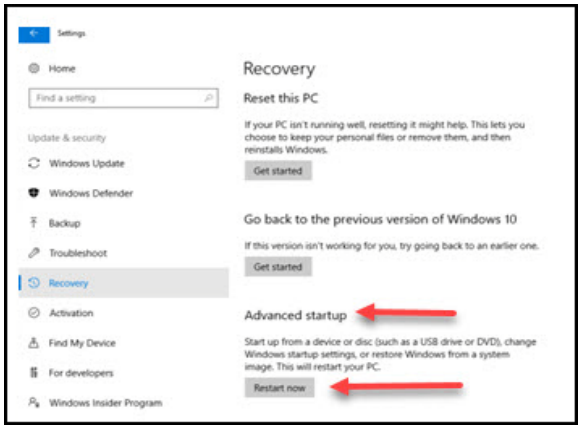
3. From the Windows Settings window, select **Update and Security**.



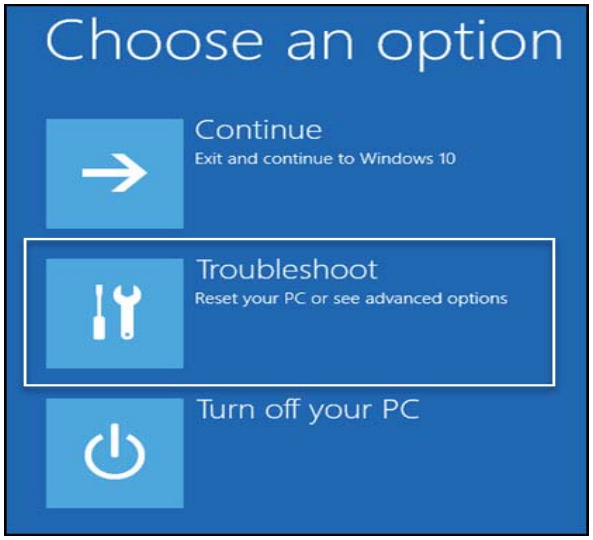
4. From the Windows Update window, select **Recovery**.



5. From the Recovery window, in the Advanced startup section, click **Restart now**.



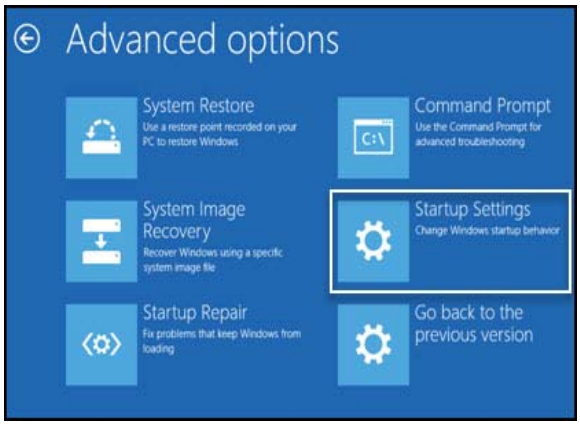
6. From the Choose an option window, select **Troubleshoot**.



7. From the Troubleshoot window, Select **Advanced options**.



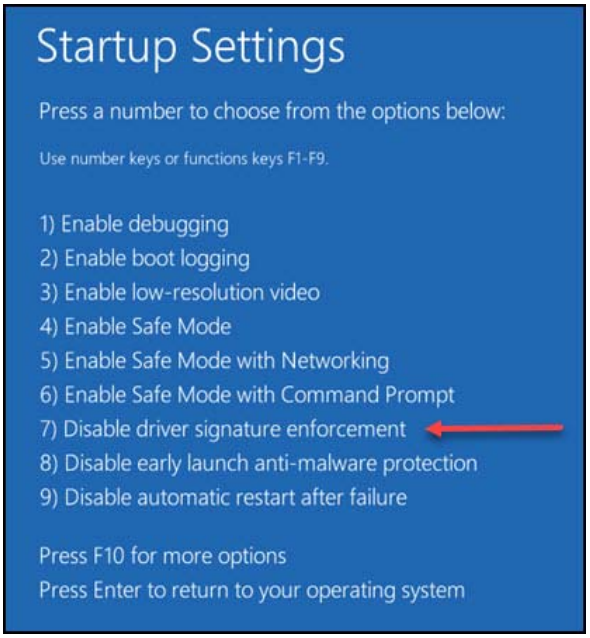
8. From Advanced Options window, Select **Startup Settings**.



9. From the Startup Settings window, click **Restart**.



10. From the next Startup Settings window, press # 7 to select **Disable driver signature enforcement.**

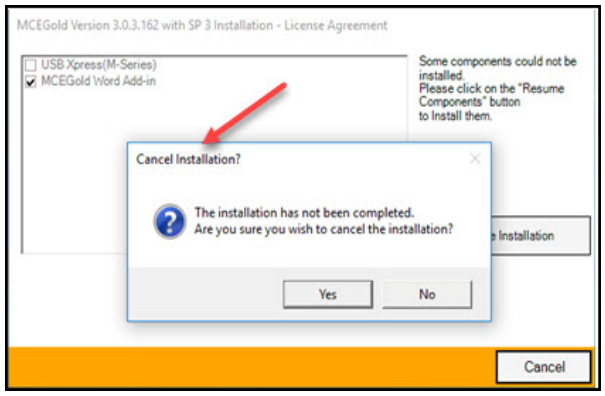


11. The computer displays the start up screen. Go to the MCEGold 3.0.3 SP3 Installation section.

MCEGOLD 3.0.3 SP3 INSTALLATION

NOTE: During the installation process, if you see either of the following windows or messages: MCEGold – **Some components could not be installed**, or MCEGold – **Cancel Installation?**, then Windows 10 has not been configured to allow unsigned driver installation. See the section *Prepare Windows 10 for MCEGold 3.0.3 SP3 Installation.*





1. Insert the MCEGold 3.0.3 SP3 USB flash drive into the USB port. If the installation does not begin automatically, run setup.exe from the USB flash drive. (Select Run, setup.exe from the AutoPlay window).

2. Right click on setup.exe and select Run as administrator.

3. The License Agreement window opens. Read the PdMA license and select the "I Accept" option button. The **Next** button becomes visible. Click **Next**.
   Note: If you do not accept the terms, the **Next** button is not visible, you can only click **Cancel**, which closes the software without installing it.



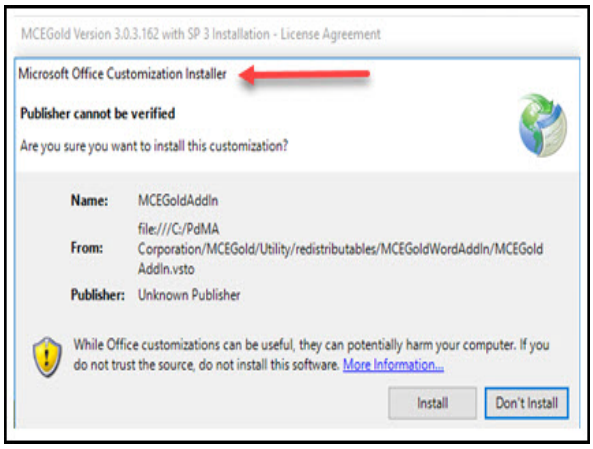
4. In the License Key window enter your Company Name and License Key exactly as provided by PdMA. You may copy and paste the license key using the paste button.

5. Click **Submit** (located to the right of the Company Name). When the license has been verified a green check appears. The **Next** button appears. Click **Next**.

6. In the Installation Path window, accept the default shown in the text box (recommended) for the location to install the MCEGold program folder or using the drop-down list select an alternate location, make a note of it for your future use, and click **Next**. Note: It is not suggested to use an alternate location because that can cause conflict and Windows rights problems.

7. When prompted, click **Install Components**. Some components may require additional prompts.

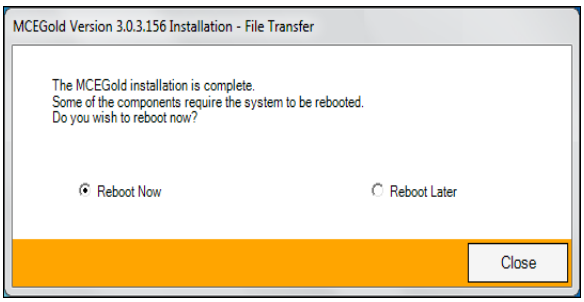
   Note: When installing MCEGold, a Word Add-in driver is installed. You may receive a message informing you that "Windows can't verify the publisher of this driver software." Select "Install".



8. When the installation of components is complete the **Next** button appears. Click **Next**.

9. A progress bar shows the progress of copying files to your computer.

10. When the installation is complete you must reboot your system. Select the Reboot Now option and click **Close**.



11. After rebooting, locate and copy the backup Emaxprb.xml file and the Template folder back into their appropriate locations in

    C:\PdMA Corporation\MCEGold\Emax
    C:\PdMA Corporation\MCEGold\Report

12. Answer Yes to “Merge the folder?” inquiry.

13. Remove the MCEGold 3.0.3 SP3 USB flash drive from the computer.

FIELD TESTER DATABASE SETUP

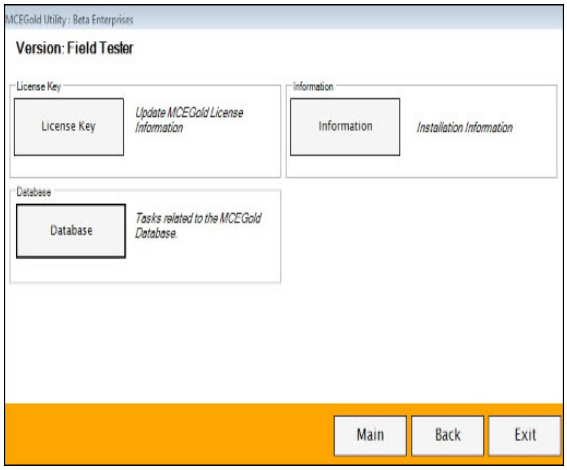
NOTE: For the following, please use the information provided by your IT department.

Field testers utilize a local database for storage of assets. These assets can then be synchronized with the Network database. In order to perform field testing in local tester mode, assets must be down-synced to the local database. In order to perform testing using MCEGold Lite, assets must be in a WatchList and down-synced to the local database.

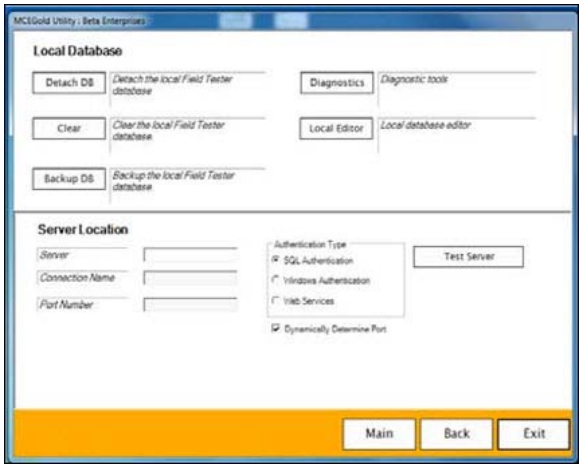
To connect to the existing network database, please follow the instructions below.

1. Open the MCEGold Utility program.

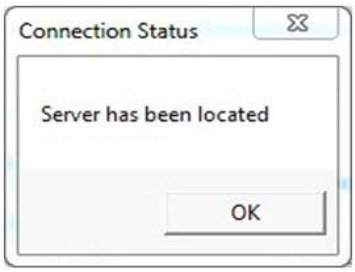
2. Click **Database**.



3. Enter the server information provided by your IT department.

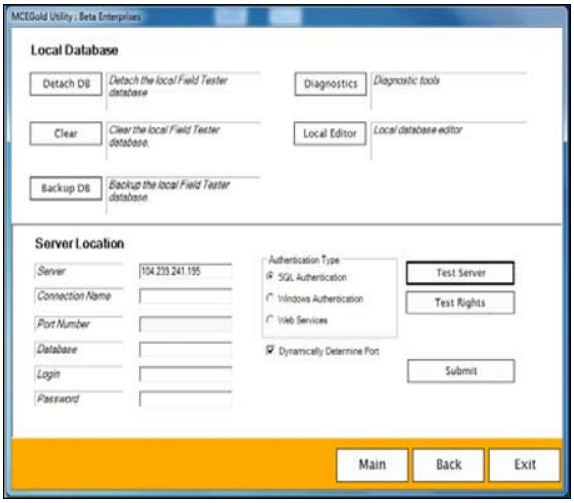


4. Once the server information has been entered, click **Test Server**. You should receive a message indicating “Server has been located”.

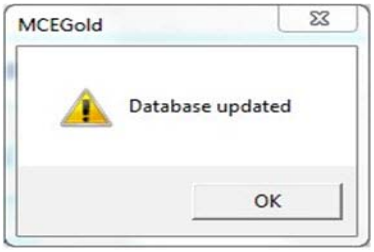


5. Click **OK** on the Connection Status window.

6. Enter the following connection information provided by either your Administrator or IT Department: Connection Name, Database Information, Login Information, and Password.



7. Click **Submit**. You will receive a message indicating "Database updated". Click OK.



8. If you receive an error as shown below, verify the information you entered is correct. If it is correct, click OK and contact your Administrator.



9. If you do not receive an error message, click **Exit** on the Utility window.

10. Start MCEGold and enter the name and password for the tester. Select the Field Tester Network mode.

11. Once you have opened MCEGold and you have verified MCEGold is correctly communicating with the database. You are now ready to perform testing.

TECHNOTE 1704-S7

ISSUED

August 2017

SUBJECT

Release of MCEGold® 3.0.3 SP3 - Stand Alone for Windows 7.

DESCRIPTION

MCEGold 3.0.3 SP3 is an upgrade from MCEGold 3.0.3. SP1

NOTES

- MCEGold 3.0.3 SP3 is only compatible with Windows 10 and Windows 7 and M-Series testers.

- Installation of MCEGold 3.0.3 SP3 on a Windows 10 computer uses a special installation procedure. For a Windows 10 installation refer to TechNote 1704-S10 (Stand Alone) or TechNote 1704-N10 (Network) as applicable.

- MCEGold Word Add-in is only compatible with MS Word 2007 and 2013. MCEGold Word Add-in is NOT compatible with MS Word 2010. Templates created with other versions of MS Word may not be functional and may cause conflicts with the MCEGold software.

- To ensure application accessibility, the default installation location has been set to C:\PdMA Corporation.

- Databases attached to MCEGold 3.0.3 SP3 must be from MCEGold 2.6.1 or later and once updated with 3.0.3 SP3 *will not* be compatible with older versions of MCEGold.

- Assets opened with MCEGold 3.0.3 SP3 *will not* be compatible with older versions of MCEGold.

- If you have any questions, please contact PdMA Technical Support (813-621-6463 ext. 251).

Minimum Requirements

Computer	Dell Latitude E5470 Laptop*
Processor	2+ GHz Intel i5 or equivalent
Resolution	1600 x 900/1920 x 1080 (small font)
Operating System	Microsoft® Windows 7 SP1 (32 or 64 bit)**
Memory	4.0+ G RAM***
Ports/Drives	(1) USB Port in Rear or Side
Hard Disk	20G Available

* Using any other computer manufacturer in conjunction with the PdMA software may result in erratic computer behavior; not limited to but including:

- Power Management Issues
- Lock-up
- Communication Port Malfunction
- Driver Incompatibility
- Display Errors
- SQL Database Incompatibility
- Network Synchronization Issues.

** For International Customers: Windows 7 Ultimate (32 or 64-bit).

***If you are upgrading from MCEGold 2.6.1 - 2.6.2 verify that your computer has at least 4G of RAM.

PREPARE FOR MCEGOLD 3.0.3 SP3 INSTALLATION

NOTE: If you have MCEGold 3.0.3, 3.0.3 SP1, or 3.0.3 SP2 follow the instructions in Upgrading From MCEGold 3.0.3 or Later.

If you have any version prior to MCEGold 3.0.3 a full uninstall is required before installing version 3.0.3 SP3. See Upgrading From a Version Previous to MCEGold 3.0.3.

Upgrading From MCEGold 3.0.3 or Later

Backup

Before beginning the MCEGold install, copy the Emaxprb.xml file only (not the folder) and the complete Templates folder to a safe location and make note of the location.

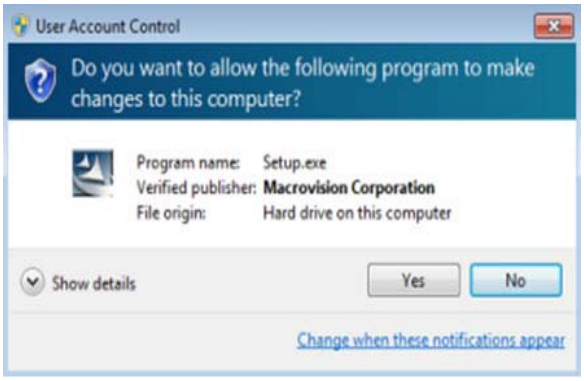
The default location for the files is listed below, however you may have chosen a different location during the original installation.
C:\PdMA Corporation\MCEGold\Emax
C:\PdMA Corporation\MCEGold\Report

MCEGold 3.0.3 SP3 Installation

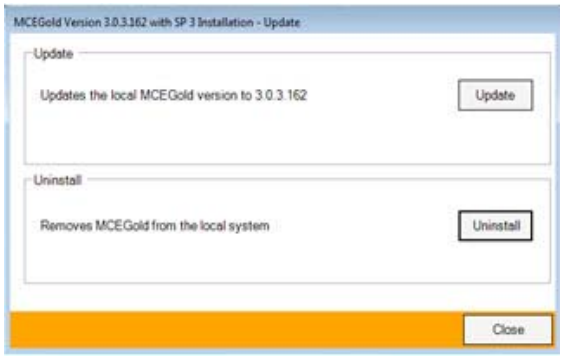
NOTE: Some on screen prompts and messages during the installation process are controlled by the Windows operating system and are out of PdMA's control. Every effort has been made to include their possible appearance and the action you should take. However, if you are unsure please contact our technical support department for help.

1. Insert the MCEGold 3.0.3 SP3 USB flash drive into the USB port. If the installation does not begin automatically, run setup.exe from the USB flash drive. (Select Run, setup.exe from the AutoPlay window).

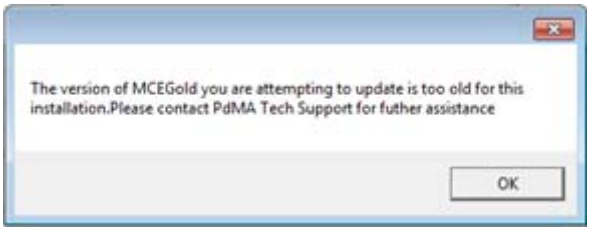
2. If you see the User Account Control screen, click **Yes**.



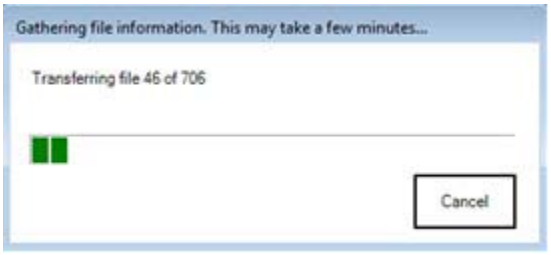
3. If there is an existing MCEGold version installed on your computer, you will see the MCEGold Update screen. click **Update**.



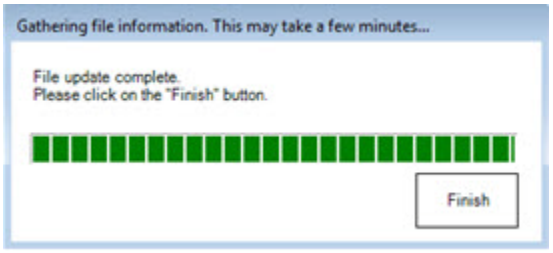
NOTE: If you have a version prior to MCEGold 3.0.3 you will receive the error message shown below. Do **NOT** proceed. Contact technical support.



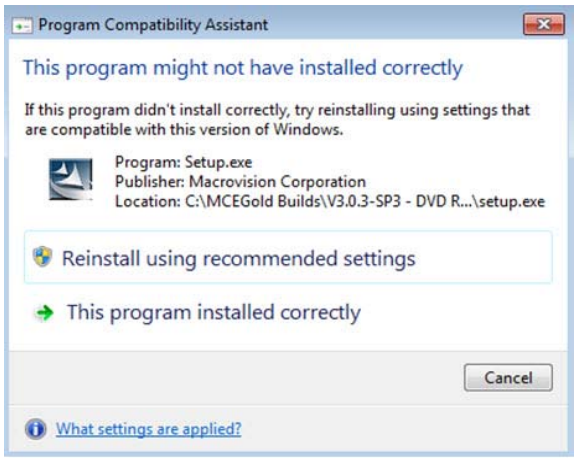
4. The status update window displays.



5. When the update is complete, click **Finish**.



6. If the Program Compatibility Assistant screen displays, select *This program installed correctly.*



7. Go to the Database Setup section.

Upgrading From a Version Prior to MCEGold 3.0.3

Backup

Before beginning the MCEGold uninstall, copy the Emaxprb.xml file only (not the folder) and the complete Templates folder to a safe location and make note of the location.

The default location for the files is listed below, however you may have chosen a different location during the original installation.
C:\PdMA Corporation\MCEGold\Emax
C:\PdMA Corporation\MCEGold\Report

Uninstall

1. Select Start, Control Panel, select Programs, then Programs and Features.

2. In the Uninstall or change a program window scroll down to locate and highlight the MCEGold Version X.X.X on the list.

3. Click **Uninstall/Change** located above the list and follow on screen prompts.

4. Click **Finish** when the "Uninstall Complete" message is received.

5. Locate the PdMA MCEMAX Tester (Driver Removal) file. Highlight it and click **Uninstall/ Change** located above the list and follow the on screen prompts.

6. Click **Finish** when the "Uninstall Complete" message is received.

7. Locate the C:\PdMACorporation folder and delete it. The subfolders will be deleted also. After the installation of MCEGold 3.0.3 SP3 the new folder location will be C:\PdMA Corporation\....

8. Reboot your computer.

9. Go to step one in the *MCEGold 3.0.3* SP3 Installation section.

MCEGold 3.0.3 SP3 Installation

1. Insert the MCEGold 3.0.3 SP3 USB flash drive into the USB port. If the installation does not begin automatically, run setup.exe from the USB flash drive. (Select Run, setup.exe from the AutoPlay window).

2. The License Agreement window opens. Read the PdMA license and select the "I Accept" option button. The **Next** button becomes visible. Click **Next**.
   Note: If you do not accept the terms, the **Next** button is not visible, you can only click **Cancel**, which closes the software without installing it.



3. In the License Key window enter your Company Name and License Key exactly as provided by PdMA. You may copy and paste the license key using the paste button.

4. Click **Submit** (located to the right of the Company Name). When the license has been verified a green check appears. The **Next** button appears. Click **Next**.

5. In the Installation Path window, accept the default shown in the text box (recommended) for the location to install the MCEGold program folder or using the drop-down list select an alternate location, make a note of it for your future use, and click **Next**. Note: It is not suggested to use an alternate location because that can cause conflict and Windows rights problems.

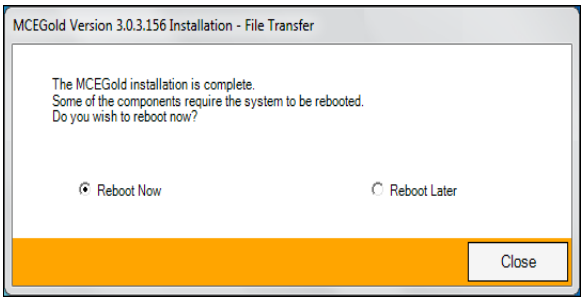
6. When prompted, click **Install Components**. Some components may require additional prompts.

Note: When installing MCEGold, a Word Add-in driver is installed. You may receive a message informing you that "Windows can't verify the publisher of this driver software." Select "Install this driver software anyway".

7. When the installation of components is complete the **Next** button appears. Click **Next**.

8. A progress bar shows the progress of copying files to your computer.

9. When the installation is complete you must reboot your system. Select the Reboot Now option and click **Close**.



10. After rebooting, locate and copy the backup Emaxprb.xml file and the Template folder back into their appropriate locations in

    C:\PdMA Corporation\MCEGold\Emax
    C:\PdMA Corporation\MCEGold\Report

11. Answer Yes to "Merge the folder?" inquiry.

12. Remove the MCEGold 3.0.3 SP3 USB flash drive from the computer.

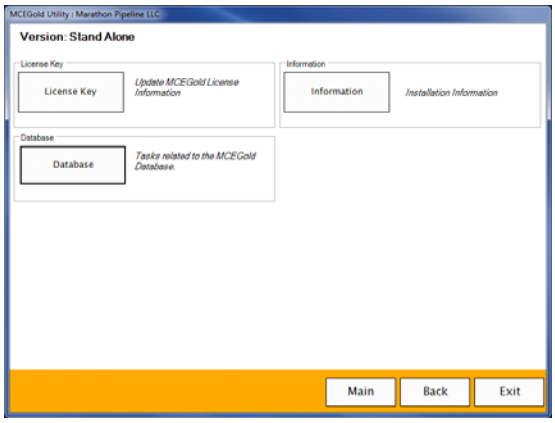
DATABASE SETUP

NOTE: This procedure is for connecting to an existing database that is to be upgraded to MCEGold 3.0.3 SP3.

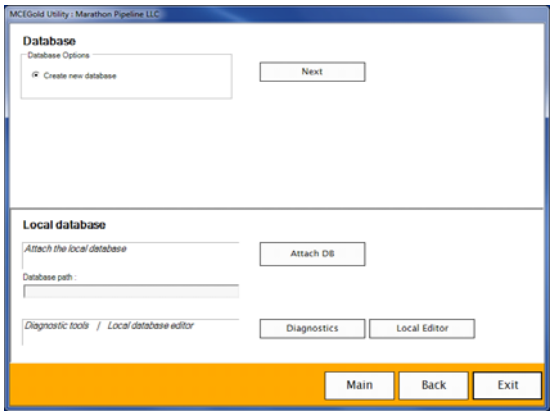
To connect to an existing database, please following the instructions below.

1. Ensure you have properly backed up the database you are converting.

2. Open the Utility program and click the **Database** button.

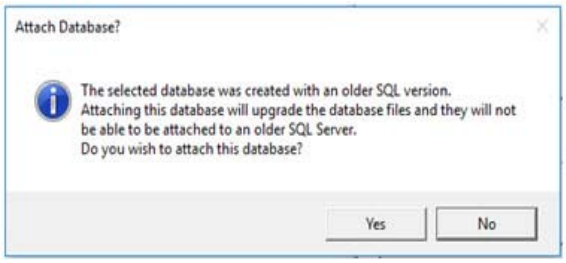


3. Click **Attach DB** as shown in the below.

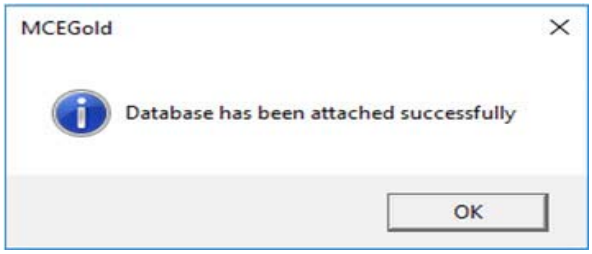


4. Navigate to the database location on your computer and select the desired database.

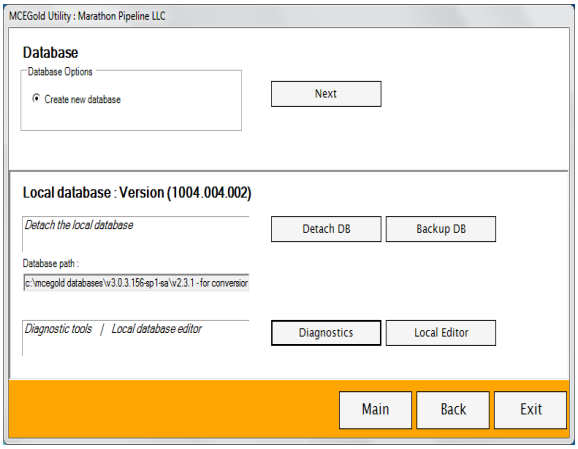
   If you receive the following message: "The database you selected was created with an older SQL version", the database needs to be upgraded to SQL 2008. **Stop!** Click **No**. Do **NOT** proceed! Contact Technical Support.



5. If the database attached properly you will see the following window. Click **OK**.



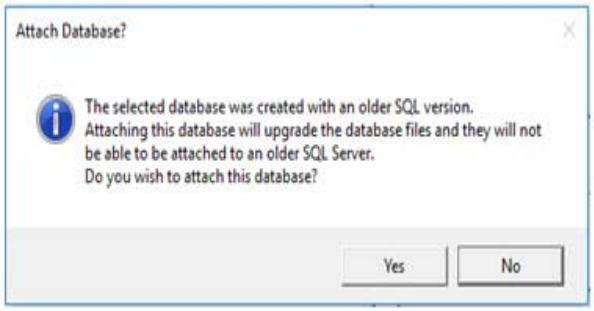
6. The MCEGold Utility Database Window opens. Click **Exit**.



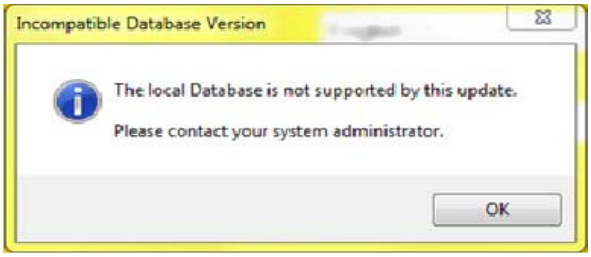
START MCEGOLD

1. Start MCEGold.

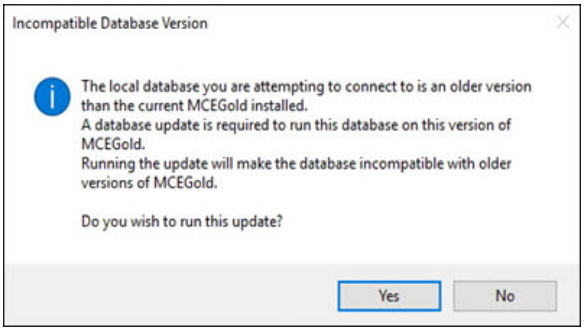
   If you receive the following message: "The database you selected was created with an older SQL version", the database needs to be upgraded to SQL 2008. **Stop!** Click **No**. Do **NOT** proceed! Contact Technical Support.



   If you receive the following "local database is not supported by this update" message when trying to start MCEGold, the attached database is too old for conversion and needs to be updated to MCEGold 2.6.1 or later prior to updating to MCEGold 3.0.3 SP3.



If you receive the following *Incompatible Database Version* message when trying to start MCEGold, you are attempting to run MCEGold with a database that is older than V3.0.3-SP3. You will be prompted to update the database. If you have properly backed up your existing database, click **Yes** to run the update. If you have not backed up your existing database, click **No**, backup the database, and then perform the Database Setup procedure.



2. Click **OK** on the message window. The message window closes, leaving the MCEGold Login window open.

3. If there is another database available, click on **Search** (the three dots on the right of Site) to bring up the navigator to search for the other database. If none are available, click **Cancel** to exit out of MCEGold, and contact PdMA Technical Support at 813-621-6463 ext. 251.

TECHNOTE 1704-S10

ISSUED

August 2017

SUBJECT

Release of MCEGold® 3.0.3 SP3 - Stand Alone for Windows 10.

DESCRIPTION

MCEGold 3.0.3 SP3 is an upgrade from MCEGold 3.0.3.

NOTES

- MCEGold 3.0.3 SP3 is only compatible with Windows 10 and Windows 7 and M-Series testers.

- Installation of MCEGold 3.0.3 SP3 on a Windows 10 computer uses a special installation procedure. For a Windows 7 installation refer to TechNote 1704-S7 (Stand Alone) or TechNote 1704-N7 (Network) as applicable.

- MCEGold Word Add-in is only compatible with MS Word 2007 and 2013. MCEGold Word Add-in is NOT compatible with MS Word 2010. Templates created with other versions of MS Word may not be functional and may cause conflicts with the MCEGold software.

- To ensure application accessibility, the default installation location has been set to C:\PdMA Corporation.

- Databases attached to MCEGold 3.0.3 SP3 must be from MCEGold 2.6.1 or later and once updated with 3.0.3 SP3 *will not* be compatible with older versions of MCEGold.

- Assets opened with MCEGold 3.0.3 SP3 *will not* be compatible with older versions of MCEGold.

- If you have any questions, please contact PdMA Technical Support (813-621-6463 ext. 251).

Minimum Requirements

Computer	Dell Latitude E5470 Laptop*
Processor	2+ GHz Intel i5 or equivalent
Resolution	1600 x 900/1920 x 1080 (small font)
Operating System	Microsoft® Windows 10 (32 or 64 bit)**
Memory	4.0+ G RAM***
Ports/Drives	(1) USB Port in Rear or Side
Hard Disk	20G Available

* Using any other computer manufacturer in conjunction with the PdMA software may result in erratic computer behavior; not limited to but including:

- Power Management Issues
- Lock-up
- Communication Port Malfunction
- Driver Incompatibility
- Display Errors
- SQL Database Incompatibility
- Network Synchronization Issues.

** For International Customers: Windows 10 or (32 or 64-bit)

***If you are upgrading from MCEGold 2.6.1 - 2.6.2 verify that your computer has at least 4G of RAM.

PREPARE WINDOWS 10 FOR MCEGOLD 3.0.3 SP3 INSTALLATION

NOTE: If you have updated to Windows 10 from a previous version of Windows, you must perform a full uninstall of MCEGold regardless of the version. If you have not previously installed MCEGold on your Windows 10 computer, it is not necessary to uninstall MCEGold. Go to the Disable Driver Signature Enforcement section.

Backup

Before beginning the MCEGold uninstall, copy the Emaxprb.xml file only (not the folder) and the complete Templates folder to a safe location and make note of the location.

The default location for the files is listed below, however you may have chosen a different location during the original installation.
C:\PdMA Corporation\MCEGold\Emax
C:\PdMA Corporation\MCEGold\Report

Uninstall

1. Select Start, Control Panel, select Programs, then Programs and Features.

2. In the Uninstall or change a program window scroll down to locate and highlight the MCEGold Version X.X.X on the list.

3. Click **Uninstall/Change** located above the list and follow on screen prompts.

4. Click **Finish** when the "Uninstall Complete" message is received.

5. Locate the PdMA MCEMAX Tester (Driver Removal) file. Highlight it and click **Uninstall/ Change** located above the list and follow the on screen prompts.

6. Click **Finish** when the "Uninstall Complete" message is received.

7. Locate the C:\PdMACorporation folder and delete it. The subfolders will be deleted also. After the installation of MCEGold 3.0.3 SP3 the new folder location will be C:\PdMA Corporation\....

8. Reboot your computer.

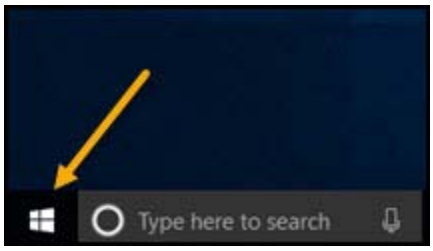
9. Go to step one in the Disable Driver Signature Enforcement section.

Disable Driver Signature Enforcement

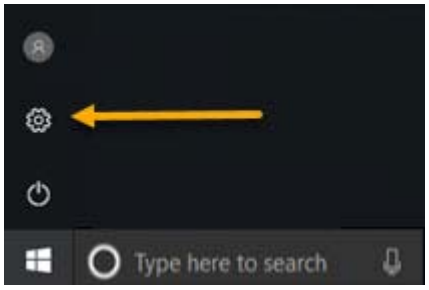
NOTE: To install MCEGold 3.0.3 SP3 on a Windows 10 operating system, the operating system must be in the "Disable driver signature enforcement" mode.

Use the following steps to enter the Disable driver signature enforcement installation mode.

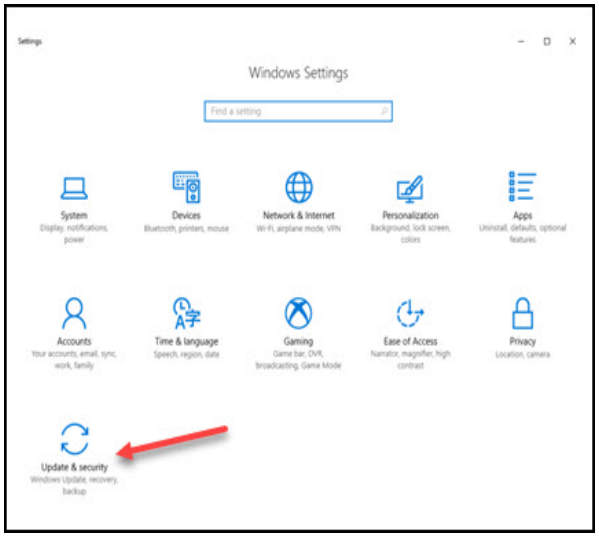
1. From the main Windows 10 screen, click the **Start** button in the lower left corner of the computer screen.



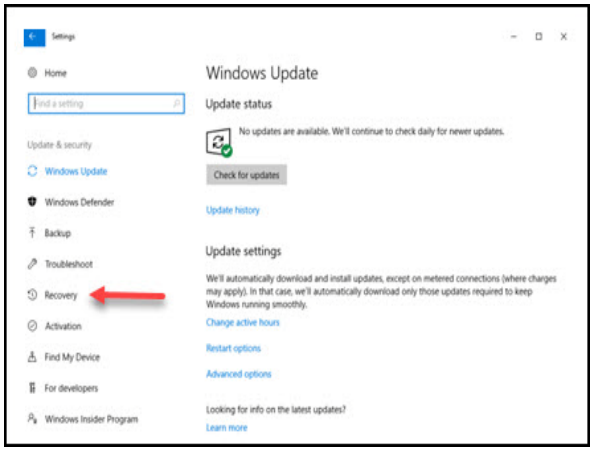
2. Click **Settings**.



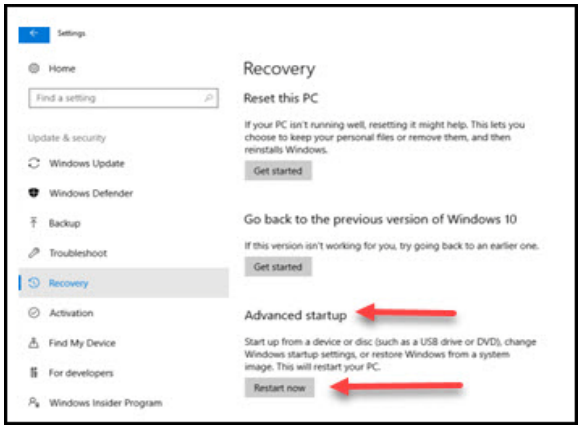
3. From the Windows Settings window, select **Update and Security**.



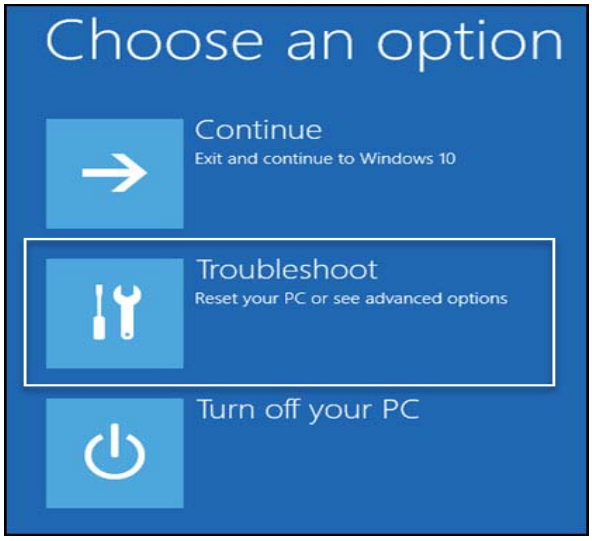
4. From the Windows Update window, select **Recovery**.



5. From the Recovery window, in the Advanced startup section, click **Restart now**.



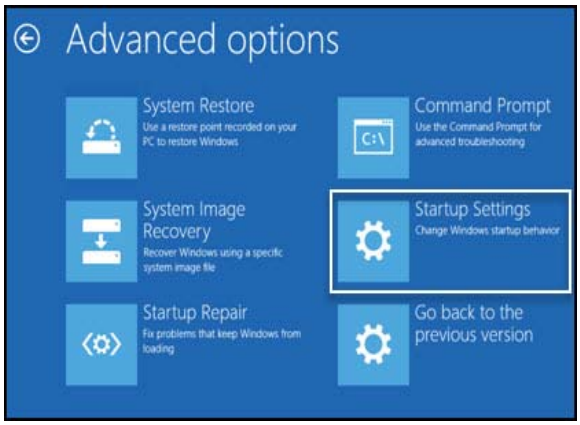
6. From the Choose an option window, select **Troubleshoot**.



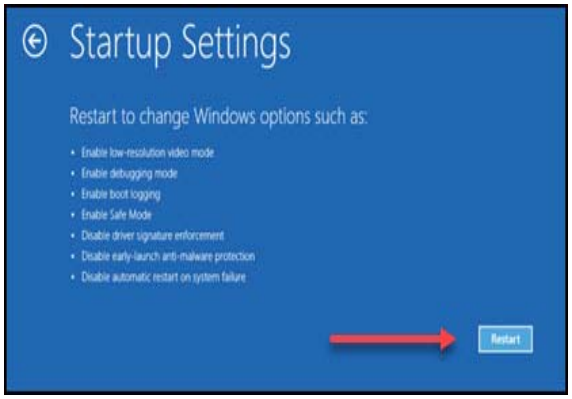
7. From the Troubleshoot window, Select **Advanced options**.



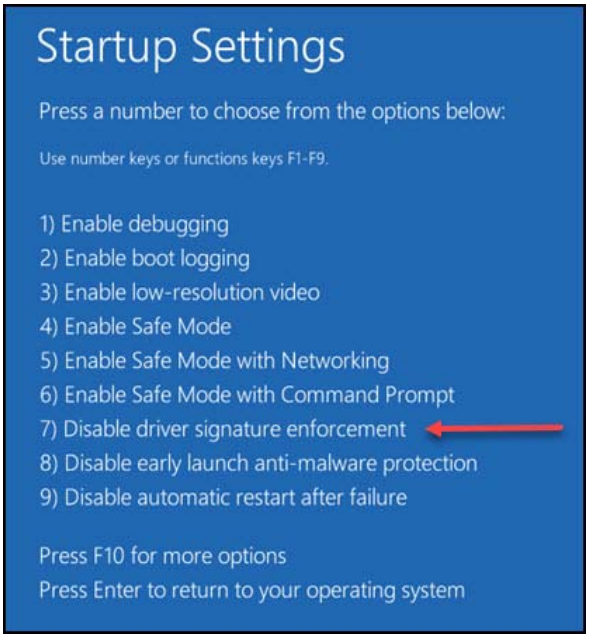
8. From Advanced Options window, Select **Startup Settings**.



9. From the Startup Settings window, click **Restart**.



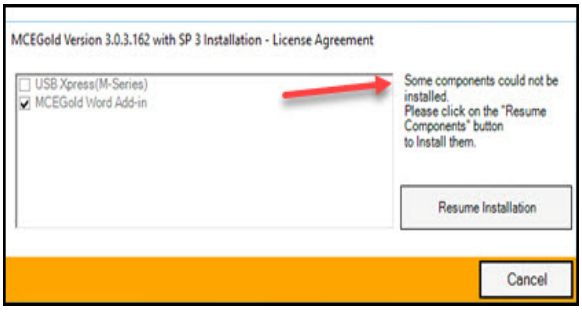
10. From the next Startup Settings window, press # 7 to select **Disable driver signature enforcement.**

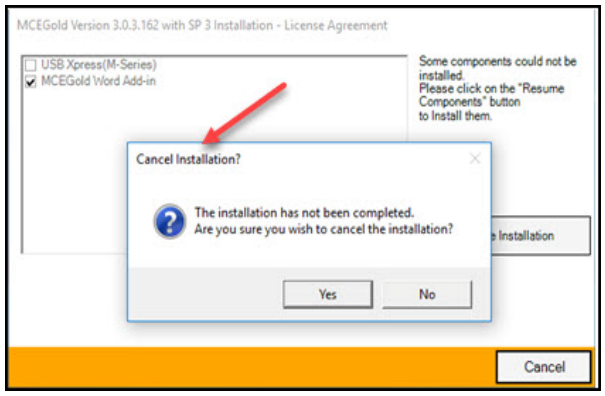


11. The computer displays the start up screen.

MCEGOLD 3.0.3 SP3 INSTALLATION

NOTE: During the installation process, if you see either of the following windows or messages: MCEGold – **Some components could not be installed**, or MCEGold – **Cancel Installation?**, then Windows 10 has not been configured to allow unsigned driver installation. See the section *Prepare Windows 10 for MCEGold 3.0.3 SP3 Installation.*

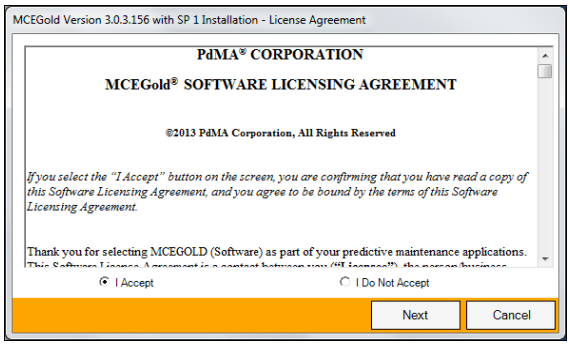




1. Insert the MCEGold 3.0.3 SP3 USB flash drive into the USB port. If the installation does not begin automatically, run setup.exe from the USB flash drive. (Select Run, setup.exe from the AutoPlay window).

2. Right click on setup.exe and select Run as administrator.

3. The License Agreement window opens. Read the PdMA license and select the "I Accept" option button. The **Next** button becomes visible. Click **Next**.
   Note: If you do not accept the terms, the **Next** button is not visible, you can only click **Cancel**, which closes the software without installing it.



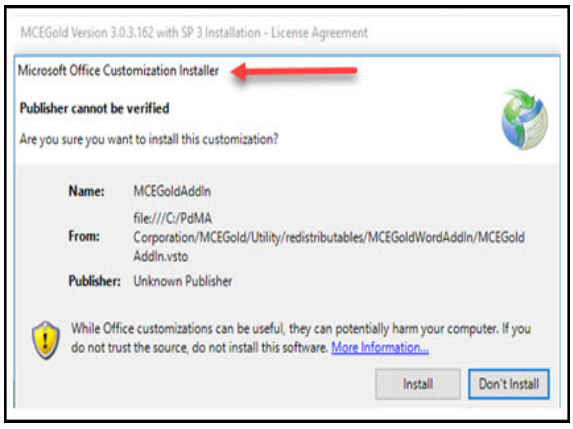
4. In the License Key window enter your Company Name and License Key exactly as provided by PdMA. You may copy and paste the license key using the paste button.

5. Click **Submit** (located to the right of the Company Name). When the license has been verified a green check appears. The **Next** button appears. Click **Next**.

6. In the Installation Path window, accept the default shown in the text box (recommended) for the location to install the MCEGold program folder or using the drop-down list select an alternate location, make a note of it for your future use, and click **Next**. Note: It is not suggested to use an alternate location because that can cause conflict and Windows rights problems.

7. When prompted, click **Install Components**. Some components may require additional prompts.

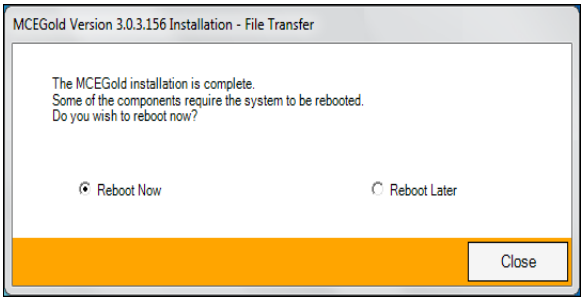
   Note: When installing MCEGold, a Word Add-in driver is installed. You may receive a message informing you that "Windows can't verify the publisher of this driver software." Select "Install".



8. When the installation of components is complete the **Next** button appears. Click **Next**.

9. A progress bar shows the progress of copying files to your computer.

10. When the installation is complete you must reboot your system. Select the Reboot Now option and click **Close**.



11. After rebooting, locate and copy the backup Emaxprb.xml file and the Template folder back into their appropriate locations in

    C:\PdMA Corporation\MCEGold\Emax
    C:\PdMA Corporation\MCEGold\Report

12. Answer Yes to "Merge the folder?" inquiry.

13. Remove the MCEGold 3.0.3 SP3 USB flash drive from the computer.

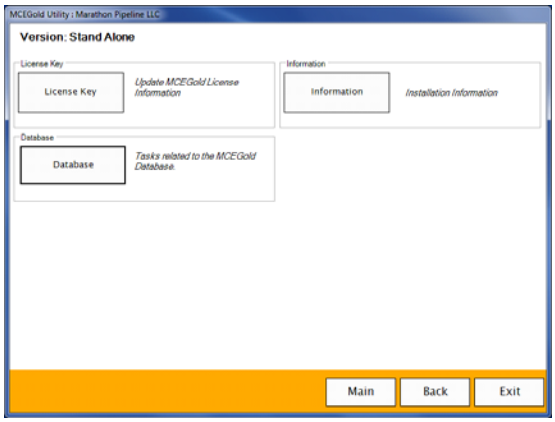
DATABASE SETUP

Note: This procedure is for connecting to an existing database that is to be upgraded to MCEGold 3.0.3 SP3.

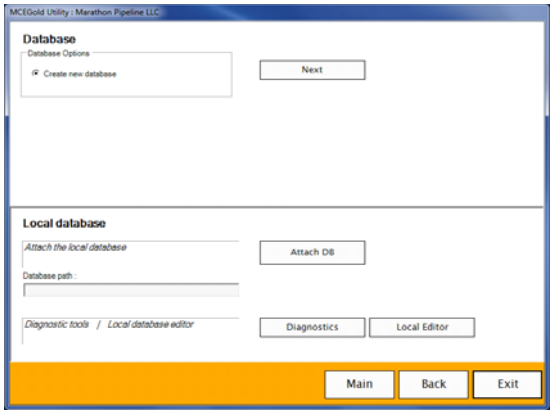
To connect to an existing database, please follow the instructions below.

1. Ensure you have properly backed up the database you are converting.

2. Open the Utility program and click the **Database** button.

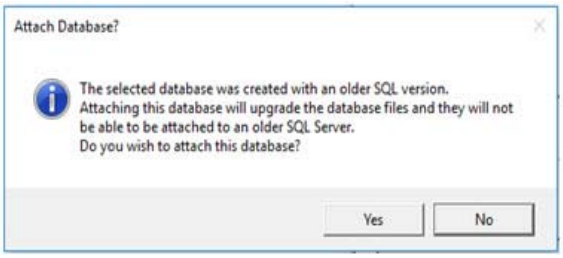


3. Click **Attach DB** as shown in the screen below.

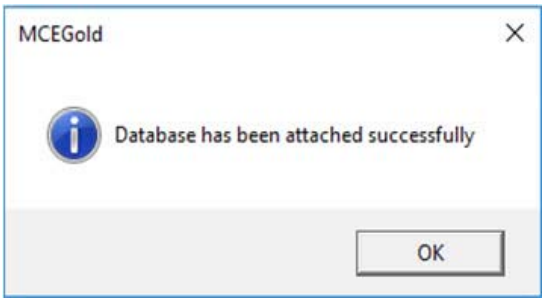


4. Navigate to the database location on your computer and select the desired database.

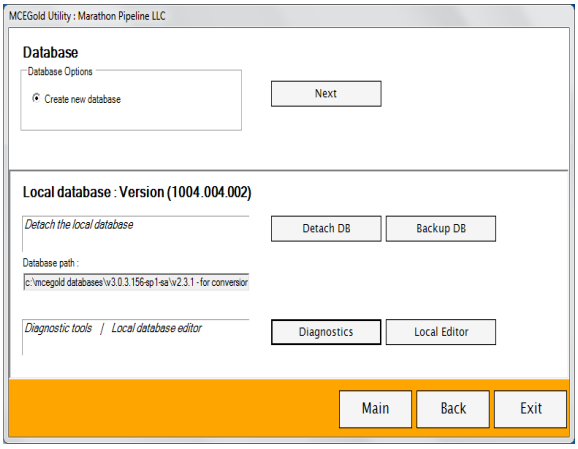
   If you receive the following message: "The database you selected was created with an older SQL version", the database needs to be upgraded to SQL 2008. **Stop!** Click **No.** Do **NOT** proceed! Contact Technical Support.



5. If the database attached properly you will see the following window. Click **OK**.



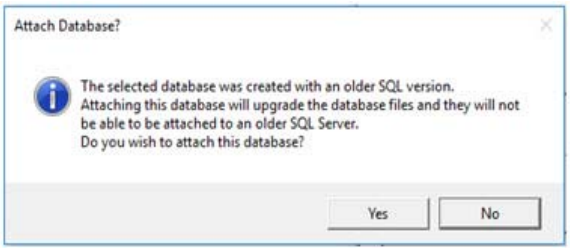
6. The MCEGold Utility Database Window opens. Click **Exit**.



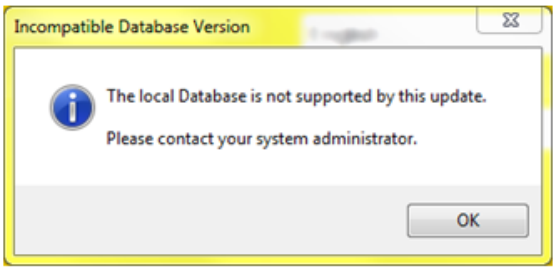
START MCEGOLD

1. Start MCEGold.

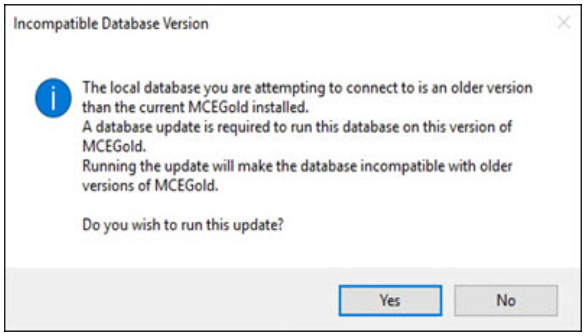
   If you receive the following message: "The database you selected was created with an older SQL version", the database needs to be upgraded to SQL 2008. **Stop!** Click **No**. Do **NOT** proceed! Contact Technical Support.



   If you receive the following "local database is not supported by this update" message when trying to start MCEGold, the attached database is too old for conversion and needs to be updated to MCEGold 2.6.1 or later prior to updating to MCEGold 3.0.3 SP3.



If you receive the following "Incompatible Database Version" message, shown on page 7, when trying to start MCEGold, you are attempting to run MCEGold with a database that is older than V3.0.3-SP3. You will be prompted to update the database. If you have properly backed up your existing database, click **Yes** to run the update. If you have not backed up your existing database, click **No**, backup the database, and then perform the Database Setup procedure.



2. Click **OK** on the message window. The message window closes, leaving the MCEGold Login window open.

3. If there is another database available, click on **Search** (the three dots on the right of Site) to bring up the navigator to search for the other database. If none are available, click **Cancel** to exit out of MCEGold, and contact PdMA Technical Support at 813-621-6463 ext. 251.

TECHNOTE 1801-N7

ISSUED

February 2018

SUBJECT

Release of MCEGold® 3.0.3 SP5 - Network Version for Windows 7.

DESCRIPTION

MCEGold 3.0.3 SP5 Network Version is an upgrade from MCEGold 3.0.3. SP4.

PDMA CLOUD SERVICES

The network edition of MCEGold 3.0.3 SP5 supports access to PdMA Cloud Services. Please contact PdMA Technical Support (813-6216-6463 ext. 251) to discuss this option.

NOTES

- MCEGold 3.0.3 SP5 is only compatible with Windows 10 and Windows 7 and M-Series testers.

- Installation of MCEGold 3.0.3 SP5 on a Windows 10 computer uses a special installation procedure. Refer to TechNote 1801 - S10 (Standalone) or 1801-N10 (Network).

- MCEGold Word Add-in is only compatible with MS Word 2007 and 2013. MCEGold Word Add-in is NOT compatible with MS Word 2010. Templates created with other versions of MS Word may not be functional and may cause conflicts with the MCEGold software.

- To ensure application accessibility, the default installation location has been set to C:\PdMA Corporation.

- Databases attached to MCEGold 3.0.3 SP5 must be from MCEGold 2.6.1 or later and once updated with 3.0.3 SP5 *will not* be compatible with older versions of MCEGold.

- Assets opened or exported with MCEGold 3.0.3 SP5 *will not* be compatible with older versions of MCEGold.

- If you have any questions, please contact PdMA Technical Support (813-621-6463 ext. 251).

Minimum Requirements

Computer	Dell Latitude E5470 Laptop*
Processor	2+ GHz Intel i5 or equivalent
Resolution	1600 x 900/1920 x 1080 (small font)
Operating System	Microsoft® Windows 7 SP1 (32 or 64 bit)**
Memory	4.0+ G RAM***
Ports/Drives	(1) USB Port in Rear or Side
Hard Disk	20G Available

* Using any other computer manufacturer in conjunction with the PdMA software may result in erratic computer behavior; not limited to but including:

- Power Management Issues
- Lock-up
- Communication Port Malfunction
- Driver Incompatibility
- Display Errors
- SQL Database Incompatibility
- Network Synchronization Issues.

** For International Customers: Windows 7 Ultimate (32 or 64-bit).

*** If you are upgrading from MCEGold 2.6.1 - 2.6.2 verify that your computer has at least 4G of RAM.

UPDATE SERVER DATABASE FOR NETWORK USERS

NOTE: Ensure the user account being used to update the server has “sysadmin” permissions.

There is a separate application on the Installation USB flash drive to update the network database on the server. ***The database must be updated on the server first, then the desktops and finally field testers.***

If the update is installed on a network field tester before the server database is updated, a warning message appears informing you the database is an old version and to contact your system administrator.

1. Fully Sync all field testers.
   NOTE: Before proceeding ensure all local database synchronization has been performed.

2. Back up the MCEGold server database.

3. Insert the MCEGold 3.0.3 SP5 USB flash drive into the USB port. If the drive starts automatically, click **Exit** and proceed to the next step.

4. Locate the MCEGold Database Server Update folder on the MCEGold 3.0.3 SP5 USB flash drive.

5. Click on the MCEGold Database Server Update.exe file.

6. The Server Information window opens. Fill in the Server, Database, Login, and Password information.The Login and Password will depend on your authentication (Windows/SQL).

7. Click **Run Update**. The progress status will display on the window.

8. When the update complete message displays, close the window.

PREPARE FIELD TESTERS FOR MCEGOLD 3.0.3 SP5

Backup

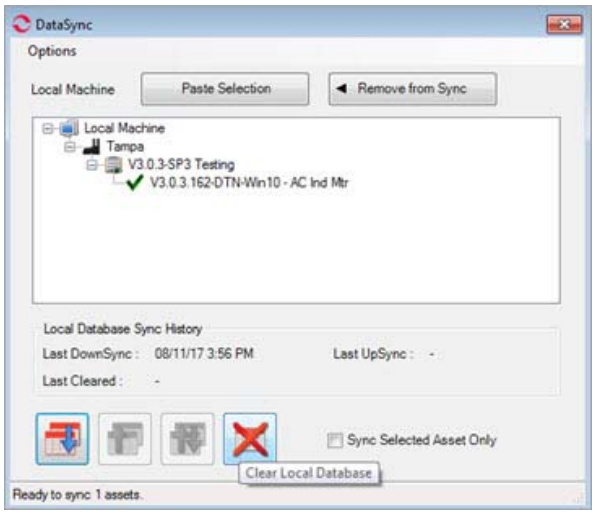
Before beginning the MCEGold uninstall, copy the Emaxprb.xml file only (not the folder) and the complete Templates folder to a safe location and make note of the location.

The default location for the files is listed below, however you may have chosen a different location during the original installation.
C:\PdMA Corporation\MCEGold\Emax
C:\PdMA Corporation\MCEGold\Report

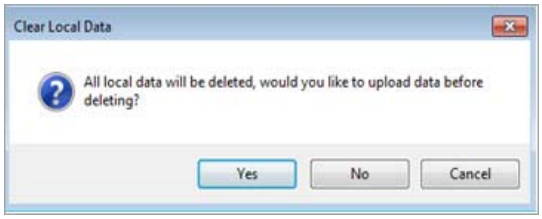
Clear Local Database

NOTE: Before proceeding ensure all local database synchronization has been performed. Failure to synchronize before clearing the local database will result in loss of data.

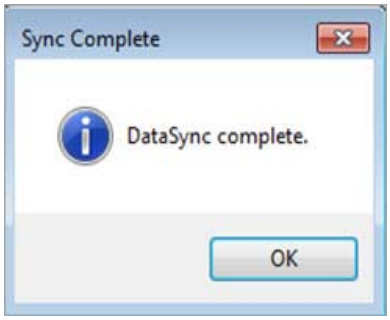
1. From the DataSync window, click **Clear Local Database**.



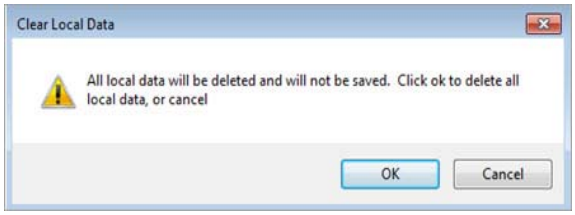
2. From the Clear Local Data window, click **Yes** to upload (UpSync) data, click **No** if you have already synchronized the data.



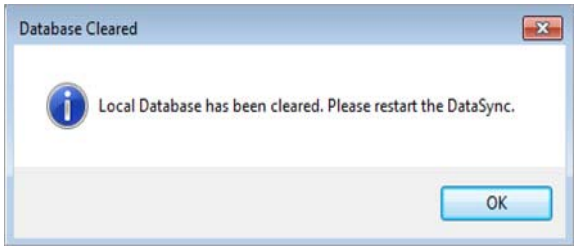
3. From the Sync Complete window, click **OK**.



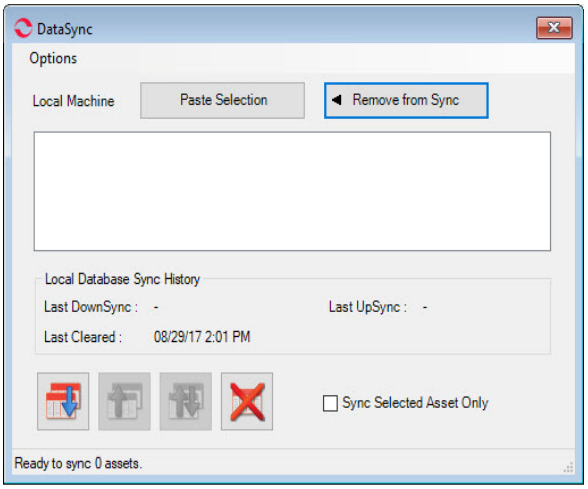
4. From the next Clear Local Data window, click **OK** to delete all local data.



5. From the Database Cleared window, click **OK.**



6. Reopen the DataSync window to ensure the database has been cleared, as shown in figure below. If it did not clear contact Technical Support.



UPGRADE FROM MCEGOLD 3.0.3 OR LATER

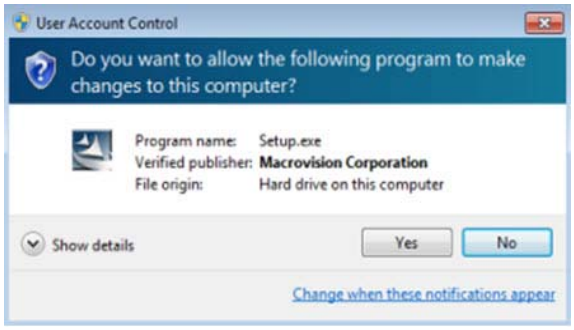
NOTE: If you have any version prior to MCEGold 3.0.3 a full uninstall is required before installing version 3.0.3 SP5. Go to the Upgrading From a Version Previous to MCEGold 3.0.3 Section.

MCEGold 3.0.3 SP5 Update

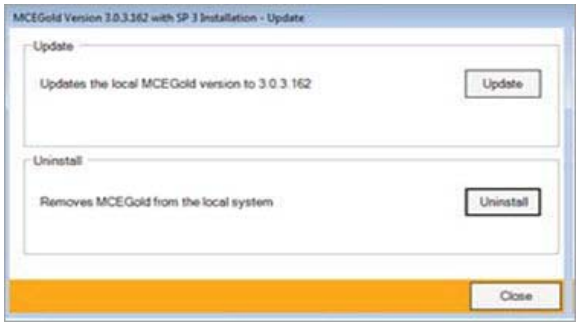
NOTE: Some on screen prompts and messages during the installation process are controlled by the Windows operating system and are out of PdMA's control. Every effort has been made to include their possible appearance and the action you should take. However, if you are unsure please contact our technical support department for help.

1. Insert the MCEGold 3.0.3 SP5 USB flash drive into the USB port. If the installation does not begin automatically, run setup.exe from the USB flash drive. (Select Run, setup.exe from the AutoPlay window).

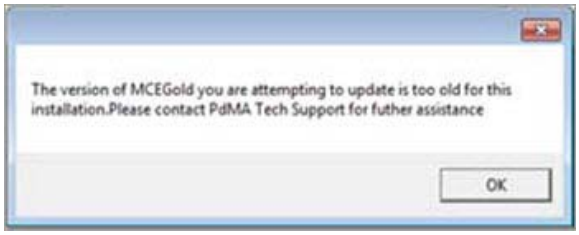
2. If you see the User Account Control screen, click **Yes**.



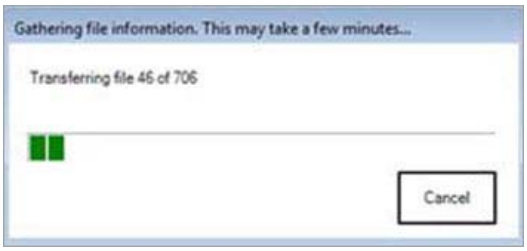
3. If there is an existing MCEGold version installed on your computer, you will see the MCEGold Update screen. click **Update**.



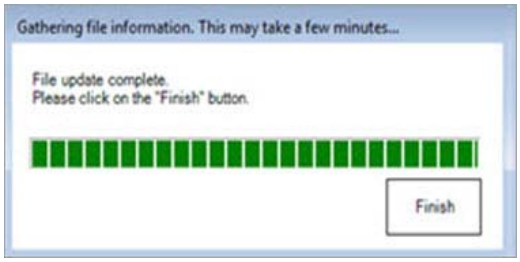
NOTE: If you have a version prior to MCEGold3.0.3 you will receive the error message shown below. Do **NOT** proceed. Contact technical support.



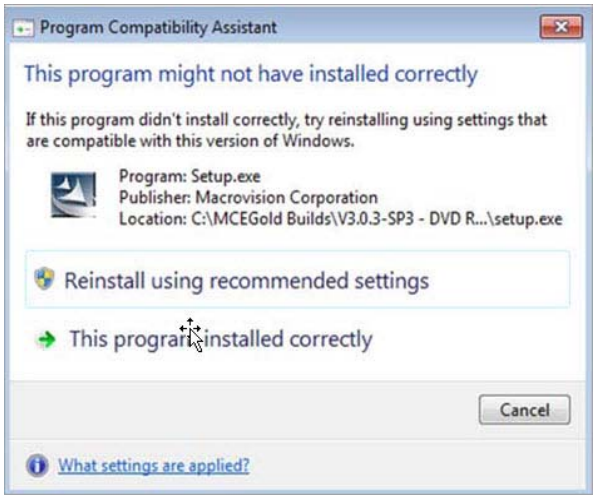
4. The status update window displays.



5. When the update is complete, click **Finish**.



6. If the Program Compatibility Assistant screen displays, select *This program installed correctly.*



Clear Local Database

1. Open the MCEGold Utility Program.

2. Click the Database button.

3. Click Clear and follow the prompts. This will ensure the local database is updated.

4. Go to the Start MCEGold Section.

UPGRADING FROM A VERSION PRIOR TO MCEGOLD 3.0.3

Uninstall

NOTE: Before beginning the MCEGold uninstall you must back up the Emaxprb.xml and Templates folder. See the Backup and Clear Local Database sections on page 2.

1. Select Start, Control Panel, select Programs, then Programs and Features.

2. In the Uninstall or change a program window scroll down to locate and highlight the MCEGold Version X.X.X on the list.

3. Click **Uninstall/Change** located above the list and follow on screen prompts.

4. Click **Finish** when the "Uninstall Complete" message is received.

5. Locate the PdMA MCEMAX Tester (Driver Removal) file. Highlight it and click **Uninstall/ Change** located above the list and follow the on screen prompts.

6. Click **Finish** when the "Uninstall Complete" message is received.

7. Locate the C:\PdMACorporation folder and delete it. The subfolders will be deleted also. After the installation of MCEGold 3.0.3 SP5 the new folder location will be C:\PdMA Corporation\....

8. Reboot your computer.

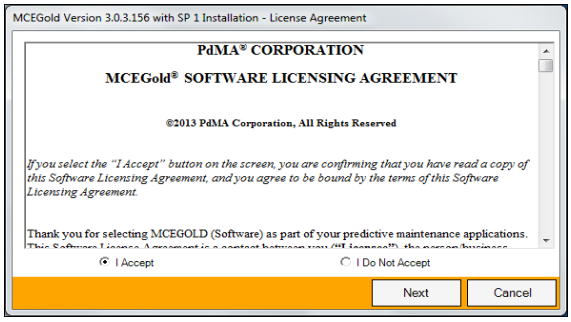
9. Go to step one in the MCEGold 3.0.3 SP5 Installation.

MCEGOLD 3.0.3 SP5 INSTALLATION

1. Insert the MCEGold 3.0.3 SP5 USB flash drive into the USB port. If the installation does not begin automatically, run setup.exe from the USB flash drive. (Select Run setup.exe from the AutoPlay window).

2. The License Agreement window opens. Read the PdMA license and select the "I Accept" option button. The **Next** button becomes visible. Click **Next**.

   NOTE: If you do not accept the terms, the **Next** button is not visible, you can only click **Cancel**, which closes the software without installing it.



3. In the License Key window enter your Company Name and License Key exactly as provided by PdMA. You may copy and paste the license key using the paste button.

4. Click **Submit** (located to the right of the Company Name). When the license has been verified a green check appears. The **Next** button appears. Click **Next**.

5. In the Installation Path window, accept the default shown in the text box (recommended) for the location to install the MCEGold program folder or using the drop-down list select an alternate location, make a note of it for your future use, and click **Next**. Note: It is not suggested to use an alternate location because that can cause conflict and Windows rights problems.

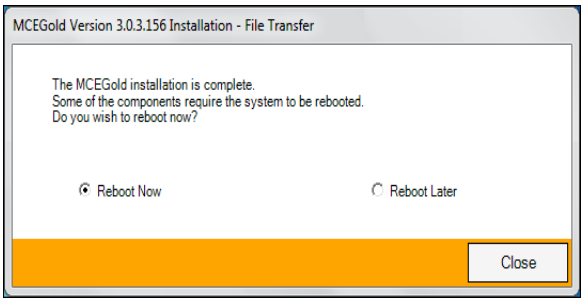
6. When prompted, click **Install Components**. Some components may require additional prompts.

   NOTE: When installing MCEGold, a Word Add-in driver is installed. You may receive a message informing you that "Windows can't verify the publisher of this driver software." Select "Install this driver software anyway".

7. When the installation of components is complete the **Next** button appears. Click **Next**.

8. A progress bar shows the progress of copying files to your computer.

9. When the installation is complete you must reboot your system. Select the Reboot Now option and click **Close**.



10. After rebooting, locate and copy the backup Emaxprb.xml file and the Template folder back into their appropriate locations in

    C:\PdMA Corporation\MCEGold\Emax
    C:\PdMA Corporation\MCEGold\Report

11. Answer Yes to "Merge the folder?" inquiry.

12. Remove the MCEGold 3.0.3 SP5 Network Version USB flash drive from the computer.

Field Tester Database Setup

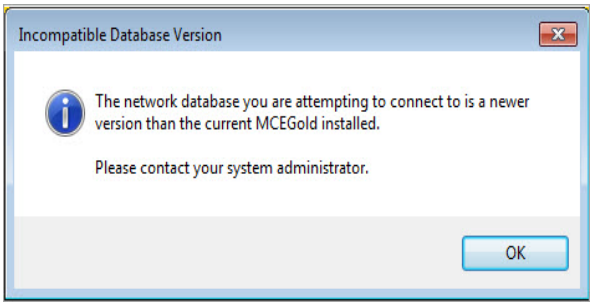
NOTE: For the following, please use the information provided by your IT department.

Field testers utilize a local database for storage of assets. These assets can then be synchronized with the Network database. In order to perform field testing in local tester mode, assets must be down-synced to the local database. In order to perform testing using MCEGold Lite, assets must be in a WatchList and down-synced to the local database.

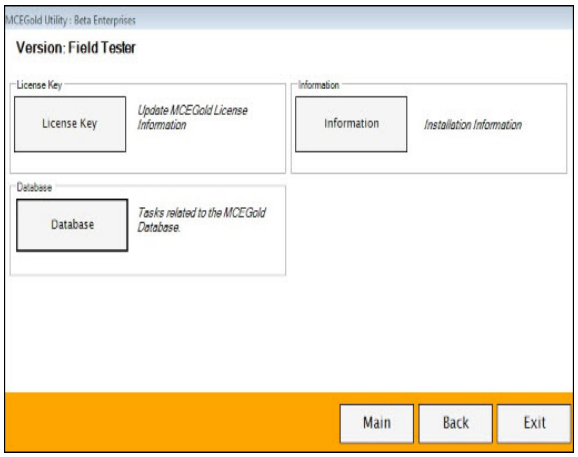
To connect to the existing network database, please follow the instructions below.

1. Open the MCEGold Utility program.

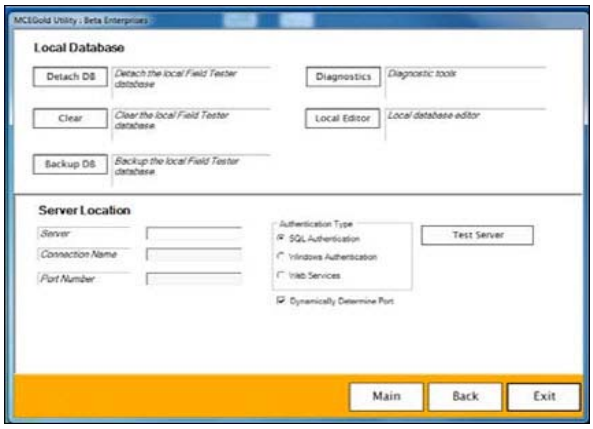
2. If you see the Incompatible Database Version window, you have not properly updated MCEGold. Return to the section MCEGold 3.0.3 SP5 Installation. If you have properly updated MCEGold, and are receiving this message contact Technical Support.



3. Click the **Database** button.

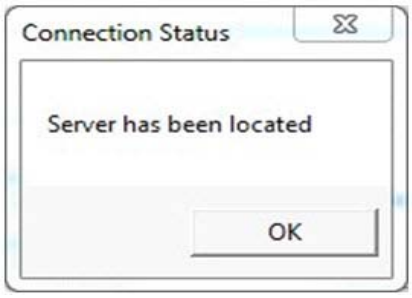


4. Enter the server information provided by your IT department.

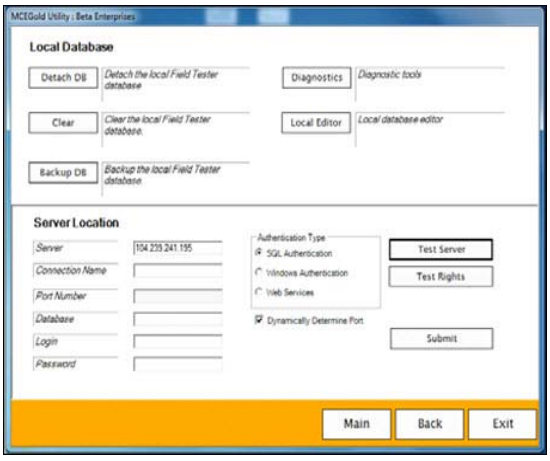


5. Once the server information has been entered, click **Test Server**.

6. The Connection Status window indicates *Server has been located.* Click **OK**.

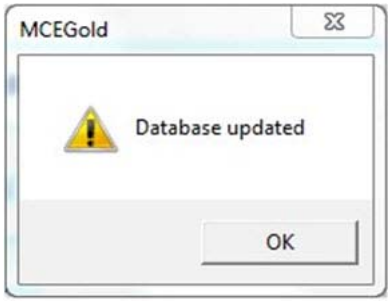


7. In the Server Location section of the MCEGold Utility window enter Connection Name, Database Information, Login Information, and Password as provided by your either your Administrator or your IT Department.



8. Click **Submit**.

9. You will receive a message indicating *Database updated*. Click **OK.**



10. If you receive an error as shown below, verify the information you entered is correct. If it is correct, click **OK** and contact your Administrator.

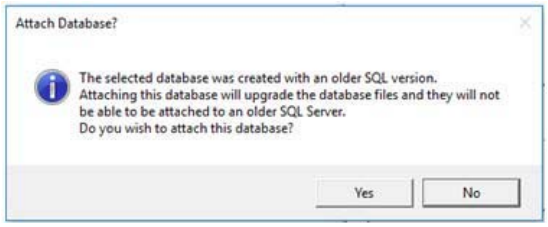


11. If you do not receive an error message, click **Exit** on the Utility window.

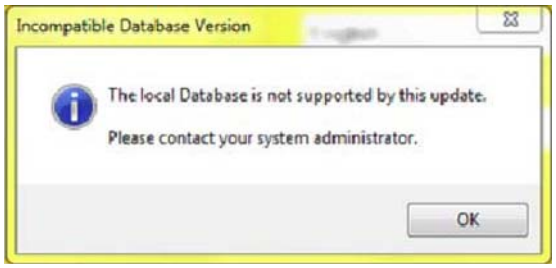
START MCEGOLD

1. When MCEGold starts:

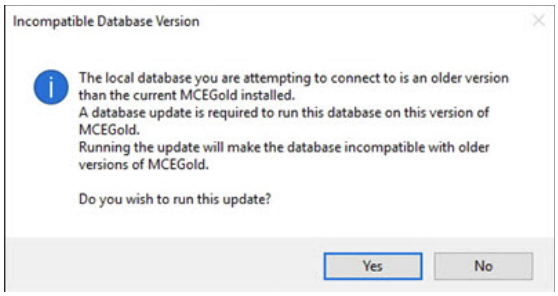
   If you receive the following message: "The database you selected was created with an older SQL version", the database needs to be upgraded to SQL 2008. **Stop!** Click **No**. Do **NOT** proceed! Contact Technical Support.



   If you receive the following "The local database is not supported by this update" message when trying to start MCEGold, the attached database is too old for conversion and needs to be updated to MCEGold 2.6.1 or later prior to updating to MCEGold 3.0.3 SP5.



   If you receive the following *Incompatible Database Version* message when trying to start MCEGold, you are attempting to run MCEGold with a database that is older than V3.0.3 SP5. You will be prompted to update the database. If you have properly backed up your existing database, click **Yes** to run the update. If you have not backed up your existing database, click **No**, backup the database, and then perform the Database Setup procedure.



2. Click **OK** on the message window. The message window closes, leaving the MCEGold Login window open.

3. Enter your name and password.

   NOTE: For a tester, select the Field Tester Network mode. Verify MCEGold is correctly communication with the database. You are ready to perform testing.

TECHNOTE 1801-N10

ISSUED

February 2018

SUBJECT

Release of MCEGold® 3.0.3 SP5 - Network Version for Windows 10.

DESCRIPTION

MCEGold 3.0.3 SP5 Network Version is an upgrade from MCEGold 3.0.3**.** SP4.

PDMA CLOUD SERVICES

The network edition of MCEGold 3.0.3 SP5 supports access to PdMA Cloud Services. Please contact PdMA Technical Support (813-6216-6463 ext. 251) to discuss this option.

NOTES

- MCEGold 3.0.3 SP5 is only compatible with Windows 10 and Windows 7 and M-Series testers.

-Installation of MCEGold 3.0.3 SP5 on a Windows 10 computer uses a special installation procedure. For a Windows 7 installation refer to TechNote 1801-S7 (Stand Alone) or TechNote 1801-N7 (Network) as applicable.

- MCEGold Word Add-in is only compatible with MS Word 2007 and 2013. MCEGold Word Add-in is NOT compatible with MS Word 2010. Templates created with other versions of MS Word may not be functional and may cause conflicts with the MCEGold software.

- To ensure application accessibility, the default installation location has been set to C:\PdMA Corporation.

- Databases attached to MCEGold 3.0.3 SP5 must be from MCEGold 2.6.1 or later and once updated with 3.0.3 SP5 *will not* be compatible with older versions of MCEGold.

- Assets exported with MCEGold 3.0.3 SP5 *will not* be compatible with older versions of MCEGold.

- If you have any questions, please contact PdMA Technical Support (813-621-6463 ext. 251).

Minimum Requirements

Computer	Dell Latitude E5470 Laptop*
Processor	2+ GHz Intel i5 or equivalent
Resolution	1600 x 900/1920 x 1080 (small font)
Operating System	Microsoft® Windows 10 (32 or 64 bit)**
Memory	4.0+ G RAM***
Ports/Drives	(1) USB Port in Rear or Side
Hard Disk	20G Available

* Using any other computer manufacturer in conjunction with the PdMA software may result in erratic computer behavior; not limited to but including:

- Power Management Issues
- Lock-up
- Communication Port Malfunction
- Driver Incompatibility
- Display Errors
- SQL Database Incompatibility
- Network Synchronization Issues.

** For International Customers: Windows 10 (32 or 64-bit)

*** If you are upgrading from MCEGold 2.6.1 - 2.6.2 verify that your computer has at least 4G of RAM.

UPDATE SERVER DATABASE FOR NETWORK USERS

NOTE: Ensure the user account being used to update the server has “sysadmin” permissions.

There is a separate application on the Installation USB flash drive to update the network database on the server. ***The database must be updated on the server first, then the desktops and field testers.***

If the update is installed on a network field tester before the server database is updated, a warning message appears informing you the database is an old version and to contact your system administrator.

1. Backup the MCEGold server database.

2. Insert the MCEGold 3.0.3 SP5 USB flash drive into the USB port. If the drive starts automatically, click **Exit** and proceed to the next step.

3. Locate the MCEGold Database Server Update folder on the MCEGold 3.0.3 SP5 USB flash drive.

4. Click on the MCEGold Database Server Update.exe file.

5. The Server Information window opens. Fill in the Server, Database, Login, and Password information. The Login and Password will depend on your authentication (Windows/SQL).

6. Click **Run Update**. The progress status will display on the window.

7. When the update complete message displays, close the window.

PREPARE WINDOWS 10 FOR MCEGOLD 3.0.3 SP5 INSTALLATION

NOTE: If you have updated to Windows 10 from a previous version of Windows, you must perform a full uninstall of MCEGold regardless of the version. If you have not previously installed MCEGold on your Windows 10 computer, it is not necessary to uninstall MCEGold. Go to the Disable Driver Signature Enforcement section.

Backup

Before beginning the MCEGold uninstall, copy the Emaxprb.xml file only (not the folder) and the complete Templates folder to a safe location and make note of the location.

The default location for the files is listed below, however you may have chosen a different location during the original installation.
C:\PdMA Corporation\MCEGold\Emax
C:\PdMA Corporation\MCEGold\Report

Uninstall

1. Select Start, Control Panel, select Programs, then Programs and Features.

2. In the Uninstall or change a program window scroll down to locate and highlight the MCEGold Version X.X.X on the list.

3. Click **Uninstall/Change** located above the list and follow on-screen prompts.

4. Click **Finish** when the "Uninstall Complete" message is received.

5. Locate the PdMA MCEMAX Tester (Driver Removal) file. Highlight it and click **Uninstall/ Change** located above the list and follow the on-screen prompts.

6. Click **Finish** when the "Uninstall Complete" message is received.

7. Locate the C:\PdMACorporation folder and delete it. The subfolders will be deleted also. After the installation of MCEGold 3.0.3 SP5 the new folder location will be C:\PdMA Corporation\....

8. Reboot your computer.

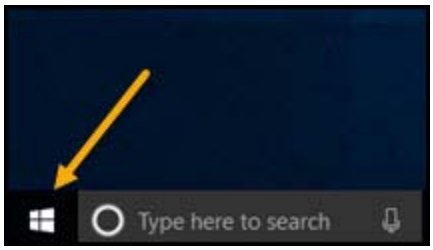
9. Go to step one in Disable Driver Signature Enforcement section.

Disable Driver Signature Enforcement

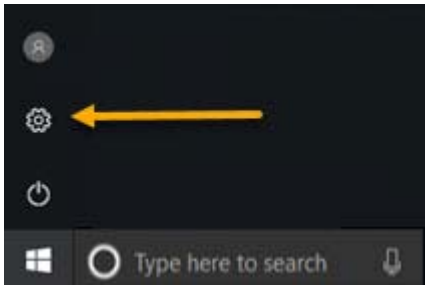
NOTE: To install MCEGold 3.0.3 SP5 on a Windows 10 operating system, the operating system must be in the "Disable driver signature enforcement" mode.

Use the following steps to enter the Disable Driver Signature Enforcement mode.

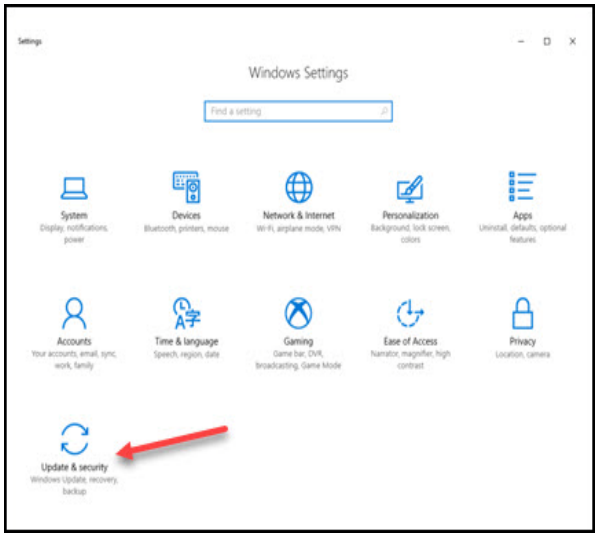
1. From the main Windows 10 screen, click the **Start** button in the lower left corner of the computer screen.



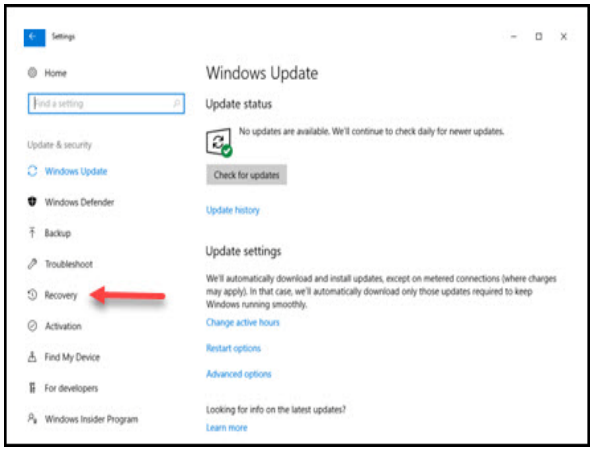
2. Click **Settings**.



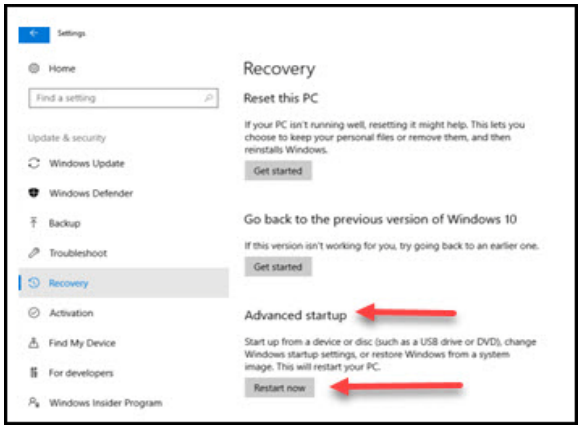
3. From the Windows Settings window, select **Update and Security**.



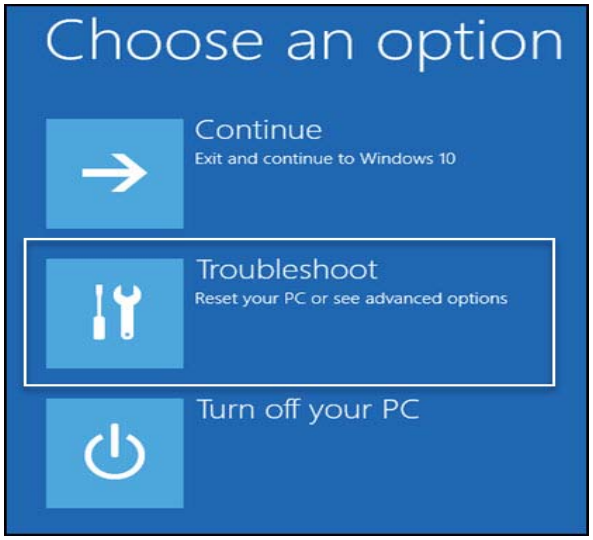
4. From the Windows Update window, select **Recovery**.



5. From the Recovery window, in the Advanced startup section, click **Restart now**.



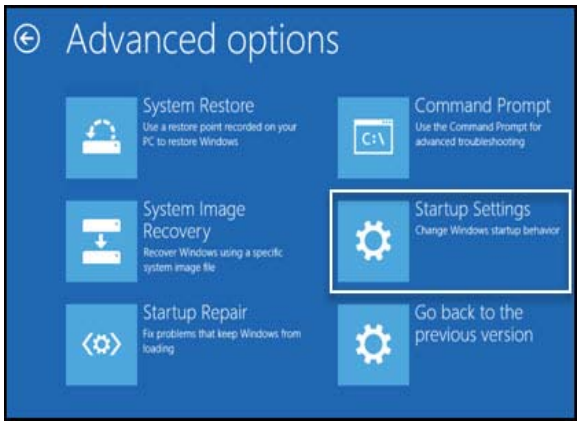
6. From the Choose an option window, select **Troubleshoot**.



7. From the Troubleshoot window, Select **Advanced options**.



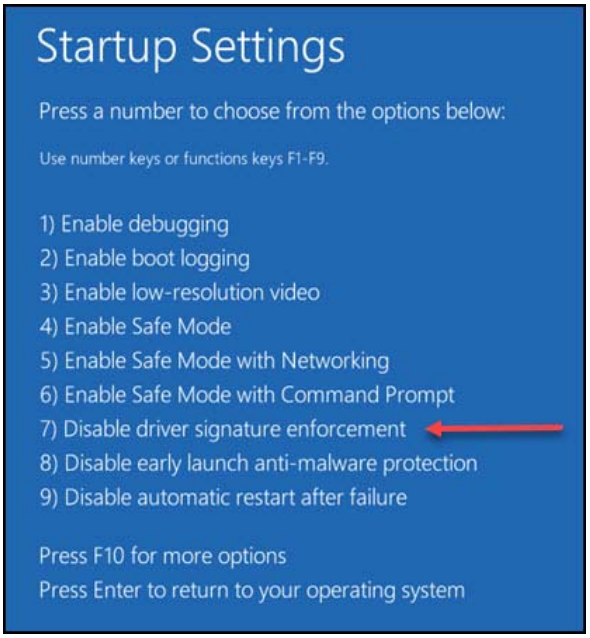
8. From Advanced Options window, Select **Startup Settings**.



9. From the Startup Settings window, click **Restart**.



10. From the next Startup Settings window, press # 7 to select **Disable driver signature enforcement.**

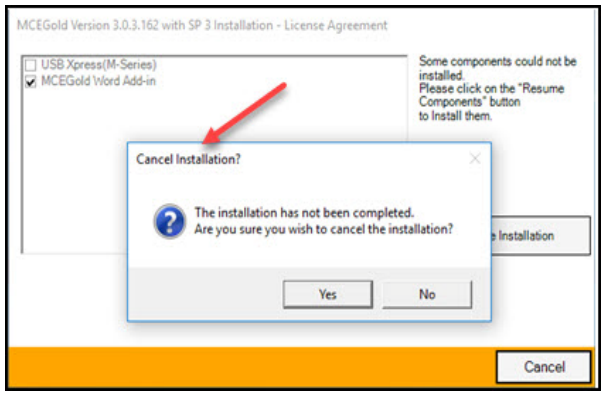


11. The computer displays the start up screen. Go to the MCEGold 3.0.3 SP5 Installation section.

MCEGOLD 3.0.3 SP5 INSTALLATION

NOTE: During the installation process, if you see either of the following windows or messages: MCEGold – **Some components could not be installed**, or MCEGold – **Cancel Installation?**, then Windows 10 has not been configured to allow unsigned driver installation. See the section *Prepare Windows 10 for MCEGold 3.0.3 SP5 Installation.*





1. Insert the MCEGold 3.0.3 SP5 USB flash drive into the USB port. If the installation does not begin automatically, run setup.exe from the USB flash drive. (Select Run, setup.exe from the AutoPlay window).

2. Right click on setup.exe and select Run as administrator.

3. The License Agreement window opens. Read the PdMA license and select the "I Accept" option button. The **Next** button becomes visible. Click **Next**.
   Note: If you do not accept the terms, the **Next** button is not visible, you can only click **Cancel**, which closes the software without installing it.



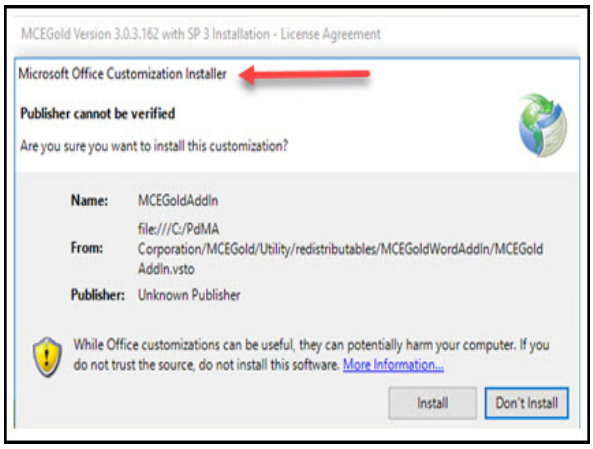
4. In the License Key window enter your Company Name and License Key exactly as provided by PdMA. You may copy and paste the license key using the paste button.

5. Click **Submit** (located to the right of the Company Name). When the license has been verified a green check appears. The **Next** button appears. Click **Next**.

6. In the Installation Path window, accept the default shown in the text box (recommended) for the location to install the MCEGold program folder or using the drop-down list select an alternate location, make a note of it for your future use, and click **Next**. Note: It is not suggested to use an alternate location because that can cause conflict and Windows rights problems.

7. When prompted, click **Install Components**. Some components may require additional prompts.

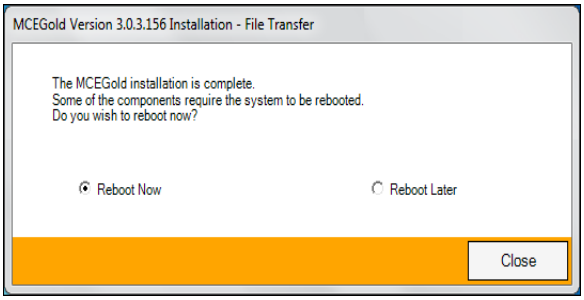
   Note: When installing MCEGold, a Word Add-in driver is installed. You may receive a message informing you that "Windows can't verify the publisher of this driver software." Select "Install".



8. When the installation of components is complete the **Next** button appears. Click **Next**.

9. A progress bar shows the progress of copying files to your computer.

10. When the installation is complete you must reboot your system. Select the Reboot Now option and click **Close**.



11. After rebooting, locate and copy the backup Emaxprb.xml file and the Template folder back into their appropriate locations in

    C:\PdMA Corporation\MCEGold\Emax
    C:\PdMA Corporation\MCEGold\Report

12. Answer Yes to “Merge the folder?” inquiry.

13. Remove the MCEGold 3.0.3 SP5 USB flash drive from the computer.

FIELD TESTER DATABASE SETUP

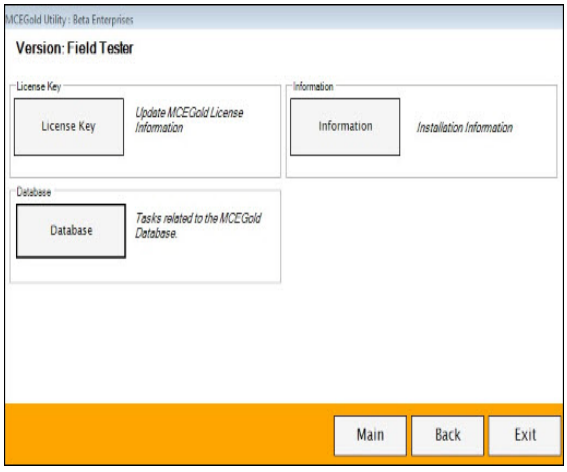
NOTE: For the following, please use the information provided by your IT department.

Field testers utilize a local database for storage of assets. These assets can then be synchronized with the Network database. In order to perform field testing in local tester mode, assets must be down-synced to the local database. In order to perform testing using MCEGold Lite, assets must be in a WatchList and down-synced to the local database.

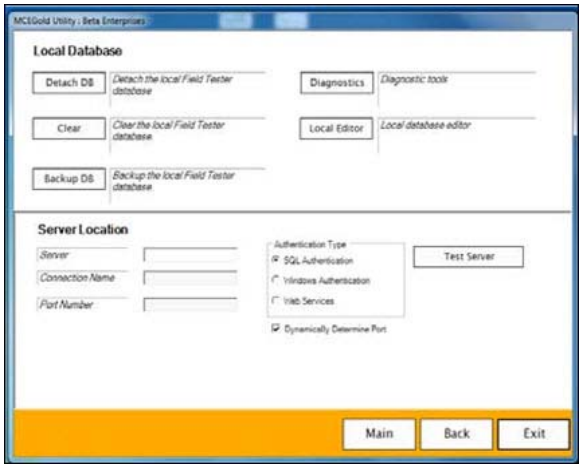
To connect to the existing network database, please follow the instructions below.

1. Open the MCEGold Utility program.

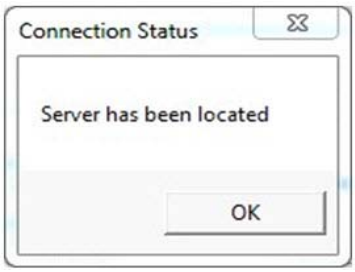
2. Click **Database**.



3. Enter the server information provided by your IT department.

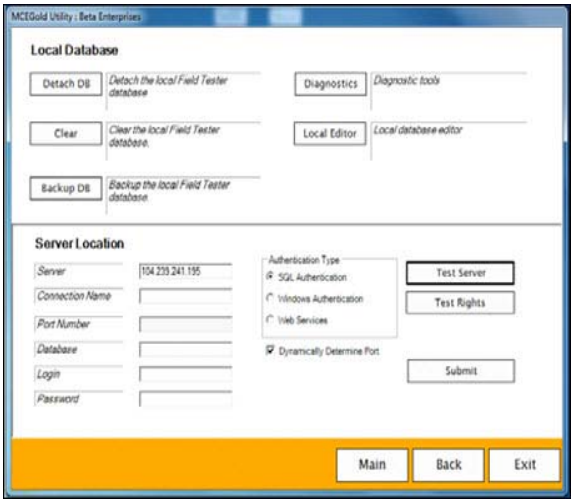


4. Once the server information has been entered, click **Test Server**. You should receive a message indicating “Server has been located”.

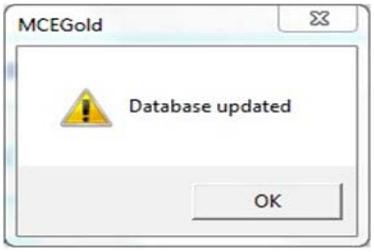


5. Click **OK** on the Connection Status window.

6. Enter the following connection information provided by either your Administrator or IT Department: Connection Name, Database Information, Login Information, and Password.



7. Click **Submit**. You will receive a message indicating "Database updated". Click OK.



8. If you receive an error as shown below, verify the information you entered is correct. If it is correct, click OK and contact your Administrator.



9. If you do not receive an error message, click **Exit** on the Utility window.

10. Start MCEGold and enter the name and password for the tester. Select the Field Tester Network mode.

11. Once you have opened MCEGold and you have verified MCEGold is correctly communicating with the database. You are now ready to perform testing.

TECHNOTE 1801-S7

ISSUED

February 2018

SUBJECT

Release of MCEGold® 3.0.3 SP5 - Stand Alone for Windows 7.

DESCRIPTION

MCEGold 3.0.3 SP5 is an upgrade from MCEGold 3.0.3. SP4.

NOTES

- MCEGold 3.0.3 SP5 is only compatible with Windows 10 and Windows 7 and M-Series testers.

- Installation of MCEGold 3.0.3 SP5 on a Windows 10 computer uses a special installation procedure. For a Windows 10 installation refer to TechNote 1801-S10 (Stand Alone) or TechNote 1801-N10 (Network) as applicable.

- MCEGold Word Add-in is only compatible with MS Word 2007 and 2013. MCEGold Word Add-in is NOT compatible with MS Word 2010. Templates created with other versions of MS Word may not be functional and may cause conflicts with the MCEGold software.

- To ensure application accessibility, the default installation location has been set to C:\PdMA Corporation.

- Databases attached to MCEGold 3.0.3 SP5 must be from MCEGold 2.6.1 or later and once updated with 3.0.3 SP5 *will not* be compatible with older versions of MCEGold.

- Assets opened with MCEGold 3.0.3 SP5 *will not* be compatible with older versions of MCEGold.

- If you have any questions, please contact PdMA Technical Support (813-621-6463 ext. 251).

Minimum Requirements

Computer	Dell Latitude E5470 Laptop*
Processor	2+ GHz Intel i5 or equivalent
Resolution	1600 x 900/1920 x 1080 (small font)
Operating System	Microsoft® Windows 7 SP1 (32 or 64 bit)**
Memory	4.0+ G RAM***
Ports/Drives	(1) USB Port in Rear or Side
Hard Disk	20G Available

* Using any other computer manufacturer in conjunction with the PdMA software may result in erratic computer behavior; not limited to but including:

- Power Management Issues
- Lock-up
- Communication Port Malfunction
- Driver Incompatibility
- Display Errors
- SQL Database Incompatibility
- Network Synchronization Issues.

** For International Customers: Windows 7 Ultimate (32 or 64-bit).

***If you are upgrading from MCEGold 2.6.1 - 2.6.2 verify that your computer has at least 4G of RAM.

PREPARE FOR MCEGOLD 3.0.3 SP5 INSTALLATION

NOTE: If you have MCEGold 3.0.3, 3.0.3 SP1, 3.0.3 SP2, 3.0.3 SP3, or 3.0.3 SP4 follow the instructions in Upgrading From MCEGold 3.0.3 or Later.

If you have any version prior to MCEGold 3.0.3 a full uninstall is required before installing version 3.0.3 SP5. See Upgrading From a Version Previous to MCEGold 3.0.3.

Upgrading From MCEGold 3.0.3 or Later

Backup

Before beginning the MCEGold install, copy the Emaxprb.xml file only (not the folder) and the complete Templates folder to a safe location and make note of the location.

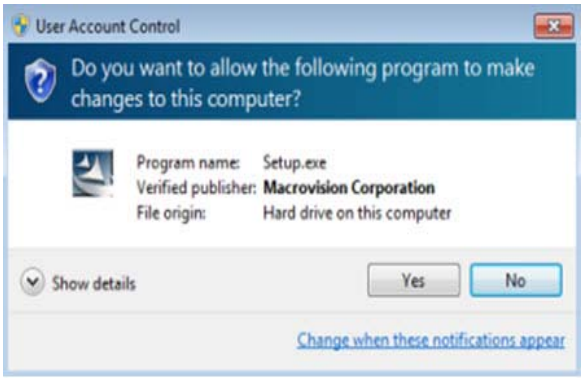
The default location for the files is listed below, however you may have chosen a different location during the original installation.
C:\PdMA Corporation\MCEGold\Emax
C:\PdMA Corporation\MCEGold\Report

MCEGold 3.0.3 SP5 Installation

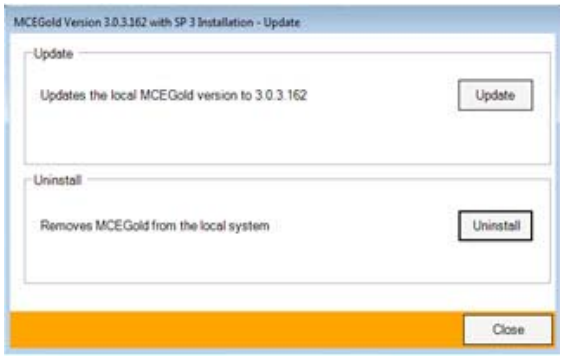
NOTE: Some on screen prompts and messages during the installation process are controlled by the Windows operating system and are out of PdMA's control. Every effort has been made to include their possible appearance and the action you should take. However, if you are unsure please contact our technical support department for help.

1. Insert the MCEGold 3.0.3 SP5 USB flash drive into the USB port. If the installation does not begin automatically, run setup.exe from the USB flash drive. (Select Run, setup.exe from the AutoPlay window).

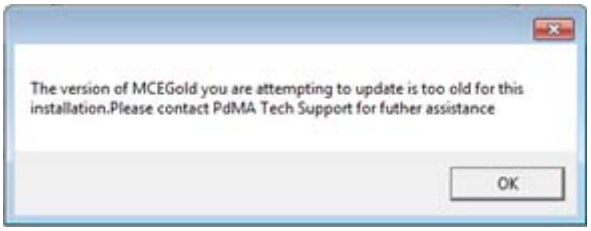
2. If you see the User Account Control screen, click **Yes**.



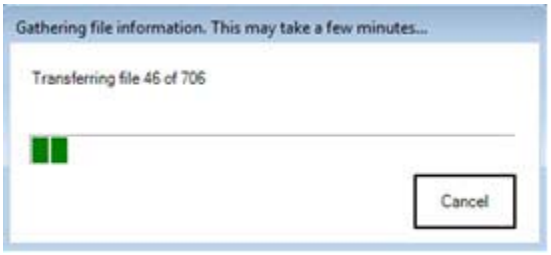
3. If there is an existing MCEGold version installed on your computer, you will see the MCEGold Update screen. click **Update**.



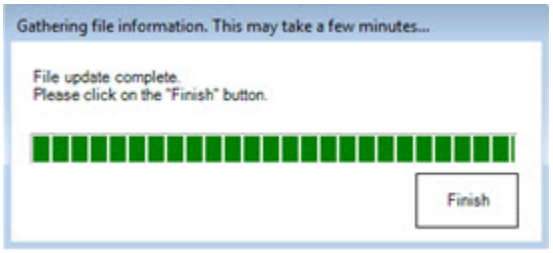
NOTE: If you have a version prior to MCEGold 3.0.3 you will receive the error message shown below. Do **NOT** proceed. Contact technical support.



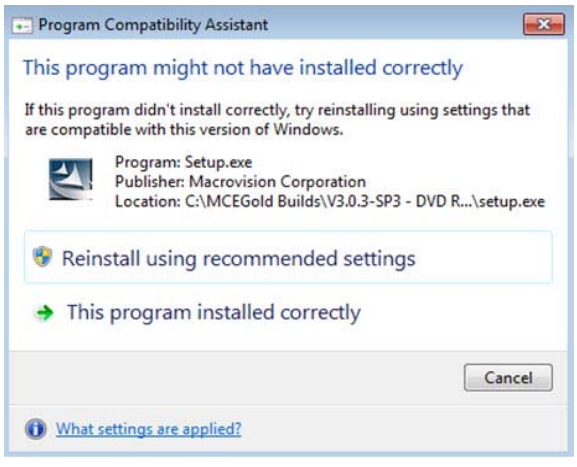
4. The status update window displays.



5. When the update is complete, click **Finish**.



6. If the Program Compatibility Assistant screen displays, select *This program installed correctly.*



7. Go to the Database Setup section.

Upgrading From a Version Prior to MCEGold 3.0.3

Backup

Before beginning the MCEGold uninstall, copy the Emaxprb.xml file only (not the folder) and the complete Templates folder to a safe location and make note of the location.

The default location for the files is listed below, however you may have chosen a different location during the original installation.
C:\PdMA Corporation\MCEGold\Emax
C:\PdMA Corporation\MCEGold\Report

Uninstall

1. Select Start, Control Panel, select Programs, then Programs and Features.

2. In the Uninstall or change a program window scroll down to locate and highlight the MCEGold Version X.X.X on the list.

3. Click **Uninstall/Change** located above the list and follow on screen prompts.

4. Click **Finish** when the "Uninstall Complete" message is received.

5. Locate the PdMA MCEMAX Tester (Driver Removal) file. Highlight it and click **Uninstall/ Change** located above the list and follow the on screen prompts.

6. Click **Finish** when the "Uninstall Complete" message is received.

7. Locate the C:\PdMACorporation folder and delete it. The subfolders will be deleted also. After the installation of MCEGold 3.0.3 SP5 the new folder location will be C:\PdMA Corporation\....

8. Reboot your computer.

9. Go to step one in the *MCEGold 3.0.3* SP5 Installation section.

MCEGold 3.0.3 SP5 Installation

1. Insert the MCEGold 3.0.3 SP5 USB flash drive into the USB port. If the installation does not begin automatically, run setup.exe from the USB flash drive. (Select Run, setup.exe from the AutoPlay window).

2. The License Agreement window opens. Read the PdMA license and select the "I Accept" option button. The **Next** button becomes visible. Click **Next**.
   Note: If you do not accept the terms, the **Next** button is not visible, you can only click **Cancel**, which closes the software without installing it.



3. In the License Key window enter your Company Name and License Key exactly as provided by PdMA. You may copy and paste the license key using the paste button.

4. Click **Submit** (located to the right of the Company Name). When the license has been verified a green check appears. The **Next** button appears. Click **Next**.

5. In the Installation Path window, accept the default shown in the text box (recommended) for the location to install the MCEGold program folder or using the drop-down list select an alternate location, make a note of it for your future use, and click **Next**. Note: It is not suggested to use an alternate location because that can cause conflict and Windows rights problems.

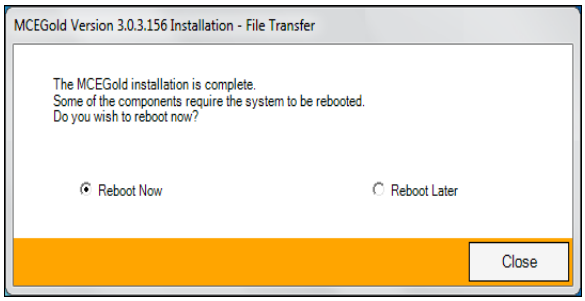
6. When prompted, click **Install Components**. Some components may require additional prompts.

Note: When installing MCEGold, a Word Add-in driver is installed. You may receive a message informing you that "Windows can't verify the publisher of this driver software." Select "Install this driver software anyway".

7. When the installation of components is complete the **Next** button appears. Click **Next**.

8. A progress bar shows the progress of copying files to your computer.

9. When the installation is complete you must reboot your system. Select the Reboot Now option and click **Close**.



10. After rebooting, locate and copy the backup Emaxprb.xml file and the Template folder back into their appropriate locations in

    C:\PdMA Corporation\MCEGold\Emax
    C:\PdMA Corporation\MCEGold\Report

11. Answer Yes to "Merge the folder?" inquiry.

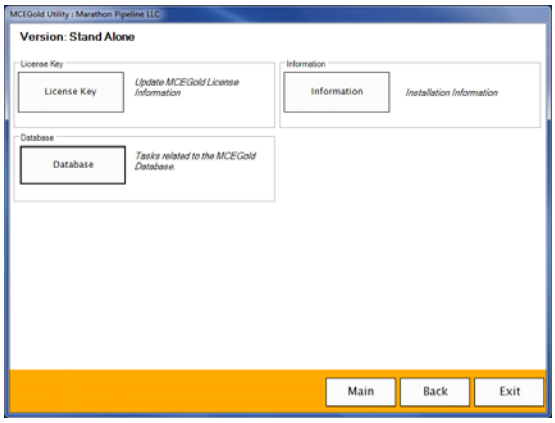
12. Remove the MCEGold 3.0.3 SP5 USB flash drive from the computer.

DATABASE SETUP

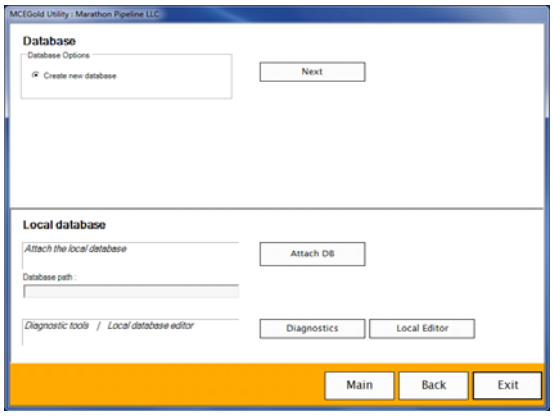
NOTE: This procedure is for connecting to an existing database that is to be upgraded to MCEGold 3.0.3 SP5. To connect to an existing database, please following the instructions below.

1. Ensure you have properly backed up the database you are converting.

2. Open the Utility program and click the **Database** button.

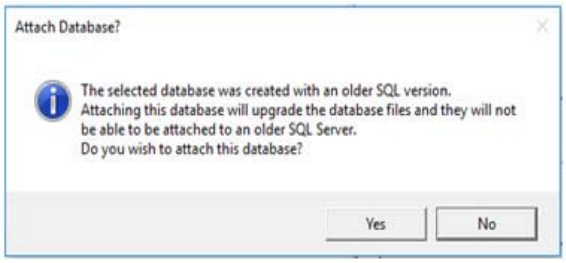


3. Click **Attach DB** as shown in the below.

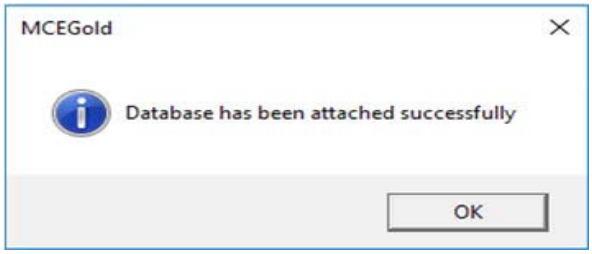


4. Navigate to the database location on your computer and select the desired database.

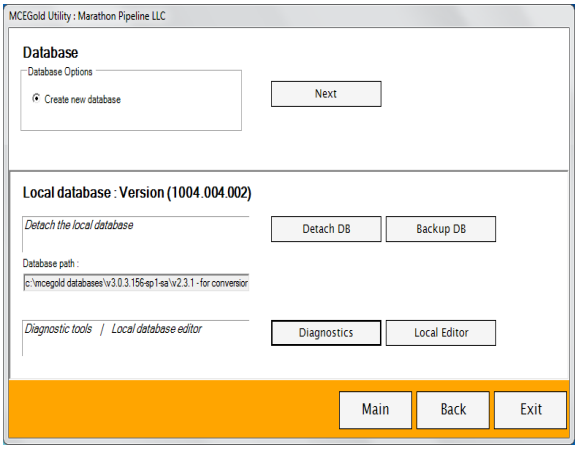
   If you receive the following message: "The database you selected was created with an older SQL version", the database needs to be upgraded to SQL 2008. **Stop!** Click **No**. Do **NOT** proceed! Contact Technical Support.



5. If the database attached properly you will see the following window. Click **OK**.



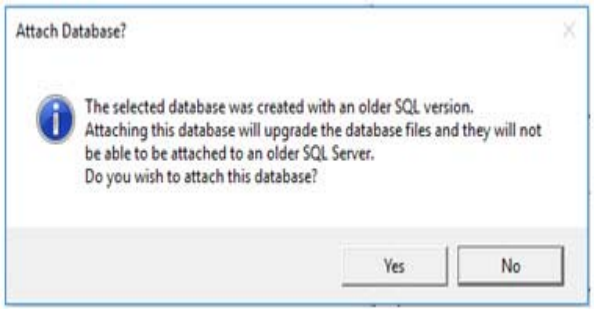
6. The MCEGold Utility Database Window opens. Click **Exit**.



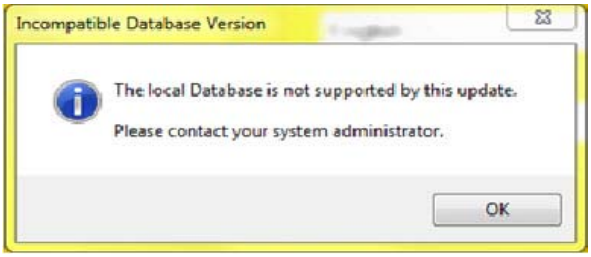
START MCEGOLD

1. Start MCEGold.

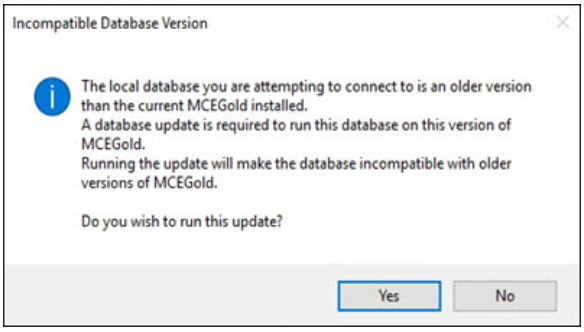
   If you receive the following message: "The database you selected was created with an older SQL version", the database needs to be upgraded to SQL 2008. **Stop!** Click **No**. Do **NOT** proceed! Contact Technical Support.



   If you receive the following "local database is not supported by this update" message when trying to start MCEGold, the attached database is too old for conversion and needs to be updated to MCEGold 2.6.1 or later prior to updating to MCEGold 3.0.3 SP5.



If you receive the following *Incompatible Database Version* message when trying to start MCEGold, you are attempting to run MCEGold with a database that is older than V3.0.3-SP5. You will be prompted to update the database. If you have properly backed up your existing database, click **Yes** to run the update. If you have not backed up your existing database, click **No**, backup the database, and then perform the Database Setup procedure.



2. Click **OK** on the message window. The message window closes, leaving the MCEGold Login window open.

3. If there is another database available, click on **Search** (the three dots on the right of Site) to bring up the navigator to search for the other database. If none are available, click **Cancel** to exit out of MCEGold, and contact PdMA Technical Support at 813-621-6463 ext. 251.

TECHNOTE 1801-S10

ISSUED

February 2018

SUBJECT

Release of MCEGold® 3.0.3 SP5 - Stand Alone for Windows 10.

DESCRIPTION

MCEGold 3.0.3 SP5 is an upgrade from MCEGold 3.0.3. SP4.

NOTES

- MCEGold 3.0.3 SP5 is only compatible with Windows 10 and Windows 7 and M-Series testers.

- Installation of MCEGold 3.0.3 SP5 on a Windows 10 computer uses a special installation procedure. For a Windows 7 installation refer to TechNote 1801-S7 (Stand Alone) or TechNote 1801-N7 (Network) as applicable.

- MCEGold Word Add-in is only compatible with MS Word 2007 and 2013. MCEGold Word Add-in is NOT compatible with MS Word 2010. Templates created with other versions of MS Word may not be functional and may cause conflicts with the MCEGold software.

- To ensure application accessibility, the default installation location has been set to C:\PdMA Corporation.

- Databases attached to MCEGold 3.0.3 SP5 must be from MCEGold 2.6.1 or later and once updated with 3.0.3 SP5 *will not* be compatible with older versions of MCEGold.

- Assets opened with MCEGold 3.0.3 SP5 *will not* be compatible with older versions of MCEGold.

- If you have any questions, please contact PdMA Technical Support (813-621-6463 ext. 251).

Minimum Requirements

Computer	Dell Latitude E5470 Laptop*
Processor	2+ GHz Intel i5 or equivalent
Resolution	1600 x 900/1920 x 1080 (small font)
Operating System	Microsoft® Windows 10 (32 or 64 bit)**
Memory	4.0+ G RAM***
Ports/Drives	(1) USB Port in Rear or Side
Hard Disk	20G Available

* Using any other computer manufacturer in conjunction with the PdMA software may result in erratic computer behavior; not limited to but including:

- Power Management Issues
- Lock-up
- Communication Port Malfunction
- Driver Incompatibility
- Display Errors
- SQL Database Incompatibility
- Network Synchronization Issues.

** For International Customers: Windows 10 or (32 or 64-bit)

***If you are upgrading from MCEGold 2.6.1 - 2.6.2 verify that your computer has at least 4G of RAM.

PREPARE WINDOWS 10 FOR MCEGOLD 3.0.3 SP5 INSTALLATION

NOTE: If you have updated to Windows 10 from a previous version of Windows, you must perform a full uninstall of MCEGold regardless of the version. If you have not previously installed MCEGold on your Windows 10 computer, it is not necessary to uninstall MCEGold. Go to the Disable Driver Signature Enforcement section.

Backup

Before beginning the MCEGold uninstall, copy the Emaxprb.xml file only (not the folder) and the complete Templates folder to a safe location and make note of the location.

The default location for the files is listed below, however you may have chosen a different location during the original installation.
C:\PdMA Corporation\MCEGold\Emax
C:\PdMA Corporation\MCEGold\Report

Uninstall

1. Select Start, Control Panel, select Programs, then Programs and Features.

2. In the Uninstall or change a program window scroll down to locate and highlight the MCEGold Version X.X.X on the list.

3. Click **Uninstall/Change** located above the list and follow on screen prompts.

4. Click **Finish** when the "Uninstall Complete" message is received.

5. Locate the PdMA MCEMAX Tester (Driver Removal) file. Highlight it and click **Uninstall/ Change** located above the list and follow the on screen prompts.

6. Click **Finish** when the "Uninstall Complete" message is received.

7. Locate the C:\PdMACorporation folder and delete it. The subfolders will be deleted also. After the installation of MCEGold 3.0.3 SP5 the new folder location will be C:\PdMA Corporation\....

8. Reboot your computer.

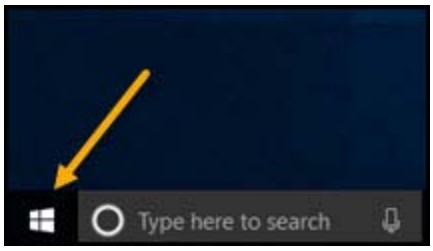
9. Go to step one in the Disable Driver Signature Enforcement section.

Disable Driver Signature Enforcement

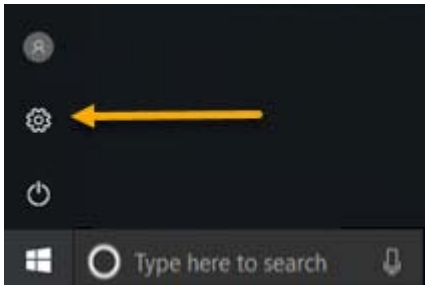
NOTE: To install MCEGold 3.0.3 SP5 on a Windows 10 operating system, the operating system must be in the "Disable driver signature enforcement" mode.

Use the following steps to enter the Disable driver signature enforcement installation mode.

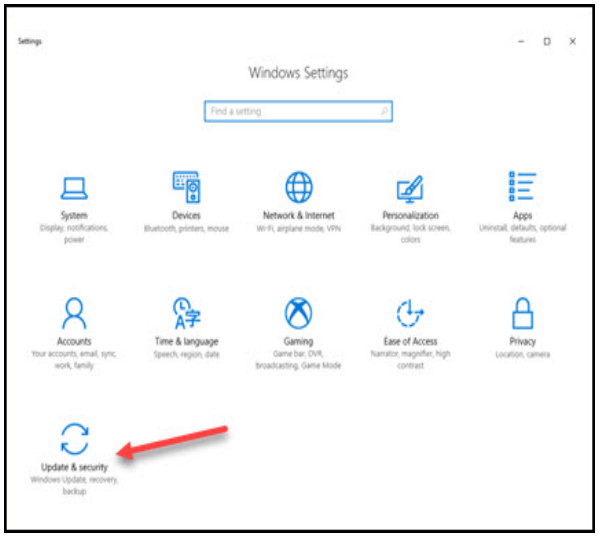
1. From the main Windows 10 screen, click the **Start** button in the lower left corner of the computer screen.



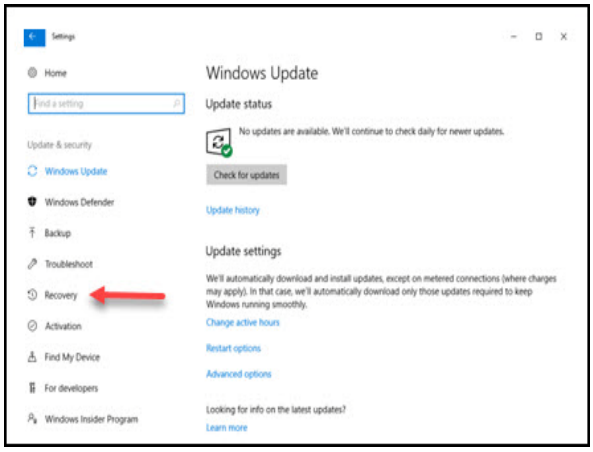
2. Click **Settings**.



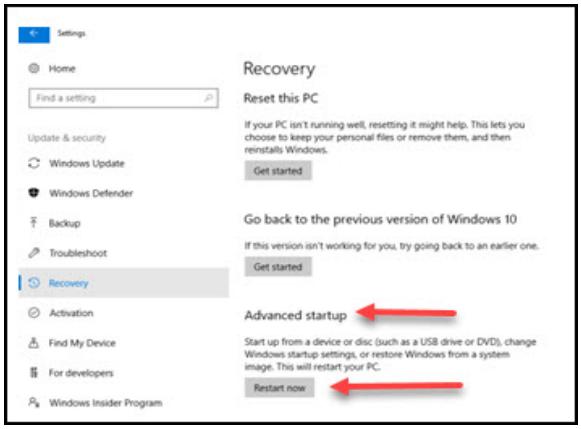
3. From the Windows Settings window, select **Update and Security**.



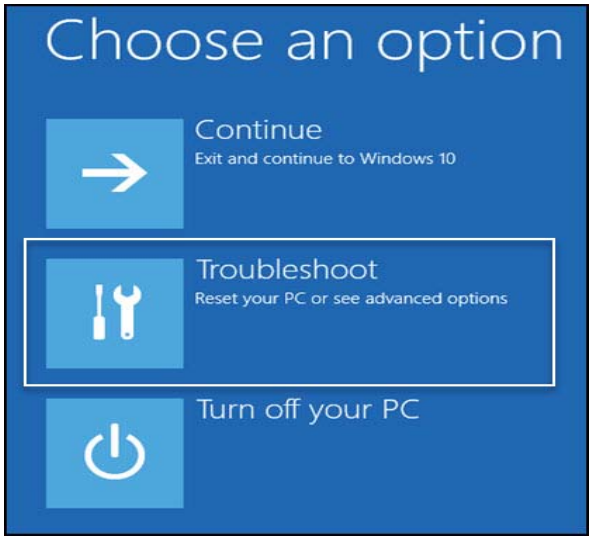
4. From the Windows Update window, select **Recovery**.



5. From the Recovery window, in the Advanced startup section, click **Restart now**.



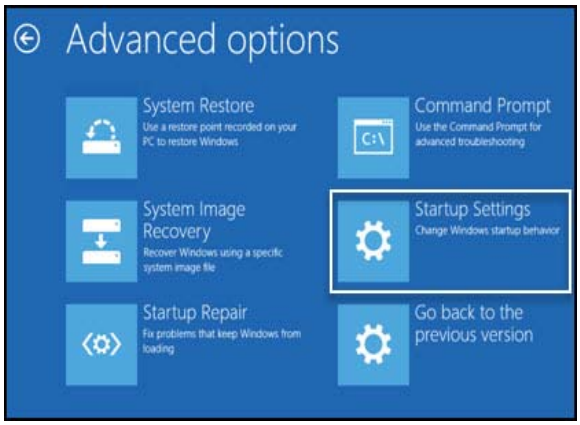
6. From the Choose an option window, select **Troubleshoot**.



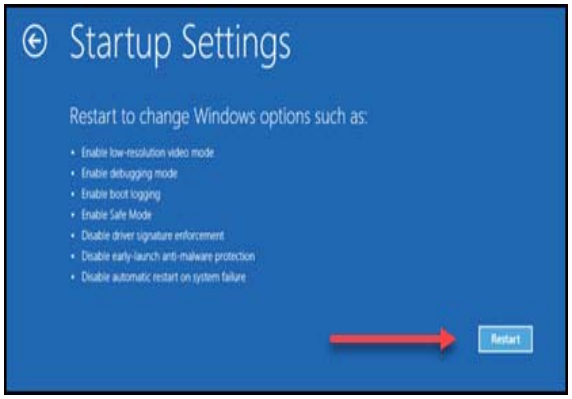
7. From the Troubleshoot window, Select **Advanced options**.



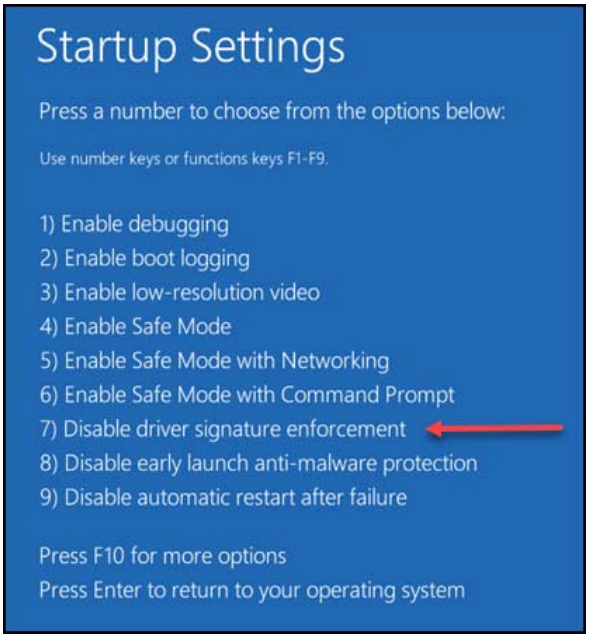
8. From Advanced Options window, Select **Startup Settings**.



9. From the Startup Settings window, click **Restart**.



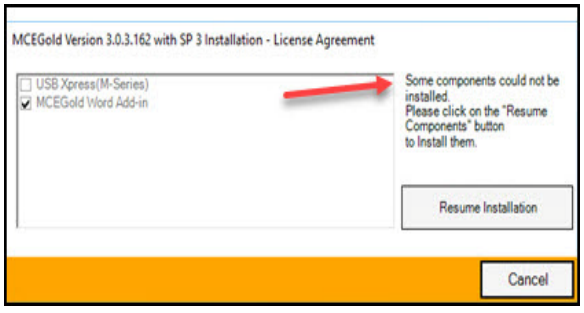
10. From the next Startup Settings window, press # 7 to select **Disable driver signature enforcement.**

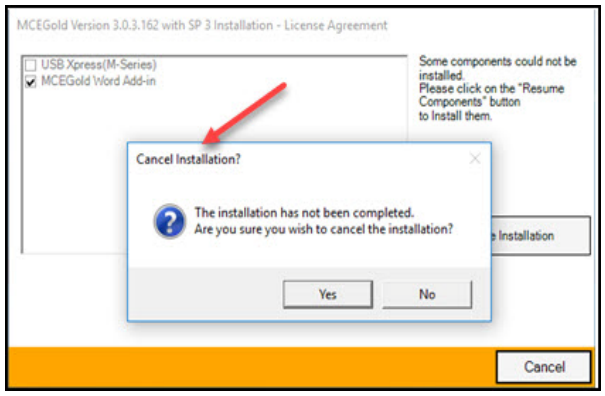


11. The computer displays the start up screen.

MCEGOLD 3.0.3 SP5 INSTALLATION

NOTE: During the installation process, if you see either of the following windows or messages: MCEGold – **Some components could not be installed**, or MCEGold – **Cancel Installation?**, then Windows 10 has not been configured to allow unsigned driver installation. See the section *Prepare Windows 10 for MCEGold 3.0.3 SP5 Installation.*

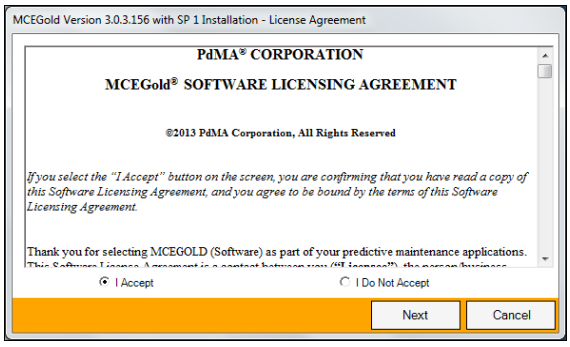




1. Insert the MCEGold 3.0.3 SP5 USB flash drive into the USB port. If the installation does not begin automatically, run setup.exe from the USB flash drive. (Select Run, setup.exe from the AutoPlay window).

2. Right click on setup.exe and select Run as administrator.

3. The License Agreement window opens. Read the PdMA license and select the "I Accept" option button. The **Next** button becomes visible. Click **Next**.
   Note: If you do not accept the terms, the **Next** button is not visible, you can only click **Cancel**, which closes the software without installing it.



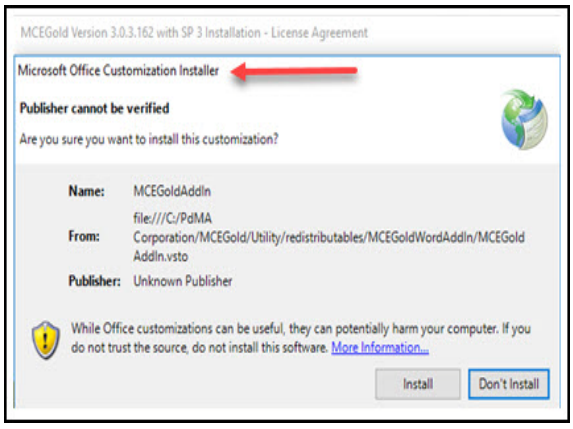
4. In the License Key window enter your Company Name and License Key exactly as provided by PdMA. You may copy and paste the license key using the paste button.

5. Click **Submit** (located to the right of the Company Name). When the license has been verified a green check appears. The **Next** button appears. Click **Next**.

6. In the Installation Path window, accept the default shown in the text box (recommended) for the location to install the MCEGold program folder or using the drop-down list select an alternate location, make a note of it for your future use, and click **Next**. Note: It is not suggested to use an alternate location because that can cause conflict and Windows rights problems.

7. When prompted, click **Install Components**. Some components may require additional prompts.

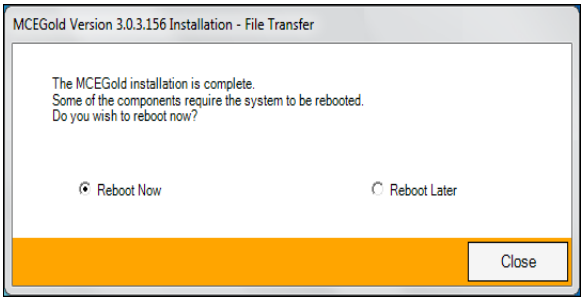
   Note: When installing MCEGold, a Word Add-in driver is installed. You may receive a message informing you that "Windows can't verify the publisher of this driver software." Select "Install".



8. When the installation of components is complete the **Next** button appears. Click **Next**.

9. A progress bar shows the progress of copying files to your computer.

10. When the installation is complete you must reboot your system. Select the Reboot Now option and click **Close**.



11. After rebooting, locate and copy the backup Emaxprb.xml file and the Template folder back into their appropriate locations in

    C:\PdMA Corporation\MCEGold\Emax
    C:\PdMA Corporation\MCEGold\Report

12. Answer Yes to "Merge the folder?" inquiry.

13. Remove the MCEGold 3.0.3 SP5 USB flash drive from the computer.

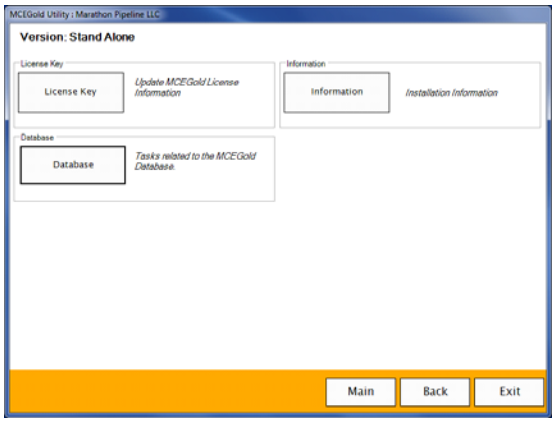
DATABASE SETUP

Note: This procedure is for connecting to an existing database that is to be upgraded to MCEGold 3.0.3 SP5.

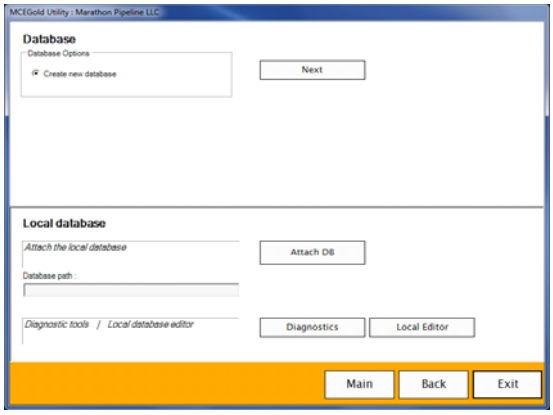
To connect to an existing database, please follow the instructions below.

1. Ensure you have properly backed up the database you are converting.

2. Open the Utility program and click the **Database** button.

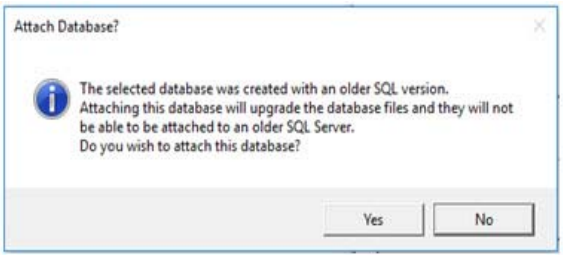


3. Click **Attach DB** as shown in the screen below.

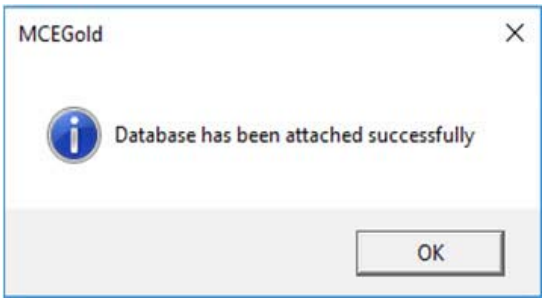


4. Navigate to the database location on your computer and select the desired database.

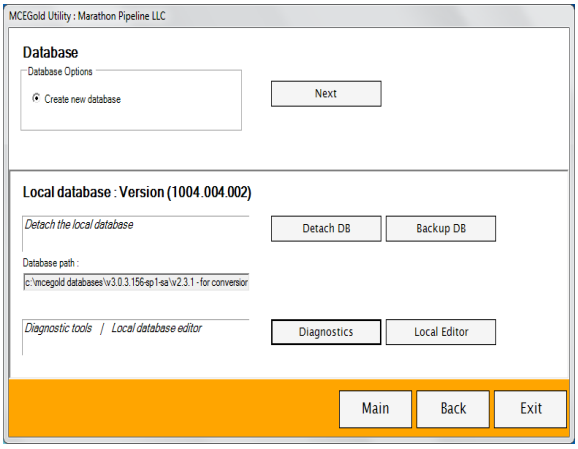
   If you receive the following message: "The database you selected was created with an older SQL version", the database needs to be upgraded to SQL 2008. **Stop!** Click **No.** Do **NOT** proceed! Contact Technical Support.



5. If the database attached properly you will see the following window. Click **OK**.



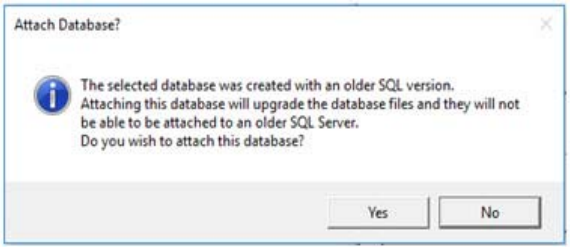
6. The MCEGold Utility Database Window opens. Click **Exit**.



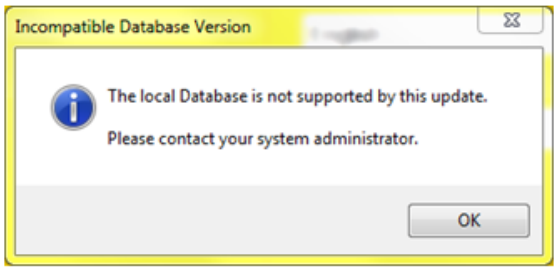
START MCEGOLD

1. Start MCEGold.

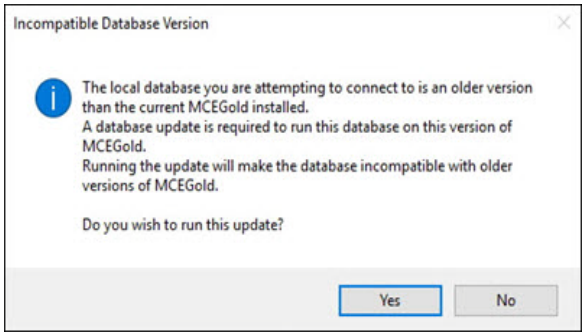
   If you receive the following message: "The database you selected was created with an older SQL version", the database needs to be upgraded to SQL 2008. **Stop!** Click **No**. Do **NOT** proceed! Contact Technical Support.



   If you receive the following "local database is not supported by this update" message when trying to start MCEGold, the attached database is too old for conversion and needs to be updated to MCEGold 2.6.1 or later prior to updating to MCEGold 3.0.3 SP5.



If you receive the following "Incompatible Database Version" message, shown on page 7, when trying to start MCEGold, you are attempting to run MCEGold with a database that is older than V3.0.3-SP5. You will be prompted to update the database. If you have properly backed up your existing database, click **Yes** to run the update. If you have not backed up your existing database, click **No**, backup the database, and then perform the Database Setup procedure.



2. Click **OK** on the message window. The message window closes, leaving the MCEGold Login window open.

3. If there is another database available, click on **Search** (the three dots on the right of Site) to bring up the navigator to search for the other database. If none are available, click **Cancel** to exit out of MCEGold, and contact PdMA Technical Support at 813-621-6463 ext. 251.

TECHNOTE 1802

ISSUED

April, 2018

SUBJECT

USB connection configuration

DESCRIPTION

The tester comes from PdMA with the software installed and COM port (USB connection) configured, however if the computer is reformatted or the MCE is connected to a newly installed operating system, it may be necessary to reinstall the COM Port (USB connection) configuration.

Installing the Software

From PdMA Website Download

1. Locate the ...exe and run it.
2. Uncheck “Run setup.exe”
3. Click **Unzip**.
4. Click **OK** when finished, then close.
5. Navigate to C:\MCEGold_Setup\2.6.2.65_SP8\USB-to-serial
6. Go to Installation Section.

MCEGold (Disc or USB)

1. Insert the MCEGold media in the CD-ROM drive or USB port.
2. Use Windows Explorer to navigate to the USB-to Serial_Port_Adapter_Drivers_Windows7 folder.
3. Go to the Installation Section.

Installation

1. Double click **PL2303_Prolific_DriverInstaller_v1.14.0_20160802.3x3**
2. The system will extract the files. The InstallShield Wizard window appears. Click **Next**.
3. When the installation is complete click **Finish**, then **Exit** the Installation window.
4. Go to *Installing the Adapter* section

Installing the Adapter

Note: These instructions are based on the Dell computers supplied with the tester, longer cables may be required for other models. Call tech support (813-621-6463 ext. 2) for help if you have a different model.

1. Connect the USB cable to the MCE port on the tester and to the USB port labeled MCE on the laptop. (Figure 1)

   Note: If using a model computer different than a Dell E64XX series then choose the most convenient USB port on the laptop.



Figure 1

2. Wait for the computer to recognize and install the adapter. The progress is displayed on the task bar located in the lower right of the screen. Windows will indicate when the installation is complete.
3. Click **Start** (lower left corner on task bar) and select **Control Panel**. In the control panel window double click the **Device Manager** icon.
4. In the Device Manager window double click on **Ports (COM & LTP).**

5. Double click **Prolific USB-to-Serial Comm Port**. (Figure 2)

   Note: If there is a device on COM1 then follow the procedure in step 6 and 7 to assign it to a different COM port first**.**

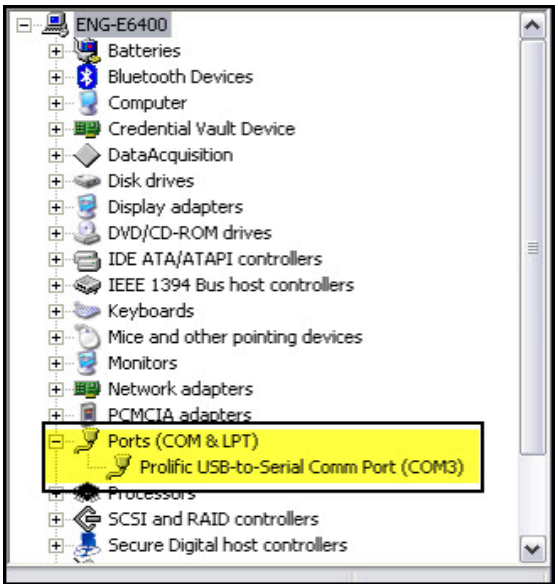


Figure 2

6. In the Properties window select the **Port Settings** tab and then click the **Advanced...** button. (Figure 3)

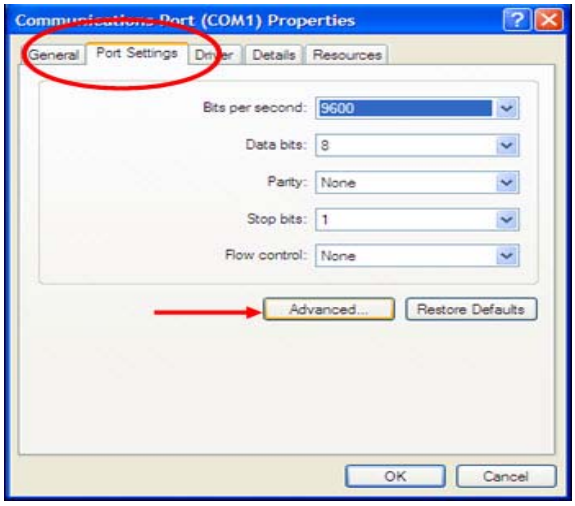


Figure 3

7. In the Advanced Settings window, click the down arrow on the **COM Port Number** box and select **COM1**. (Figure 4)

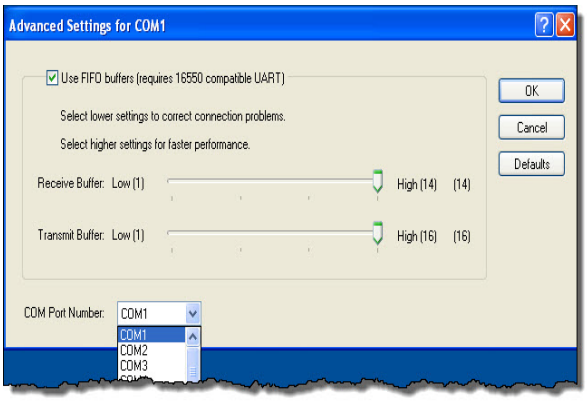


Figure 4

8. Click **OK**. Click **OK** on the next window, close the Device Manager (click the red "X"), click **OK** on the Device Manager window, and close the Control Panel window.

Stow USB Cable

Always stow the USB cable as shown in Figure 5, to prevent damage to the cable and the computer.



Figure 5X

TECHNOTE 1803-N7

ISSUED

May 2018

SUBJECT

Release of MCEGold® 3.0.3 SP6 - Network Version for Windows 7.

DESCRIPTION

MCEGold 3.0.3 SP6 Network Version is an upgrade from MCEGold 3.0.3. SP5.

PDMA CLOUD SERVICES

The network edition of MCEGold 3.0.3 SP6 supports access to PdMA Cloud Services. Please contact PdMA Technical Support (813-6216-6463 ext. 251) to discuss this option.

NOTES

- MCEGold 3.0.3 SP6 is only compatible with Windows 10 and Windows 7 and M-Series testers.

- Installation of MCEGold 3.0.3 SP6 on a Windows 10 computer uses a special installation procedure. Refer to TechNote 1803-S10 (Standalone) or 1803-N10 (Network).

- MCEGold Word Add-in is only compatible with MS Word 2007 and 2013. MCEGold Word Add-in is NOT compatible with MS Word 2010. Templates created with other versions of MS Word may not be functional and may cause conflicts with the MCEGold software.

- To ensure application accessibility, the default installation location has been set to C:\PdMA Corporation.

- Databases attached to MCEGold 3.0.3 SP6 must be from MCEGold 2.6.1 or later and once updated with 3.0.3 SP6 *will not* be compatible with older versions of MCEGold.

- Assets opened or exported with MCEGold 3.0.3 SP6 *will not* be compatible with older versions of MCEGold.

- If you have any questions, please contact PdMA Technical Support (813-621-6463 ext. 251).

Minimum Requirements

Computer	Dell Latitude E5470 Laptop*
Processor	2+ GHz Intel i5 or equivalent
Resolution	1600 x 900/1920 x 1080 (small font)
Operating System	Microsoft® Windows 7 SP1 (32 or 64 bit)**
Memory	4.0+ G RAM***
Ports/Drives	(1) USB Port in Rear or Side
Hard Disk	20G Available

* Using any other computer manufacturer in conjunction with the PdMA software may result in erratic computer behavior; not limited to but including:

- Power Management Issues
- Lock-up
- Communication Port Malfunction
- Driver Incompatibility
- Display Errors
- SQL Database Incompatibility
- Network Synchronization Issues.

** For International Customers: Windows 7 Ultimate (32 or 64-bit).

*** If you are upgrading from MCEGold 2.6.1 - 2.6.2 verify that your computer has at least 4G of RAM.

UPDATE SERVER DATABASE FOR NETWORK USERS

NOTE: Ensure the user account being used to update the server has “sysadmin” permissions.

There is a separate application on the Installation USB flash drive to update the network database on the server. ***The database must be updated on the server first, then the desktops and finally field testers.***

If the update is installed on a network field tester before the server database is updated, a warning message appears informing you the database is an old version and to contact your system administrator.

1. Fully Sync all field testers.
   NOTE: Before proceeding ensure all local database synchronization has been performed.

2. Back up the MCEGold server database.

3. Insert the MCEGold 3.0.3 SP6 USB flash drive into the USB port. If the drive starts automatically, click **Exit** and proceed to the next step.

4. Locate the MCEGold Database Server Update folder on the MCEGold 3.0.3 SP6 USB flash drive.

5. Click on the MCEGold Database Server Update.exe file.

6. The Server Information window opens. Fill in the Server, Database, Login, and Password information.The Login and Password will depend on your authentication (Windows/SQL).

7. Click **Run Update**. The progress status will display on the window.

8. When the update complete message displays, close the window.

PREPARE FIELD TESTERS FOR MCEGOLD 3.0.3 SP6

Backup

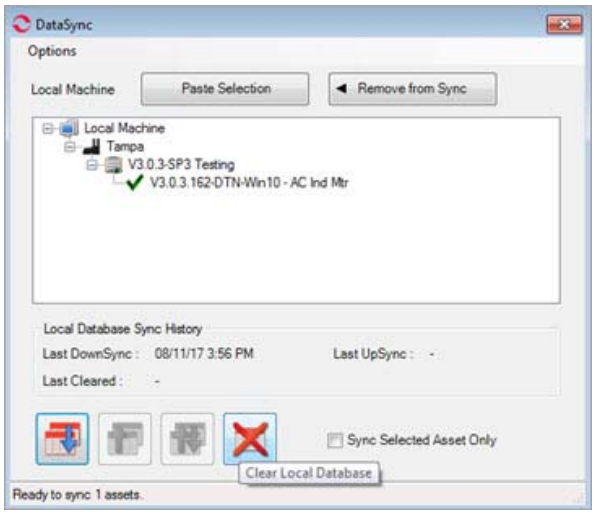
Before beginning the MCEGold uninstall, copy the Emaxprb.xml file only (not the folder) and the complete Templates folder to a safe location and make note of the location.

The default location for the files is listed below, however you may have chosen a different location during the original installation.
C:\PdMA Corporation\MCEGold\Emax
C:\PdMA Corporation\MCEGold\Report

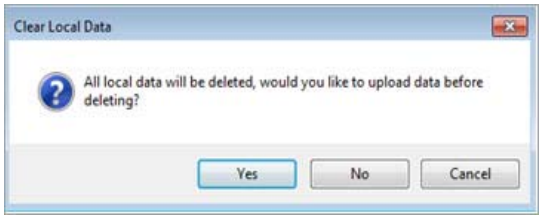
Clear Local Database

NOTE: Before proceeding ensure all local database synchronization has been performed. Failure to synchronize before clearing the local database will result in loss of data.

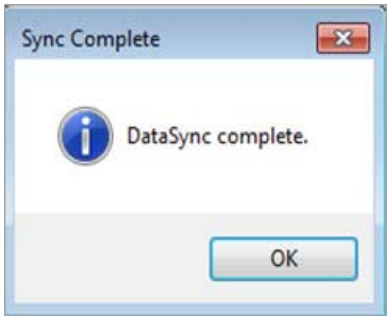
1. From the DataSync window, click **Clear Local Database**.



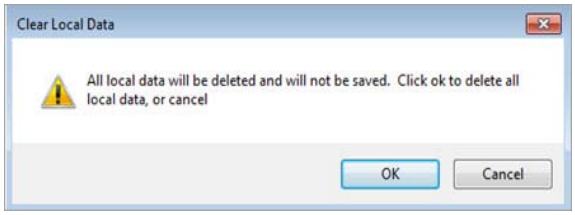
2. From the Clear Local Data window, click **Yes** to upload (UpSync) data, click **No** if you have already synchronized the data.



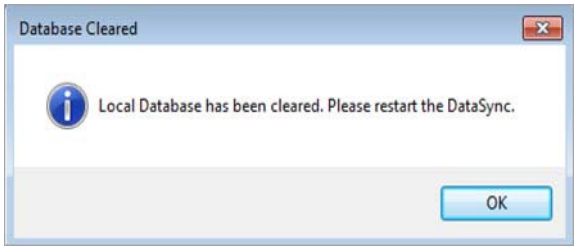
3. From the Sync Complete window, click **OK**.



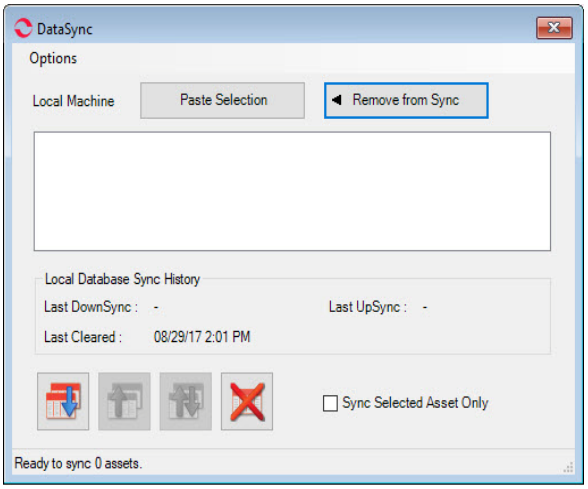
4. From the next Clear Local Data window, click **OK** to delete all local data.



5. From the Database Cleared window, click **OK.**



6. Reopen the DataSync window to ensure the database has been cleared, as shown in figure below. If it did not clear contact Technical Support.



UPGRADE FROM MCEGOLD 3.0.3 OR LATER

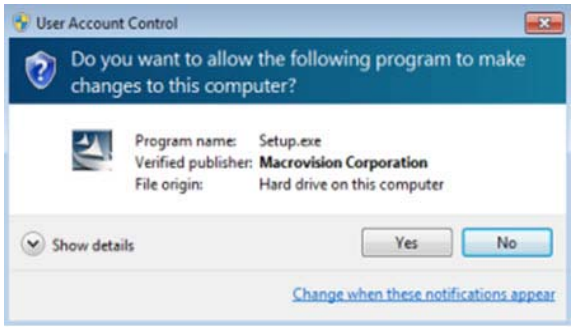
NOTE: If you have any version prior to MCEGold 3.0.3 a full uninstall is required before installing version 3.0.3 SP6. Go to the Upgrading From a Version Previous to MCEGold 3.0.3 Section.

MCEGold 3.0.3 SP6 Update

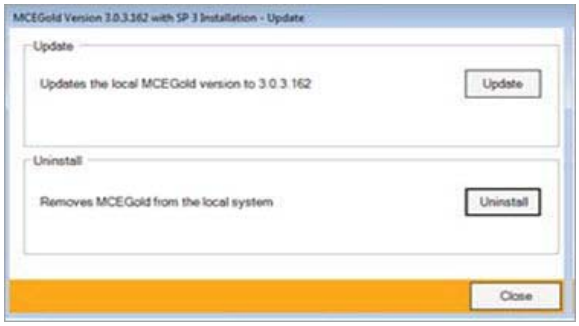
NOTE: Some on screen prompts and messages during the installation process are controlled by the Windows operating system and are out of PdMA's control. Every effort has been made to include their possible appearance and the action you should take. However, if you are unsure please contact our technical support department for help.

1. Insert the MCEGold 3.0.3 SP6 USB flash drive into the USB port. If the installation does not begin automatically, run setup.exe from the USB flash drive. (Select Run, setup.exe from the AutoPlay window).

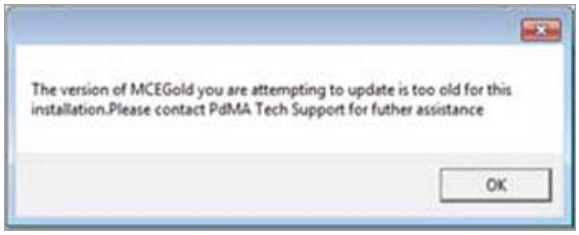
2. If you see the User Account Control screen, click **Yes**.



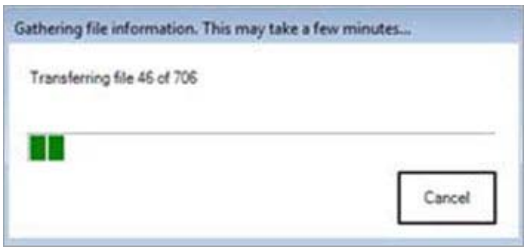
3. If there is an existing MCEGold version installed on your computer, you will see the MCEGold Update screen. click **Update**.



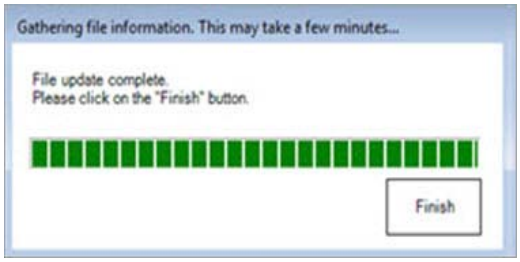
NOTE: If you have a version prior to MCEGold3.0.3 you will receive the error message shown below. Do **NOT** proceed. Contact technical support.



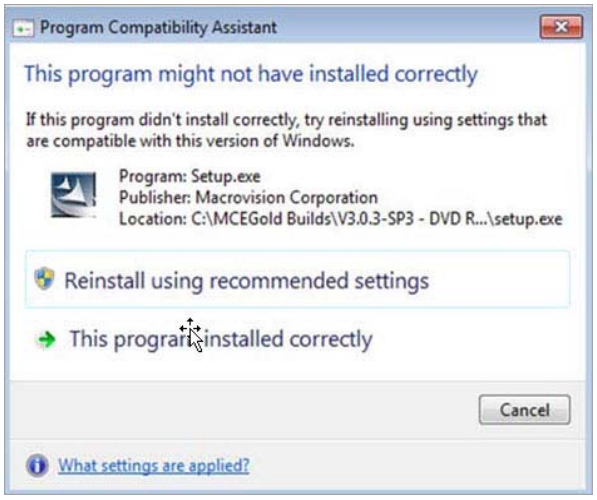
4. The status update window displays.



5. When the update is complete, click **Finish**.



6. If the Program Compatibility Assistant screen displays, select *This program installed correctly.*



Clear Local Database

1. Open the MCEGold Utility Program.

2. Click the Database button.

3. Click Clear and follow the prompts. This will ensure the local database is updated.

4. Go to the Start MCEGold Section.

UPGRADING FROM A VERSION PRIOR TO MCEGOLD 3.0.3

Uninstall

NOTE: Before beginning the MCEGold uninstall you must back up the Emaxprb.xml and Templates folder. See the Backup and Clear Local Database sections on page 2.

1. Select Start, Control Panel, select Programs, then Programs and Features.

2. In the Uninstall or change a program window scroll down to locate and highlight the MCEGold Version X.X.X on the list.

3. Click **Uninstall/Change** located above the list and follow on screen prompts.

4. Click **Finish** when the "Uninstall Complete" message is received.

5. Locate the PdMA MCEMAX Tester (Driver Removal) file. Highlight it and click **Uninstall/ Change** located above the list and follow the on screen prompts.

6. Click **Finish** when the "Uninstall Complete" message is received.

7. Locate the C:\PdMACorporation folder and delete it. The subfolders will be deleted also. After the installation of MCEGold 3.0.3 SP6 the new folder location will be C:\PdMA Corporation\....

8. Reboot your computer.

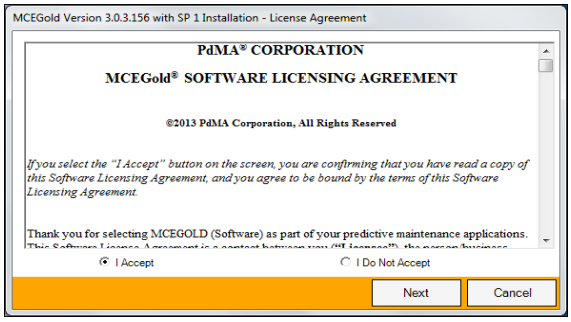
9. Go to step one in the MCEGold 3.0.3 SP6 Installation.

MCEGOLD 3.0.3 SP6 INSTALLATION

1. Insert the MCEGold 3.0.3 SP6 USB flash drive into the USB port. If the installation does not begin automatically, run setup.exe from the USB flash drive. (Select Run setup.exe from the AutoPlay window).

2. The License Agreement window opens. Read the PdMA license and select the "I Accept" option button. The **Next** button becomes visible. Click **Next**.

   NOTE: If you do not accept the terms, the **Next** button is not visible, you can only click **Cancel**, which closes the software without installing it.



3. In the License Key window enter your Company Name and License Key exactly as provided by PdMA. You may copy and paste the license key using the paste button.

4. Click **Submit** (located to the right of the Company Name). When the license has been verified a green check appears. The **Next** button appears. Click **Next**.

5. In the Installation Path window, accept the default shown in the text box (recommended) for the location to install the MCEGold program folder or using the drop-down list select an alternate location, make a note of it for your future use, and click **Next**. Note: It is not suggested to use an alternate location because that can cause conflict and Windows rights problems.

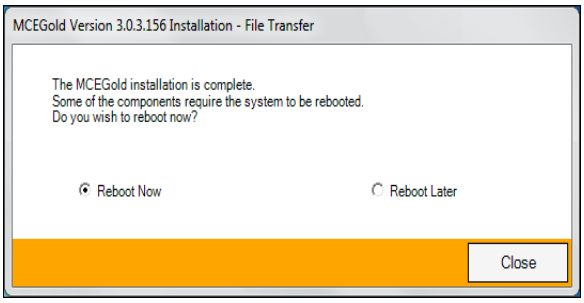
6. When prompted, click **Install Components**. Some components may require additional prompts.

   NOTE: When installing MCEGold, a Word Add-in driver is installed. You may receive a message informing you that "Windows can't verify the publisher of this driver software." Select "Install this driver software anyway".

7. When the installation of components is complete the **Next** button appears. Click **Next**.

8. A progress bar shows the progress of copying files to your computer.

9. When the installation is complete you must reboot your system. Select the Reboot Now option and click **Close**.



10. After rebooting, locate and copy the backup Emaxprb.xml file and the Template folder back into their appropriate locations in

    C:\PdMA Corporation\MCEGold\Emax
    C:\PdMA Corporation\MCEGold\Report

11. Answer Yes to "Merge the folder?" inquiry.

12. Remove the MCEGold 3.0.3 SP6 Network Version USB flash drive from the computer.

Field Tester Database Setup

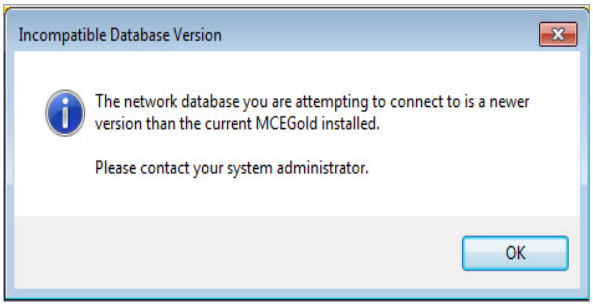
NOTE: For the following, please use the information provided by your IT department.

Field testers utilize a local database for storage of assets. These assets can then be synchronized with the Network database. In order to perform field testing in local tester mode, assets must be down-synced to the local database. In order to perform testing using MCEGold Lite, assets must be in a WatchList and down-synced to the local database.

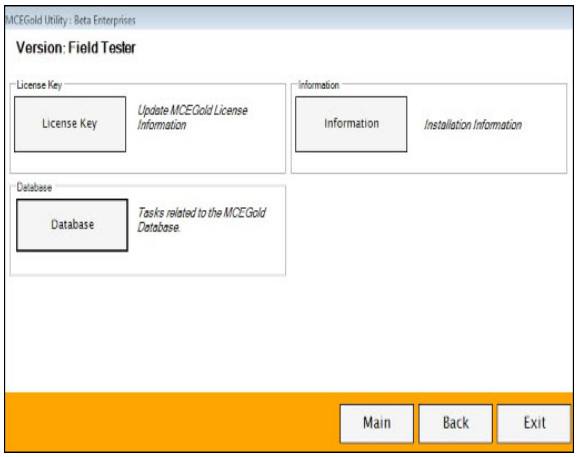
To connect to the existing network database, please follow the instructions below.

1. Open the MCEGold Utility program.

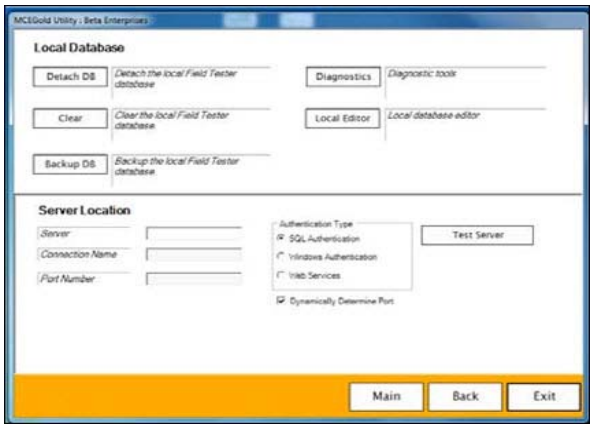
2. If you see the Incompatible Database Version window, you have not properly updated MCEGold. Return to the section MCEGold 3.0.3 SP6 Installation. If you have properly updated MCEGold, and are receiving this message contact Technical Support.



3. Click the **Database** button.

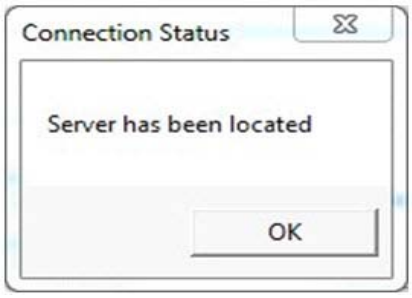


4. Enter the server information provided by your IT department.

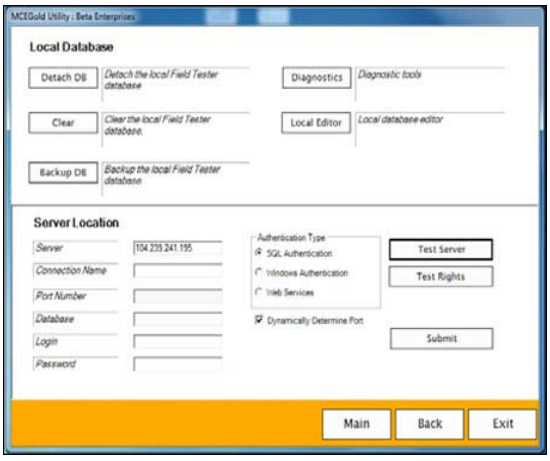


5. Once the server information has been entered, click **Test Server**.

6. The Connection Status window indicates *Server has been located.* Click **OK**.

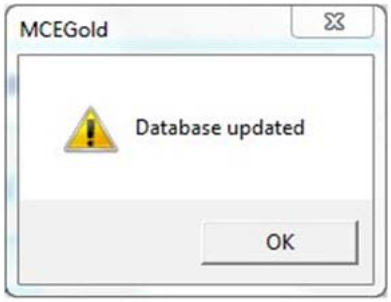


7. In the Server Location section of the MCEGold Utility window enter Connection Name, Database Information, Login Information, and Password as provided by your either your Administrator or your IT Department.

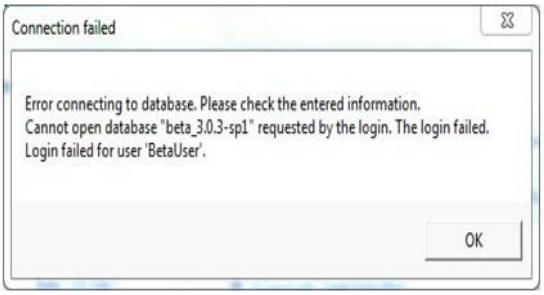


8. Click **Submit**.

9. You will receive a message indicating *Database updated*. Click **OK.**



10. If you receive an error as shown below, verify the information you entered is correct. If it is correct, click **OK** and contact your Administrator.

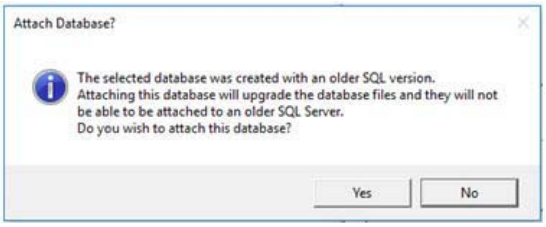


11. If you do not receive an error message, click **Exit** on the Utility window.

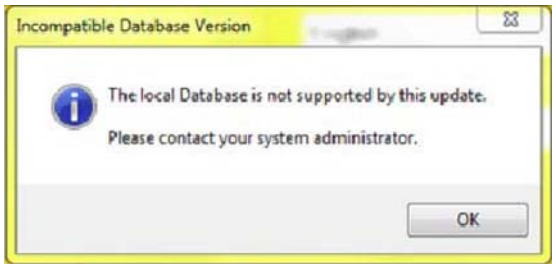
START MCEGOLD

1. When MCEGold starts:

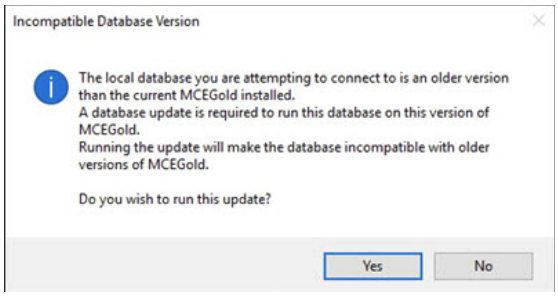
   If you receive the following message: "The database you selected was created with an older SQL version", the database needs to be upgraded to SQL 2008. **Stop!** Click **No**. Do **NOT** proceed! Contact Technical Support.



   If you receive the following "The local database is not supported by this update" message when trying to start MCEGold, the attached database is too old for conversion and needs to be updated to MCEGold 2.6.1 or later prior to updating to MCEGold 3.0.3 SP6.



   If you receive the following *Incompatible Database Version* message when trying to start MCEGold, you are attempting to run MCEGold with a database that is older than V3.0.3 SP6. You will be prompted to update the database. If you have properly backed up your existing database, click **Yes** to run the update. If you have not backed up your existing database, click **No**, backup the database, and then perform the Database Setup procedure.



2. Click **OK** on the message window. The message window closes, leaving the MCEGold Login window open.

3. Enter your name and password.

   NOTE: For a tester, select the Field Tester Network mode. Verify MCEGold is correctly communication with the database. You are ready to perform testing.

TECHNOTE 1803-N10

ISSUED

May 2018

SUBJECT

Release of MCEGold® 3.0.3 SP6 - Network Version for Windows 10.

DESCRIPTION

MCEGold 3.0.3 SP6 Network Version is an upgrade from MCEGold 3.0.3**.** SP5.

PDMA CLOUD SERVICES

The network edition of MCEGold 3.0.3 SP6 supports access to PdMA Cloud Services. Please contact PdMA Technical Support (813-6216-6463 ext. 251) to discuss this option.

NOTES

- MCEGold 3.0.3 SP6 is only compatible with Windows 10 and Windows 7 and M-Series testers.

-Installation of MCEGold 3.0.3 SP6 on a Windows 10 computer uses a special installation procedure. For a Windows 7 installation refer to TechNote 1803-S7 (Stand Alone) or TechNote 1803-N7 (Network) as applicable.

- MCEGold Word Add-in is only compatible with MS Word 2007 and 2013. MCEGold Word Add-in is NOT compatible with MS Word 2010. Templates created with other versions of MS Word may not be functional and may cause conflicts with the MCEGold software.

- To ensure application accessibility, the default installation location has been set to C:\PdMA Corporation.

- Databases attached to MCEGold 3.0.3 SP6 must be from MCEGold 2.6.1 or later and once updated with 3.0.3 SP6 *will not* be compatible with older versions of MCEGold.

- Assets exported with MCEGold 3.0.3 SP6 *will not* be compatible with older versions of MCEGold.

- If you have any questions, please contact PdMA Technical Support (813-621-6463 ext. 251).

Minimum Requirements

Computer	Dell Latitude E5470 Laptop*
Processor	2+ GHz Intel i5 or equivalent
Resolution	1600 x 900/1920 x 1080 (small font)
Operating System	Microsoft® Windows 10 (32 or 64 bit)**
Memory	4.0+ G RAM***
Ports/Drives	(1) USB Port in Rear or Side
Hard Disk	20G Available

* Using any other computer manufacturer in conjunction with the PdMA software may result in erratic computer behavior; not limited to but including:

- Power Management Issues
- Lock-up
- Communication Port Malfunction
- Driver Incompatibility
- Display Errors
- SQL Database Incompatibility
- Network Synchronization Issues.

** For International Customers: Windows 10 (32 or 64-bit)

*** If you are upgrading from MCEGold 2.6.1 - 2.6.2 verify that your computer has at least 4G of RAM.

UPDATE SERVER DATABASE FOR NETWORK USERS

NOTE: Ensure the user account being used to update the server has “sysadmin” permissions.

There is a separate application on the Installation USB flash drive to update the network database on the server. ***The database must be updated on the server first, then the desktops and field testers.***

If the update is installed on a network field tester before the server database is updated, a warning message appears informing you the database is an old version and to contact your system administrator.

1. Backup the MCEGold server database.

2. Insert the MCEGold 3.0.3 SP6 USB flash drive into the USB port. If the drive starts automatically, click **Exit** and proceed to the next step.

3. Locate the MCEGold Database Server Update folder on the MCEGold 3.0.3 SP6 USB flash drive.

4. Click on the MCEGold Database Server Update.exe file.

5. The Server Information window opens. Fill in the Server, Database, Login, and Password information. The Login and Password will depend on your authentication (Windows/SQL).

6. Click **Run Update**. The progress status will display on the window.

7. When the update complete message displays, close the window.

PREPARE WINDOWS 10 FOR MCEGOLD 3.0.3 SP6 INSTALLATION

NOTE: If you have updated to Windows 10 from a previous version of Windows, you must perform a full uninstall of MCEGold regardless of the version. If you have not previously installed MCEGold on your Windows 10 computer, it is not necessary to uninstall MCEGold. Go to the Disable Driver Signature Enforcement section.

Backup

Before beginning the MCEGold uninstall, copy the Emaxprb.xml file only (not the folder) and the complete Templates folder to a safe location and make note of the location.

The default location for the files is listed below, however you may have chosen a different location during the original installation.
C:\PdMA Corporation\MCEGold\Emax
C:\PdMA Corporation\MCEGold\Report

Uninstall

1. Select Start, Control Panel, select Programs, then Programs and Features.

2. In the Uninstall or change a program window scroll down to locate and highlight the MCEGold Version X.X.X on the list.

3. Click **Uninstall/Change** located above the list and follow on-screen prompts.

4. Click **Finish** when the "Uninstall Complete" message is received.

5. Locate the PdMA MCEMAX Tester (Driver Removal) file. Highlight it and click **Uninstall/ Change** located above the list and follow the on-screen prompts.

6. Click **Finish** when the "Uninstall Complete" message is received.

7. Locate the C:\PdMACorporation folder and delete it. The subfolders will be deleted also. After the installation of MCEGold 3.0.3 SP6 the new folder location will be C:\PdMA Corporation\....

8. Reboot your computer.

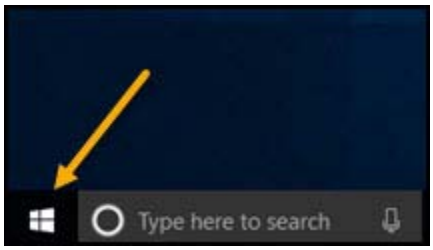
9. Go to step one in Disable Driver Signature Enforcement section.

Disable Driver Signature Enforcement

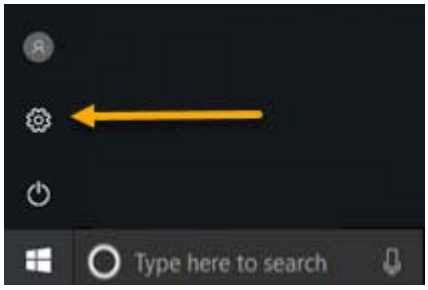
NOTE: To install MCEGold 3.0.3 SP6 on a Windows 10 operating system, the operating system must be in the "Disable driver signature enforcement" mode.

Use the following steps to enter the Disable Driver Signature Enforcement mode.

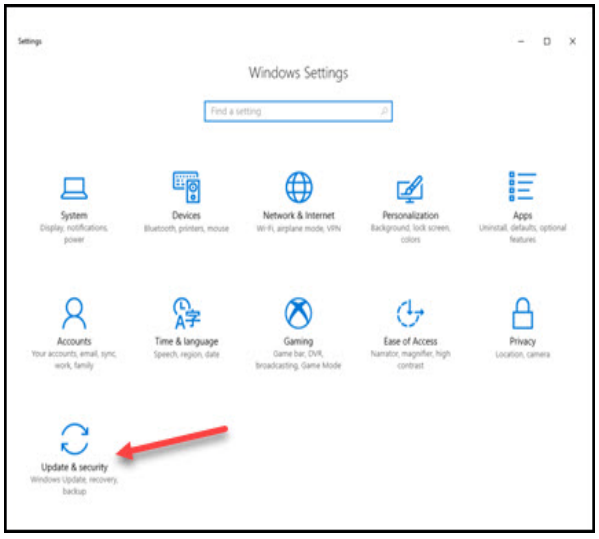
1. From the main Windows 10 screen, click the **Start** button in the lower left corner of the computer screen.



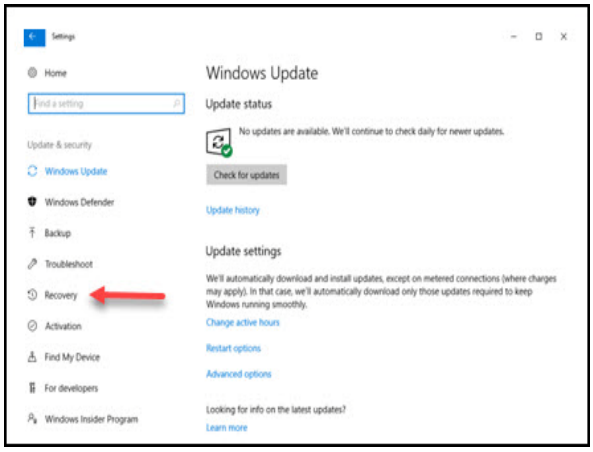
2. Click **Settings**.



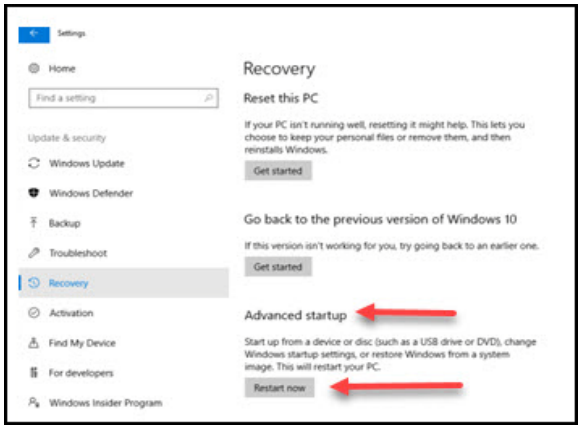
3. From the Windows Settings window, select **Update and Security**.



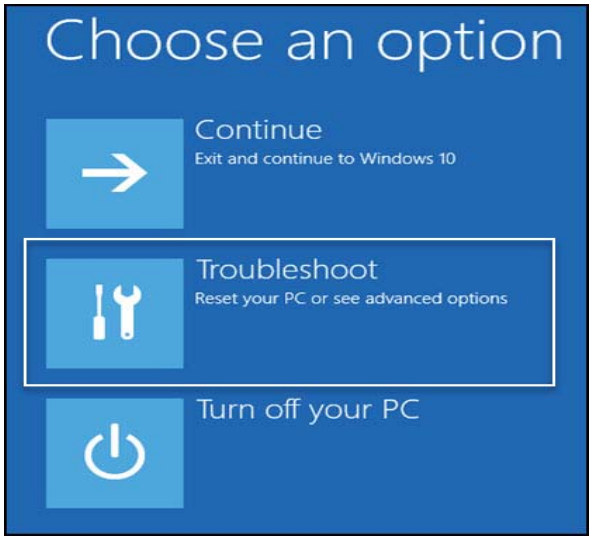
4. From the Windows Update window, select **Recovery**.



5. From the Recovery window, in the Advanced startup section, click **Restart now**.



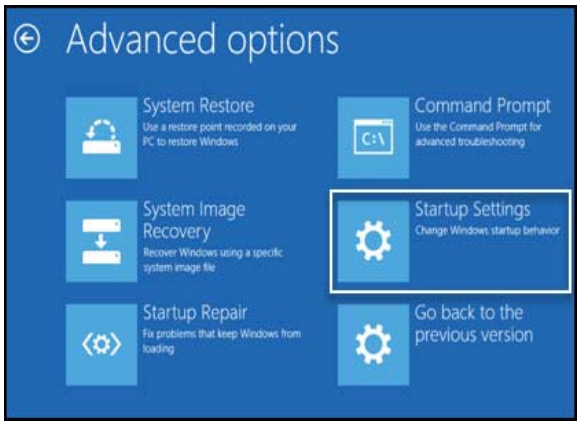
6. From the Choose an option window, select **Troubleshoot**.



7. From the Troubleshoot window, Select **Advanced options**.



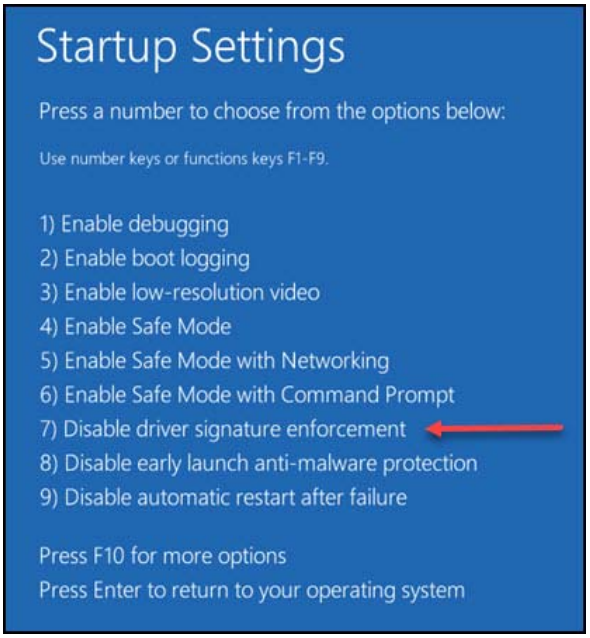
8. From Advanced Options window, Select **Startup Settings**.



9. From the Startup Settings window, click **Restart**.



10. From the next Startup Settings window, press # 7 to select **Disable driver signature enforcement.**

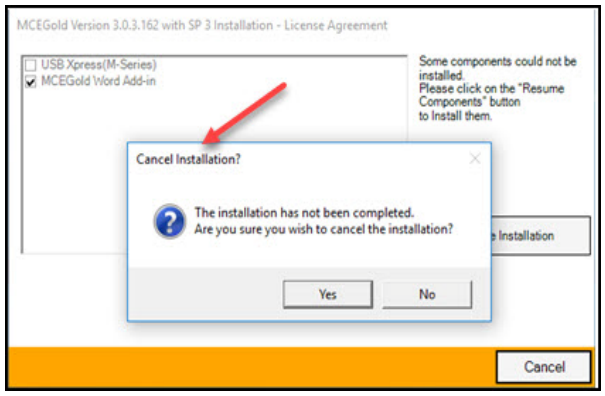


11. The computer displays the start up screen. Go to the MCEGold 3.0.3 SP6 Installation section.

MCEGOLD 3.0.3 SP6 INSTALLATION

NOTE: During the installation process, if you see either of the following windows or messages: MCEGold – **Some components could not be installed**, or MCEGold – **Cancel Installation?**, then Windows 10 has not been configured to allow unsigned driver installation. See the section *Prepare Windows 10 for MCEGold 3.0.3 SP6 Installation.*





1. Insert the MCEGold 3.0.3 SP6 USB flash drive into the USB port. If the installation does not begin automatically, run setup.exe from the USB flash drive. (Select Run, setup.exe from the AutoPlay window).

2. Right click on setup.exe and select Run as administrator.

3. The License Agreement window opens. Read the PdMA license and select the "I Accept" option button. The **Next** button becomes visible. Click **Next**.
   Note: If you do not accept the terms, the **Next** button is not visible, you can only click **Cancel**, which closes the software without installing it.



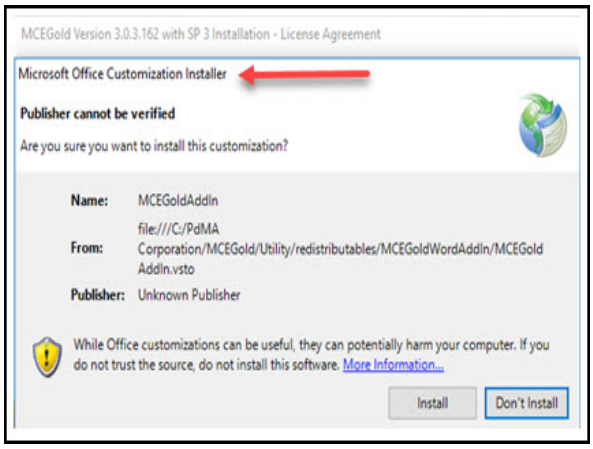
4. In the License Key window enter your Company Name and License Key exactly as provided by PdMA. You may copy and paste the license key using the paste button.

5. Click **Submit** (located to the right of the Company Name). When the license has been verified a green check appears. The **Next** button appears. Click **Next**.

6. In the Installation Path window, accept the default shown in the text box (recommended) for the location to install the MCEGold program folder or using the drop-down list select an alternate location, make a note of it for your future use, and click **Next**. Note: It is not suggested to use an alternate location because that can cause conflict and Windows rights problems.

7. When prompted, click **Install Components**. Some components may require additional prompts.

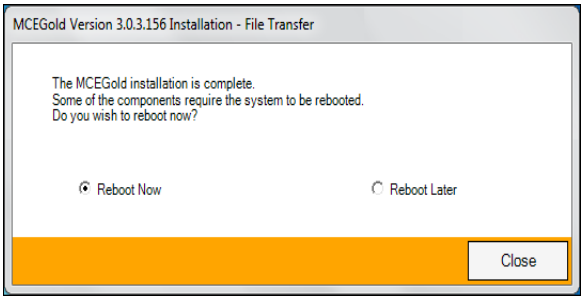
   Note: When installing MCEGold, a Word Add-in driver is installed. You may receive a message informing you that "Windows can't verify the publisher of this driver software." Select "Install".



8. When the installation of components is complete the **Next** button appears. Click **Next**.

9. A progress bar shows the progress of copying files to your computer.

10. When the installation is complete you must reboot your system. Select the Reboot Now option and click **Close**.



11. After rebooting, locate and copy the backup Emaxprb.xml file and the Template folder back into their appropriate locations in

    C:\PdMA Corporation\MCEGold\Emax
    C:\PdMA Corporation\MCEGold\Report

12. Answer Yes to “Merge the folder?” inquiry.

13. Remove the MCEGold 3.0.3 SP6 USB flash drive from the computer.

FIELD TESTER DATABASE SETUP

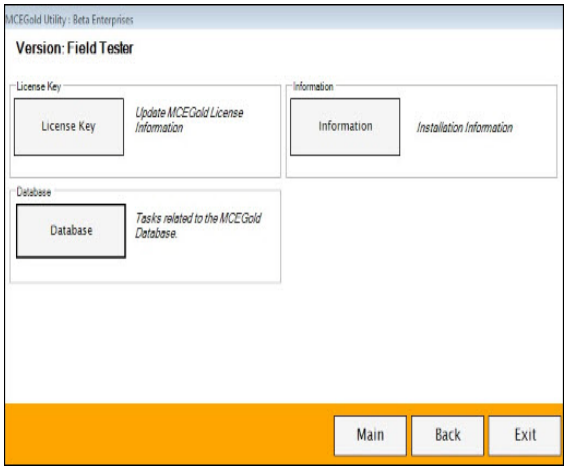
NOTE: For the following, please use the information provided by your IT department.

Field testers utilize a local database for storage of assets. These assets can then be synchronized with the Network database. In order to perform field testing in local tester mode, assets must be down-synced to the local database. In order to perform testing using MCEGold Lite, assets must be in a WatchList and down-synced to the local database.

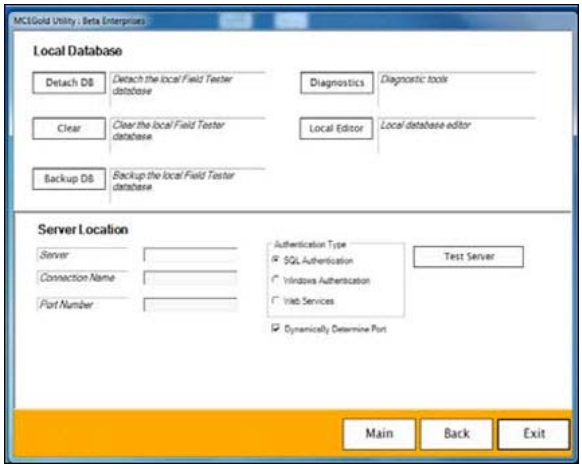
To connect to the existing network database, please follow the instructions below.

1. Open the MCEGold Utility program.

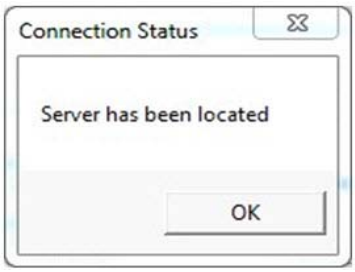
2. Click **Database**.



3. Enter the server information provided by your IT department.

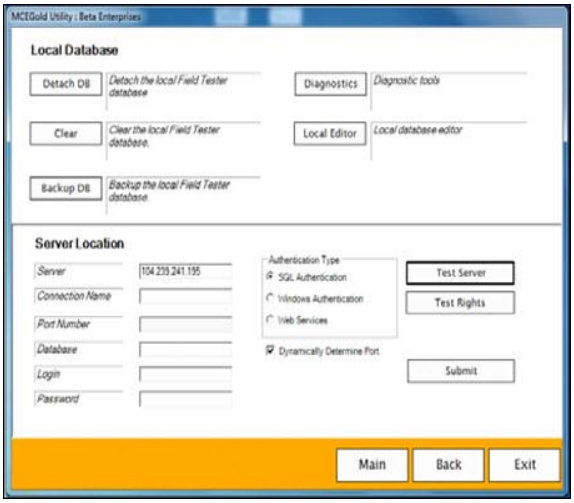


4. Once the server information has been entered, click **Test Server**. You should receive a message indicating “Server has been located”.

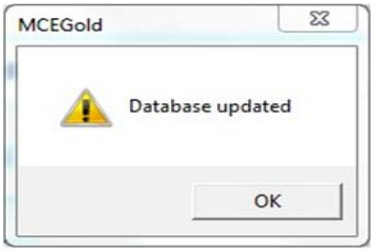


5. Click **OK** on the Connection Status window.

6. Enter the following connection information provided by either your Administrator or IT Department: Connection Name, Database Information, Login Information, and Password.



7. Click **Submit**. You will receive a message indicating "Database updated". Click OK.



8. If you receive an error as shown below, verify the information you entered is correct. If it is correct, click OK and contact your Administrator.



9. If you do not receive an error message, click **Exit** on the Utility window.

10. Start MCEGold and enter the name and password for the tester. Select the Field Tester Network mode.

11. Once you have opened MCEGold and you have verified MCEGold is correctly communicating with the database. You are now ready to perform testing.

TECHNOTE 1803-S7

ISSUED

May 2018

SUBJECT

Release of MCEGold® 3.0.3 SP6 - Stand Alone for Windows 7.

DESCRIPTION

MCEGold 3.0.3 SP6 is an upgrade from MCEGold 3.0.3. SP5.

NOTES

- MCEGold 3.0.3 SP6 is only compatible with Windows 10 and Windows 7 and M-Series testers.

- Installation of MCEGold 3.0.3 SP6 on a Windows 10 computer uses a special installation procedure. For a Windows 10 installation refer to TechNote 1803-S10 (Stand Alone) or TechNote 1803-N10 (Network) as applicable.

- MCEGold Word Add-in is only compatible with MS Word 2007 and 2013. MCEGold Word Add-in is NOT compatible with MS Word 2010. Templates created with other versions of MS Word may not be functional and may cause conflicts with the MCEGold software.

- To ensure application accessibility, the default installation location has been set to C:\PdMA Corporation.

- Databases attached to MCEGold 3.0.3 SP6 must be from MCEGold 2.6.1 or later and once updated with 3.0.3 SP6 *will not* be compatible with older versions of MCEGold.

- Assets opened with MCEGold 3.0.3 SP6 *will not* be compatible with older versions of MCEGold.

- If you have any questions, please contact PdMA Technical Support (813-621-6463 ext. 251).

Minimum Requirements

Computer	Dell Latitude E5470 Laptop*
Processor	2+ GHz Intel i5 or equivalent
Resolution	1600 x 900/1920 x 1080 (small font)
Operating System	Microsoft® Windows 7 SP1 (32 or 64 bit)**
Memory	4.0+ G RAM***
Ports/Drives	(1) USB Port in Rear or Side
Hard Disk	20G Available

* Using any other computer manufacturer in conjunction with the PdMA software may result in erratic computer behavior; not limited to but including:

- Power Management Issues
- Lock-up
- Communication Port Malfunction
- Driver Incompatibility
- Display Errors
- SQL Database Incompatibility
- Network Synchronization Issues.

** For International Customers: Windows 7 Ultimate (32 or 64-bit).

***If you are upgrading from MCEGold 2.6.1 - 2.6.2 verify that your computer has at least 4G of RAM.

PREPARE FOR MCEGOLD 3.0.3 SP6 INSTALLATION

NOTE: If you have MCEGold 3.0.3, 3.0.3 SP1, 3.0.3 SP2, 3.0.3 SP3, or 3.0.3 SP4 follow the instructions in Upgrading From MCEGold 3.0.3 or Later.

If you have any version prior to MCEGold 3.0.3 a full uninstall is required before installing version 3.0.3 SP6. See Upgrading From a Version Previous to MCEGold 3.0.3.

Upgrading From MCEGold 3.0.3 or Later

Backup

Before beginning the MCEGold install, copy the Emaxprb.xml file only (not the folder) and the complete Templates folder to a safe location and make note of the location.

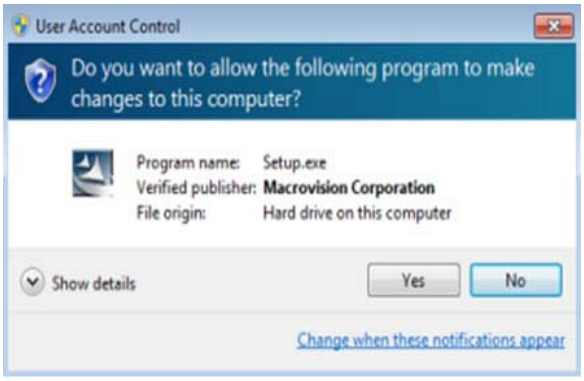
The default location for the files is listed below, however you may have chosen a different location during the original installation.
C:\PdMA Corporation\MCEGold\Emax
C:\PdMA Corporation\MCEGold\Report

MCEGold 3.0.3 SP6 Installation

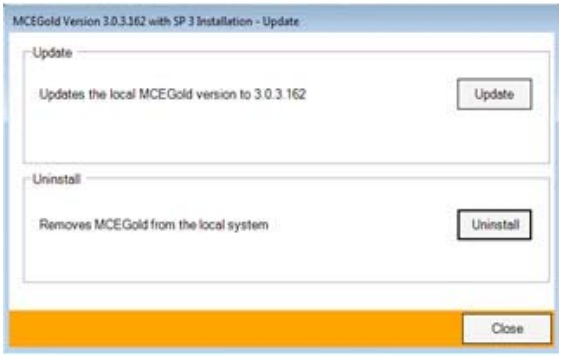
NOTE: Some on screen prompts and messages during the installation process are controlled by the Windows operating system and are out of PdMA's control. Every effort has been made to include their possible appearance and the action you should take. However, if you are unsure please contact our technical support department for help.

1. Insert the MCEGold 3.0.3 SP6 USB flash drive into the USB port. If the installation does not begin automatically, run setup.exe from the USB flash drive. (Select Run, setup.exe from the AutoPlay window).

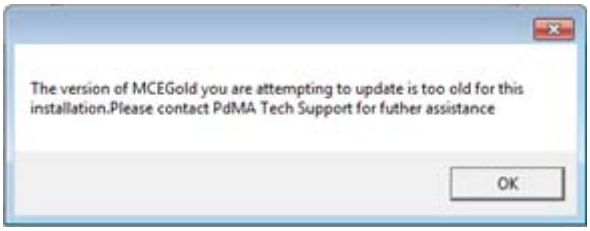
2. If you see the User Account Control screen, click **Yes**.



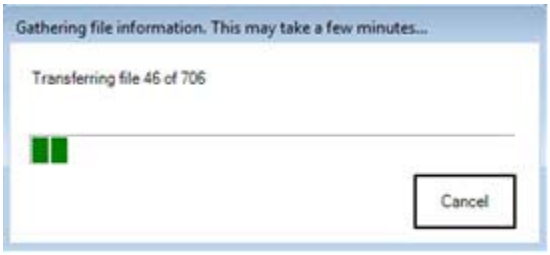
3. If there is an existing MCEGold version installed on your computer, you will see the MCEGold Update screen. click **Update**.



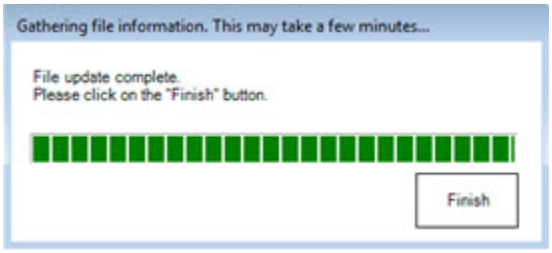
NOTE: If you have a version prior to MCEGold 3.0.3 you will receive the error message shown below. Do **NOT** proceed. Contact technical support.



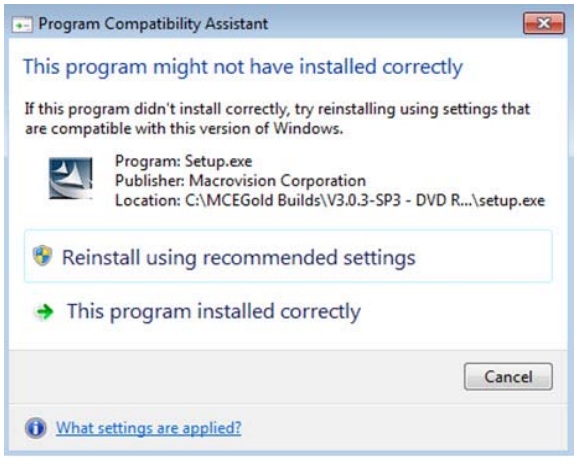
4. The status update window displays.



5. When the update is complete, click **Finish**.



6. If the Program Compatibility Assistant screen displays, select *This program installed correctly.*



7. Go to the Database Setup section.

Upgrading From a Version Prior to MCEGold 3.0.3

Backup

Before beginning the MCEGold uninstall, copy the Emaxprb.xml file only (not the folder) and the complete Templates folder to a safe location and make note of the location.

The default location for the files is listed below, however you may have chosen a different location during the original installation.
C:\PdMA Corporation\MCEGold\Emax
C:\PdMA Corporation\MCEGold\Report

Uninstall

1. Select Start, Control Panel, select Programs, then Programs and Features.

2. In the Uninstall or change a program window scroll down to locate and highlight the MCEGold Version X.X.X on the list.

3. Click **Uninstall/Change** located above the list and follow on screen prompts.

4. Click **Finish** when the "Uninstall Complete" message is received.

5. Locate the PdMA MCEMAX Tester (Driver Removal) file. Highlight it and click **Uninstall/ Change** located above the list and follow the on screen prompts.

6. Click **Finish** when the "Uninstall Complete" message is received.

7. Locate the C:\PdMACorporation folder and delete it. The subfolders will be deleted also. After the installation of MCEGold 3.0.3 SP6 the new folder location will be C:\PdMA Corporation\....

8. Reboot your computer.

9. Go to step one in the *MCEGold 3.0.3* SP6 Installation section.

MCEGold 3.0.3 SP6 Installation

1. Insert the MCEGold 3.0.3 SP6 USB flash drive into the USB port. If the installation does not begin automatically, run setup.exe from the USB flash drive. (Select Run, setup.exe from the AutoPlay window).

2. The License Agreement window opens. Read the PdMA license and select the "I Accept" option button. The **Next** button becomes visible. Click **Next**.
   Note: If you do not accept the terms, the **Next** button is not visible, you can only click **Cancel**, which closes the software without installing it.



3. In the License Key window enter your Company Name and License Key exactly as provided by PdMA. You may copy and paste the license key using the paste button.

4. Click **Submit** (located to the right of the Company Name). When the license has been verified a green check appears. The **Next** button appears. Click **Next**.

5. In the Installation Path window, accept the default shown in the text box (recommended) for the location to install the MCEGold program folder or using the drop-down list select an alternate location, make a note of it for your future use, and click **Next**. Note: It is not suggested to use an alternate location because that can cause conflict and Windows rights problems.

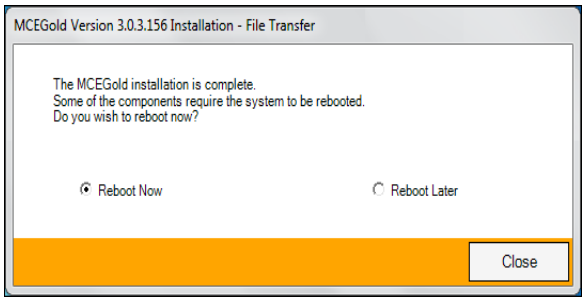
6. When prompted, click **Install Components**. Some components may require additional prompts.

Note: When installing MCEGold, a Word Add-in driver is installed. You may receive a message informing you that "Windows can't verify the publisher of this driver software." Select "Install this driver software anyway".

7. When the installation of components is complete the **Next** button appears. Click **Next**.

8. A progress bar shows the progress of copying files to your computer.

9. When the installation is complete you must reboot your system. Select the Reboot Now option and click **Close**.



10. After rebooting, locate and copy the backup Emaxprb.xml file and the Template folder back into their appropriate locations in

    C:\PdMA Corporation\MCEGold\Emax
    C:\PdMA Corporation\MCEGold\Report

11. Answer Yes to "Merge the folder?" inquiry.

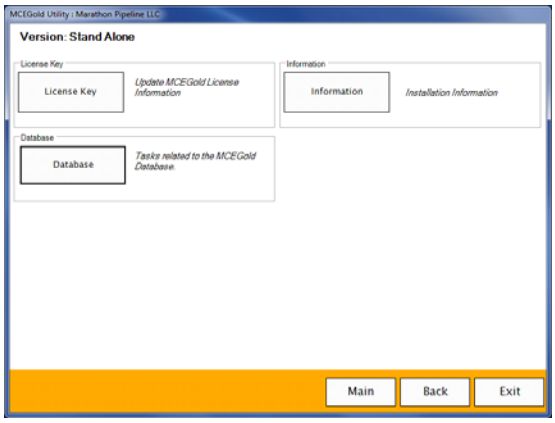
12. Remove the MCEGold 3.0.3 SP6 USB flash drive from the computer.

DATABASE SETUP

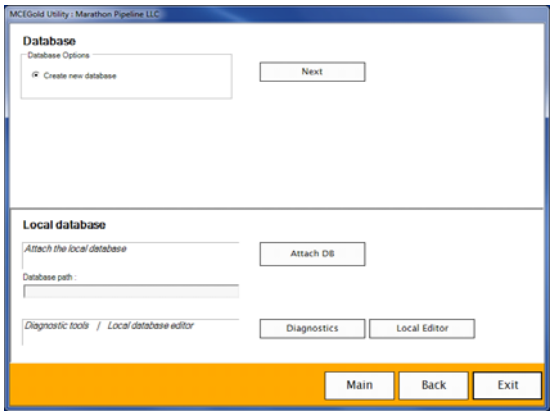
NOTE: This procedure is for connecting to an existing database that is to be upgraded to MCEGold 3.0.3 SP6. To connect to an existing database, please following the instructions below.

1. Ensure you have properly backed up the database you are converting.

2. Open the Utility program and click the **Database** button.

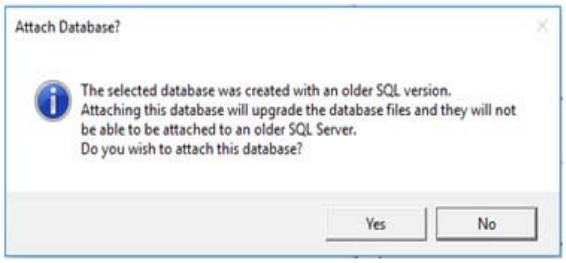


3. Click **Attach DB** as shown in the below.

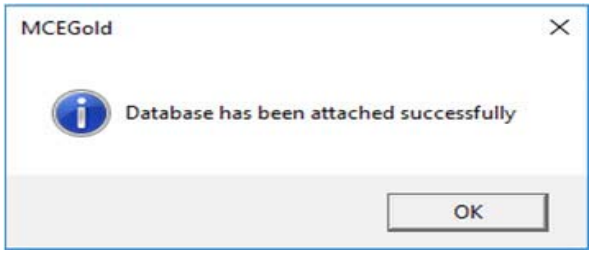


4. Navigate to the database location on your computer and select the desired database.

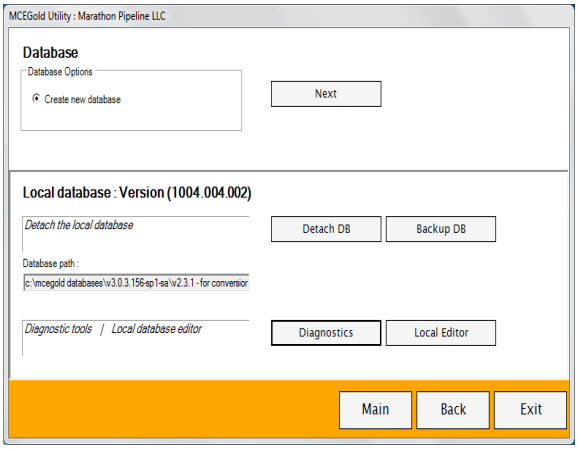
   If you receive the following message: "The database you selected was created with an older SQL version", the database needs to be upgraded to SQL 2008. **Stop!** Click **No**. Do **NOT** proceed! Contact Technical Support.



5. If the database attached properly you will see the following window. Click **OK**.



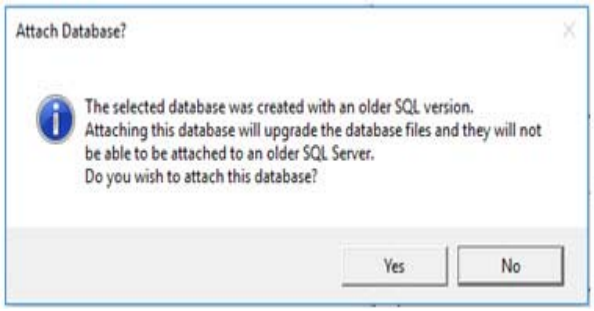
6. The MCEGold Utility Database Window opens. Click **Exit**.



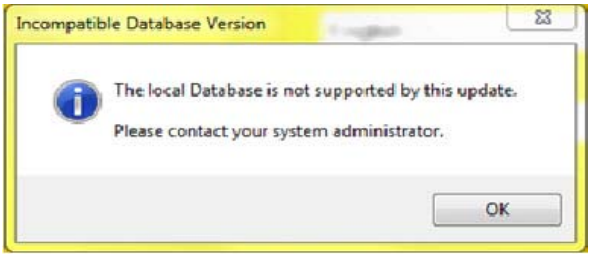
START MCEGOLD

1. Start MCEGold.

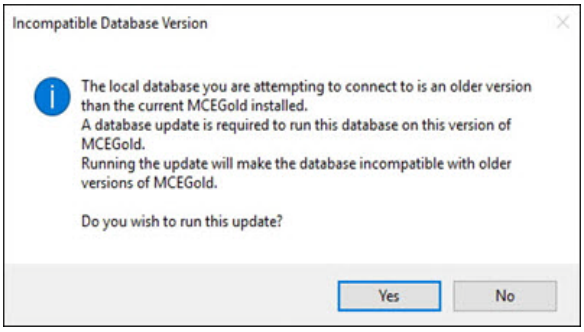
   If you receive the following message: "The database you selected was created with an older SQL version", the database needs to be upgraded to SQL 2008. **Stop!** Click **No**. Do **NOT** proceed! Contact Technical Support.



   If you receive the following "local database is not supported by this update" message when trying to start MCEGold, the attached database is too old for conversion and needs to be updated to MCEGold 2.6.1 or later prior to updating to MCEGold 3.0.3 SP6.



If you receive the following *Incompatible Database Version* message when trying to start MCEGold, you are attempting to run MCEGold with a database that is older than V3.0.3-SP6. You will be prompted to update the database. If you have properly backed up your existing database, click **Yes** to run the update. If you have not backed up your existing database, click **No**, backup the database, and then perform the Database Setup procedure.



2. Click **OK** on the message window. The message window closes, leaving the MCEGold Login window open.

3. If there is another database available, click on **Search** (the three dots on the right of Site) to bring up the navigator to search for the other database. If none are available, click **Cancel** to exit out of MCEGold, and contact PdMA Technical Support at 813-621-6463 ext. 251.

TECHNOTE 1803-S10

ISSUED

May 2018

SUBJECT

Release of MCEGold® 3.0.3 SP6 - Stand Alone for Windows 10.

DESCRIPTION

MCEGold 3.0.3 SP6 is an upgrade from MCEGold 3.0.3. SP5.

NOTES

- MCEGold 3.0.3 SP6 is only compatible with Windows 10 and Windows 7 and M-Series testers.

- Installation of MCEGold 3.0.3 SP6 on a Windows 10 computer uses a special installation procedure. For a Windows 7 installation refer to TechNote 1803-S7 (Stand Alone) or TechNote 1803-N7 (Network) as applicable.

- MCEGold Word Add-in is only compatible with MS Word 2007 and 2013. MCEGold Word Add-in is NOT compatible with MS Word 2010. Templates created with other versions of MS Word may not be functional and may cause conflicts with the MCEGold software.

- To ensure application accessibility, the default installation location has been set to C:\PdMA Corporation.

- Databases attached to MCEGold 3.0.3 SP6 must be from MCEGold 2.6.1 or later and once updated with 3.0.3 SP6 *will not* be compatible with older versions of MCEGold.

- Assets opened with MCEGold 3.0.3 SP6 *will not* be compatible with older versions of MCEGold.

- If you have any questions, please contact PdMA Technical Support (813-621-6463 ext. 251).

Minimum Requirements

Computer	Dell Latitude E5470 Laptop*
Processor	2+ GHz Intel i5 or equivalent
Resolution	1600 x 900/1920 x 1080 (small font)
Operating System	Microsoft® Windows 10 (32 or 64 bit)**
Memory	4.0+ G RAM***
Ports/Drives	(1) USB Port in Rear or Side
Hard Disk	20G Available

* Using any other computer manufacturer in conjunction with the PdMA software may result in erratic computer behavior; not limited to but including:

- Power Management Issues
- Lock-up
- Communication Port Malfunction
- Driver Incompatibility
- Display Errors
- SQL Database Incompatibility
- Network Synchronization Issues.

** For International Customers: Windows 10 or (32 or 64-bit)

***If you are upgrading from MCEGold 2.6.1 - 2.6.2 verify that your computer has at least 4G of RAM.

PREPARE WINDOWS 10 FOR MCEGOLD 3.0.3 SP6 INSTALLATION

NOTE: If you have updated to Windows 10 from a previous version of Windows, you must perform a full uninstall of MCEGold regardless of the version. If you have not previously installed MCEGold on your Windows 10 computer, it is not necessary to uninstall MCEGold. Go to the Disable Driver Signature Enforcement section.

Backup

Before beginning the MCEGold uninstall, copy the Emaxprb.xml file only (not the folder) and the complete Templates folder to a safe location and make note of the location.

The default location for the files is listed below, however you may have chosen a different location during the original installation.
C:\PdMA Corporation\MCEGold\Emax
C:\PdMA Corporation\MCEGold\Report

Uninstall

1. Select Start, Control Panel, select Programs, then Programs and Features.

2. In the Uninstall or change a program window scroll down to locate and highlight the MCEGold Version X.X.X on the list.

3. Click **Uninstall/Change** located above the list and follow on screen prompts.

4. Click **Finish** when the "Uninstall Complete" message is received.

5. Locate the PdMA MCEMAX Tester (Driver Removal) file. Highlight it and click **Uninstall/ Change** located above the list and follow the on screen prompts.

6. Click **Finish** when the "Uninstall Complete" message is received.

7. Locate the C:\PdMACorporation folder and delete it. The subfolders will be deleted also. After the installation of MCEGold 3.0.3 SP6 the new folder location will be C:\PdMA Corporation\....

8. Reboot your computer.

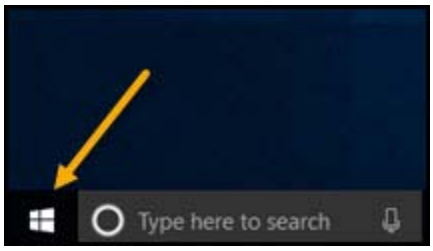
9. Go to step one in the Disable Driver Signature Enforcement section.

Disable Driver Signature Enforcement

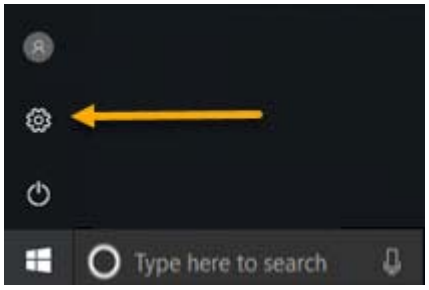
NOTE: To install MCEGold 3.0.3 SP6 on a Windows 10 operating system, the operating system must be in the "Disable driver signature enforcement" mode.

Use the following steps to enter the Disable driver signature enforcement installation mode.

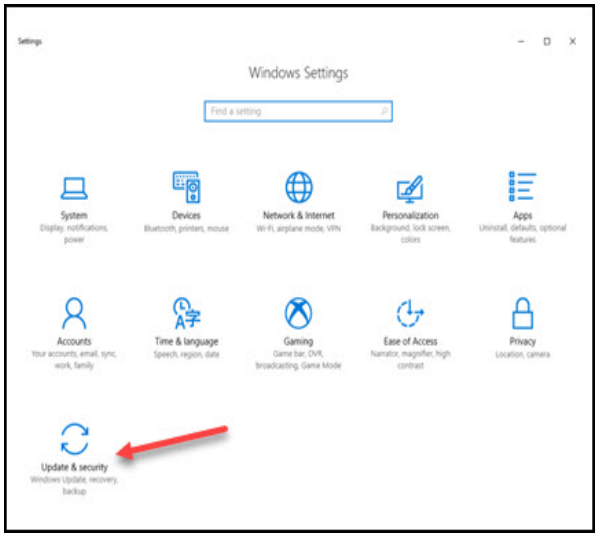
1. From the main Windows 10 screen, click the **Start** button in the lower left corner of the computer screen.



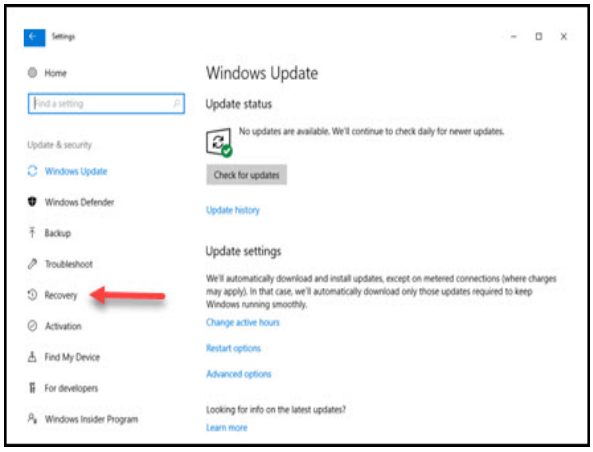
2. Click **Settings**.



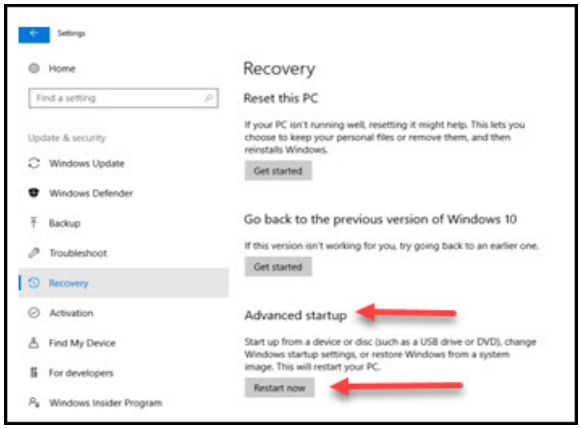
3. From the Windows Settings window, select **Update and Security**.



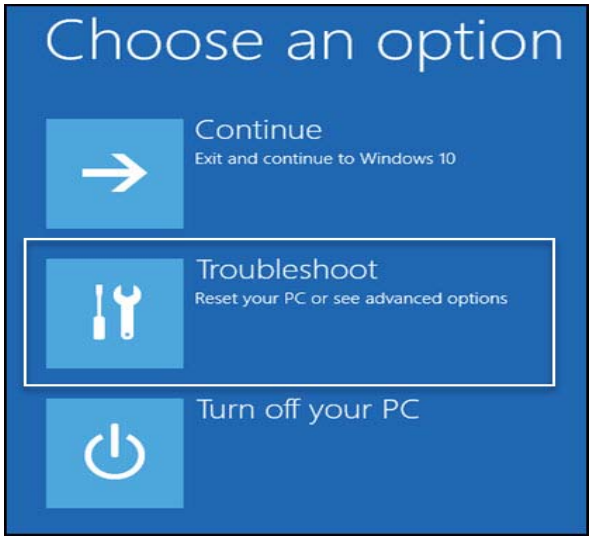
4. From the Windows Update window, select **Recovery**.



5. From the Recovery window, in the Advanced startup section, click **Restart now**.



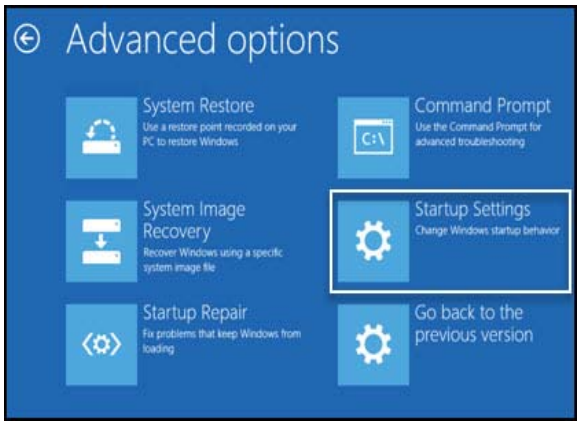
6. From the Choose an option window, select **Troubleshoot**.



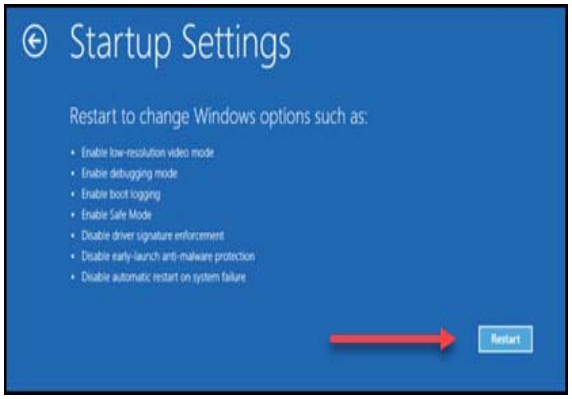
7. From the Troubleshoot window, Select **Advanced options**.



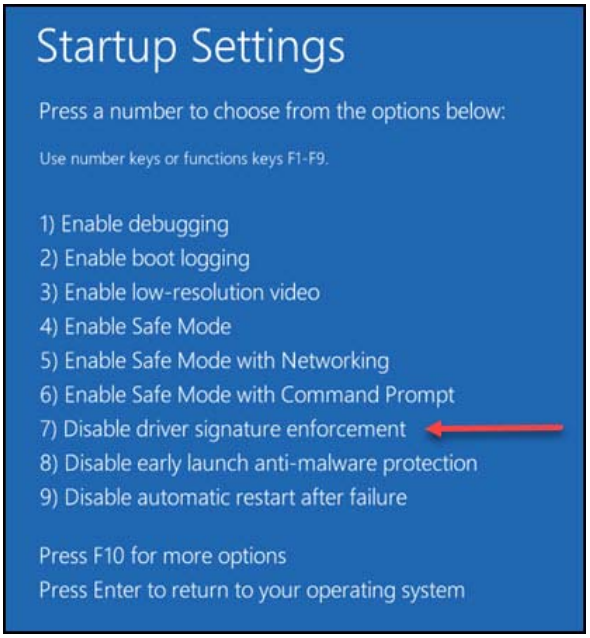
8. From Advanced Options window, Select **Startup Settings**.



9. From the Startup Settings window, click **Restart**.



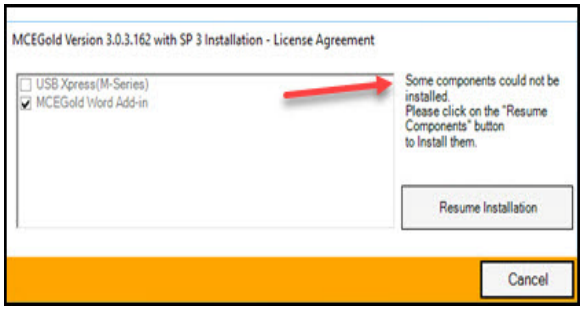
10. From the next Startup Settings window, press # 7 to select **Disable driver signature enforcement.**

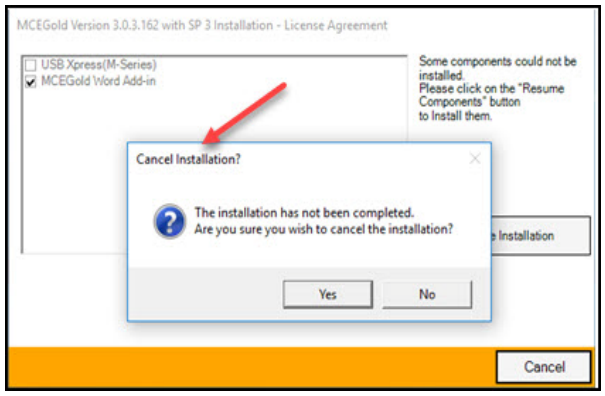


11. The computer displays the start up screen.

MCEGOLD 3.0.3 SP6 INSTALLATION

NOTE: During the installation process, if you see either of the following windows or messages: MCEGold – **Some components could not be installed**, or MCEGold – **Cancel Installation?**, then Windows 10 has not been configured to allow unsigned driver installation. See the section *Prepare Windows 10 for MCEGold 3.0.3 SP6 Installation.*

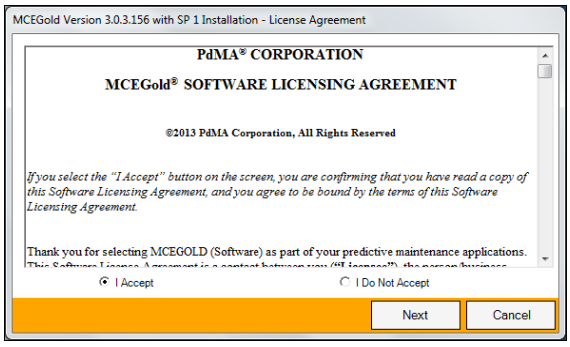




1. Insert the MCEGold 3.0.3 SP6 USB flash drive into the USB port. If the installation does not begin automatically, run setup.exe from the USB flash drive. (Select Run, setup.exe from the AutoPlay window).

2. Right click on setup.exe and select Run as administrator.

3. The License Agreement window opens. Read the PdMA license and select the "I Accept" option button. The **Next** button becomes visible. Click **Next**.
   Note: If you do not accept the terms, the **Next** button is not visible, you can only click **Cancel**, which closes the software without installing it.



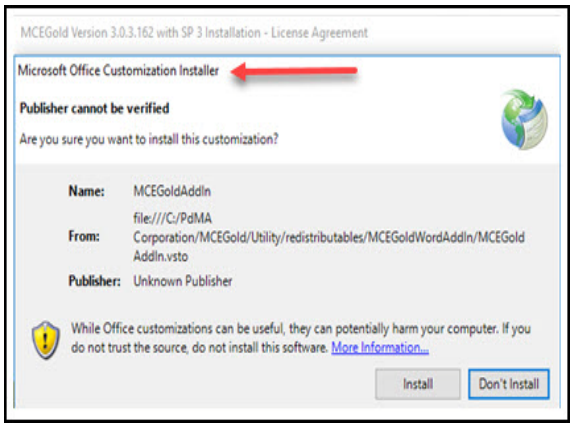
4. In the License Key window enter your Company Name and License Key exactly as provided by PdMA. You may copy and paste the license key using the paste button.

5. Click **Submit** (located to the right of the Company Name). When the license has been verified a green check appears. The **Next** button appears. Click **Next**.

6. In the Installation Path window, accept the default shown in the text box (recommended) for the location to install the MCEGold program folder or using the drop-down list select an alternate location, make a note of it for your future use, and click **Next**. Note: It is not suggested to use an alternate location because that can cause conflict and Windows rights problems.

7. When prompted, click **Install Components**. Some components may require additional prompts.

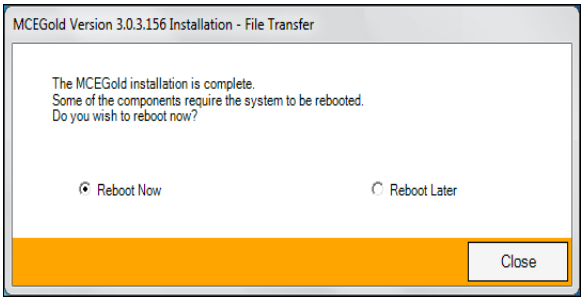
   Note: When installing MCEGold, a Word Add-in driver is installed. You may receive a message informing you that "Windows can't verify the publisher of this driver software." Select "Install".



8. When the installation of components is complete the **Next** button appears. Click **Next**.

9. A progress bar shows the progress of copying files to your computer.

10. When the installation is complete you must reboot your system. Select the Reboot Now option and click **Close**.



11. After rebooting, locate and copy the backup Emaxprb.xml file and the Template folder back into their appropriate locations in

    C:\PdMA Corporation\MCEGold\Emax
    C:\PdMA Corporation\MCEGold\Report

12. Answer Yes to "Merge the folder?" inquiry.

13. Remove the MCEGold 3.0.3 SP6 USB flash drive from the computer.

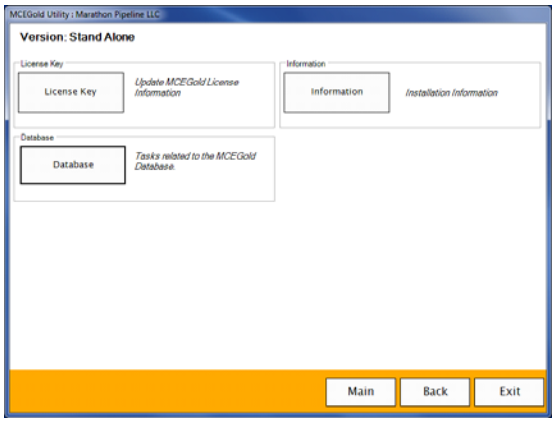
DATABASE SETUP

Note: This procedure is for connecting to an existing database that is to be upgraded to MCEGold 3.0.3 SP6.

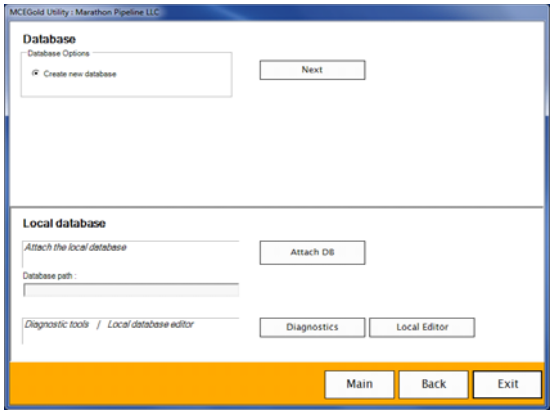
To connect to an existing database, please follow the instructions below.

1. Ensure you have properly backed up the database you are converting.

2. Open the Utility program and click the **Database** button.

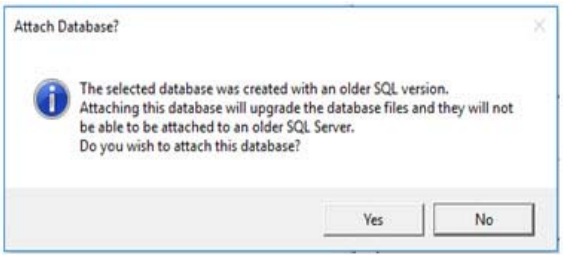


3. Click **Attach DB** as shown in the screen below.

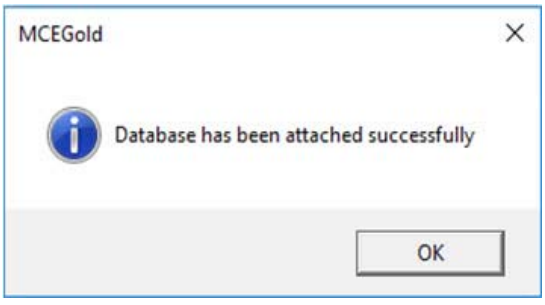


4. Navigate to the database location on your computer and select the desired database.

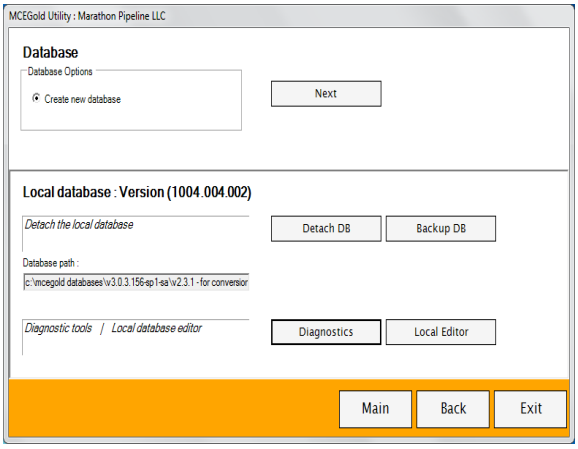
   If you receive the following message: "The database you selected was created with an older SQL version", the database needs to be upgraded to SQL 2008. **Stop!** Click **No.** Do **NOT** proceed! Contact Technical Support.



5. If the database attached properly you will see the following window. Click **OK**.



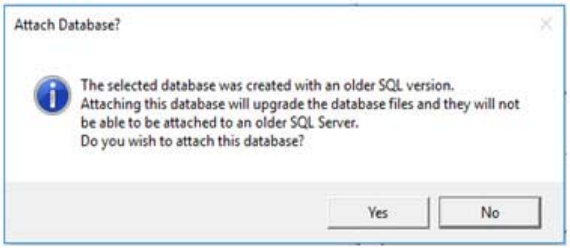
6. The MCEGold Utility Database Window opens. Click **Exit**.



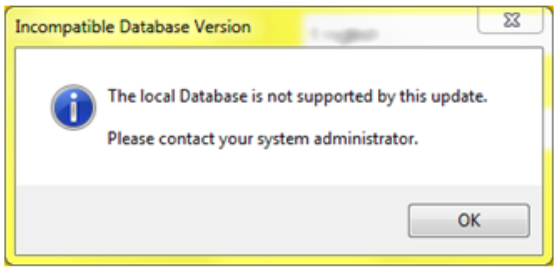
START MCEGOLD

1. Start MCEGold.

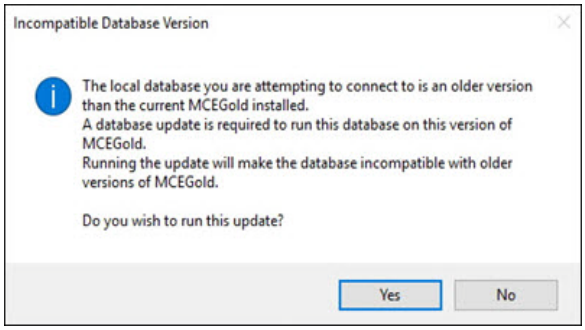
   If you receive the following message: "The database you selected was created with an older SQL version", the database needs to be upgraded to SQL 2008. **Stop!** Click **No**. Do **NOT** proceed! Contact Technical Support.



   If you receive the following "local database is not supported by this update" message when trying to start MCEGold, the attached database is too old for conversion and needs to be updated to MCEGold 2.6.1 or later prior to updating to MCEGold 3.0.3 SP6.



If you receive the following "Incompatible Database Version" message, shown on page 7, when trying to start MCEGold, you are attempting to run MCEGold with a database that is older than V3.0.3-SP6. You will be prompted to update the database. If you have properly backed up your existing database, click **Yes** to run the update. If you have not backed up your existing database, click **No**, backup the database, and then perform the Database Setup procedure.



2. Click **OK** on the message window. The message window closes, leaving the MCEGold Login window open.

3. If there is another database available, click on **Search** (the three dots on the right of Site) to bring up the navigator to search for the other database. If none are available, click **Cancel** to exit out of MCEGold, and contact PdMA Technical Support at 813-621-6463 ext. 251.

TECHNOTE 1901-N7

ISSUED

April 2019

SUBJECT

Release of MCEGold® 3.1.2 SP1 Network Version for Windows 7.

DESCRIPTION

MCEGold 3.1.2 SP1 Network Version is an upgrade from MCEGold 3.0.3. SP6.

PDMA CLOUD SERVICES

The network edition of MCEGold 3.1.2 SP1 supports access to PdMA Cloud Services. Please contact PdMA Technical Support (813-6216-6463 ext. 251) to discuss this option.

NOTES

- MCEGold 3.1.2 SP1 is only compatible with Windows 10 and Windows 7 and M-Series testers.

- Installation of MCEGold 3.1.2 SP1 on a Windows 10 computer uses a special installation procedure. Refer to TechNote 1901-S10 (Standalone) or 1901-N10 (Network).

- MCEGold Word Add-in is only compatible with MS Word 2007 and 2013. MCEGold Word Add-in is NOT compatible with MS Word 2010. Templates created with other versions of MS Word may not be functional and may cause conflicts with the MCEGold software.

- To ensure application accessibility, the default installation location has been set to C:\PdMA Corporation.

- Databases upgraded to MCEGold 3.1.2 SP1 must be from MCEGold 3.0.3 SP2 or later and once upgraded with MCEGold 3.1.2 SP1 *will not* be compatible with older versions of MCEGold.

- Please make sure you allow sufficient time to update your database. Depending on the size of your database, updates may take an hour or longer.

- Assets opened or exported with MCEGold 3.1.2 SP1 *will not* be compatible with older versions of MCEGold.

- If you have any questions, please contact PdMA Technical Support (813-621-6463 ext. 251).

Minimum Requirements

Computer	Dell Latitude E5470 Laptop*
Processor	2+ GHz Intel i5 or equivalent
Resolution	1600 x 900/1920 x 1080 (small font)
Operating System	Microsoft® Windows 7 SP1 (32 or 64 bit)**
Memory	4.0+ G RAM
Ports/Drives	(1) USB Port in Rear or Side
Hard Disk	20G Available

* Using any other computer manufacturer in conjunction with the PdMA software may result in erratic computer behavior; not limited to but including:

- Power Management Issues
- Lock-up
- Communication Port Malfunction
- Driver Incompatibility
- Display Errors
- SQL Database Incompatibility
- Network Synchronization Issues.

** For International Customers: Windows 7 Ultimate (32 or 64-bit).

UPDATE SERVER DATABASE FOR NETWORK USERS

NOTE: Ensure the user account being used to update the server has “sysadmin” permissions.

Please make sure you allow sufficient time to update your database. Depending on the size of your database, updates may take an hour or longer.

There is a separate application on the Installation USB flash drive to update the network database on the server. ***The database must be updated on the server first, then the desktops and finally field testers.***

If the update is installed on a network field tester before the server database is updated, a warning message appears informing you the database is an old version and to contact your system administrator.

1. Fully Sync all field testers.
   NOTE: Before proceeding ensure all local database synchronization has been performed.
2. Back up the MCEGold server database.
3. Insert the MCEGold 3.1.2 SP1 USB flash drive into the USB port. If the drive starts automatically, click **Exit** and proceed to the next step.
4. Locate the MCEGold Database Server Update folder on the MCEGold 3.1.2 SP1 USB flash drive.
5. Click on the MCEGold Database Server Update.exe file.
6. The Server Information window opens. Fill in the Server, Database, Login, and Password information.The Login and Password will depend on your authentication (Windows/SQL).
7. Click **Run Update**. The progress status will display on the window.
8. When the update complete message displays, close the window.

PREPARE FIELD TESTERS FOR MCEGOLD 3.1.2 SP1

Backup

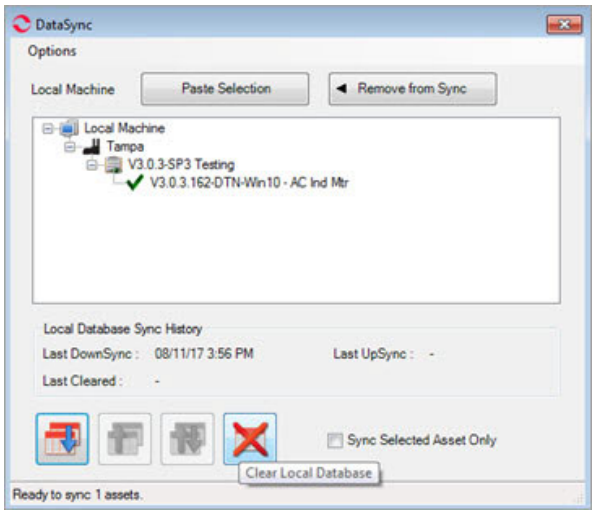
Before beginning the MCEGold uninstall, copy the Emaxprb.xml file only (not the folder) and the complete Templates folder to a safe location and make note of the location.

The default location for the files is listed below, however you may have chosen a different location during the original installation.
C:\PdMA Corporation\MCEGold\Emax
C:\PdMA Corporation\MCEGold\Report

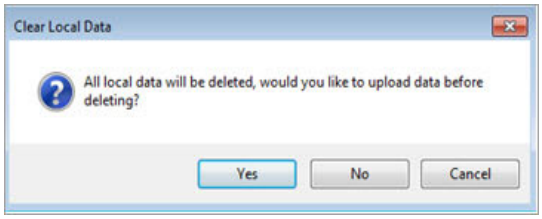
Clear Local Database

NOTE: Before proceeding ensure all local database synchronization has been performed. Failure to synchronize before clearing the local database will result in loss of data.

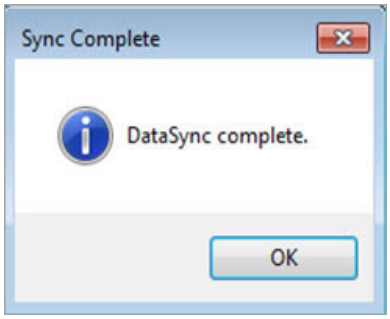
1. From the DataSync window, click **Clear Local Database**.



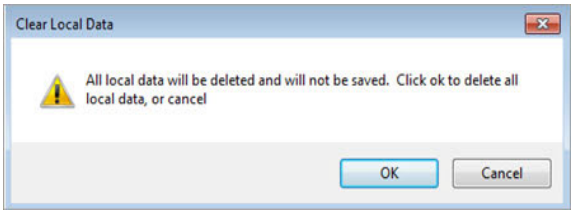
2. From the Clear Local Data window, click **Yes** to upload (UpSync) data, click **No** if you have already synchronized the data.



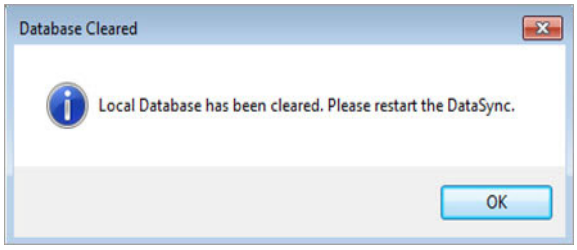
3. From the Sync Complete window, click **OK**.



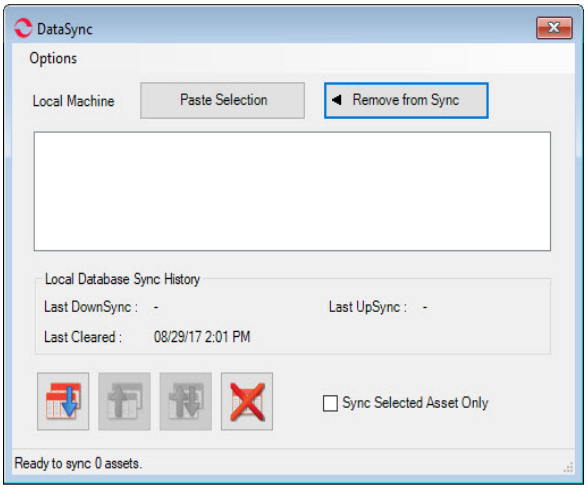
4. From the next Clear Local Data window, click **OK** to delete all local data.



5. From the Database Cleared window, click **OK.**



6. Reopen the DataSync window to ensure the database has been cleared, as shown in figure below. If it did not clear contact Technical Support.



Upgrade From a Previous Version to MCEGold 3.1.2 SP1

NOTE: For ALL previous versions of MCEGold a full uninstall is required before installing MCEGold 3.1.2 SP1.

Uninstall

NOTE: Before beginning the MCEGold uninstall you must back up the Emaxprb.xml and Templates folder.

See the Backup and Clear Local Database sections on page 2.

NOTE: If you have MCEGold icons pinned to your Taskbar, it is necessary to unpin them before beginning the uninstall. Right click on the icon and select “Unpin this program from the taskbar”.

1. Select Start, Control Panel, select Programs, then Programs and Features.

2. In the Uninstall or change a program window scroll down to locate and highlight the MCEGold Version X.X.X on the list.

3. Click **Uninstall/Change** located above the list and follow on screen prompts.

4. Click **Finish** when the “Uninstall Complete” message is received.

5. Locate the PdMA MCEMAX Tester (Driver Removal) file. Highlight it and click **Uninstall/ Change** located above the list and follow the on screen prompts.

6. Click **Finish** when the “Uninstall Complete” message is received.

7. Locate the C:\PdMACorporation folder and delete it. The subfolders will be deleted also. After the installation of MCEGold 3.1.2 SP1 the new folder location will be C:\PdMA Corporation\....

8. Reboot your computer.

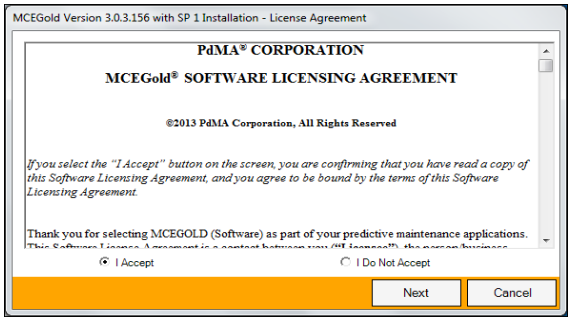
9. Go to MCEGold 3.1.2 SP1 Installation.

MCEGold 3.1.2 SP1 INSTALLATION

1. Insert the MCEGold 3.1.2 SP1 USB flash drive into the USB port. If the installation does not begin automatically, run setup.exe from the USB flash drive. (Select Run setup.exe from the AutoPlay window).

2. The License Agreement window opens. Read the PdMA license and select the “I Accept” option button. The **Next** button becomes visible. Click **Next**.

NOTE: If you do not accept the terms, the **Next** button is not visible, you can only click **Cancel**, which closes the software without installing it.



3. In the License Key window enter your Company Name and License Key exactly as provided by PdMA. You may copy and paste the license key using the paste button.

4. When the license has been verified a green check appears. The **Next** button appears. Click **Next**.

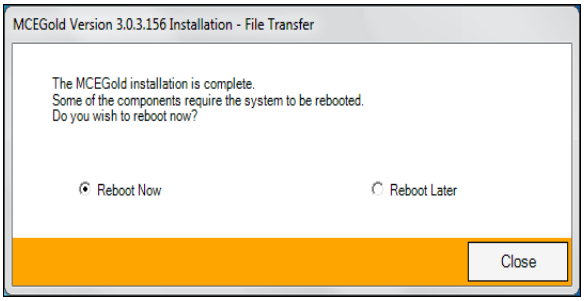
5. In the Installation Path window, accept the default shown in the text box (recommended) for the location to install the MCEGold program folder or using the browse (...) button to select an alternate location, make a note of it for your future use, and click **Next**. Note: It is not suggested to use an alternate location because that can cause conflict and Windows rights problems.

6. When prompted, click **Install Components**. Some components may require additional prompts.

7. When the installation of components is complete the **Next** button appears. Click **Next**.

8. A progress bar shows the progress of copying files to your computer.

9. When the installation is complete you must reboot your system. Select the Reboot Now option and click **Close**.



10. After rebooting, locate and copy the backup Emaxprb.xml file and the Template folder back into their appropriate locations in

    C:\PdMA Corporation\MCEGold\Emax
    C:\PdMA Corporation\MCEGold\Report

11. Answer Yes to "Merge the folder?" inquiry.

12. Remove the MCEGold 3.1.2 SP1 USB flash drive from the computer.

Field Tester Database Setup

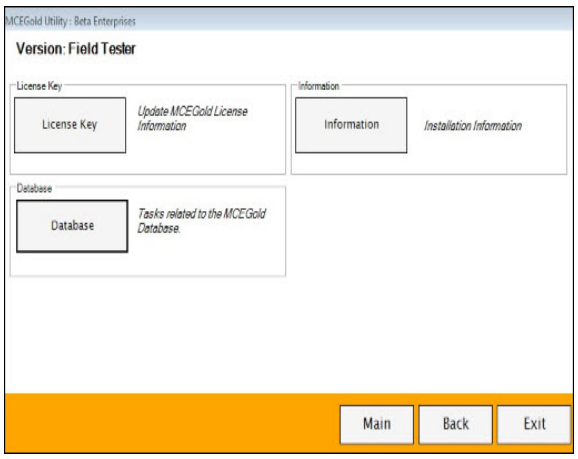
NOTE: For the following, please use the information provided by your IT department.

Field testers utilize a local database for storage of assets. These assets can then be synchronized with the Network database. In order to perform field testing in local tester mode, assets must be down-synced to the local database. In order to perform testing using MCEGold Lite, assets must be in a WatchList and down-synced to the local database.

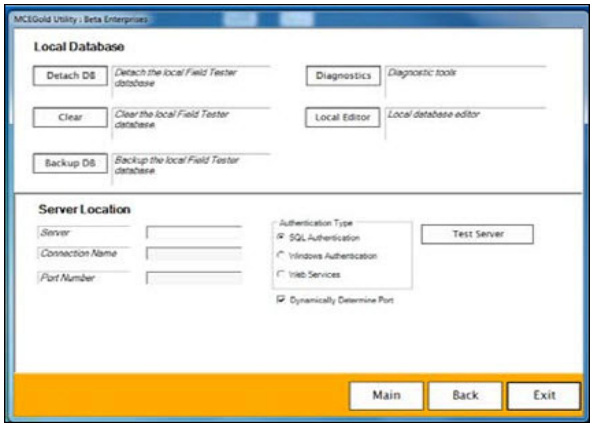
To connect to the existing network database, please follow the instructions below.

1. Open the MCEGold Utility program.

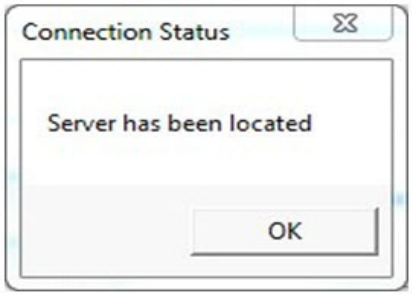
2. Click the **Database** button.



3. Enter the server information provided by your IT department.

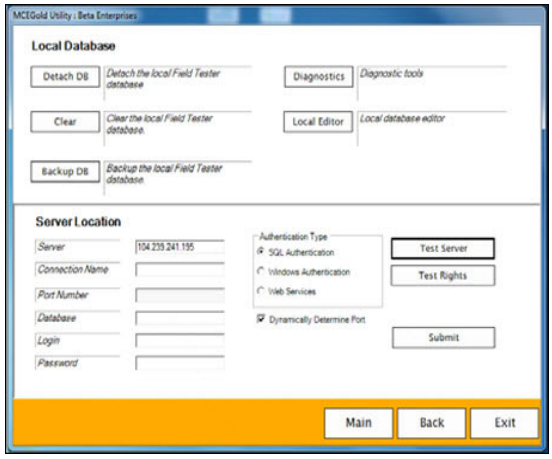


4. Once the server information has been entered, click **Test Server**. You should receive a message indicating *Server has been located.*

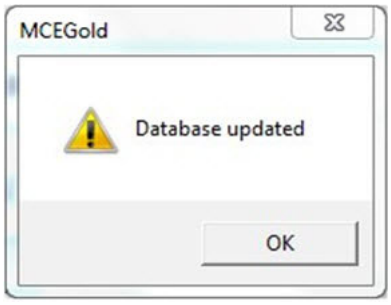


5. Click **OK** on the Connection Status window.

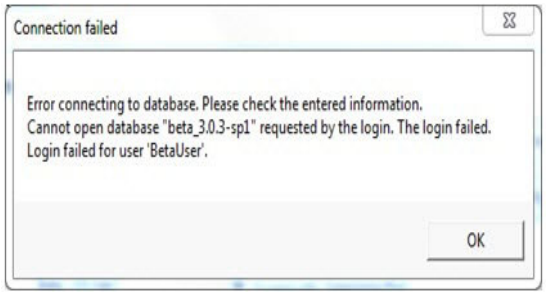
6. Enter the following connection information provided by either your Administrator or IT Department: Connection Name, Database Information, Login Information, and Password.



7. Click **Submit**. You will receive a message indicating *Database updated*. Click **OK.**



8. If you receive an error as shown below, verify the information you entered is correct. If it is correct, click **OK** and contact your Administrator.



9. If you do not receive an error message, click **Exit** on the Utility window.

10. Start MCEGold and enter the name and password for the tester. Select the Field Tester Network mode.

11. Once you have opened MCEGold and you have verified MCEGold is correctly communicating with the database, you are ready to perform testing.

TECHNOTE 1901-N10

ISSUED

April 2019

SUBJECT

Release of MCEGold® 3.1.2 SP1 Network Version for Windows 10.

DESCRIPTION

MCEGold 3.1.2 SP1 Network Version is an upgrade from MCEGold 3.0.3 SP6.

PDMA CLOUD SERVICES

The network edition of MCEGold 3.1.2 SP1 supports access to PdMA Cloud Services. Please contact PdMA Technical Support (813-6216-6463 ext. 251) to discuss this option.

NOTES

- MCEGold 3.1.2 SP1 is only compatible with Windows 10 and Windows 7 and M-Series testers.

-Installation of MCEGold 3.1.2 SP1 on a Windows 10 computer uses a special installation procedure. For a Windows 7 installation refer to TechNote 1901-S7 (Stand Alone) or TechNote 1901-N7 (Network) as applicable.

- MCEGold Word Add-in is only compatible with MS Word 2007 and 2013. MCEGold Word Add-in is NOT compatible with MS Word 2010. Templates created with other versions of MS Word may not be functional and may cause conflicts with the MCEGold software.

- To ensure application accessibility, the default installation location has been set to C:\PdMA Corporation.

- Databases attached to MCEGold 3.1.2 SP1 must be from MCEGold 3.0.3 SP2 or later and once updated with 3.1.2 SP1 *will not* be compatible with older versions of MCEGold.

- Please make sure you allow sufficient time to update your database. Depending on the size of your database, updates may take an hour or longer.

- Assets exported with MCEGold 3.1.2 SP1 *will not* be compatible with older versions of MCEGold.

- If during installation you receive a message telling you "SQL Server System CLR Types requires the .Net Framework", contact tech support for assistance.

- If you have any questions, please contact PdMA Technical Support (813-621-6463 ext. 251).

Minimum Requirements

Computer	Dell Latitude E5470 Laptop*
Processor	2+ GHz Intel i5 or equivalent
Resolution	1600 x 900/1920 x 1080 (small font)
Operating System	Microsoft® Windows 10 (32 or 64 bit)
Memory	4.0+ G RAM
Ports/Drives	(1) USB Port in Rear or Side
Hard Disk	20G Available

* Using any other computer manufacturer in conjunction with the PdMA software may result in erratic computer behavior; not limited to but including:

- Power Management Issues
- Lock-up
- Communication Port Malfunction
- Driver Incompatibility
- Display Errors
- SQL Database Incompatibility
- Network Synchronization Issues.

UPDATE SERVER DATABASE FOR NETWORK USERS

NOTE: Ensure the user account being used to update the server has "sysadmin" permissions.

Please make sure you allow sufficient time to update your database. Depending on the size of your database, updates may take an hour or longer.

There is a separate application on the Installation USB flash drive to update the network database on the server. ***The database must be updated on the server first, then the desktops and field testers.***

If the update is installed on a network field tester before the server database is updated, a warning message appears informing you the database is an old version and to contact your system administrator.

1. Backup the MCEGold server database.
2. Insert the MCEGold 3.1.2 SP1 USB flash drive into the USB port. If the drive starts automatically, click **Exit** and proceed to the next step.
3. Locate the MCEGold Database Server Update folder on the MCEGold 3.1.2 SP1 USB flash drive.
4. Click on the MCEGold Database Server Update.exe file.
5. The Server Information window opens. Fill in the Server, Database, Login, and Password information. The Login and Password will depend on your authentication (Windows/SQL).
6. Click **Run Update**. The progress status will display on the window.
7. When the update complete message displays, close the window.

PREPARE WINDOWS 10 FOR MCEGOLD 3.1.2 SP1 INSTALLATION

NOTE: If you have updated to Windows 10 from a previous version of Windows, you must perform a full uninstall of MCEGold regardless of the version. If you have not previously installed MCEGold on your Windows 10 computer, it is not necessary to uninstall MCEGold. Go to the Disable Driver Signature Enforcement section.

Backup

Before beginning the MCEGold uninstall, copy the Emaxprb.xml file only (not the folder) and the complete Templates folder to a safe location and make note of the location.

The default location for the files is listed below, however you may have chosen a different location during the original installation.
C:\PdMA Corporation\MCEGold\Emax
C:\PdMA Corporation\MCEGold\Report

Uninstall

Note: If you have MCEGold icons pinned to your Taskbar, it is necessary to unpin them before beginning the uninstall. Right click on the icon and select “Unpin from taskbar”.

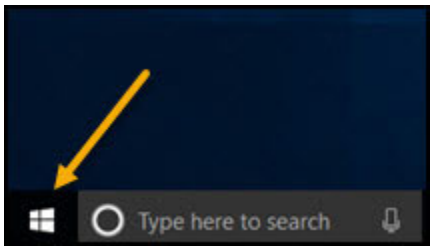
1. Select Start, Settings, Apps and locate MCEGold.
2. Highlight the MCEGold Version X.X.X.
3. Click **Uninstall** and follow on-screen prompts.
4. Click **Finish** when the “Uninstall Complete” message is received.
5. Locate the PdMA MCEMAX Tester (Driver Removal) file. Highlight it and click **Uninstall/ Change** located above the list and follow the on-screen prompts.
6. Click **Finish** when the “Uninstall Complete” message is received.
7. Locate the C:\PdMACorporation folder and delete it. The subfolders will be deleted also. After the installation of MCEGold 3.1.2 SP1 the new folder location will be C:\PdMA Corporation\....
8. Reboot your computer.
9. Go to the Disable Driver Signature Enforcement section.

Disable Driver Signature Enforcement

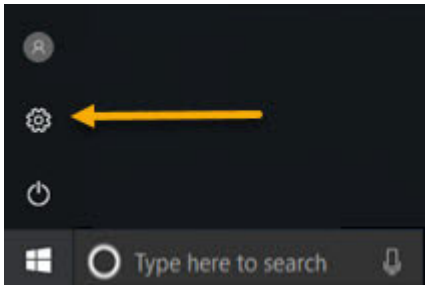
NOTE: To install MCEGold 3.1.2 SP1 on a Windows 10 operating system, the operating system must be in the “Disable driver signature enforcement” mode.

Use the following steps to enter the Disable Driver Signature Enforcement mode.

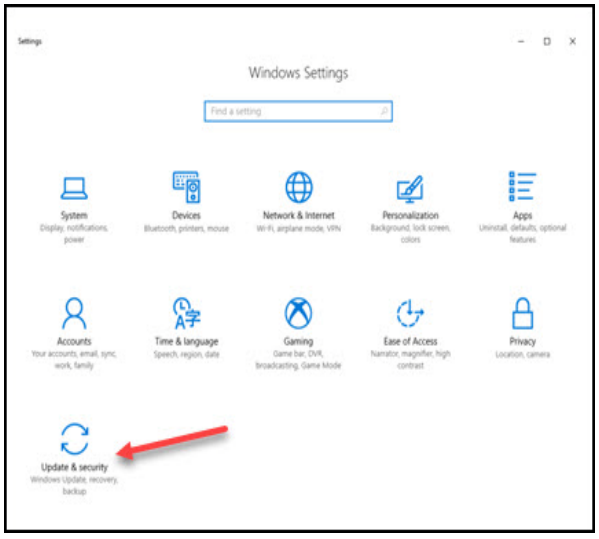
1. From the main Windows 10 screen, click the **Start** button in the lower left corner of the computer screen.



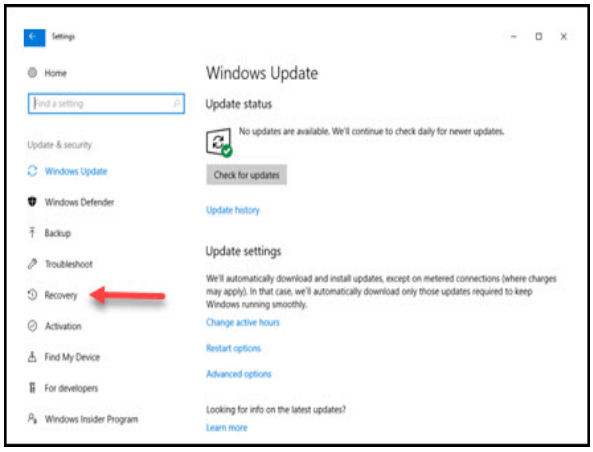
2. Click **Settings**.



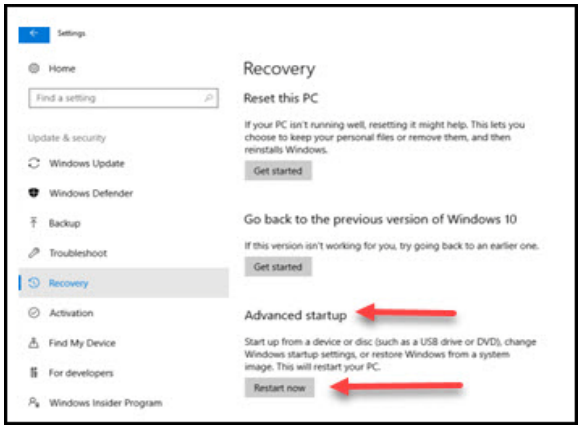
3. From the Windows Settings window, select **Update and Security**.



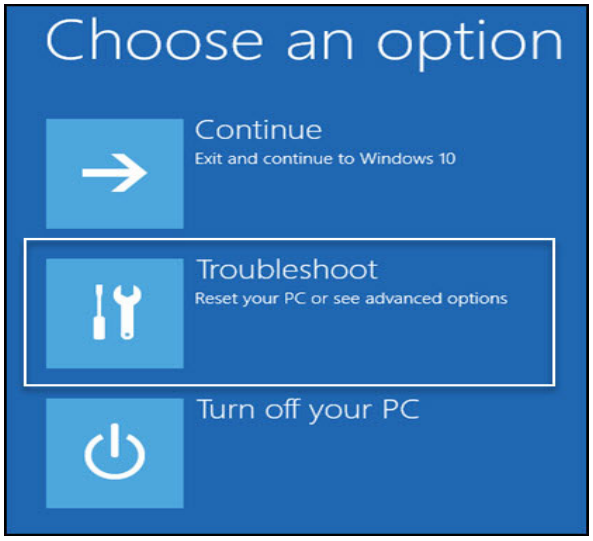
4. From the Windows Update window, select **Recovery**.



5. From the Recovery window, in the Advanced startup section, click **Restart now**.



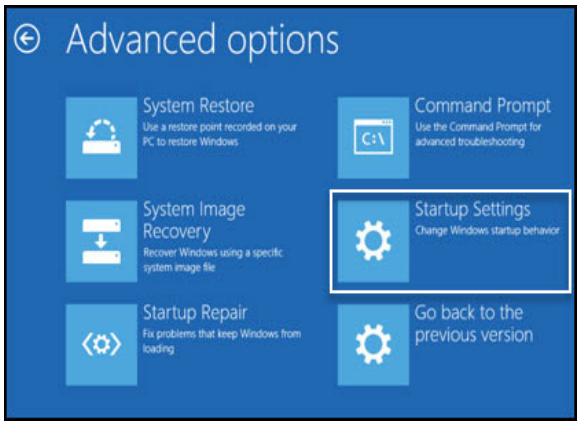
6. From the Choose an option window, select **Troubleshoot**.



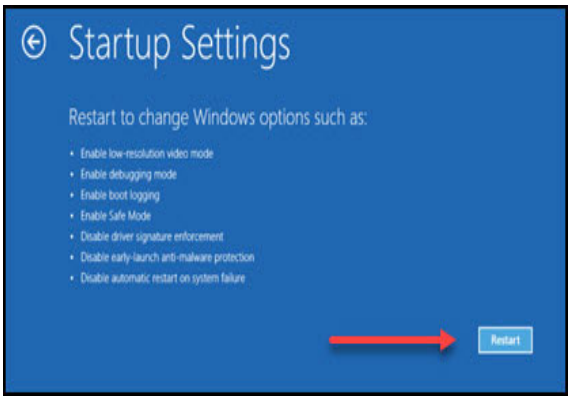
7. From the Troubleshoot window, Select **Advanced options**.



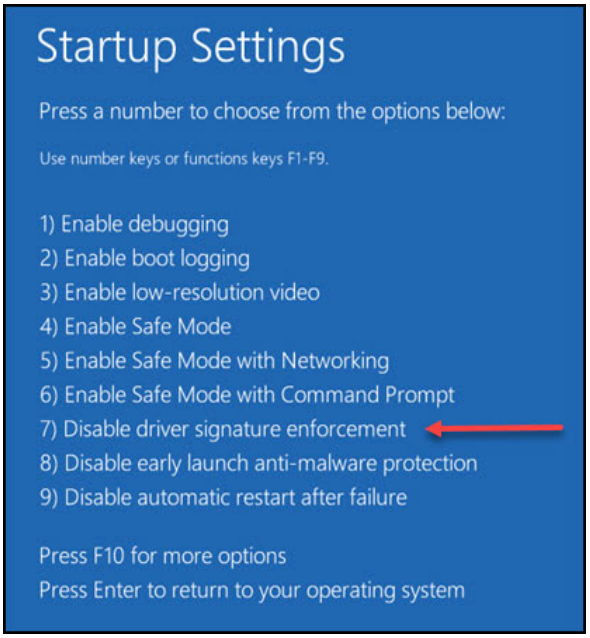
8. From Advanced Options window, Select **Startup Settings**.



9. From the Startup Settings window, click **Restart**.



10. From the next Startup Settings window, press 7 to select **Disable driver signature enforcement.**

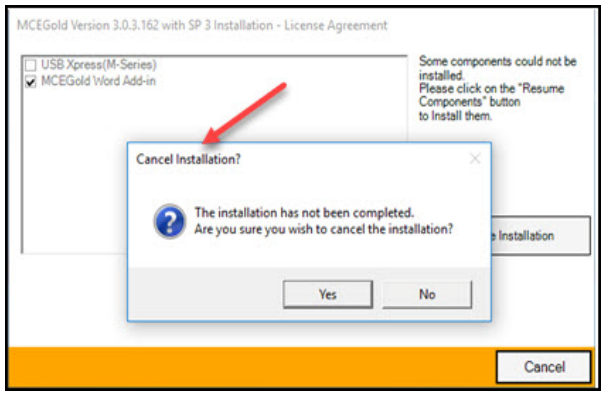


11. The computer displays the start up screen. Go to the MCEGold 3.1.2 SP1 Installation section.

MCEGOLD 3.1.2 SP1 INSTALLATION

NOTE: During the installation process, if you see either of the following windows or messages: MCEGold – **Some components could not be installed**, or MCEGold – **Cancel Installation?**, then Windows 10 has not been configured to allow unsigned driver installation. See the section *Prepare Windows 10 for MCEGold 3.1.2 SP1 Installation.*

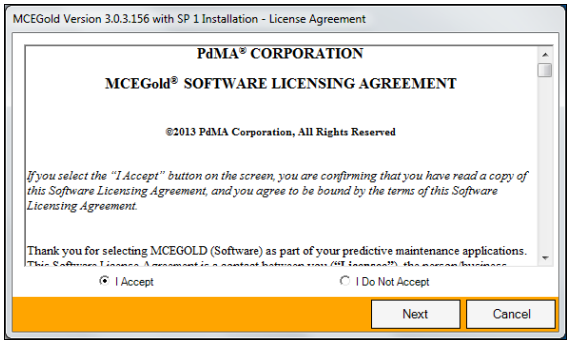




1. Insert the MCEGold 3.1.2 SP1 USB flash drive into the USB port. If the installation does not begin automatically, run setup.exe from the USB flash drive. (Select Run, setup.exe from the AutoPlay window).

2. Right click on setup.exe and select Run as administrator.

3. The License Agreement window opens. Read the PdMA license and select the "I Accept" option button. The **Next** button becomes visible. Click **Next**.
   Note: If you do not accept the terms, the **Next** button is not visible, you can only click **Cancel**, which closes the software without installing it.



4. In the License Key window enter your Company Name and License Key exactly as provided by PdMA. You may copy and paste the license key using the paste button.

5. When the license has been verified a green check appears. The **Next** button appears. Click **Next**.

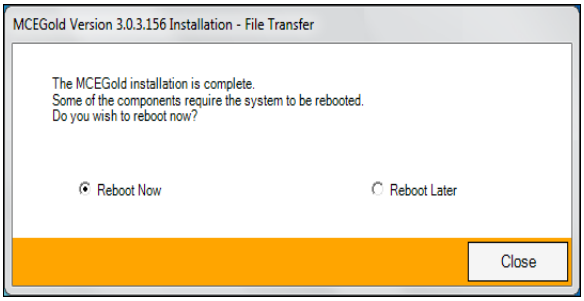
6. In the Installation Path window, accept the default shown in the text box (recommended) for the location to install the MCEGold program folder or use the browse (...) button to select an alternate location, make a note of it for your future use, and click **Next**. Note: It is not suggested to use an alternate location because that can cause conflict and Windows rights problems.

7. When prompted, click **Install Components**. Some components may require additional prompts.

8. When the installation of components is complete the **Next** button appears. Click **Next**.

9. A progress bar shows the progress of copying files to your computer.

10. When the installation is complete you must reboot your system. Select the Reboot Now option and click **Close**.



11. After rebooting, locate and copy the backup Emaxprb.xml file and the Template folder back into their appropriate locations in

    C:\PdMA Corporation\MCEGold\Emax
    C:\PdMA Corporation\MCEGold\Report

12. Answer Yes to "Merge the folder?" inquiry.

13. Remove the MCEGold 3.1.2 SP1 USB flash drive from the computer.

FIELD TESTER DATABASE SETUP

NOTE: For the following, please use the information provided by your IT department.

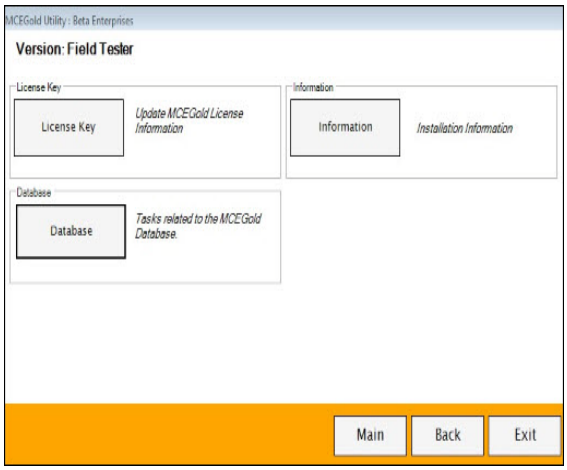
Field testers utilize a local database for storage of assets. These assets can then be synchronized with the Network database. In order to perform field testing in local tester mode, assets must be down-synced to the local database. In order to perform testing using MCEGold Lite, assets

must be in a WatchList and down-synced to the local database.

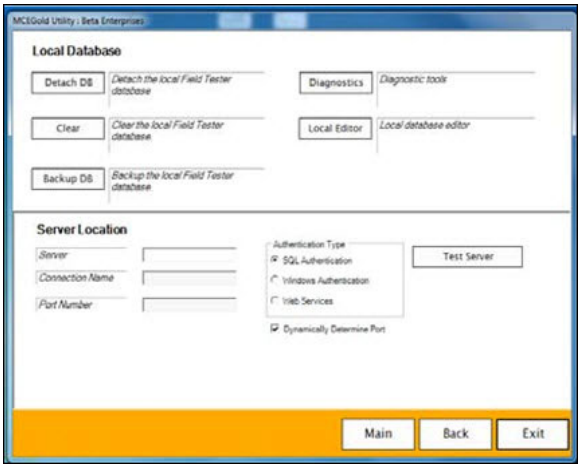
To connect to the existing network database, please follow the instructions below.

1. Open the MCEGold Utility program.

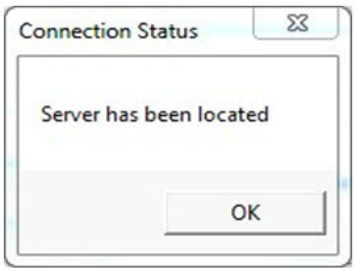
2. Click **Database**.



3. Enter the server information provided by your IT department.

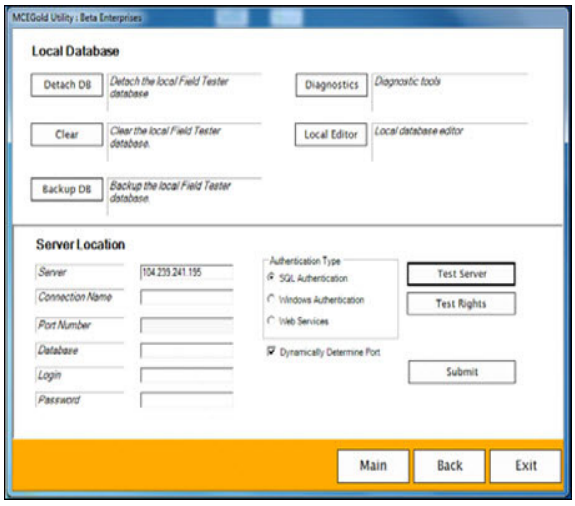


4. Once the server information has been entered, click **Test Server**. You should receive a message indicating "Server has been located".

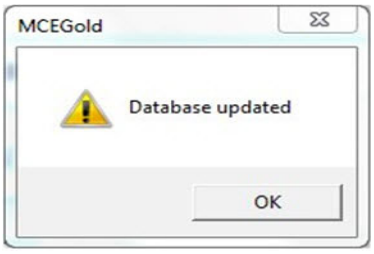


5. Click **OK** on the Connection Status window.

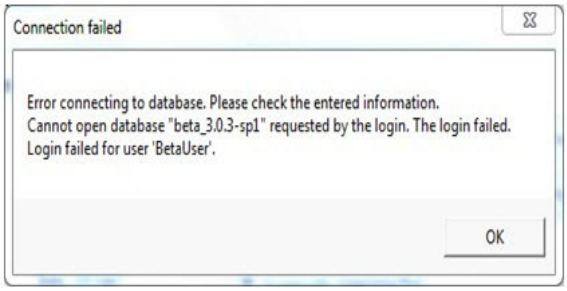
6. Enter the following connection information provided by either your Administrator or IT Department: Connection Name, Database Information, Login Information, and Password.



7. Click **Submit**. You will receive a message indicating "Database updated". Click OK.



8. If you receive an error as shown below, verify the information you entered is correct. If it is correct, click OK and contact your Administrator.



9. If you do not receive an error message, click **Exit** on the Utility window.

10. Start MCEGold and enter the name and password for the tester. Select the Field Tester Network mode.

11. Once you have opened MCEGold and you have verified MCEGold is correctly communicating with the database. You are now ready to perform testing.

TECHNOTE 1901-S7

ISSUED

April 2019

SUBJECT

Release of MCEGold® 3.1.2 SP1 Stand Alone for Windows 7.

DESCRIPTION

MCEGold 3.1.2 SP1 is an upgrade from MCEGold 3.0.3. SP6.

NOTES

- MCEGold 3.1.2 SP1 is only compatible with Windows 10 and Windows 7 and M-Series testers.

- Installation of MCEGold 3.1.2 SP1 on a Windows 10 computer uses a special installation procedure. For a Windows 10 installation refer to TechNote 1901-S10 (Stand Alone) or TechNote 1901-N10 (Network) as applicable.

- MCEGold Word Add-in is only compatible with MS Word 2007 and 2013. MCEGold Word Add-in is NOT compatible with MS Word 2010. Templates created with other versions of MS Word may not be functional and may cause conflicts with the MCEGold software.

- To ensure application accessibility, the default installation location has been set to C:\PdMA Corporation.

- Databases attached to MCEGold 3.1.2 SP1 must be from MCEGold 3.0.3 SP2 or later and once updated with MCEGold 3.1.2 SP1 *will not* be compatible with older versions of MCEGold.

- Please make sure you allow sufficient time to update your database. Depending on the size of your database, updates may take an hour or longer.

- Assets opened with MCEGold 3.1.2 SP1 *will not* be compatible with older versions of MCEGold.

- If you have any questions, please contact PdMA Technical Support (813-621-6463 ext. 251).

Minimum Requirements

Computer	Dell Latitude E5470 Laptop*
Processor	2+ GHz Intel i5 or equivalent
Resolution	1600 x 900/1920 x 1080 (small font)
Operating System	Microsoft® Windows 7 SP1 (32 or 64 bit)**
Memory	4.0+ G RAM
Ports/Drives	(1) USB Port in Rear or Side
Hard Disk	20G Available

* Using any other computer manufacturer in conjunction with the PdMA software may result in erratic computer behavior; not limited to but including:

- Power Management Issues
- Lock-up
- Communication Port Malfunction
- Driver Incompatibility
- Display Errors
- SQL Database Incompatibility
- Network Synchronization Issues.

** For International Customers: Windows 7 Ultimate (32 or 64-bit).

PREPARE FOR MCEGOLD 3.1.2 SP1 INSTALLATION

NOTE: For ALL previous versions of MCEGold a full uninstall is required before installing MCEGold 3.1.2 SP1. See Upgrading From a Previous Version of MCEGold.

Upgrading From a Previous Version of MCEGold

Backup

Before beginning the MCEGold install, copy the Emaxprb.xml file only (not the folder) and the complete Templates folder to a safe location and make note of the location.

The default location for the files is listed below, however you may have chosen a different location during the original installation.

C:\PdMA Corporation\MCEGold\Emax
C:\PdMA Corporation\MCEGold\Report

Uninstall

Note: If you have MCEGold icons pinned to your Taskbar, it is necessary to unpin them before beginning the uninstall. Right click on the icon and select "Unpin this program from the taskbar".

1. Select Start, Control Panel, select Programs, then Programs and Features.

2. In the Uninstall or change a program window scroll down to locate and highlight the MCEGold Version X.X.X on the list.

3. Click **Uninstall/Change** located above the list and follow on screen prompts.

4. Click **Finish** when the "Uninstall Complete" message is received.

5. Locate the PdMA MCEMAX Tester (Driver Removal) file. Highlight it and click **Uninstall/ Change** located above the list and follow the on screen prompts.

6. Click **Finish** when the "Uninstall Complete" message is received.

7. Locate the C:\PdMACorporation folder and delete it. The subfolders will be deleted also. After the installation of MCEGold 3.1.2 SP1 the new folder location will be C:\PdMA Corporation\....

8. Reboot your computer.

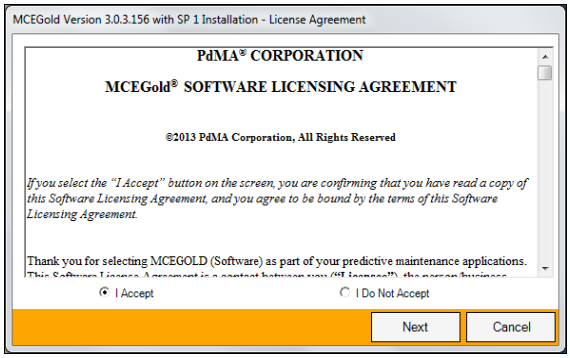
9. Go to step one in the *MCEGold 3.1.2 SP1* Installation section.

MCEGold 3.1.2 SP1 Installation

1. Insert the MCEGold 3.1.2 SP1 USB flash drive into the USB port. If the installation does not begin automatically, run setup.exe from the USB flash drive. (Select Run, setup.exe from the AutoPlay window).

2. The License Agreement window opens. Read the PdMA license and select the "I Accept" option button. The **Next** button becomes visible. Click **Next**.

   Note: If you do not accept the terms, the **Next** button is not visible, you can only click **Cancel**, which closes the software without installing it.



3. In the License Key window enter your Company Name and License Key exactly as provided by PdMA. You may copy and paste the license key using the paste button.

4. When the license has been verified a green check appears. The **Next** button appears. Click **Next**.

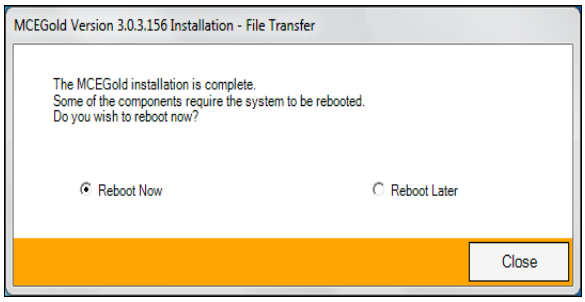
5. In the Installation Path window, accept the default shown in the text box (recommended) for the location to install the MCEGold program folder or using the browse (...) button to select an alternate location, make a note of it for your future use, and click **Next**. Note: It is not suggested to use an alternate location because that can cause conflict and Windows rights problems.

6. When prompted, click **Install Components**. Some components may require additional prompts.

7. When the installation of components is complete the **Next** button appears. Click **Next**.

8. A progress bar shows the progress of copying files to your computer.

9. When the installation is complete you must reboot your system. Select the Reboot Now option and click **Close**.



10. After rebooting, locate and copy the backup Emaxprb.xml file and the Template folder back into their appropriate locations in

    C:\PdMA Corporation\MCEGold\Emax
    C:\PdMA Corporation\MCEGold\Report

11. Answer Yes to "Merge the folder?" inquiry.

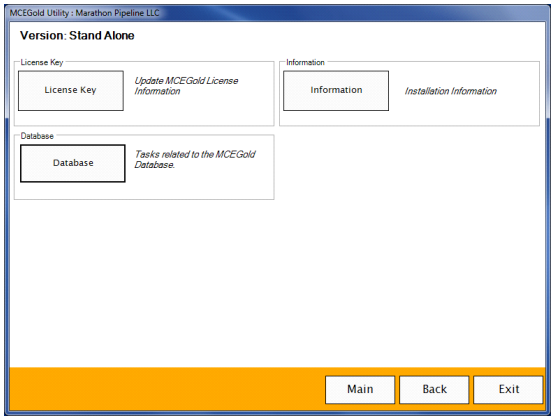
12. Remove the MCEGold 3.1.2 SP1 USB flash drive from the computer.

DATABASE SETUP

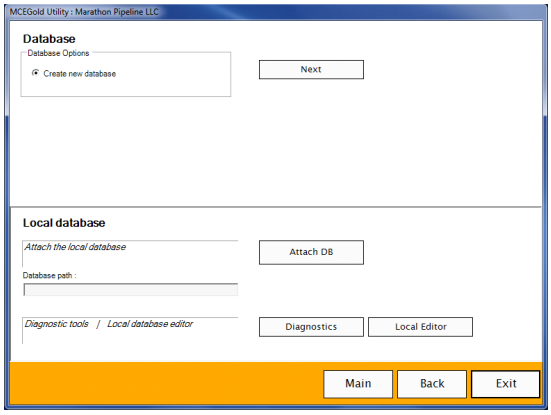
NOTE: This procedure is for connecting to an existing database that is to be upgraded to MCEGold 3.1.2 SP1. To connect to an existing database, please follow the instructions below.

1. Ensure you have properly backed up the database you are converting.

2. Open the Utility program and click the **Database** button.

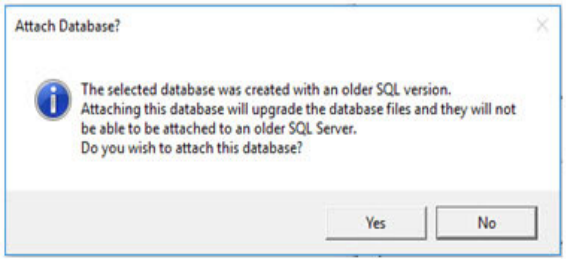


3. Click **Attach DB** as shown in the below.

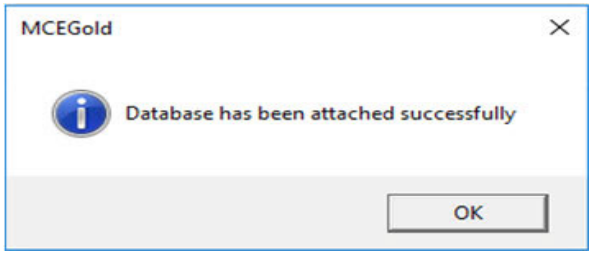


4. Navigate to the database location on your computer and select the desired database.

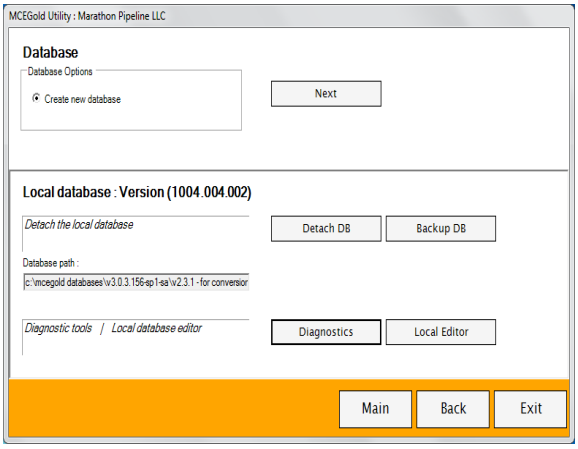
   If you receive the following message: "The database you selected was created with an older SQL version", the database needs to be upgraded to SQL 2008. **Stop!** Click **No**. Do **NOT** proceed! Contact Technical Support.



5. If the database attached properly you will see the following window. Click **OK**.



6. The MCEGold Utility Database Window opens. Click **Exit**.

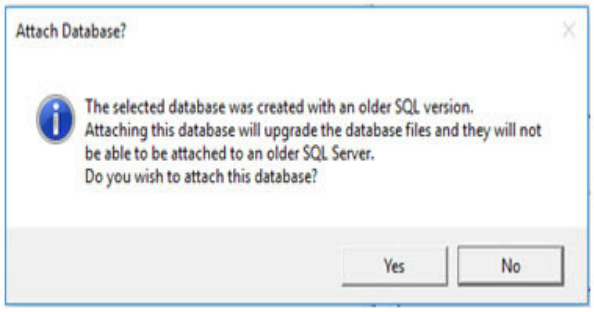


START MCEGOLD

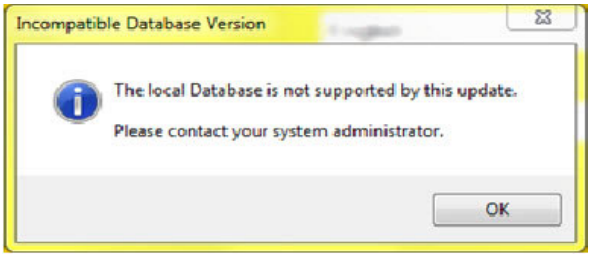
1. Start MCEGold.

2. Select a database using the Search button (...) located on the right side of the Site textbox. This opens your computer navigator window which allows you to search for a database. If none are available, click **Cancel** to exit out of MCEGold, and contact PdMA Technical Support at 813-621-6463 ext. 251.

   If you receive the following message: "The database you selected was created with an older SQL version", the database needs to be upgraded to SQL 2008. **Stop!** Click **No**. Do **NOT** proceed! Contact Technical Support.

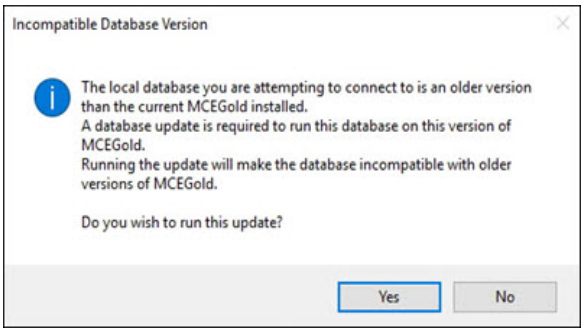


   If you receive the following "local database is not supported by this update" message when trying to start MCEGold, the attached database is too old for conversion and needs to be updated to MCEGold 3.0.3 SP2 or later prior to updating to MCEGold 3.1.2 SP1. Contact your system administrator.



   If you receive the following *Incompatible Database Version* message when trying to start MCEGold, you are attempting to run MCEGold with a database that is older than MCEGold 3.1.2 SP1. You will be prompted to update the database. If you have properly backed up your existing database, click **Yes** to run the update. If you have not backed up your existing database, click **No**, backup the database, and then perform the Database Setup procedure.

   NOTE: Please make sure you allow sufficient time to update your database. Depending on the size of your database, updates may take an hour or longer.



3. When the update completes, click **OK** on the message window. The message window closes, leaving the MCEGold Login window open.

4. Verify login parameters on the right side of the window are correct and click **OK**.

TECHNOTE 1901-S10

ISSUED

April 2019

SUBJECT

Release of MCEGold® 3.1.2 SP1 Stand Alone for Windows 10.

DESCRIPTION

MCEGold 3.1.2 SP1 is an upgrade from MCEGold 3.0.3. SP6.

NOTES

- MCEGold 3.1.2 SP1 is only compatible with Windows 10 and Windows 7 and M-Series testers.

- Installation of MCEGold 3.1.2 SP1 on a Windows 10 computer uses a special installation procedure. For a Windows 7 installation refer to TechNote 1901-S7 (Stand Alone) or TechNote 1901-N7 (Network) as applicable.

- MCEGold Word Add-in is only compatible with MS Word 2007 and 2013. MCEGold Word Add-in is NOT compatible with MS Word 2010. Templates created with other versions of MS Word may not be functional and may cause conflicts with the MCEGold software.

- To ensure application accessibility, the default installation location has been set to C:\PdMA Corporation.

- Databases attached to MCEGold 3.1.2 SP1 must be from MCEGold 3.0.3 SP2 or later and once updated with MCEGold 3.1.2 SP1 *will not* be compatible with older versions of MCEGold.

- Please make sure you allow sufficient time to update your database. Depending on the size of your database, updates may take an hour or longer.

- Assets opened with MCEGold 3.1.2 SP1 *will not* be compatible with older versions of MCEGold.

- If during installation you receive a message telling you "SQL Server System CLR Types requires the .Net Framework", contact tech support for assistance.

- If you have any questions, please contact PdMA Technical Support (813-621-6463 ext. 251).

Minimum Requirements

Computer	Dell Latitude E5470 Laptop*
Processor	2+ GHz Intel i5 or equivalent
Resolution	1600 x 900/1920 x 1080 (small font)
Operating System	Microsoft® Windows 10 (32 or 64 bit)
Memory	4.0+ G RAM
Ports/Drives	(1) USB Port in Rear or Side
Hard Disk	20G Available

* Using any other computer manufacturer in conjunction with the PdMA software may result in erratic computer behavior; not limited to but including:

- Power Management Issues
- Lock-up
- Communication Port Malfunction
- Driver Incompatibility
- Display Errors
- SQL Database Incompatibility
- Network Synchronization Issues.

PREPARE WINDOWS 10 FOR MCEGOLD 3.1.2 SP1 INSTALLATION

NOTE: If you have a previous version of MCEGold installed on your computer it is necessary to perform a complete uninstall. Go to the Backup section. If you do not have MCEGold installed on your computer go to the Disable Driver Signature Enforcement section.

Backup

Before beginning the MCEGold uninstall, copy the Emaxprb.xml file only (not the folder) and the complete Templates folder to a safe location and make note of the location.

The default location for the files is listed below, however you may have chosen a different location during the original installation.
C:\PdMA Corporation\MCEGold\Emax
C:\PdMA Corporation\MCEGold\Report

Uninstall

Note: If you have MCEGold icons pinned to your Taskbar, it is necessary to unpin them before beginning the uninstall. Right click on the icon and select "Unpin from taskbar".

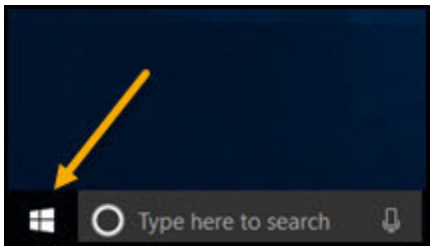
1. Select Start, Settings, Apps, and locate MCEGold.
2. Highlight the MCEGold Version X.X.X.
3. Click **Uninstall** and follow on screen prompts.
4. Click **Finish** when the "Uninstall Complete" message is received.
5. Locate the PdMA MCEMAX Tester (Driver Removal) file. Highlight it and click **Uninstall/ Change** located above the list and follow the on screen prompts.
6. Click **Finish** when the "Uninstall Complete" message is received.
7. Locate the C:\PdMA Corporation folder and delete it. The subfolders will be deleted also. After the installation of MCEGold 3.1.2 SP1 the new folder location will be C:\PdMA Corporation\....
8. Reboot your computer.
9. Go to step one in the Disable Driver Signature Enforcement section.

Disable Driver Signature Enforcement

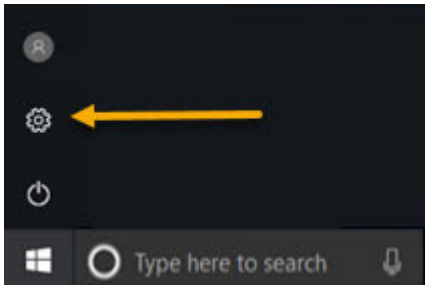
NOTE: To install MCEGold 3.1.2 SP1 on a Windows 10 operating system, the operating system must be in the "Disable driver signature enforcement" mode.

Use the following steps to enter the Disable driver signature enforcement installation mode.

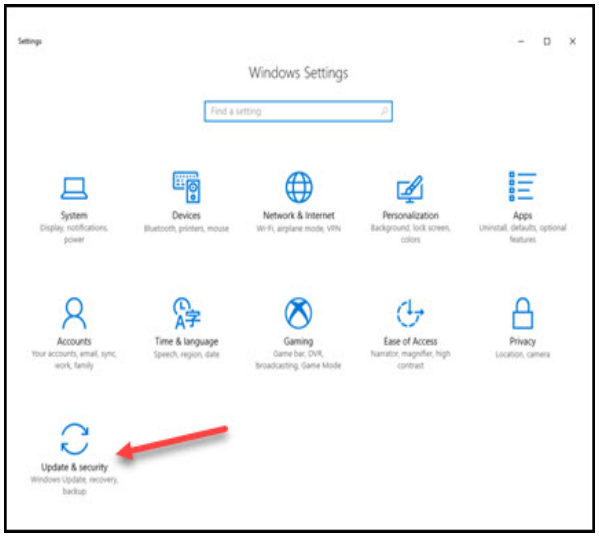
1. From the main Windows 10 screen, click the **Start** button in the lower left corner of the computer screen.



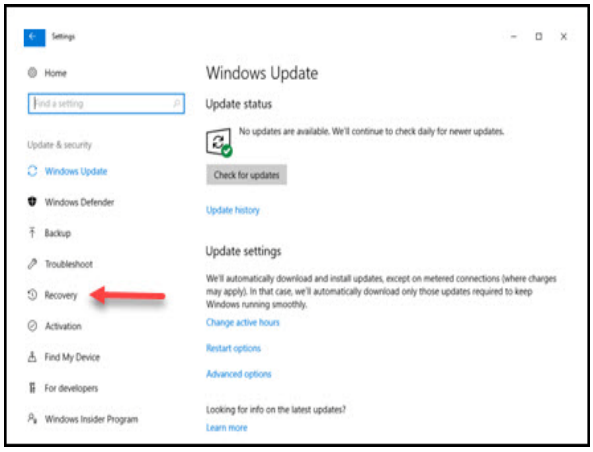
2. Click **Settings**.



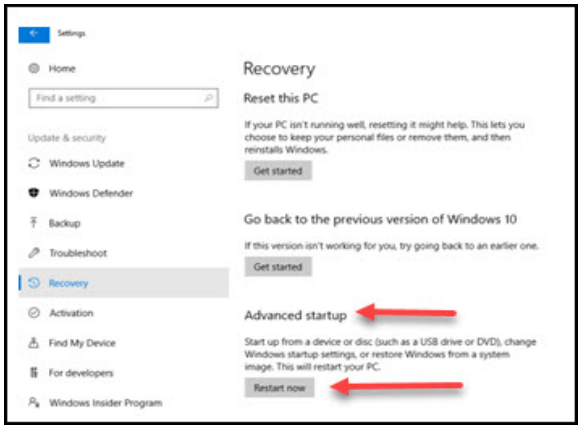
3. From the Windows Settings window, select **Update and Security**.



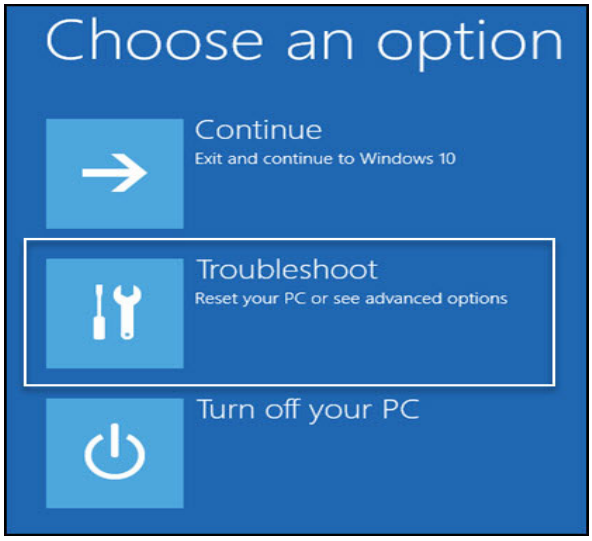
4. From the Windows Update window, select **Recovery**.



5. From the Recovery window, in the Advanced startup section, click **Restart now**.



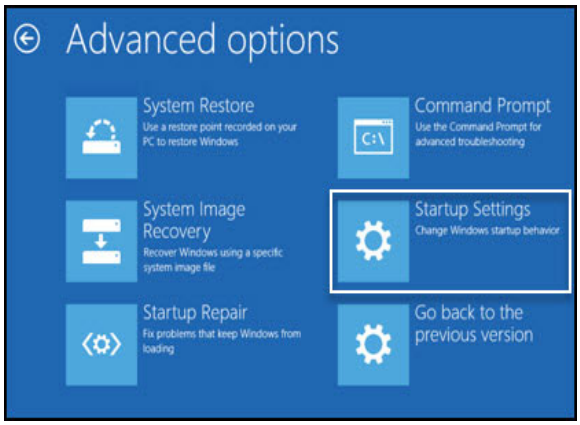
6. From the Choose an option window, select **Troubleshoot**.



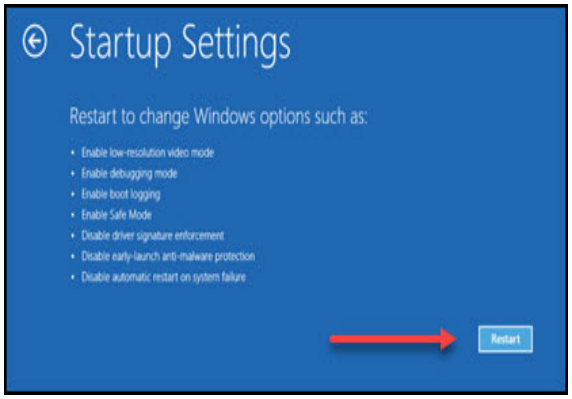
7. From the Troubleshoot window, Select **Advanced options**.



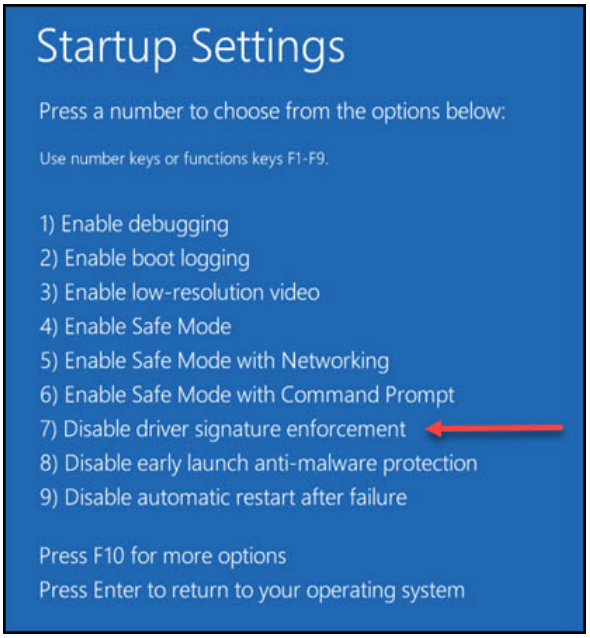
8. From Advanced Options window, Select **Startup Settings**.



9. From the Startup Settings window, click **Restart**.



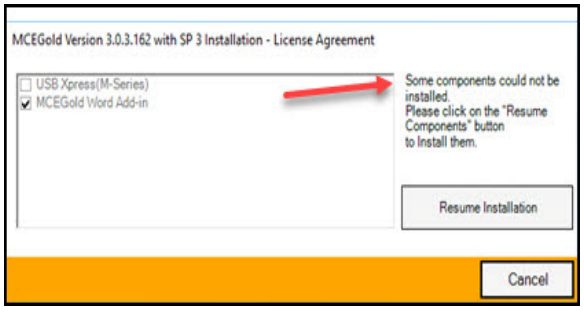
10. From the next Startup Settings window, press 7 to select **Disable driver signature enforcement.**

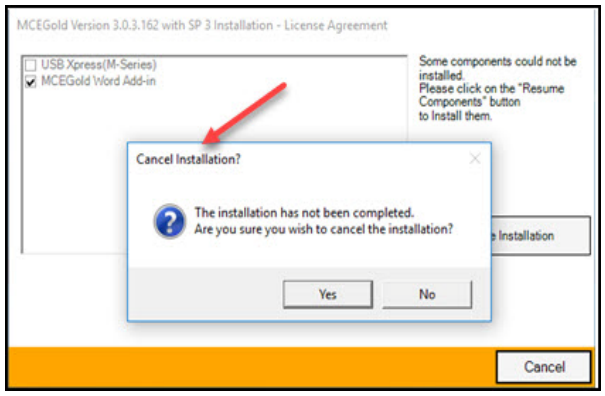


11. The computer displays the start up screen.

MCEGOLD 3.1.2 SP1 INSTALLATION

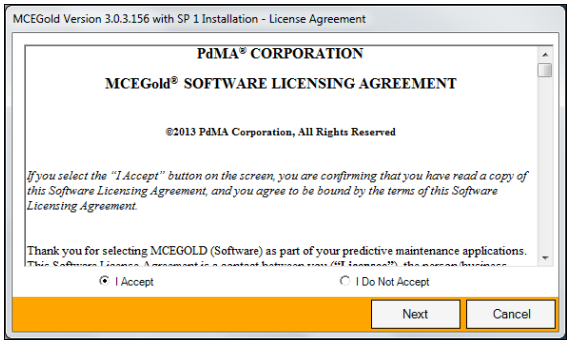
NOTE: During the installation process, if you see either of the following windows or messages: MCEGold – **Some components could not be installed**, or MCEGold – **Cancel Installation?**, then Windows 10 has not been configured to allow unsigned driver installation. See the section *Prepare Windows 10 for MCEGold 3.1.2 SP1 Installation.*





1. Insert the MCEGold 3.1.2 SP1 USB flash drive into the USB port. If the installation does not begin automatically, run setup.exe from the USB flash drive. (Select Run, setup.exe from the AutoPlay window).

2. The License Agreement window opens. Read the PdMA license and select the "I Accept" option button. The **Next** button becomes visible. Click **Next**.
   Note: If you do not accept the terms, the **Next** button is not visible, you can only click **Cancel**, which closes the software without installing it.



3. In the License Key window enter your Company Name and License Key exactly as provided by PdMA. You may copy and paste the license key using the paste button.

4. When the license has been verified a green check appears. The **Next** button appears. Click **Next**.

5. In the Installation Path window, accept the default shown in the text box (recommended) for the location to install the MCEGold program folder or use the browse (...) button to select an alternate location, make a note of it for your future use, and

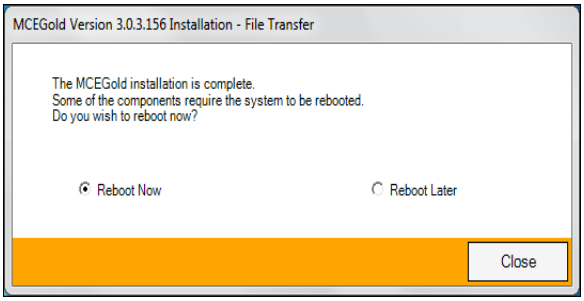
click **Next**. Note: It is not suggested to use an alternate location because that can cause conflict and Windows rights problems.

6. When prompted, click **Install Components**. Some components may require additional prompts.

7. When the installation of components is complete the **Next** button appears. Click **Next**.

8. A progress bar shows the progress of copying files to your computer.

9. When the installation is complete you must reboot your system. Select the Reboot Now option and click **Close**.



10. After rebooting, locate and copy the backup Emaxprb.xml file and the Template folder back into their appropriate locations in

    C:\PdMA Corporation\MCEGold\Emax
    C:\PdMA Corporation\MCEGold\Report

11. Answer Yes to "Merge the folder?" inquiry.

12. Remove the MCEGold 3.1.2 SP1 USB flash drive from the computer.

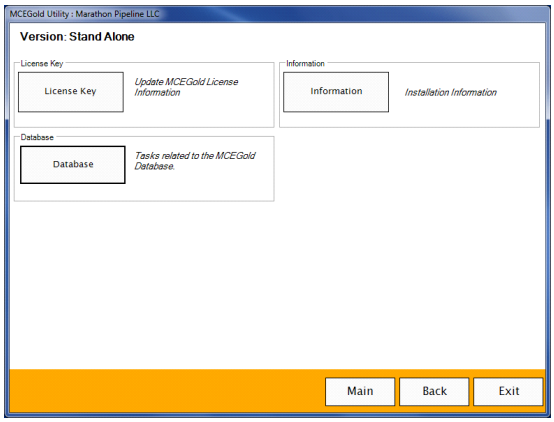
DATABASE SETUP

Note: This procedure is for connecting to an existing database that is to be upgraded to MCEGold 3.1.2 SP1.

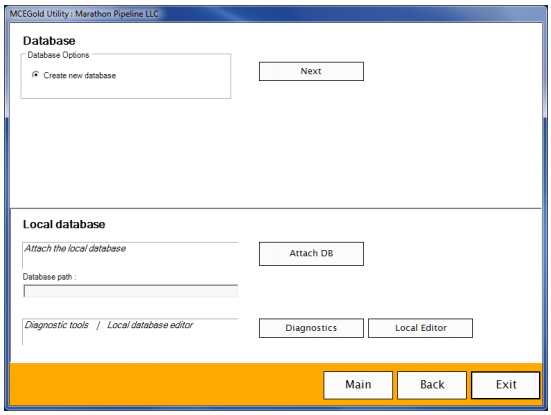
To connect to an existing database, please follow the instructions below.

1. Ensure you have properly backed up the database you are converting.

2. Open the Utility program and click the **Database** button.

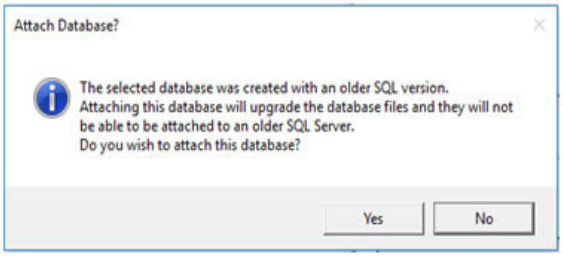


3. Click **Attach DB** as shown in the screen below.

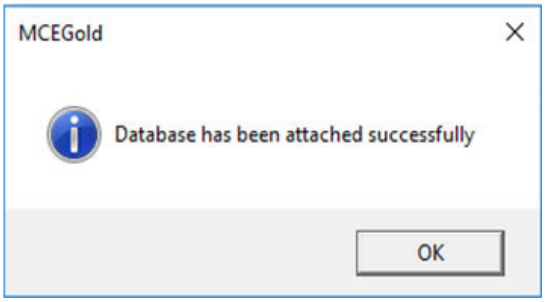


4. Navigate to the database location on your computer and select the desired database.

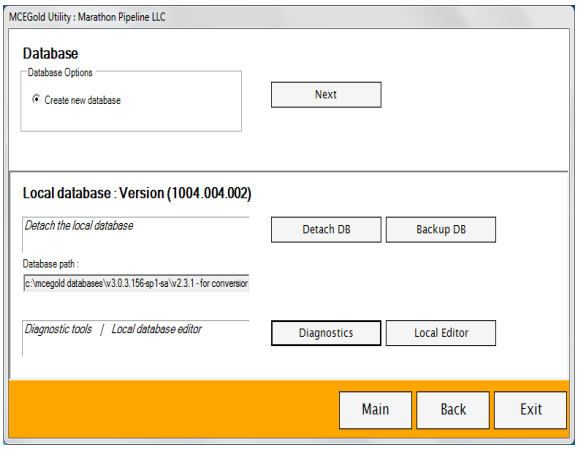
   If you receive the following message: "The database you selected was created with an older SQL version", the database needs to be upgraded to SQL 2008. **Stop!** Click **No.** Do **NOT** proceed! Contact Technical Support.



5. If the database attached properly you will see the following window. Click **OK**.



6. The MCEGold Utility Database Window opens. Click **Exit**.

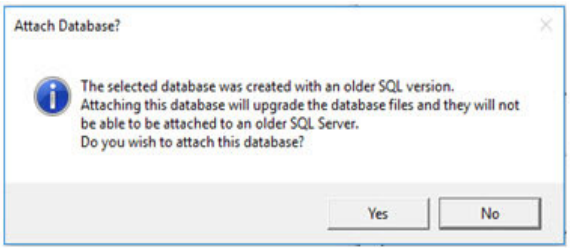


START MCEGOLD

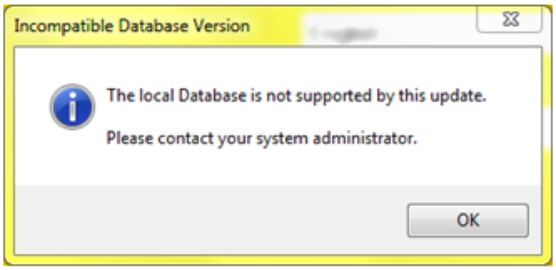
1. Start MCEGold.

2. Select a database using the Search button (...) located on the right side of the Site textbox. This opens your computer navigator window which allows you to search for a database. If none are available, click **Cancel** to exit out of MCEGold, and contact PdMA Technical Support at 813-621-6463 ext. 251.

   If you receive the following message: "The database you selected was created with an older SQL version", the database needs to be upgraded to SQL 2008. **Stop!** Click **No**. Do **NOT** proceed! Contact Technical Support.

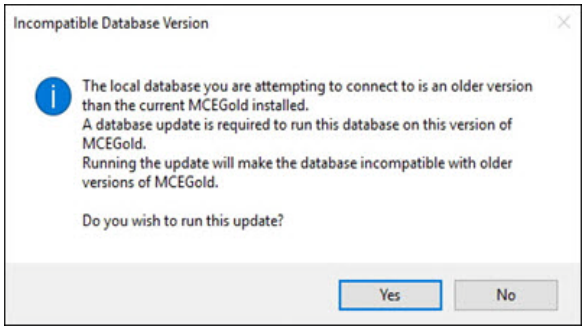


If you receive the following "local database is not supported by this update" message, the attached database is too old for conversion and needs to be updated to MCEGold 3.0.3 SP2 or later prior to updating to MCEGold 3.1.2 SP1. Contact your system administrator.



If you receive the following "Incompatible Database Version" message when trying to start MCEGold, you are attempting to run MCEGold with a database that is older than MCEGold 3.1.2. You will be prompted to update the database. If you have properly backed up your existing database, click **Yes** to run the update. If you have not backed up your existing database, click **No**, backup the database, and then perform the Database Setup procedure.

NOTE: Please make sure you allow sufficient time to update your database. Depending on the size of your database, updates may take an hour or longer.



3. When the update completes, click **OK** on the message window. The message window closes, leaving the MCEGold Login window open.

4. Verify login parameters on the right side of the window are correct and click **OK**.

TECHNOTE 1902-N7

ISSUED

August 2019

SUBJECT

Release of MCEGold® 3.1.2 SP2 Network Version for Windows 7.

DESCRIPTION

MCEGold 3.1.2 SP2 Network Version is an upgrade from MCEGold 3.1.2 SP1.

PDMA CLOUD SERVICES

The network edition of MCEGold 3.1.2 SP2 supports access to PdMA Cloud Services. Please contact PdMA Technical Support (813-6216-6463 ext. 251) to discuss this option.

NOTES

- MCEGold 3.1.2 SP2 is only compatible with Windows 10 and Windows 7 and M-Series testers.

- Upgrading from a version prior to MCEGold 3.1.2 requires a new license key. Contact PdMA (813-621-6463 ext. 251) for a new license key.

- Installation of MCEGold 3.1.2 SP2 on a Windows 10 computer uses a special installation procedure. Refer to TechNote 1902-S10 (Standalone) or 1902-N10 (Network).

- MCEGold Word Add-in is only compatible with MS Word 2007 and 2013. MCEGold Word Add-in is NOT compatible with MS Word 2010. Templates created with other versions of MS Word may not be functional and may cause conflicts with the MCEGold software.

- To ensure application accessibility, the default installation location has been set to C:\PdMA Corporation.

- Databases upgraded to MCEGold 3.1.2 SP2 must be from MCEGold 3.0.3 SP2 or later and once upgraded with MCEGold 3.1.2 SP2 *will not* be compatible with older versions of MCEGold.

- Please make sure you allow sufficient time to update your database. Depending on the size of your database, updates may take an hour or longer.

- Assets opened or exported with MCEGold 3.1.2 SP2 *will not* be compatible with older versions of MCEGold.

- If you have any questions, please contact PdMA Technical Support (813-621-6463 ext. 251).

Minimum Requirements

Computer	Dell Latitude E5490 Laptop*
Processor	2+ GHz Intel i5 or equivalent
Resolution	1600 x 900/1920 x 1080 (small font)
Operating System	Microsoft® Windows 7 SP1 (32 or 64 bit)**
Memory	4.0+ G RAM
Ports/Drives	(1) USB Port in Rear or Side
Hard Disk	20G Available

* Using any other computer manufacturer in conjunction with the PdMA software may result in erratic computer behavior; not limited to but including:

- Power Management Issues
- Lock-up
- Communication Port Malfunction
- Driver Incompatibility
- Display Errors
- SQL Database Incompatibility
- Network Synchronization Issues.

** For International Customers: Windows 7 Ultimate (32 or 64-bit).

PREPARE FIELD TESTERS FOR MCEGOLD 3.1.2 SP2 INSTALLATION

NOTE: If you have MCEGold 3.1.2 or later follow the instructions in *Upgrading From MCEGold 3.1.2 or Later* on page 6.

If you have any version prior to MCEGold 3.1.2 a full uninstall is required before installing version 3.1.2 SP2. See *Upgrading From a Version Prior to MCEGold 3.1.2.*

Upgrading From a Version Prior to MCEGold 3.1.2

Upgrading from a version prior to MCEGold 3.1.2 requires a new license key. Contact PdMA (813-621-6463 ext. 251) for a new license key.

Backup

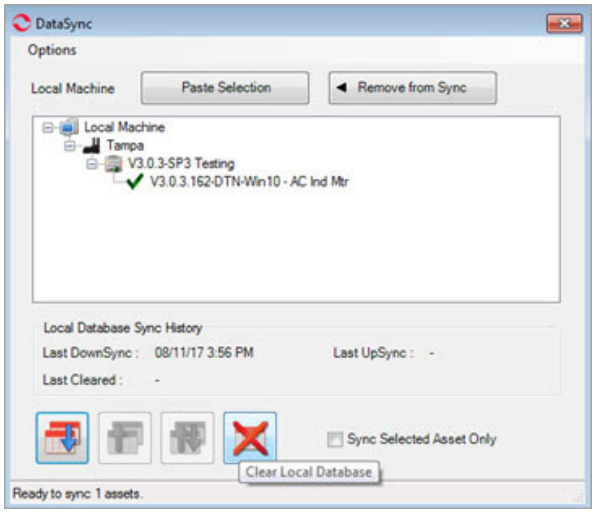
Before beginning the MCEGold uninstall, copy the Emaxprb.xml file only (not the folder) and the complete Templates folder to a safe location and make note of the location.

The default location for the files is listed below, however you may have chosen a different location during the original installation.
C:\PdMA Corporation\MCEGold\Emax
C:\PdMA Corporation\MCEGold\Report

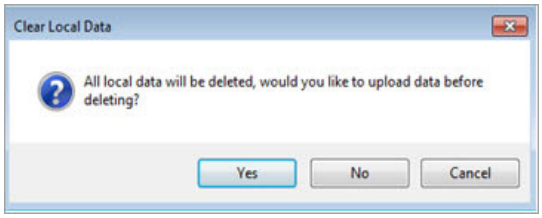
Clear Local Database

NOTE: Before proceeding ensure all local database synchronization has been performed. Failure to synchronize before clearing the local database will result in loss of data. This procedure must be completed before the server database is updated.

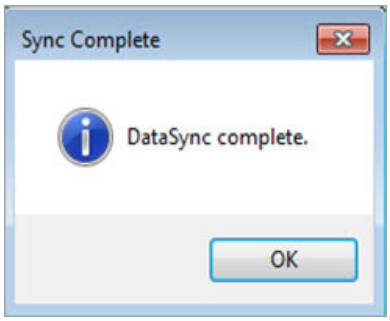
1. From the DataSync window, click **Clear Local Database**.



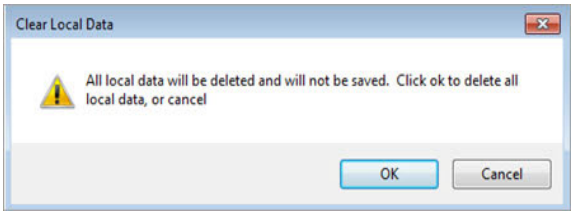
2. From the Clear Local Data window, click **Yes** to upload (UpSync) data, click **No** if you have already synchronized the data.



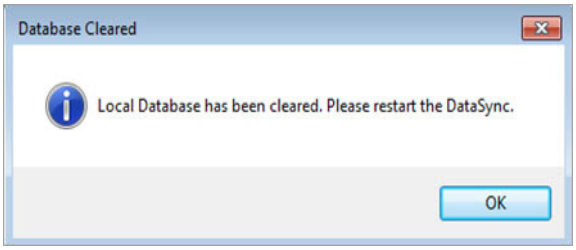
3. From the Sync Complete window, click **OK**.



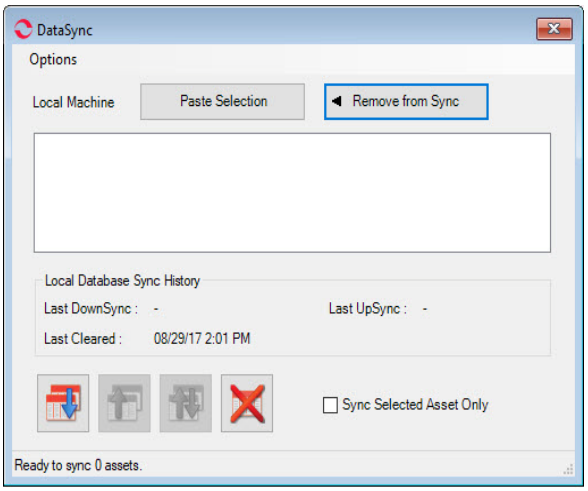
4. From the next Clear Local Data window, click **OK** to delete all local data.



5. From the Database Cleared window, click **OK.**



6. Reopen the DataSync window to ensure the database has been cleared, as shown in figure below. If it did not clear contact Technical Support.



Update Server Database for Network Users

NOTE: Ensure the user account being used to update the server has "sysadmin" permissions.

Please make sure you allow sufficient time to update your database. Depending on the size of your database, updates may take an hour or longer.

There is a separate application on the Installation USB flash drive to update the network database on the server. ***The database must be updated on the server first, then the desktops and finally field testers.***

If the update is installed on a network field tester before the server database is updated, a warning message appears informing you the database is an old version and to contact your system administrator.

1. Fully Sync all field testers.
   NOTE: Before proceeding ensure all local database synchronization has been performed.

2. Back up the MCEGold server database.

3. Insert the MCEGold 3.1.2 SP2 USB flash drive into the USB port. If the drive starts automatically, click **Exit** and proceed to the next step.

4. Locate the MCEGold Database Server Update folder on the MCEGold 3.1.2 SP2 USB flash drive.

5. Click on the MCEGold Database Server Update.exe file.

6. The Server Information window opens. Fill in the Server, Database, Login, and Password information.The Login and Password will depend on your authentication (Windows/SQL).

7. Click **Run Update**. The progress status will display on the window.

8. When the update complete message displays, close the window.

9. Go to the *Uninstall* section.

Uninstall

NOTE: Before beginning the MCEGold uninstall you must back up the Emaxprb.xml and Templates folder. See the *Backup* and *Clear Local Database* sections on page 2.

NOTE: If you have MCEGold icons pinned to your Taskbar, it is necessary to unpin them before beginning the uninstall. Right click on the icon and select "Unpin this program from the taskbar".

1. Select Start, Control Panel, select Programs, then Programs and Features.

2. In the Uninstall or change a program window scroll down to locate and highlight the MCEGold Version X.X.X on the list.

3. Click **Uninstall/Change** located above the list and follow on screen prompts.

4. Click **Finish** when the "Uninstall Complete" message is received.

5. Locate the PdMA MCEMAX Tester (Driver Removal) file. Highlight it and click **Uninstall/ Change** located above the list and follow the on screen prompts.

6. Click **Finish** when the "Uninstall Complete" message is received.

7. Locate the C:\PdMA Corporation folder and delete it. The subfolders will be deleted also. After the installation of MCEGold 3.1.2 SP2 the new folder location will be C:\PdMA Corporation\....

8. Reboot your computer.

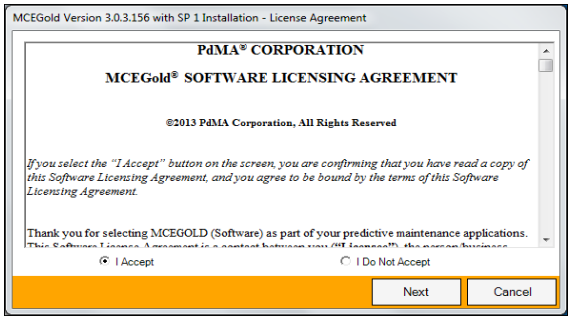
9. Go to *MCEGold 3.1.2 SP2 Installation*.

MCEGold 3.1.2 SP2 INSTALLATION

1. Insert the MCEGold 3.1.2 SP2 USB flash drive into the USB port. If the installation does not begin automatically, run setup.exe from the USB flash drive. (Select Run setup.exe from the AutoPlay window).

2. The License Agreement window opens. Read the PdMA license and select the "I Accept" option button. The **Next** button becomes visible. Click **Next**.

   NOTE: If you do not accept the terms, the **Next** button is not visible, you can only click **Cancel**, which closes the software without installing it.



3. In the License Key window enter your Company Name and License Key exactly as provided by PdMA. You may copy and paste the license key using the paste button.

4. When the license has been verified a green check appears. The **Next** button appears. Click **Next**.

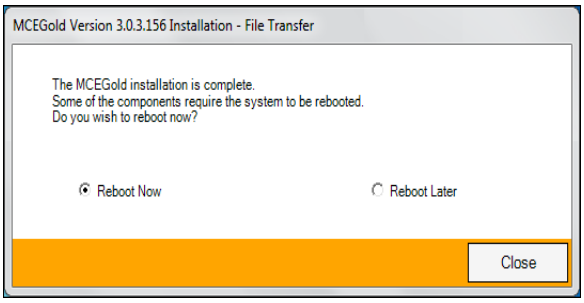
5. In the Installation Path window, accept the default shown in the text box (recommended) for the location to install the MCEGold program folder or using the browse (...) button to select an alternate location, make a note of it for your future use, and click **Next**. Note: It is not suggested to use an alternate location because that can cause conflict and Windows rights problems.

6. When prompted, click **Install Components**. Some components may require additional prompts.

7. When the installation of components is complete the **Next** button appears. Click **Next**.

8. A progress bar shows the progress of copying files to your computer.

9. When the installation is complete you must reboot your system. Select the Reboot Now option and click **Close**.



10. After rebooting, locate and copy the backup Emaxprb.xml file and the Template folder back into their appropriate locations in

    C:\PdMA Corporation\MCEGold\Emax
    C:\PdMA Corporation\MCEGold\Report

11. Answer Yes to "Merge the folder?" inquiry.

12. Remove the MCEGold 3.1.2 SP2 USB flash drive from the computer.

13. Go to *Field Tester Database Setup.*

Field Tester Database Setup

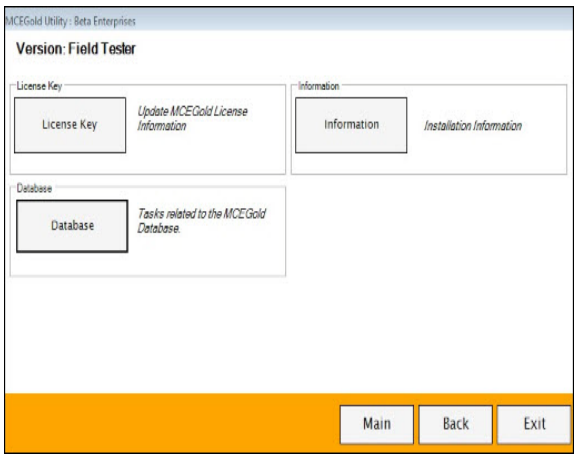
NOTE: For the following, please use the information provided by your IT department.

Field testers utilize a local database for storage of assets. These assets can then be synchronized with the Network database. In order to perform field testing in local tester mode, assets must be down-synced to the local database. In order to perform testing using MCEGold Lite, assets must be in a WatchList and down-synced to the local database.

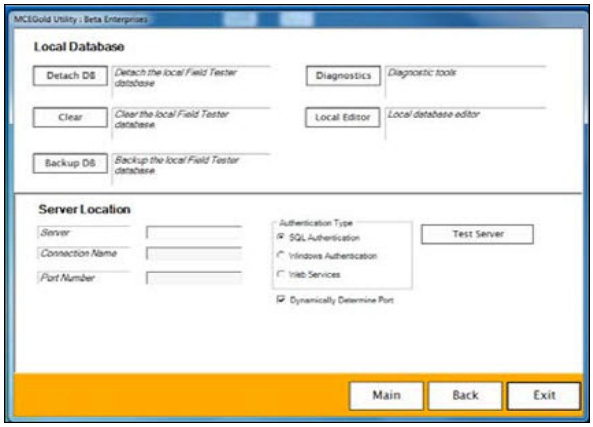
To connect to the existing network database, please follow the instructions below.

1. Open the MCEGold Utility program.

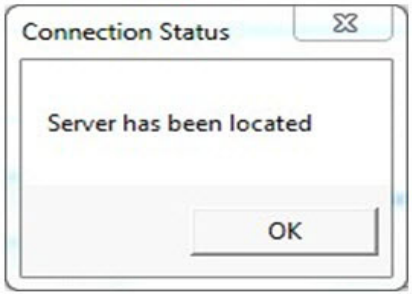
2. Click the **Database** button.



3. Enter the server information provided by your IT department.

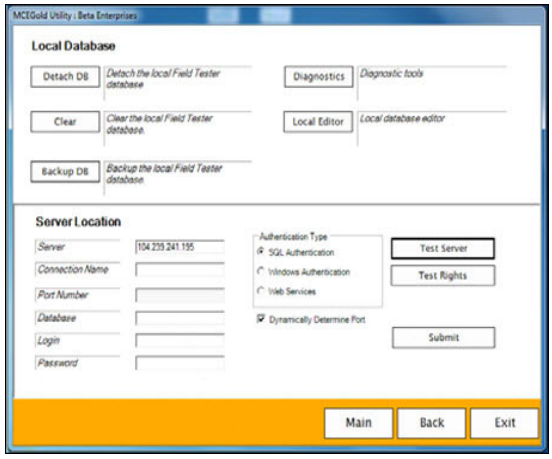


4. Once the server information has been entered, click **Test Server**. You should receive a message indicating *Server has been located.*

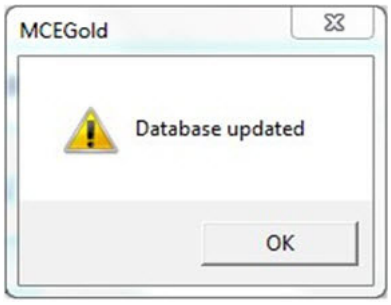


5. Click **OK** on the Connection Status window.

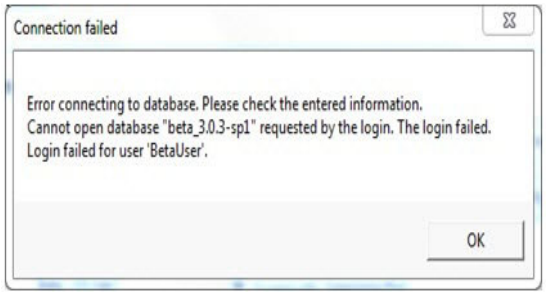
6. Enter the following connection information provided by either your Administrator or IT Department: Connection Name, Database Name, Login Information, and Password.



7. Click **Submit**. You will receive a message indicating *Database updated*. Click **OK.**



8. If you receive an error as shown below, verify the information you entered is correct. If it is correct, click **OK** and contact your Administrator.



9. If you do not receive an error message, click **Exit** on the Utility window.

10. Start MCEGold and enter the name and password for the tester. Select the Field Tester Network mode.

11. It is necessary to clear the local database a second time. Instructions are found on page 2 of this document titled Clear Local Database. Disregard the instructions in the "Note".

12. Once you have opened MCEGold, cleared the local database, and have verified MCEGold is correctly communicating with the database, you are ready to perform testing.

Upgrading From MCEGold 3.1.2 or Later

Backup

In the possibility that you may need these files after the install, it is a good idea before beginning the MCEGold install to copy the Emaxprb.xml file only (not the folder) and the complete Templates folder to a safe location and make note of the location.

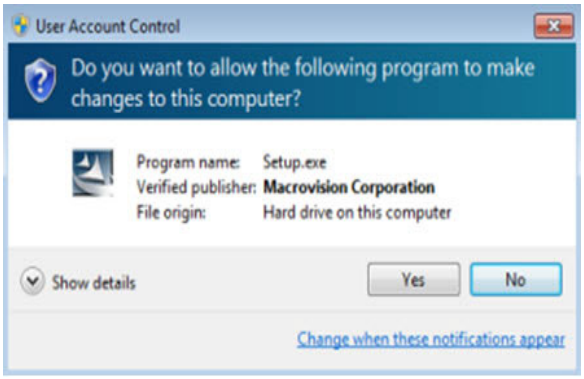
The default location for the files is listed below, however you may have chosen a different location during the original installation.
C:\PdMA Corporation\MCEGold\Emax
C:\PdMA Corporation\MCEGold\Report

MCEGold 3.1.2 SP2 Installation

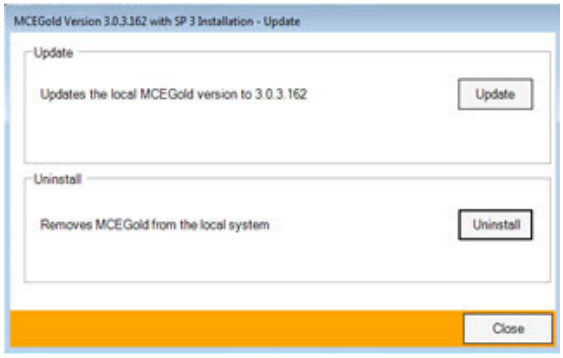
NOTE: Some on screen prompts and messages during the installation process are controlled by the Windows operating system and are out of PdMA's control. Every effort has been made to include their possible appearance and the action you should take. However, if you are unsure please contact our technical support department for help.

1. Insert the MCEGold 3.1.2 SP2 USB flash drive into the USB port. If the installation does not begin automatically, run setup.exe from the USB flash drive. (Select Run, setup.exe from the AutoPlay window).

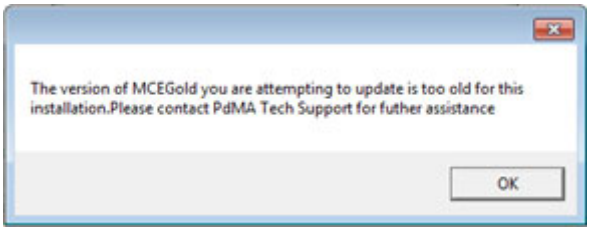
2. If you see the User Account Control screen, click **Yes**.



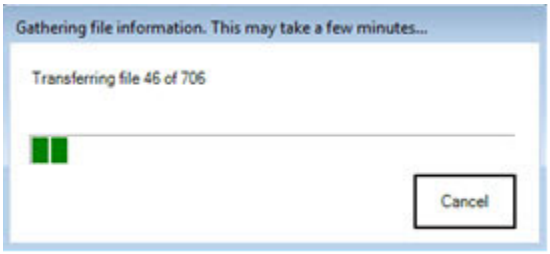
3. If there is an existing MCEGold version installed on your computer, you will see the MCEGold Update screen. click **Update**.



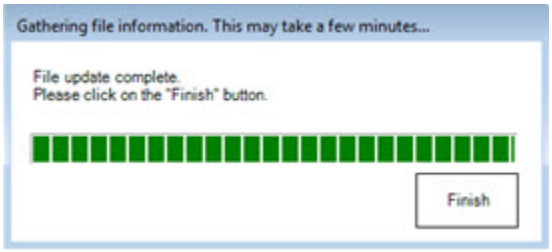
NOTE: If you have a version prior to MCEGold 3.1.2 you will receive the error message shown below. Do **NOT** proceed. Contact technical support.



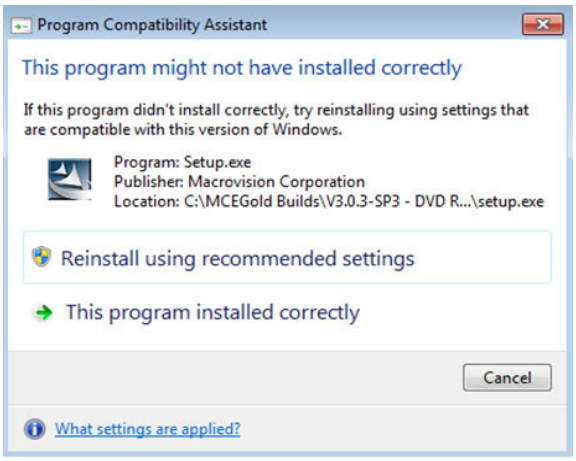
4. The status update window displays.



5. When the update is complete, click **Finish**.



6. If the Program Compatibility Assistant screen displays, select *This program installed correctly.*

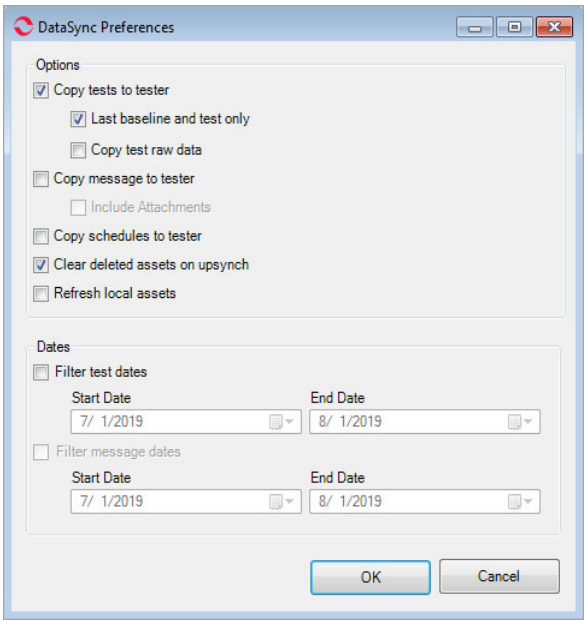


7. Go to the *Field Tester Database Setup* section on page 4.

DATASYNC PREFERENCES WINDOW

MCEGold 3.1.2 SP2 includes changes to the DataSync Preferences window shown below. “Copy test raw data” has been added to the “Copy test to tester” section.

A function is activated/inactivated by clicking in the box preceding the function, which causes a check mark to appear (active)/disappear (inactive).



Options

Copy tests to tester: If this option is selected, all history chart data back to the last baseline or dates selected in the Filter test dates section and all raw data from the last baseline and last test only will be synchronized to the tester.

Last baseline and test only: Raw data from the last baseline and last test only will be synchronized to the field tester.

Copy test raw data: All raw data back to the last baseline or dates selected in the Filter Test Dates section will be synchronized to the tester. This is potentially a very large amount of data and could result in exceeding the monthly usage limit for cloud services.

Copy message to tester: All messages recorded in the message center back to the baseline test or dates selected in the Filter Test Dates section will be synchronized to the tester. No attachments will be transferred.

Include Attachments: All attachments embedded in the Message Center back to the baseline test or dates selected in the Filter Test Dates section will be synchronized to the tester. This is potentially a very large amount of data and could result in exceeding the monthly usage limit for cloud services.

Copy schedules to tester: All schedules from the Scheduler will be synchronized to the tester.

Clear deleted assets on upsync: Local assets that are identified as deleted from the server during the sync process will be deleted from the local database and sync window.

Refresh local assets: Nameplate data for each asset on the Field Tester will be replaced with the information from the server.

Dates

Filter test dates: For the motors selected in the Sync Window, tests acquired on the Start Date and End Date as well as all dates in between the Start Date and End Date will be selected for synchronization preferences.

Filter message dates: For the motors selected in the DataSync Window, messages acquired on the Start Date and End Date as well as all dates in between the Start Date and End Date will be selected for synchronization preferences.

TECHNOTE 1902-N10

ISSUED

August 2019

SUBJECT

Release of MCEGold® 3.1.2 SP2 Network Version for Windows 10.

DESCRIPTION

MCEGold 3.1.2 SP2 Network Version is an upgrade from MCEGold 3.1.2 SP1.

PDMA CLOUD SERVICES

The network edition of MCEGold 3.1.2 SP2 supports access to PdMA Cloud Services. Please contact PdMA Technical Support (813-6216-6463 ext. 251) to discuss this option.

NOTES

- MCEGold 3.1.2 SP2 is only compatible with Windows 10 and Windows 7 and M-Series testers.

- Upgrading from a version prior to MCEGold 3.1.2 requires a new license key. Contact PdMA (813-621-6463 ext. 251) for a new license key.

-Installation of MCEGold 3.1.2 SP2 on a Windows 10 computer uses a special installation procedure. For a Windows 7 installation refer to TechNote 1902-S7 (Stand Alone) or TechNote 1902-N7 (Network) as applicable.

- MCEGold Word Add-in is only compatible with MS Word 2007 and 2013. MCEGold Word Add-in is NOT compatible with MS Word 2010. Templates created with other versions of MS Word may not be functional and may cause conflicts with the MCEGold software.

- To ensure application accessibility, the default installation location has been set to C:\PdMA Corporation.

- Databases attached to MCEGold 3.1.2 SP2 must be from MCEGold 3.0.3 SP2 or later and once updated with 3.1.2 SP2 *will not* be compatible with older versions of MCEGold.

- Please make sure you allow sufficient time to update your database. Depending on the size of your database, updates may take an hour or longer.

- Assets exported with MCEGold 3.1.2 SP2 *will not* be compatible with older versions of MCEGold.

- If during installation you receive a message telling you "SQL Server System CLR Types requires the .Net Framework", contact tech support for assistance.

- If you have any questions, please contact PdMA Technical Support (813-621-6463 ext. 251).

Minimum Requirements

Computer	Dell Latitude E5490 Laptop*
Processor	2+ GHz Intel i5 or equivalent
Resolution	1600 x 900/1920 x 1080 (small font)
Operating System	Microsoft® Windows 10 (32 or 64 bit)
Memory	4.0+ G RAM
Ports/Drives	(1) USB Port in Rear or Side
Hard Disk	20G Available

* Using any other computer manufacturer in conjunction with the PdMA software may result in erratic computer behavior; not limited to but including:

- Power Management Issues
- Lock-up
- Communication Port Malfunction
- Driver Incompatibility
- Display Errors
- SQL Database Incompatibility
- Network Synchronization Issues.

PREPARE WINDOWS 10 FOR MCEGOLD 3.1.2 SP2 INSTALLATION

NOTE: If you have MCEGold 3.1.2 or later follow the instructions in *Upgrading From MCEGold 3.1.2 or Later* on page 8.

If you have any version prior to MCEGold 3.1.2 a full uninstall is required before installing version 3.1.2 SP2. See *Upgrading From a Version Prior to MCEGold 3.1.2*.

Upgrading From a Version Prior to MCEGold 3.1.2

Upgrading from a version prior to MCEGold 3.1.2 requires a new license key. Contact PdMA (813-621-6463 ext. 251) for a new license key.

Backup

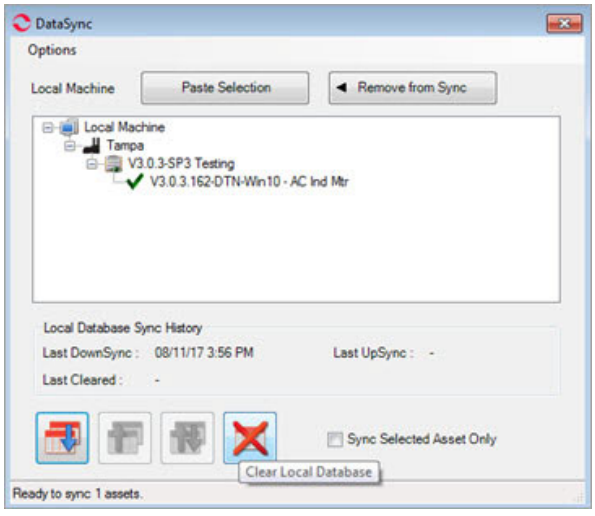
Before beginning the MCEGold uninstall, copy the Emaxprb.xml file only (not the folder) and the complete Templates folder to a safe location and make note of the location.

The default location for the files is listed below, however you may have chosen a different location during the original installation.
C:\PdMA Corporation\MCEGold\Emax
C:\PdMA Corporation\MCEGold\Report

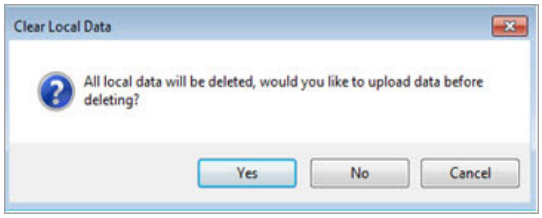
Clear Local Database

NOTE: Before proceeding ensure all local database synchronization has been performed. Failure to synchronize before clearing the local database will result in loss of data. This procedure must be completed before the server database is updated.

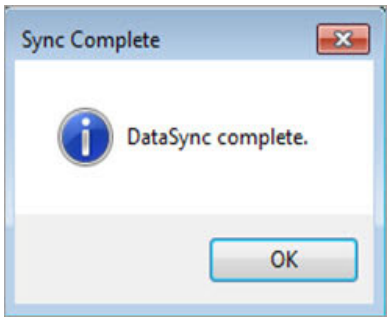
1. From the DataSync window, click **Clear Local Database**.



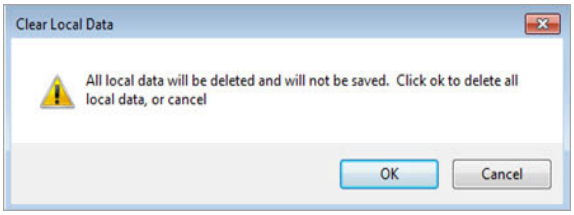
2. From the Clear Local Data window, click **Yes** to upload (UpSync) data, click **No** if you have already synchronized the data.



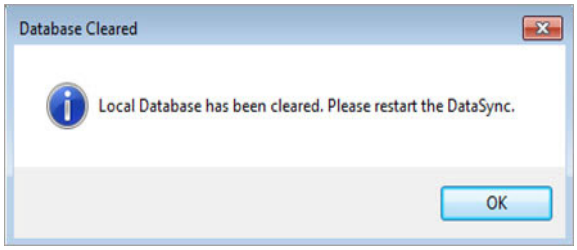
3. From the Sync Complete window, click **OK**.



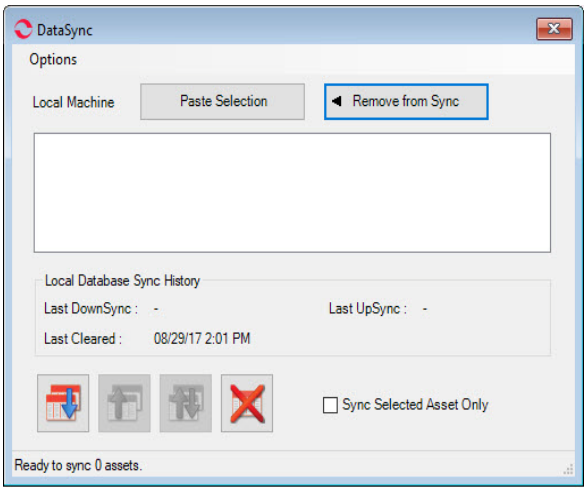
4. From the next Clear Local Data window, click **OK** to delete all local data.



5. From the Database Cleared window, click **OK.**



6. Reopen the DataSync window to ensure the database has been cleared, as shown in figure below. If it did not clear contact Technical Support.



Update Server Database for Network Users

NOTE: Ensure the user account being used to update the server has "sysadmin" permissions.

Please make sure you allow sufficient time to update your database. Depending on the size of your database, updates may take an hour or longer.

There is a separate application on the Installation USB flash drive to update the network database on the server. ***The database must be updated on the server first, then the desktops and field testers.***

If the update is installed on a network field tester before the server database is updated, a warning message appears informing you the database is an old version and to contact your system administrator.

1. Backup the MCEGold server database.

2. Insert the MCEGold 3.1.2 SP2 USB flash drive into the USB port. If the drive starts automatically, click **Exit** and proceed to the next step.

3. Locate the MCEGold Database Server Update folder on the MCEGold 3.1.2 SP2 USB flash drive.

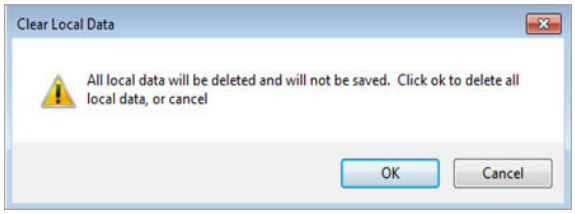
4. Click on the MCEGold Database Server Update.exe file.

5. The Server Information window opens. Fill in the Server, Database, Login, and Password information. The Login and Password will depend on your authentication (Windows/SQL).

6. Click **Run Update**. The progress status will display on the window.

7. When the update complete message displays, close the window.

8. From the next Clear Local Data window, click **OK** to delete all local data.



Uninstall

Note: If you have MCEGold icons pinned to your Taskbar, it is necessary to unpin them before beginning the uninstall. Right click on the icon and select "Unpin from taskbar".

1. Select Start, Settings, Apps and locate MCEGold.

2. Highlight the MCEGold Version X.X.X.

3. Click **Uninstall** and follow on-screen prompts.

4. Click **Finish** when the "Uninstall Complete" message is received.

5. Locate the PdMA MCEMAX Tester (Driver Removal) file. Highlight it and click **Uninstall/ Change** located above the list and follow the on-screen prompts.

6. Click **Finish** when the "Uninstall Complete" message is received.

7. Locate the C:\PdMACorporation folder and delete it. The subfolders will be deleted also. After the installation of MCEGold 3.1.2 SP2 the new folder location will be C:\PdMA Corporation\....

8. Reboot your computer.

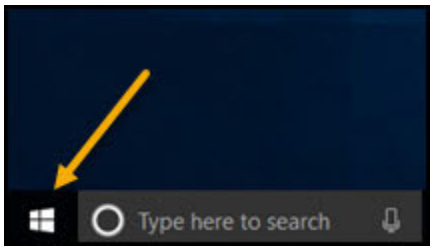
9. Go to the Disable Driver Signature Enforcement section.

Disable Driver Signature Enforcement

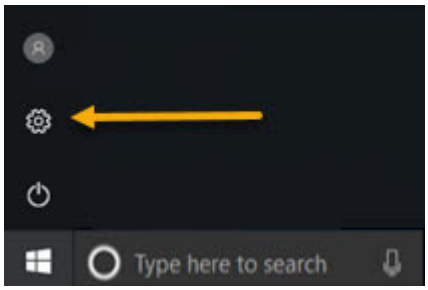
NOTE: To install MCEGold 3.1.2 SP2 on a Windows 10 operating system, the operating system must be in the "Disable driver signature enforcement" mode.

Use the following steps to enter the Disable Driver Signature Enforcement mode.

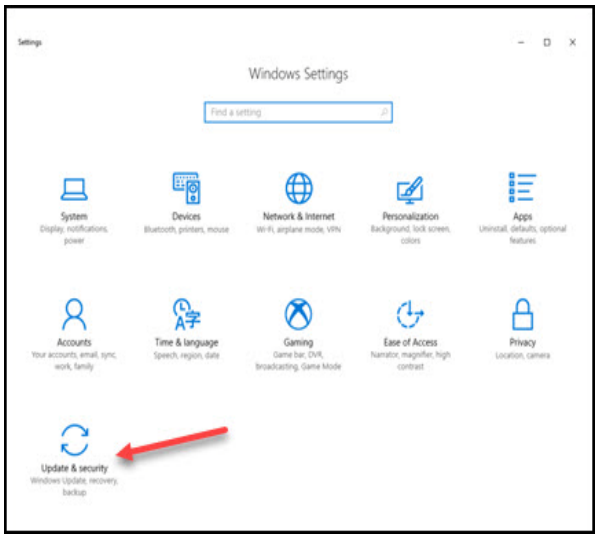
1. From the main Windows 10 screen, click the **Start** button in the lower left corner of the computer screen.



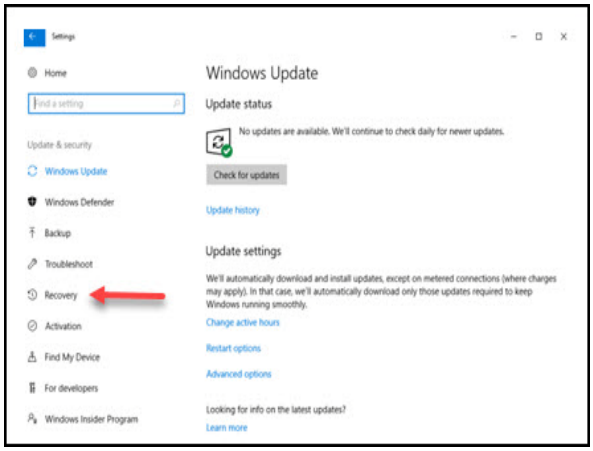
2. Click **Settings**.



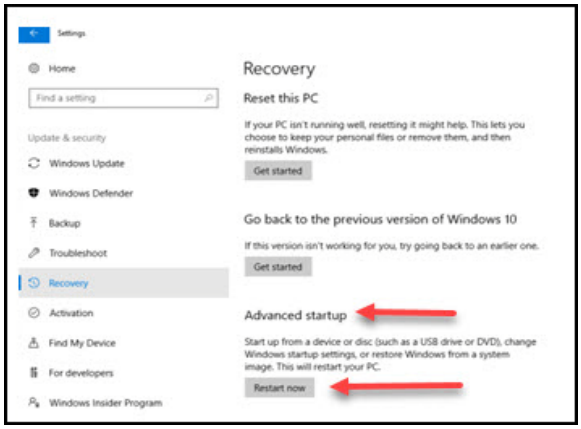
3. From the Windows Settings window, select **Update and Security**.



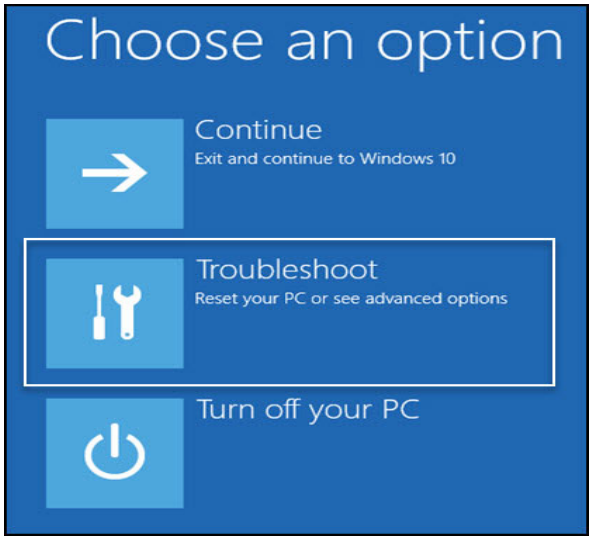
4. From the Windows Update window, select **Recovery**.



5. From the Recovery window, in the Advanced startup section, click **Restart now**.



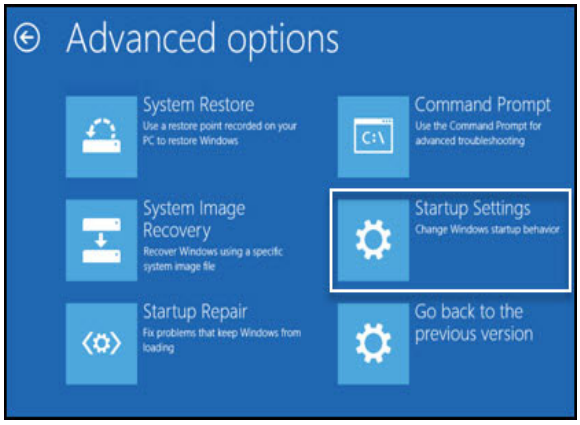
6. From the Choose an option window, select **Troubleshoot**.



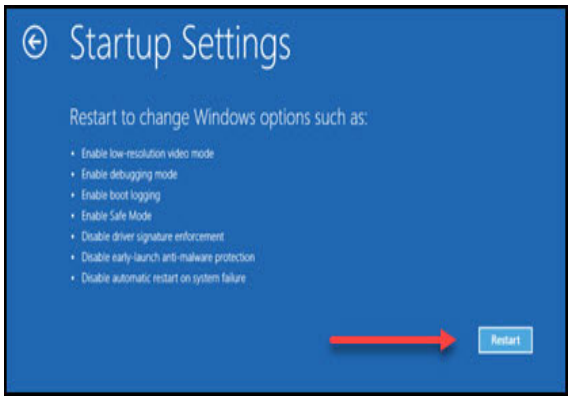
7. From the Troubleshoot window, Select **Advanced options**.



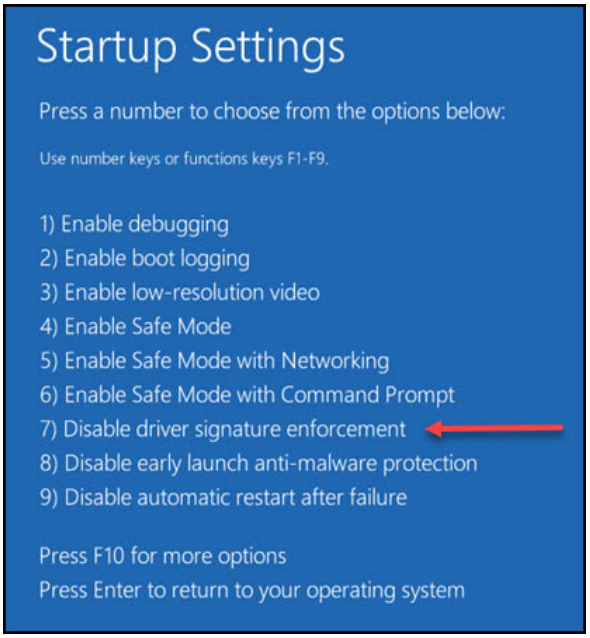
8. From Advanced Options window, Select **Startup Settings**.



9. From the Startup Settings window, click **Restart**.



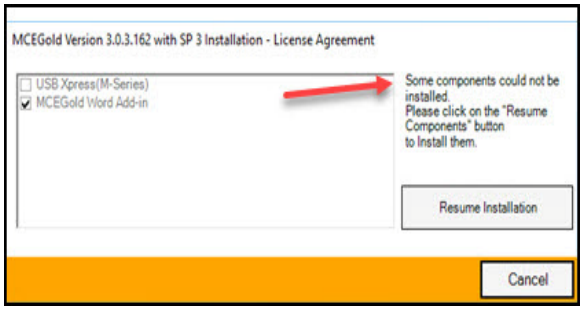
10. From the next Startup Settings window, press 7 to select **Disable driver signature enforcement.**

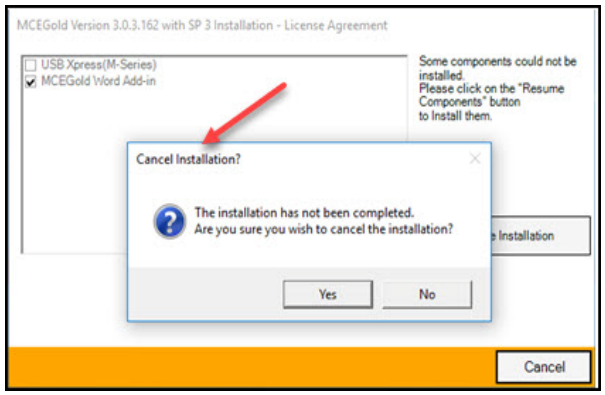


11. The computer displays the start up screen. Go to the *MCEGold 3.1.2 SP2 Installation* section.

MCEGold 3.1.2 SP2 Installation

NOTE: During the installation process, if you see either of the following windows or messages: MCEGold – **Some components could not be installed**, or MCEGold – **Cancel Installation?**, then Windows 10 has not been configured to allow unsigned driver installation. See the section *Prepare Windows 10 for MCEGold 3.1.2 SP2 Installation.*



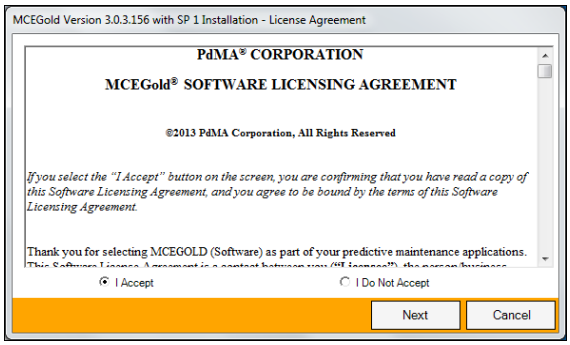


1. Insert the MCEGold 3.1.2 SP2 USB flash drive into the USB port. If the installation does not begin automatically, run setup.exe from the USB flash drive. (Select Run, setup.exe from the AutoPlay window).

2. Right click on setup.exe and select Run as administrator.

3. The License Agreement window opens. Read the PdMA license and select the "I Accept" option button. The **Next** button becomes visible. Click **Next**.

   Note: If you do not accept the terms, the **Next** button is not visible, you can only click **Cancel**, which closes the software without installing it.



4. In the License Key window enter your Company Name and License Key exactly as provided by PdMA. You may copy and paste the license key using the paste button.

5. When the license has been verified a green check appears. The **Next** button appears. Click **Next**.

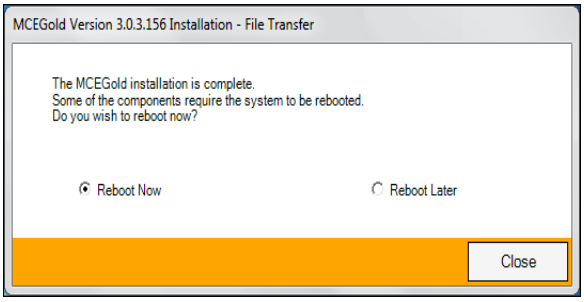
6. In the Installation Path window, accept the default shown in the text box (recommended) for the location to install the MCEGold program folder or use the browse (...) button to select an alternate location, make a note of it for your future use, and click **Next**. Note: It is not suggested to use an alternate location because that can cause conflict and Windows rights problems.

7. When prompted, click **Install Components**. Some components may require additional prompts.

8. When the installation of components is complete the **Next** button appears. Click **Next**.

9. A progress bar shows the progress of copying files to your computer.

10. When the installation is complete you must reboot your system. Select the Reboot Now option and click **Close**.



11. After rebooting, locate and copy the backup Emaxprb.xml file and the Template folder back into their appropriate locations in

    C:\PdMA Corporation\MCEGold\Emax
    C:\PdMA Corporation\MCEGold\Report

12. Answer Yes to "Merge the folder?" inquiry.

13. Remove the MCEGold 3.1.2 SP2 USB flash drive from the computer.

FIELD TESTER DATABASE SETUP

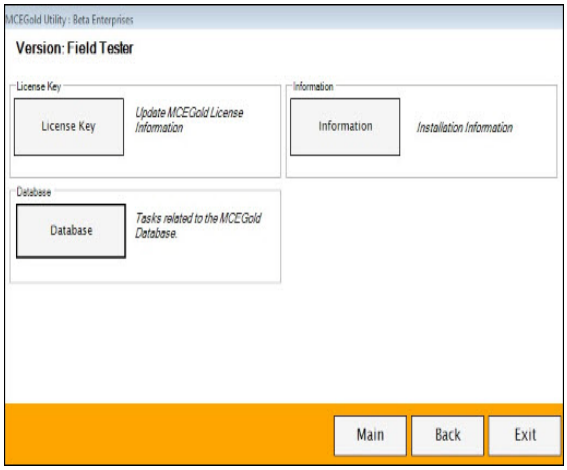
NOTE: For the following, please use the information provided by your IT department.

Field testers utilize a local database for storage of assets. These assets can then be synchronized with the Network database. In order to perform field testing in local tester mode, assets must be down-synced to the local database. In order to perform testing using MCEGold Lite, assets must be in a WatchList and down-synced to the local database.

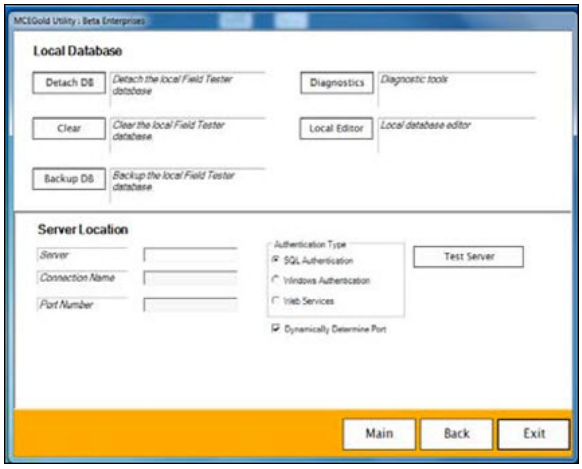
To connect to the existing network database, please follow the instructions below.

1. Open the MCEGold Utility program.

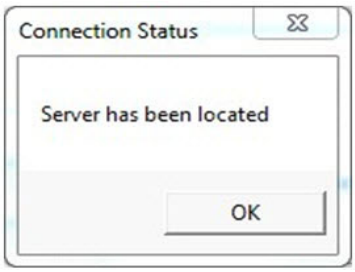
2. Click **Database**.



3. Enter the server information provided by your IT department.

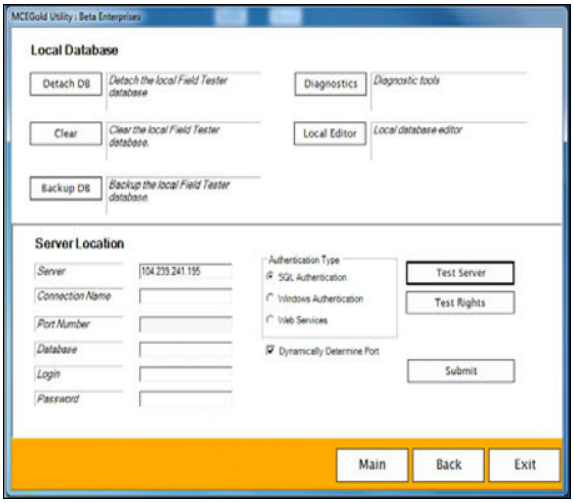


4. Once the server information has been entered, click **Test Server**. You should receive a message indicating "Server has been located".

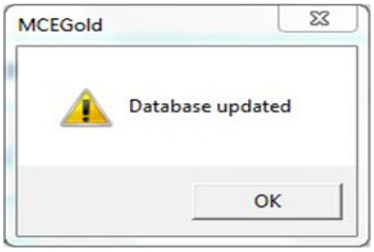


5. Click **OK** on the Connection Status window.

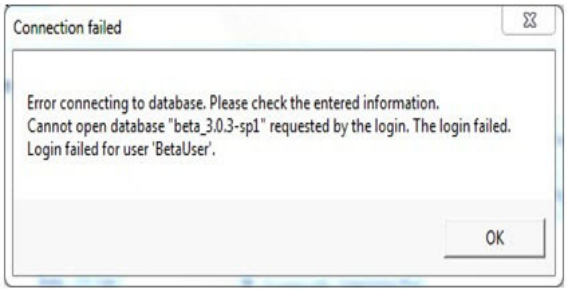
6. Enter the following connection information provided by either your Administrator or IT Department: Connection Name, Database Information, Login Information, and Password.



7. Click **Submit**. You will receive a message indicating "Database updated". Click OK.



8. If you receive an error as shown below, verify the information you entered is correct. If it is correct, click OK and contact your Administrator.



9. If you do not receive an error message, click **Exit** on the Utility window.

10. Start MCEGold and enter the name and password for the tester. Select the Field Tester Network mode.

11. It is necessary to clear the local database a second time. Instructions are found on page 2 of this document titled Clear Local Database. Disregard the instructions in the "Note".

12. Once you have opened MCEGold, cleared the local database, and have verified MCEGold is correctly communicating with the database. You are now

Upgrading From MCEGold 3.1.2 or Later

Backup

In the possibility that you may need these files after the install, it is a good idea before beginning the MCEGold install to copy the Emaxprb.xml file only (not the folder) and the complete Templates folder to a safe location and make note of the location.

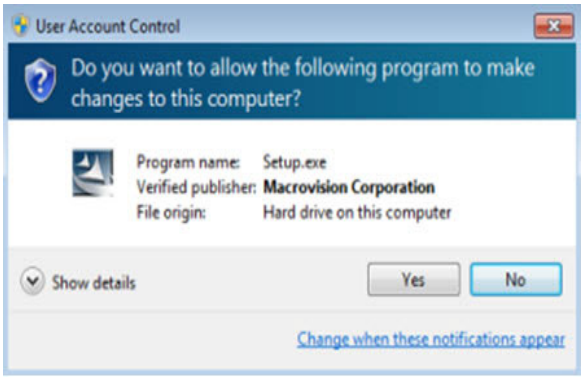
The default location for the files is listed below, however you may have chosen a different location during the original installation.
C:\PdMA Corporation\MCEGold\Emax
C:\PdMA Corporation\MCEGold\Report

MCEGold 3.1.2 SP2 Installation

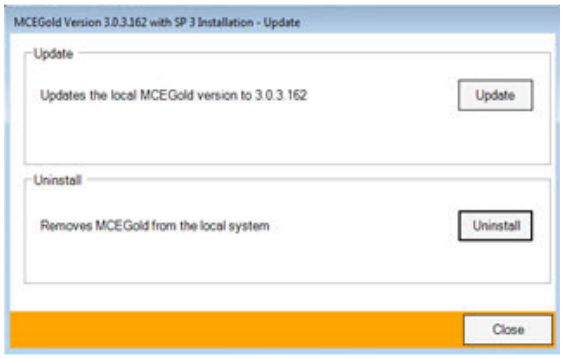
NOTE: Some on screen prompts and messages during the installation process are controlled by the Windows operating system and are out of PdMA's control. Every effort has been made to include their possible appearance and the action you should take. However, if you are unsure please contact our technical support department for help.

1. Insert the MCEGold 3.1.2 SP2 USB flash drive into the USB port. If the installation does not begin automatically, run setup.exe from the USB flash drive. (Select Run, setup.exe from the AutoPlay window).

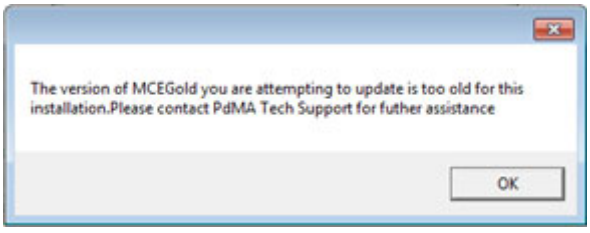
2. If you see the User Account Control screen, click **Yes**.



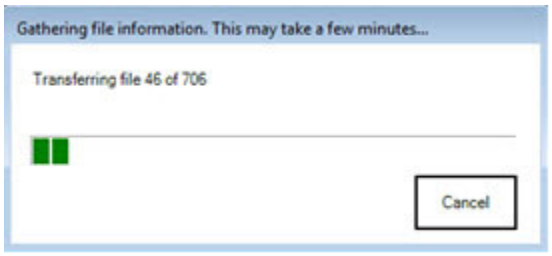
3. If there is an existing MCEGold version installed on your computer, you will see the MCEGold Update screen. click **Update**.



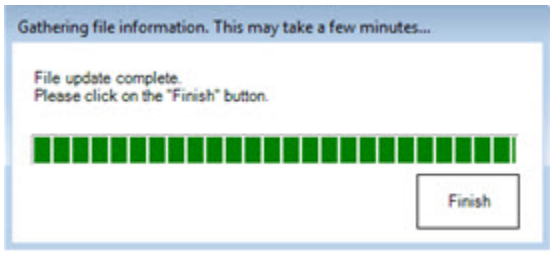
NOTE: If you have a version prior to MCEGold 3.1.2 you will receive the error message shown below. Do **NOT** proceed. Contact technical support.



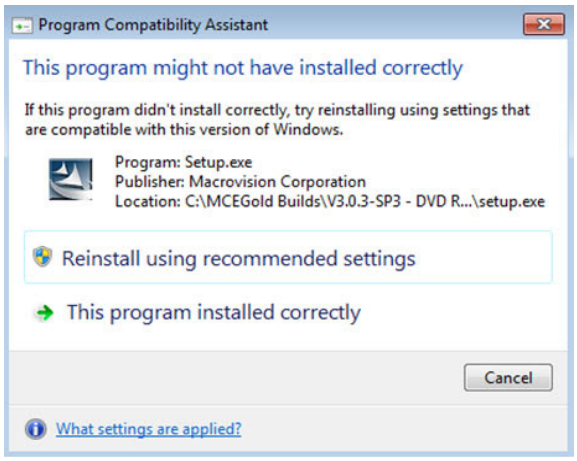
4. The status update window displays.



5. When the update is complete, click **Finish**.



6. If the Program Compatibility Assistant screen displays, select *This program installed correctly.*

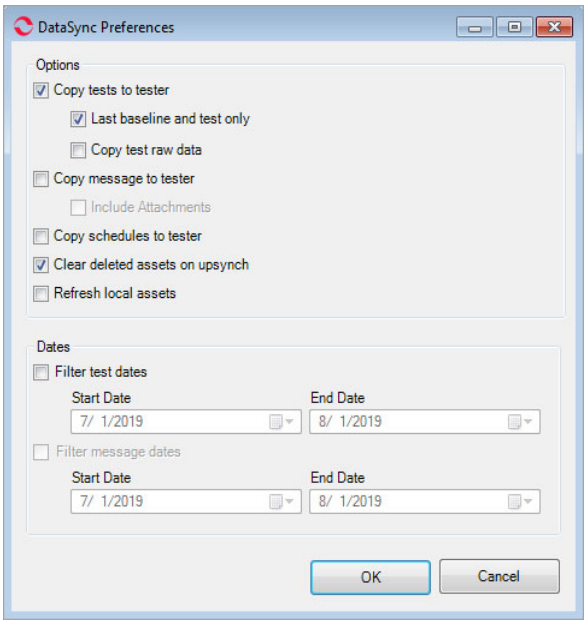


7. Go to the *Field Tester Database Setup* section on page 7.

DATASYNC PREFERENCES WINDOW

MCEGold 3.1.2 SP2 includes changes to the DataSync Preferences window shown below. “Copy test raw data” has been added to the “Copy test to tester” section.

A function is activated/inactivated by clicking in the box preceding the function, which causes a check mark to appear (active)/disappear (inactive).



Options

Copy tests to tester: If this option is selected, all history chart data back to the last baseline or dates selected in the Filter test dates section and all raw data from the last baseline and last test only will be synchronized to the tester.

Last baseline and test only: Raw data from the last baseline and last test only will be synchronized to the field tester.

Copy test raw data: All raw data back to the last baseline or dates selected in the Filter Test Dates section will be synchronized to the tester. This is potentially a very large amount of data and could result in exceeding the monthly usage limit for cloud services.

Copy message to tester: All messages recorded in the message center back to the baseline test or dates selected in the Filter Test Dates section will be synchronized to the tester. No attachments will be transferred.

Include Attachments: All attachments embedded in the Message Center back to the baseline test or dates selected in the Filter Test Dates section will be synchronized to the tester. This is potentially a very large amount of data and could result in exceeding the monthly usage limit for cloud services.

Copy schedules to tester: All schedules from the Scheduler will be synchronized to the tester.

Clear deleted assets on upsync: Local assets that are identified as deleted from the server during the sync process will be deleted from the local database and sync window.

Refresh local assets: Nameplate data for each asset on the Field Tester will be replaced with the information from the server.

Dates

Filter test dates: For the motors selected in the Sync Window, tests acquired on the Start Date and End Date as well as all dates in between the Start Date and End Date will be selected for synchronization preferences.

Filter message dates: For the motors selected in the DataSync Window, messages acquired on the Start Date and End Date as well as all dates in between the Start Date and End Date will be selected for synchronization preferences.

TECHNOTE 1902-S7

ISSUED

August 2019

SUBJECT

Release of MCEGold® 3.1.2 SP2 Stand Alone for Windows 7.

DESCRIPTION

MCEGold 3.1.2 SP2 is an upgrade from MCEGold 3.1.2 SP1.

NOTES

- MCEGold 3.1.2 SP2 is only compatible with Windows 10 and Windows 7 and M-Series testers.

- Upgrading from a version prior to MCEGold 3.1.2 requires a new license key. Contact PdMA (813-621-6463 ext. 251) for a new license key.

- Installation of MCEGold 3.1.2 SP2 on a Windows 10 computer uses a special installation procedure. For a Windows 10 installation refer to TechNote 1902-S10 (Stand Alone) or TechNote 1902-N10 (Network) as applicable.

- MCEGold Word Add-in is only compatible with MS Word 2007 and 2013. MCEGold Word Add-in is NOT compatible with MS Word 2010. Templates created with other versions of MS Word may not be functional and may cause conflicts with the MCEGold software.

- To ensure application accessibility, the default installation location has been set to C:\PdMA Corporation.

- Databases attached to MCEGold 3.1.2 SP2 must be from MCEGold 3.0.3 SP2 or later and once updated with MCEGold 3.1.2 SP2 *will not* be compatible with older versions of MCEGold.

- Please make sure you allow sufficient time to update your database. Depending on the size of your database, updates may take an hour or longer.

- Assets opened with MCEGold 3.1.2 SP2 *will not* be compatible with older versions of MCEGold.

- If you have any questions, please contact PdMA Technical Support (813-621-6463 ext. 251).

Minimum Requirements

Computer	Dell Latitude E5490 Laptop*
Processor	2+ GHz Intel i5 or equivalent
Resolution	1600 x 900/1920 x 1080 (small font)
Operating System	Microsoft® Windows 7 SP1 (32 or 64 bit)**
Memory	4.0+ G RAM
Ports/Drives	(1) USB Port in Rear or Side
Hard Disk	20G Available

* Using any other computer manufacturer in conjunction with the PdMA software may result in erratic computer behavior; not limited to but including:

- Power Management Issues
- Lock-up
- Communication Port Malfunction
- Driver Incompatibility
- Display Errors
- SQL Database Incompatibility
- Network Synchronization Issues.

** For International Customers: Windows 7 Ultimate (32 or 64-bit).

PREPARE FOR MCEGOLD 3.1.2 SP2 INSTALLATION

NOTE: If you have MCEGold 3.1.2 or later follow the instructions in *Upgrading From MCEGold 3.1.2 or Later* on page 3.

If you have any version prior to MCEGold 3.1.2 a full uninstall is required before installing version 3.1.2 SP2. See *Upgrading From a Version Prior to MCEGold 3.1.2.*

Upgrading From a Version Prior to MCEGold 3.1.2

Upgrading from a version prior to MCEGold 3.1.2 requires a new license key. Contact PdMA (813-621-6463 ext. 251) for a new license key.

Backup

Before beginning the MCEGold install, copy the Emaxprb.xml file only (not the folder) and the complete Templates folder to a safe location and make note of the location.

The default location for the files is listed below, however you may have chosen a different location during the original installation.
C:\PdMA Corporation\MCEGold\Emax
C:\PdMA Corporation\MCEGold\Report

Uninstall

Note: If you have MCEGold icons pinned to your Taskbar, it is necessary to unpin them before beginning the uninstall. Right click on the icon and select "Unpin this program from the taskbar".

1. Select Start, Control Panel, select Programs, then Programs and Features.

2. In the Uninstall or change a program window scroll down to locate and highlight the MCEGold Version X.X.X on the list.

3. Click **Uninstall/Change** located above the list and follow on screen prompts.

4. Click **Finish** when the "Uninstall Complete" message is received.

5. Locate the PdMA MCEMAX Tester (Driver Removal) file. Highlight it and click **Uninstall/ Change** located above the list and follow the on screen prompts.

6. Click **Finish** when the "Uninstall Complete" message is received.

7. Locate the C:\PdMACorporation folder and delete it. The subfolders will be deleted also. After the installation of MCEGold 3.1.2 SP2 the new folder location will be C:\PdMA Corporation\....

8. Reboot your computer.

9. Go to step one in the *MCEGold 3.1.2 SP2 Installation* section.

MCEGold 3.1.2 SP2 Installation

1. Insert the MCEGold 3.1.2 SP2 USB flash drive into the USB port. If the installation does not begin automatically, run setup.exe from the USB flash drive. (Select Run, setup.exe from the AutoPlay window).

2. The License Agreement window opens. Read the PdMA license and select the "I Accept" option button. The **Next** button becomes visible. Click **Next**.
   Note: If you do not accept the terms, the **Next** button is not visible, you can only click **Cancel**, which closes the software without installing it.



3. In the License Key window enter your Company Name and License Key exactly as provided by PdMA. You may copy and paste the license key using the paste button.

4. When the license has been verified a green check appears. The **Next** button appears. Click **Next**.

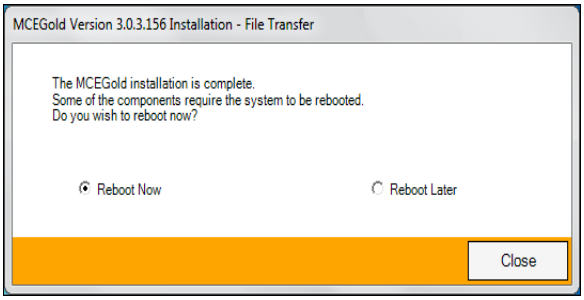
5. In the Installation Path window, accept the default shown in the text box (recommended) for the location to install the MCEGold program folder or using the browse (...) button to select an alternate location, make a note of it for your future use, and click **Next**. Note: It is not suggested to use an alternate location because that can cause conflict and Windows rights problems.

6. When prompted, click **Install Components**. Some components may require additional prompts.

7. When the installation of components is complete the **Next** button appears. Click **Next**.

8. A progress bar shows the progress of copying files to your computer.

9. When the installation is complete you must reboot your system. Select the Reboot Now option and click **Close**.



10. After rebooting, locate and copy the backup Emaxprb.xml file and the Template folder back into their appropriate locations in

    C:\PdMA Corporation\MCEGold\Emax
    C:\PdMA Corporation\MCEGold\Report

11. Answer Yes to "Merge the folder?" inquiry.

12. Remove the MCEGold 3.1.2 SP2 USB flash drive from the computer.

13. Go to the *Database Setup* section.

Upgrading From MCEGold 3.1.2 or Later

Backup

In the possibility that you may need these files after the install, it is a good idea before beginning the MCEGold install to copy the Emaxprb.xml file only (not the folder) and the complete Templates folder to a safe location and make note of the location.

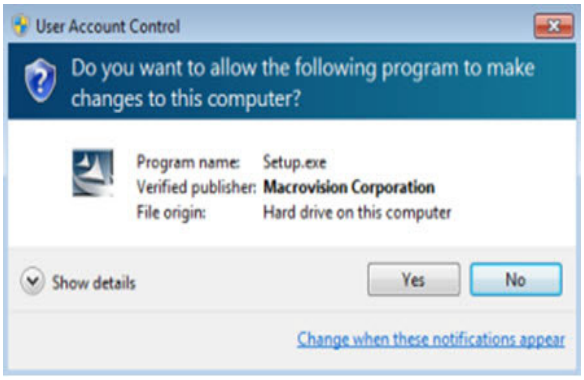
The default location for the files is listed below, however you may have chosen a different location during the original installation.
C:\PdMA Corporation\MCEGold\Emax
C:\PdMA Corporation\MCEGold\Report

MCEGold 3.1.2 SP2 Installation

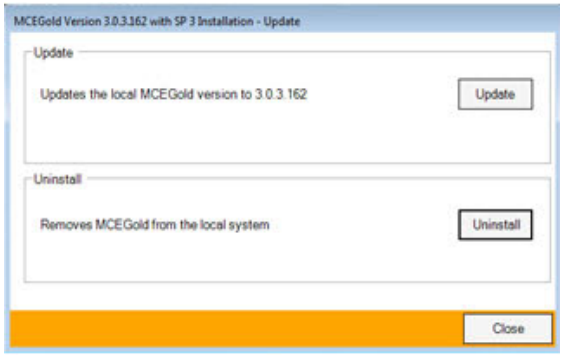
NOTE: Some on screen prompts and messages during the installation process are controlled by the Windows operating system and are out of PdMA's control. Every effort has been made to include their possible appearance and the action you should take. However, if you are unsure please contact our technical support department for help.

1. Insert the MCEGold 3.1.2 SP2 USB flash drive into the USB port. If the installation does not begin automatically, run setup.exe from the USB flash drive. (Select Run, setup.exe from the AutoPlay window).

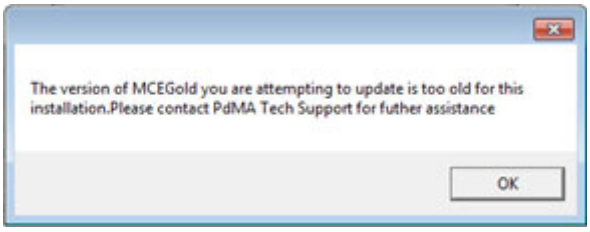
2. If you see the User Account Control screen, click **Yes**.



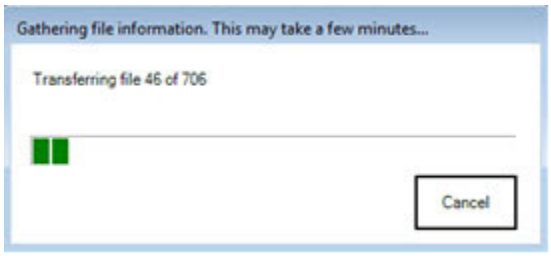
3. If there is an existing MCEGold version installed on your computer, you will see the MCEGold Update screen. click **Update**.



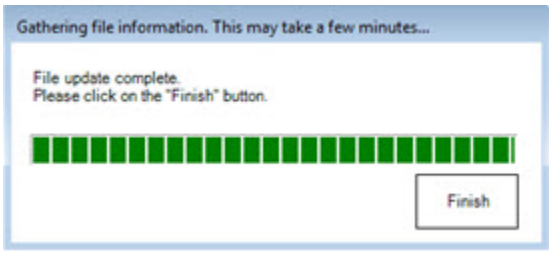
NOTE: If you have a version prior to MCEGold 3.1.2 you will receive the error message shown below. Do **NOT** proceed. Contact technical support.



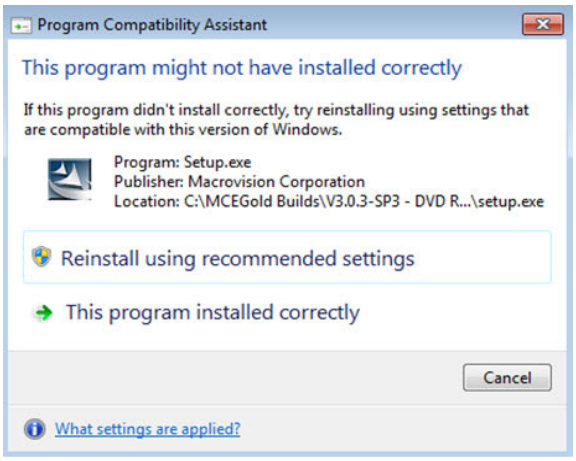
4. The status update window displays.



5. When the update is complete, click **Finish**.



6. If the Program Compatibility Assistant screen displays, select *This program installed correctly.*



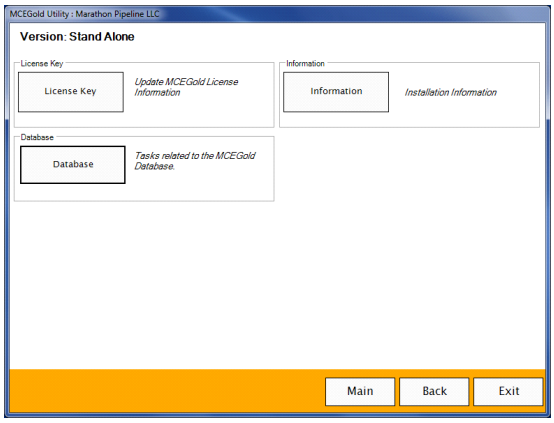
7. Go to the *Database Setup* section.

DATABASE SETUP

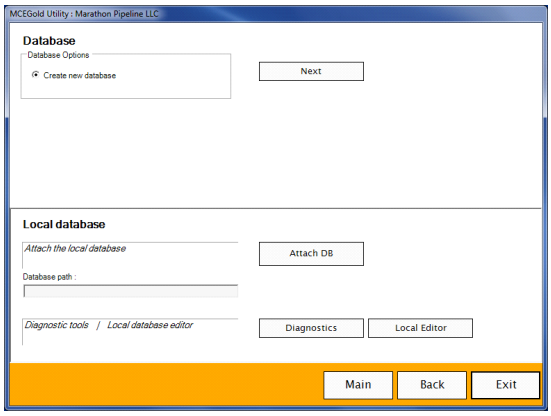
NOTE: This procedure is for connecting to an existing database that is to be upgraded to MCEGold 3.1.2 SP2. To connect to an existing database, please follow the instructions below.

1. Ensure you have properly backed up the database you are converting.

2. Open the Utility program and click the **Database** button.

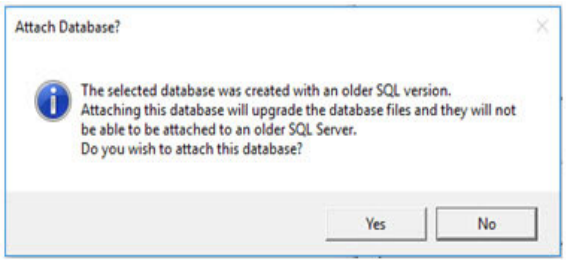


3. Click **Attach DB** as shown in the below.

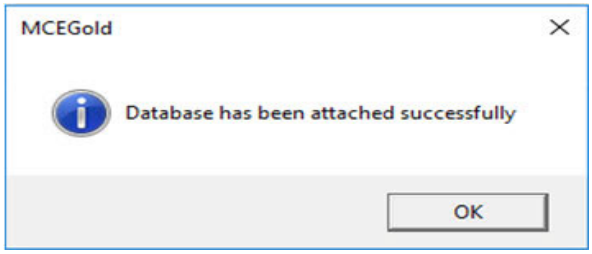


4. Navigate to the database location on your computer and select the desired database.

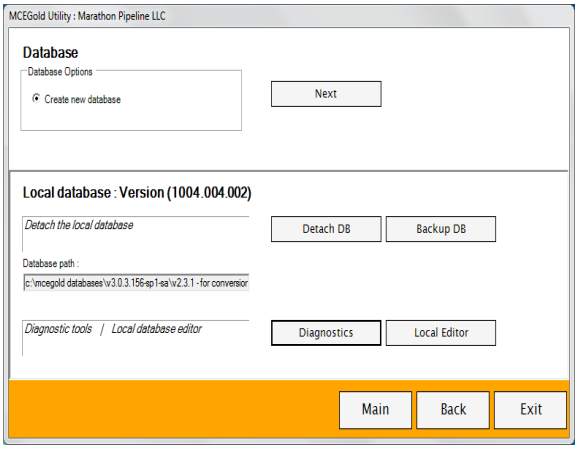
   If you receive the following message: "The database you selected was created with an older SQL version", the database needs to be upgraded to SQL 2008. **Stop!** Click **No**. Do **NOT** proceed! Contact Technical Support.



5. If the database attached properly you will see the following window. Click **OK**.



6. The MCEGold Utility Database Window opens. Click **Exit**.



START MCEGOLD

1. Start MCEGold.

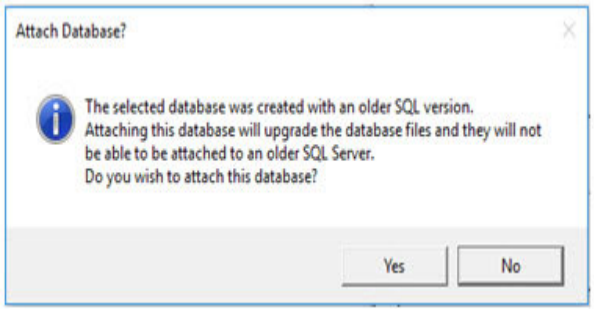
2. If the database window is empty, select a database using the Search button (...) located on the right side of the Site textbox. This opens your computer navigator window which allows you to search for a database.

3. When the database has been selected, click **Open**.

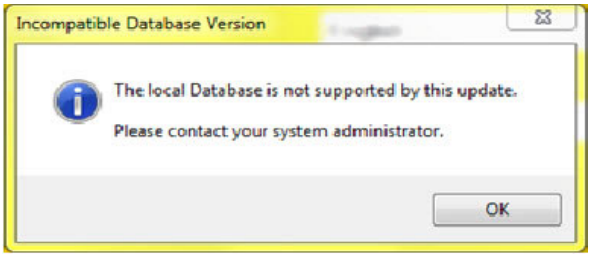
4. Verify login parameters on the right side of the window are correct and click **OK**.

   NOTE: If no databases are available, click **Cancel** to exit out of MCEGold, and contact PdMA Technical Support at 813-621-6463 ext. 251.

If you receive the following message: "The database you selected was created with an older SQL version", the database needs to be upgraded to SQL 2008. **Stop!** Click **No**. Do **NOT** proceed! Contact Technical Support.

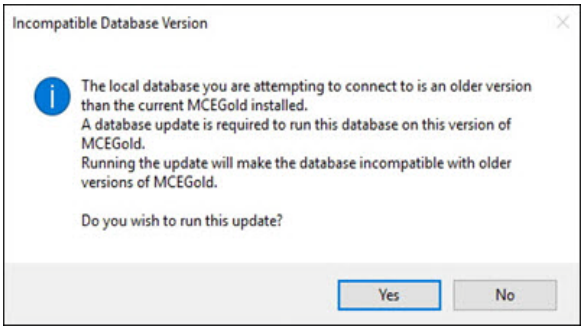


If you receive the following "local database is not supported by this update" message when trying to start MCEGold, the attached database is too old for conversion and needs to be updated to MCEGold 3.0.3 SP2 or later prior to updating to MCEGold 3.1.2 SP2. Contact your system administrator.



If you receive the following *Incompatible Database Version* message when trying to start MCEGold, you are attempting to run MCEGold with a database that is older than MCEGold 3.1.2 SP2. You will be prompted to update the database. If you have properly backed up your existing database, click **Yes** to run the update. If you have not backed up your existing database, click **No**, backup the database, and then perform the Database Setup procedure.

NOTE: Please make sure you allow sufficient time to update your database. Depending on the size of your database, updates may take an hour or longer.



TECHNOTE 1902-S10

ISSUED

August 2019

SUBJECT

Release of MCEGold® 3.1.2 SP2 Stand Alone for Windows 10.

DESCRIPTION

MCEGold 3.1.2 SP2 is an upgrade from MCEGold 3.1.2 SP1.

NOTES

- MCEGold 3.1.2 SP2 is only compatible with Windows 10 and Windows 7 and M-Series testers.

- Upgrading from a version prior to MCEGold 3.1.2 requires a new license key. Contact PdMA (813-621-6463 ext. 251) for a new license key.

- Installation of MCEGold 3.1.2 SP2 on a Windows 10 computer uses a special installation procedure. For a Windows 7 installation refer to TechNote 1902-S7 (Stand Alone) or TechNote 1902-N7 (Network) as applicable.

- MCEGold Word Add-in is only compatible with MS Word 2007 and 2013. MCEGold Word Add-in is NOT compatible with MS Word 2010. Templates created with other versions of MS Word may not be functional and may cause conflicts with the MCEGold software.

- To ensure application accessibility, the default installation location has been set to C:\PdMA Corporation.

- Databases attached to MCEGold 3.1.2 SP2 must be from MCEGold 3.0.3 SP2 or later and once updated with MCEGold 3.1.2 SP2 *will not* be compatible with older versions of MCEGold.

- Please make sure you allow sufficient time to update your database. Depending on the size of your database, updates may take an hour or longer.

- Assets opened with MCEGold 3.1.2 SP2 *will not* be compatible with older versions of MCEGold.

- If during installation you receive a message telling you "SQL Server System CLR Types requires the .Net Framework", contact tech support for assistance.

- If you have any questions, please contact PdMA Technical Support (813-621-6463 ext. 251).

Minimum Requirements

Computer	Dell Latitude E5490 Laptop*
Processor	2+ GHz Intel i5 or equivalent
Resolution	1600 x 900/1920 x 1080 (small font)
Operating System	Microsoft® Windows 10 (32 or 64 bit)
Memory	4.0+ G RAM
Ports/Drives	(1) USB Port in Rear or Side
Hard Disk	20G Available

* Using any other computer manufacturer in conjunction with the PdMA software may result in erratic computer behavior; not limited to but including:

- Power Management Issues
- Lock-up
- Communication Port Malfunction
- Driver Incompatibility
- Display Errors
- SQL Database Incompatibility
- Network Synchronization Issues.

PREPARE WINDOWS 10 FOR MCEGOLD 3.1.2 SP2 INSTALLATION

NOTE: If you have MCEGold 3.1.2 or later follow the instructions in *Upgrading From MCEGold 3.1.2 or Later* on page 5.

If you have any version prior to MCEGold 3.1.2 a full uninstall is required before installing version 3.1.2 SP2. See *Upgrading From a Version Prior to MCEGold 3.1.2.*

Upgrading From a Version Prior to MCEGold 3.1.2

Upgrading from a version prior to MCEGold 3.1.2 requires a new license key. Contact PdMA (813-621-6463 ext. 251) for a new license key.

Backup

Before beginning the MCEGold uninstall, copy the Emaxprb.xml file only (not the folder) and the complete Templates folder to a safe location and make note of the location.

The default location for the files is listed below, however you may have chosen a different location during the original installation.
C:\PdMA Corporation\MCEGold\Emax
C:\PdMA Corporation\MCEGold\Report

Uninstall

Note: If you have MCEGold icons pinned to your Taskbar, it is necessary to unpin them before beginning the uninstall. Right click on the icon and select "Unpin from taskbar".

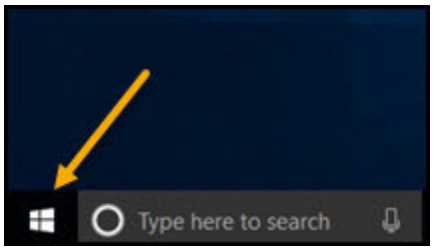
1. Select Start, Settings, Apps, and locate MCEGold.
2. Highlight the MCEGold Version X.X.X.
3. Click **Uninstall** and follow on screen prompts.
4. Click **Finish** when the "Uninstall Complete" message is received.
5. Locate the PdMA MCEMAX Tester (Driver Removal) file. Highlight it and click **Uninstall/ Change** located above the list and follow the on screen prompts.
6. Click **Finish** when the "Uninstall Complete" message is received.
7. Locate the C:\PdMA Corporation folder and delete it. The subfolders will be deleted also. After the installation of MCEGold 3.1.2 SP2 the new folder location will be C:\PdMA Corporation\....
8. Reboot your computer.
9. Go to step one in the *Disable Driver Signature Enforcement* section.

Disable Driver Signature Enforcement

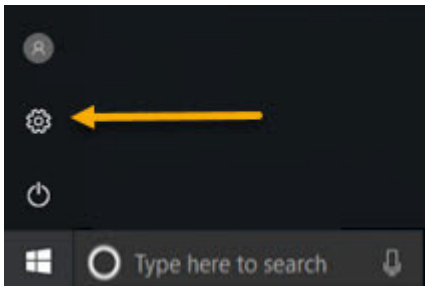
NOTE: To install MCEGold 3.1.2 SP2 on a Windows 10 operating system, the operating system must be in the "Disable driver signature enforcement" mode.

Use the following steps to enter the Disable driver signature enforcement installation mode.

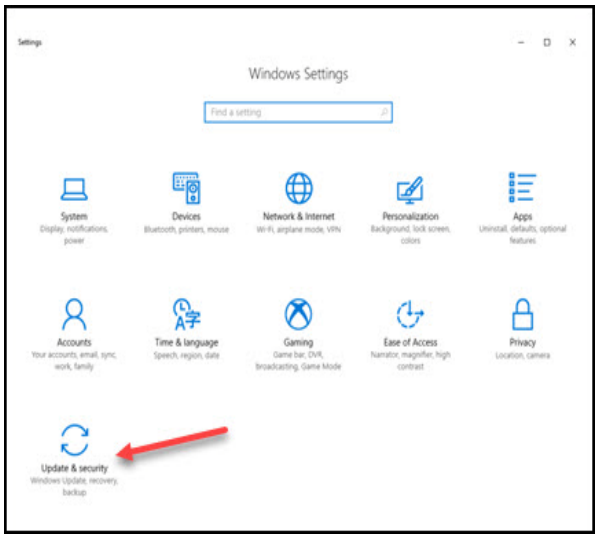
1. From the main Windows 10 screen, click the **Start** button in the lower left corner of the computer screen.



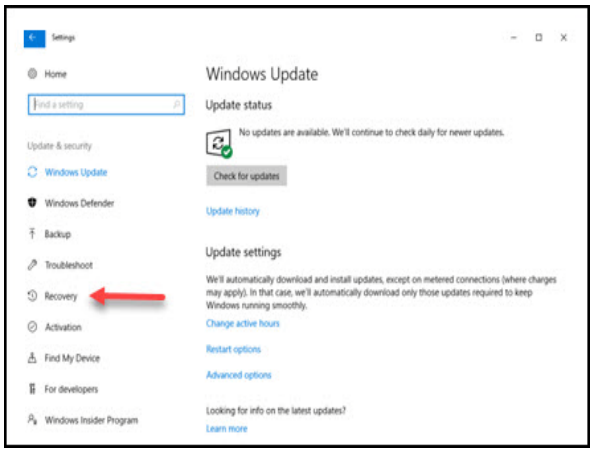
2. Click **Settings**.



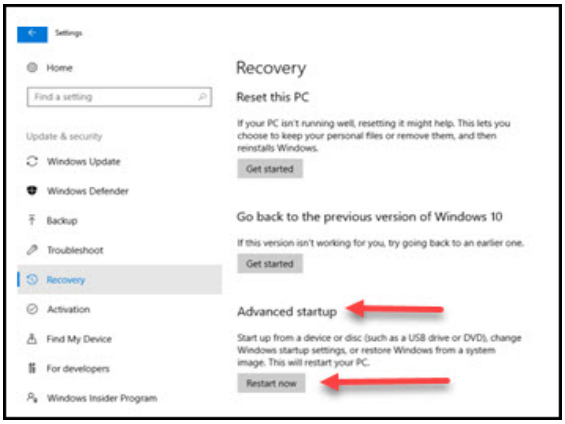
3. From the Windows Settings window, select **Update and Security**.



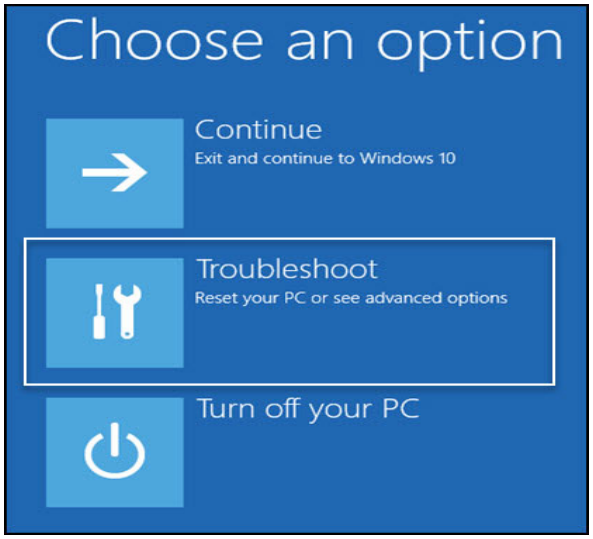
4. From the Windows Update window, select **Recovery**.



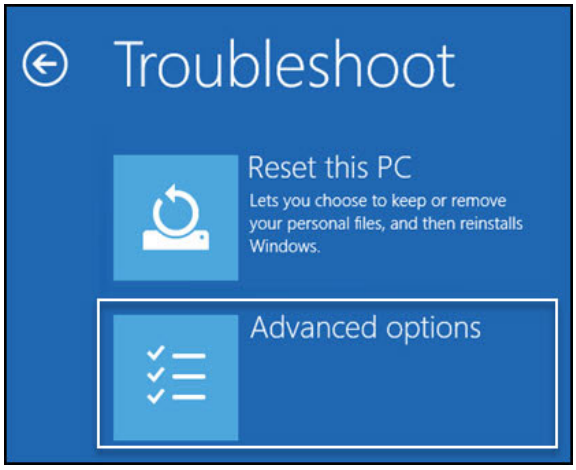
5. From the Recovery window, in the Advanced startup section, click **Restart now**.



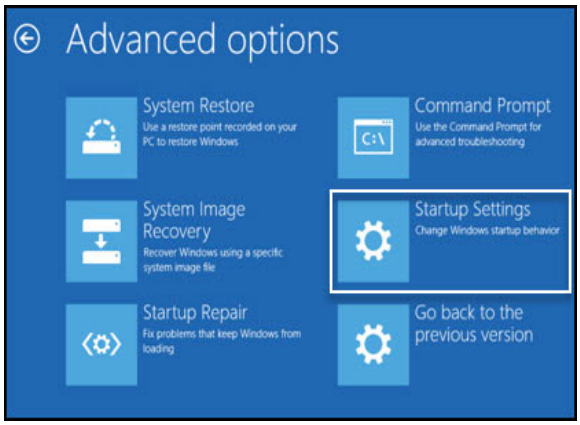
6. From the Choose an option window, select **Troubleshoot**.



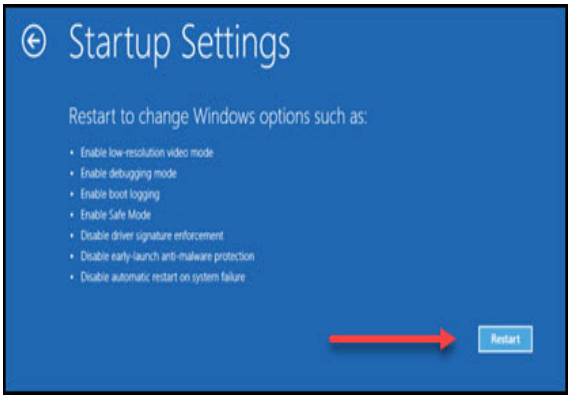
7. From the Troubleshoot window, Select **Advanced options**.



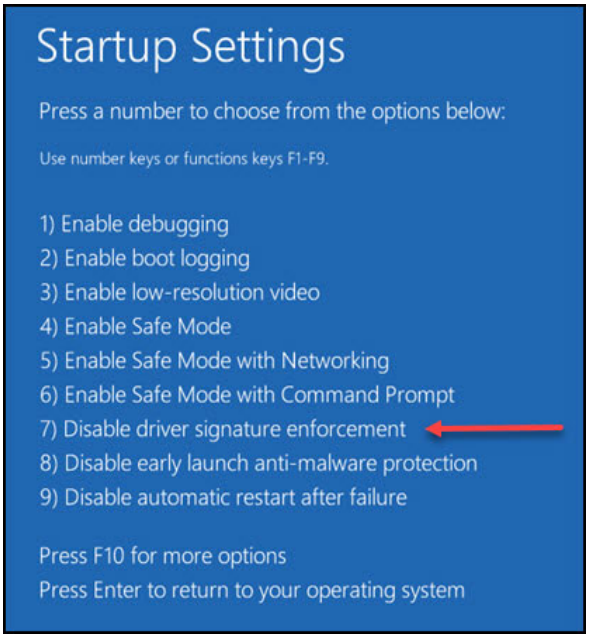
8. From Advanced Options window, Select **Startup Settings**. Note: Some computers have an option to Show More and in those cases Startup Settings will be on the next page



9. From the Startup Settings window, click **Restart**.



10. From the next Startup Settings window, press 7 to select **Disable driver signature enforcement.**

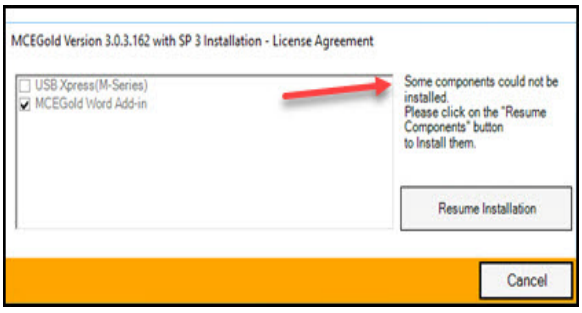


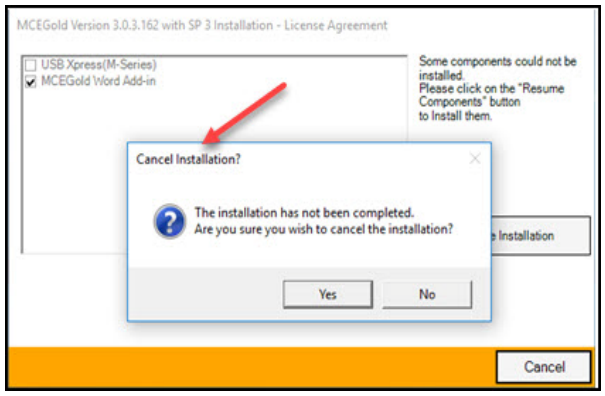
11. The computer displays the start up screen.

12. Go to *MCEGold 3.1.2 SP2 Installation* section.

MCEGOLD 3.1.2 SP2 INSTALLATION

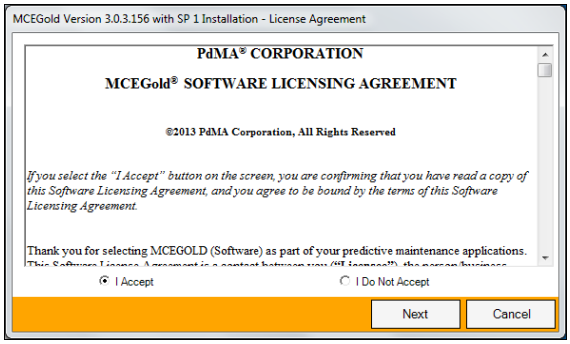
NOTE: During the installation process, if you see either of the following windows or messages: MCEGold – **Some components could not be installed**, or MCEGold – **Cancel Installation?**, then Windows 10 has not been configured to allow unsigned driver installation. See the section *Prepare Windows 10 for MCEGold 3.1.2 SP2 Installation.*





1. Insert the MCEGold 3.1.2 SP2 USB flash drive into the USB port. If the installation does not begin automatically, run setup.exe from the USB flash drive. (Select Run, setup.exe from the AutoPlay window).

2. The License Agreement window opens. Read the PdMA license and select the "I Accept" option button. The **Next** button becomes visible. Click **Next**.
   Note: If you do not accept the terms, the **Next** button is not visible, you can only click **Cancel**, which closes the software without installing it.



3. In the License Key window enter your Company Name and License Key exactly as provided by PdMA. You may copy and paste the license key using the paste button.

4. When the license has been verified a green check appears. The **Next** button appears. Click **Next**.

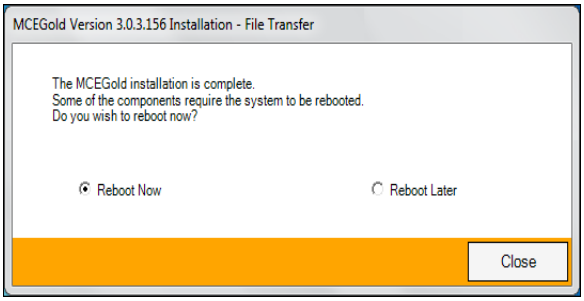
5. In the Installation Path window, accept the default shown in the text box (recommended) for the location to install the MCEGold program folder or use the browse (...) button to select an alternate location, make a note of it for your future use, and click **Next**. Note: It is not suggested to use an alternate location because that can cause conflict and Windows rights problems.

6. When prompted, click **Install Components**. Some components may require additional prompts.

7. When the installation of components is complete the **Next** button appears. Click **Next**.

8. A progress bar shows the progress of copying files to your computer.

9. When the installation is complete you must reboot your system. Select the Reboot Now option and click **Close**.



10. After rebooting, locate and copy the backup Emaxprb.xml file and the Template folder back into their appropriate locations in

    C:\PdMA Corporation\MCEGold\Emax
    C:\PdMA Corporation\MCEGold\Report

11. Answer Yes to "Merge the folder?" inquiry.

12. Remove the MCEGold 3.1.2 SP2 USB flash drive from the computer.

Upgrading From MCEGold 3.1.2 or Later

Backup

In the possibility that you may need these files after the install, it is a good idea before beginning the MCEGold install to copy the Emaxprb.xml file only (not the folder) and the complete Templates folder to a safe location and make note of the location.

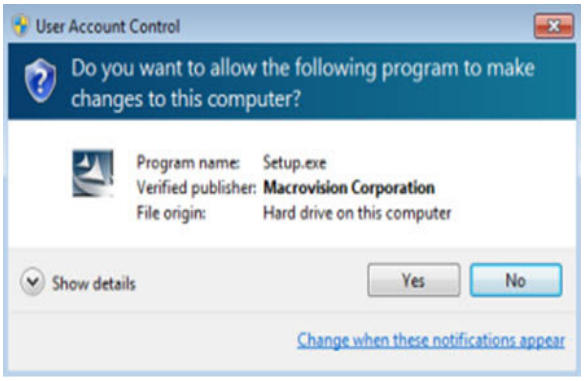
The default location for the files is listed below, however you may have chosen a different location during the original installation.
C:\PdMA Corporation\MCEGold\Emax
C:\PdMA Corporation\MCEGold\Report

MCEGold 3.1.2 SP2 Installation

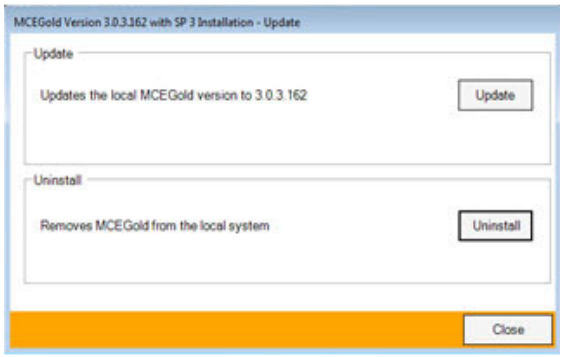
NOTE: Some on screen prompts and messages during the installation process are controlled by the Windows operating system and are out of PdMA's control. Every effort has been made to include their possible appearance and the action you should take. However, if you are unsure please contact our technical support department for help.

1. Insert the MCEGold 3.1.2 SP2 USB flash drive into the USB port. If the installation does not begin automatically, run setup.exe from the USB flash drive. (Select Run, setup.exe from the AutoPlay window).

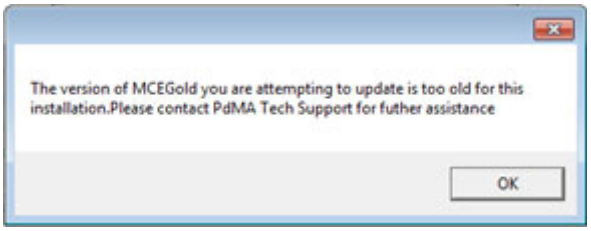
2. If you see the User Account Control screen, click **Yes**.



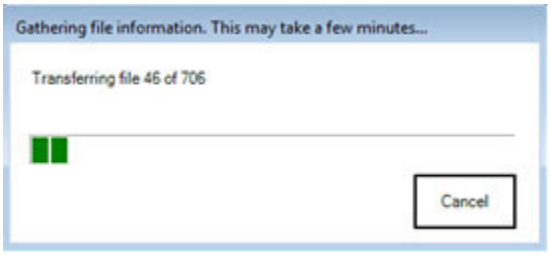
3. If there is an existing MCEGold version installed on your computer, you will see the MCEGold Update screen. click **Update**.



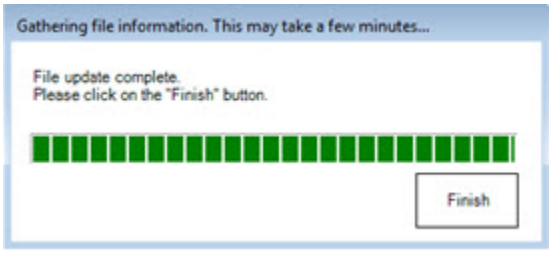
NOTE: If you have a version prior to MCEGold 3.1.2 you will receive the error message shown below. Do **NOT** proceed. Contact technical support.



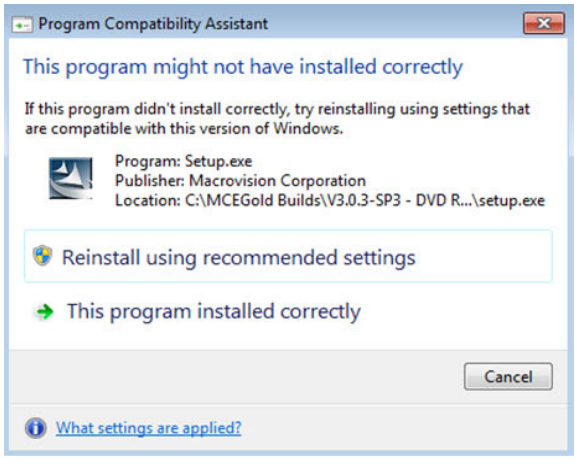
4. The status update window displays.



5. When the update is complete, click **Finish**.



6. If the Program Compatibility Assistant screen displays, select *This program installed correctly.*



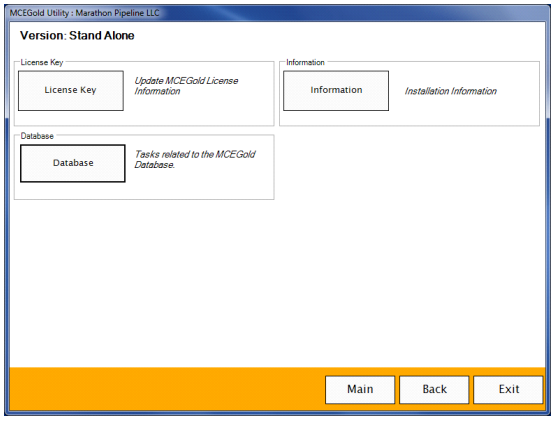
7. Go to the *Database Setup* section.

DATABASE SETUP

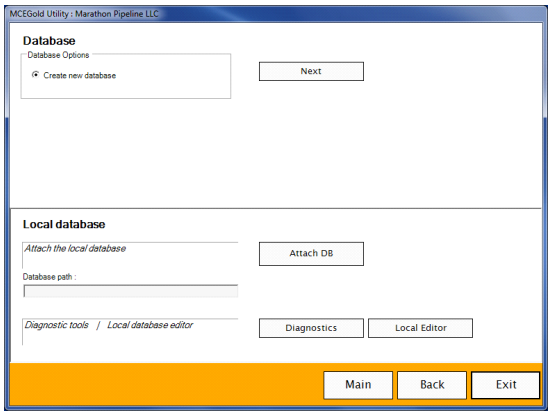
Note: This procedure is for connecting to an existing database that is to be upgraded to MCEGold 3.1.2 SP2. To connect to an existing database, please follow the instructions below.

1. Ensure you have properly backed up the database you are converting.

2. Open the Utility program and click the **Database** button.

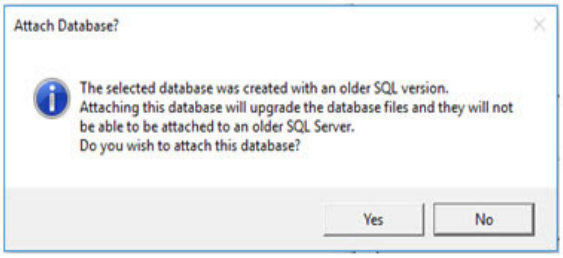


3. Click **Attach DB** as shown in the screen below.

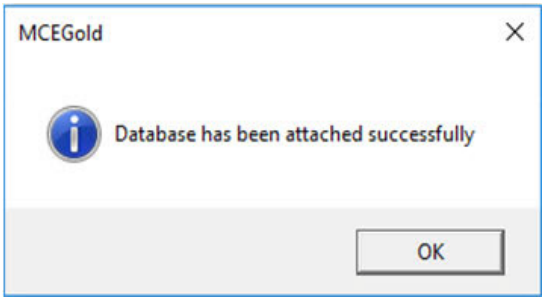


4. Navigate to the database location on your computer and select the desired database.

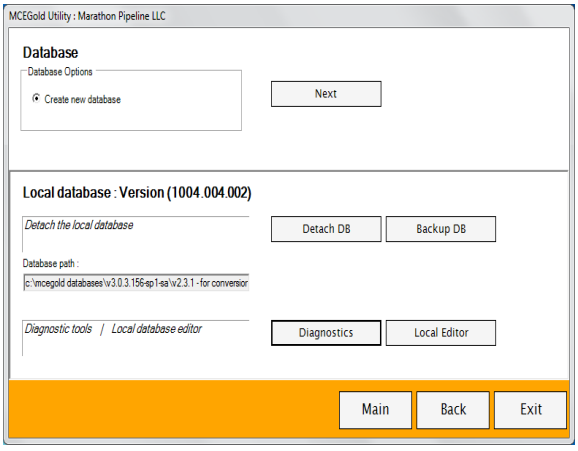
If you receive the following message: "The database you selected was created with an older SQL version", the database needs to be upgraded to SQL 2008. **Stop!** Click **No.** Do **NOT** proceed! Contact Technical Support.



5. If the database attached properly you will see the following window. Click **OK**.



6. The MCEGold Utility Database Window opens. Click **Exit**.



START MCEGOLD

1. Start MCEGold.

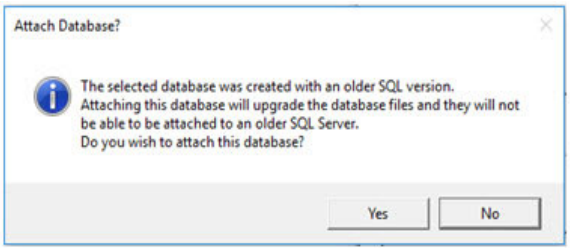
2. If the database window is empty, select a database using the Search button (...) located on the right side of the Site textbox. This opens your computer

navigator window which allows you to search for a database. When the database has been selected, click **Open**.

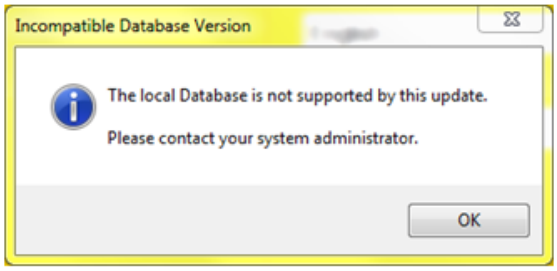
3. Verify login parameters on the right side of the window are correct and click **OK**.

   NOTE: If no databases are available, click **Cancel** to exit out of MCEGold, and contact PdMA Technical Support at 813-621-6463 ext. 251.

   If you receive the following message: "The database you selected was created with an older SQL version", the database needs to be upgraded to SQL 2008. **Stop!** Click **No**. Do **NOT** proceed! Contact Technical Support.

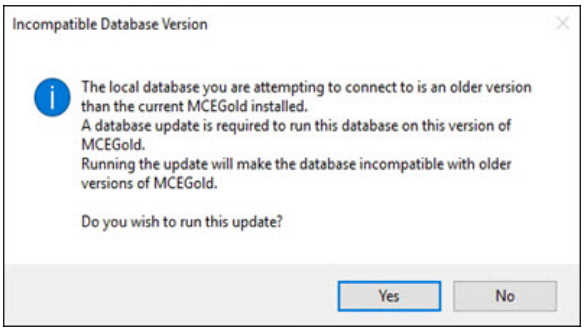


   If you receive the following "local database is not supported by this update" message, the attached database is too old for conversion and needs to be updated to MCEGold 3.0.3 SP2 or later prior to updating to MCEGold 3.1.2 SP2. Contact your system administrator.



   If you receive the following "Incompatible Database Version" message when trying to start MCEGold, you are attempting to run MCEGold with a database that is older than MCEGold 3.1.2. You will be prompted to update the database. If you have properly backed up your existing database, click **Yes** to run the update. If you have not backed up your existing database, click **No**, backup the database, and then perform the Database Setup procedure.

   NOTE: Please make sure you allow sufficient time to update your database. Depending on the size of your database, updates may take an hour or longer.



TECHNOTE 1903-N10

ISSUED

November 2019

SUBJECT

Release of MCEGold® 3.1.2 SP3 Network Version for Windows 10.

DESCRIPTION

MCEGold 3.1.2 SP3 Network Version is an upgrade from MCEGold 3.1.2 SP2.

PDMA CLOUD SERVICES

The network edition of MCEGold 3.1.2 SP3 supports access to PdMA Cloud Services. Please contact PdMA Technical Support (813-6216-6463 ext. 251) to discuss this option.

NOTES

- MCEGold 3.1.2 SP3 is *only* compatible with Windows 10 and M-Series testers.

- Upgrading from a version prior to MCEGold 3.1.2 requires a new license key. Contact PdMA (813-621-6463 ext. 251) for a new license key.

- MCEGold Word Add-in is only compatible with MS Word 2007 and 2013. **MCEGold Word Add-in is NOT compatible with MS Word 2010.** Templates created with other versions of MS Word may not be functional and may cause conflicts with the MCEGold software.

- To ensure application accessibility, the default installation location has been set to C:\PdMA Corporation.

- Databases attached to MCEGold 3.1.2 SP3 must be from MCEGold 3.0.3 SP2 or later and once updated with 3.1.2 SP3 *will not* be compatible with older versions of MCEGold.

- Please make sure you allow sufficient time to update your database. Depending on the size of your database, updates may take an hour or longer.

- Assets exported with MCEGold 3.1.2 SP3 *will not* be compatible with older versions of MCEGold.

- If during installation you receive a message telling you "SQL Server System CLR Types requires the .Net Framework", contact tech support for assistance.

- If you have any questions, please contact PdMA Technical Support (813-621-6463 ext. 251).

Minimum Requirements

Computer	Dell Latitude 5490 Laptop*
Processor	2+ GHz Intel i5 or equivalent
Resolution	1600 x 900/1920 x 1080 (small font)
Operating System	Microsoft® Windows 10 (64 bit)
Memory	4.0+ G RAM
Ports/Drives	(1) USB Port in Rear or Side
Hard Disk	30G Available

* Using any other computer manufacturer in conjunction with the PdMA software may result in erratic computer behavior; not limited to but including:

- Power Management Issues
- Lock-up
- Communication Port Malfunction
- Driver Incompatibility
- Display Errors
- SQL Database Incompatibility
- Network Synchronization Issues.

PREPARE WINDOWS 10 FOR MCEGOLD 3.1.2 SP3 INSTALLATION

NOTE: If you have MCEGold 3.1.2 or later follow the instructions in *Upgrading From MCEGold 3.1.2 or Later* on page 8.

If you have any version prior to MCEGold 3.1.2 a full uninstall is required before installing version 3.1.2 SP3.

See *Upgrading From a Version Prior to MCEGold 3.1.2.*

Upgrading From a Version Prior to MCEGold 3.1.2

Upgrading from a version prior to MCEGold 3.1.2 requires a new license key. Contact PdMA (813-621-6463 ext. 251) for a new license key.

Backup

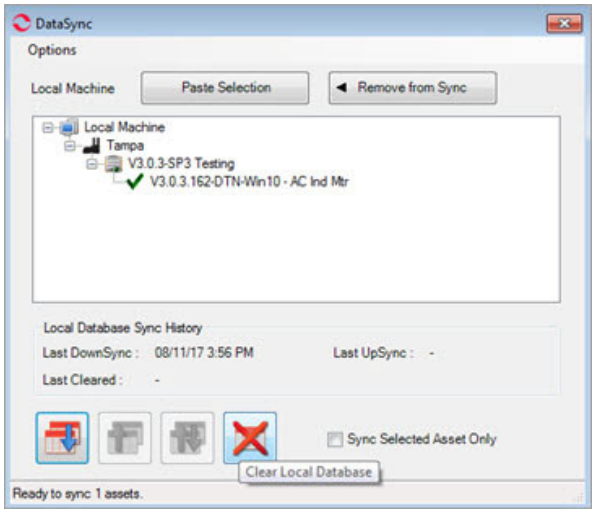
Before beginning the MCEGold uninstall, copy the Emaxprb.xml file only (not the folder) and the complete Templates folder to a safe location and make note of the location.

The default location for the files is listed below, however you may have chosen a different location during the original installation.
C:\PdMA Corporation\MCEGold\Emax
C:\PdMA Corporation\MCEGold\Report

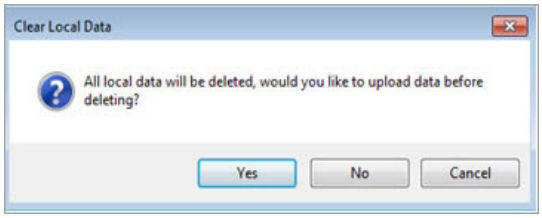
Clear Local Database

NOTE: Before proceeding ensure all local database synchronization has been performed. Failure to synchronize before clearing the local database will result in loss of data. This procedure must be completed before the server database is updated.

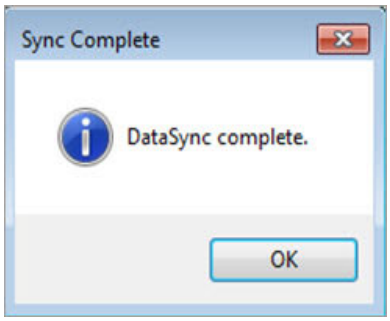
1. From the DataSync window, click **Clear Local Database**.



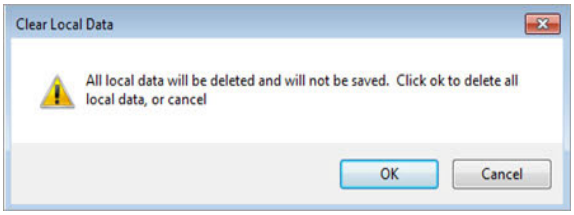
2. From the Clear Local Data window, click **Yes** to upload (UpSync) data, click **No** if you have already synchronized the data.



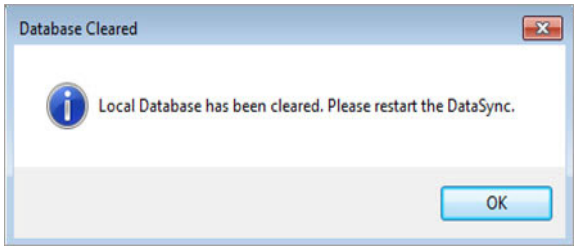
3. From the Sync Complete window, click **OK**.



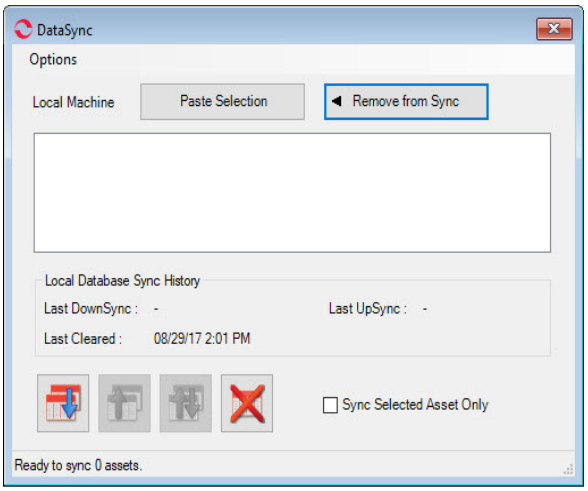
4. From the next Clear Local Data window, click **OK** to delete all local data.



5. From the Database Cleared window, click **OK.**



6. Reopen the DataSync window to ensure the database has been cleared, as shown in figure below. If it did not clear contact Technical Support.



Update Server Database for Network Users

NOTE: Ensure the user account being used to update the server has "sysadmin" permissions.

Please make sure you allow sufficient time to update your database. Depending on the size of your database, updates may take an hour or longer.

There is a separate application on the Installation USB flash drive to update the network database on the server. ***The database must be updated on the server first, then the desktops and field testers.***

If the update is installed on a network field tester before the server database is updated, a warning message appears informing you the database is an old version and to contact your system administrator.

1. Backup the MCEGold server database.

2. Insert the MCEGold 3.1.2 SP3 USB flash drive into the USB port. If the drive starts automatically, click **Exit** and proceed to the next step.

3. Locate the MCEGold Database Server Update folder on the MCEGold 3.1.2 SP3 USB flash drive.

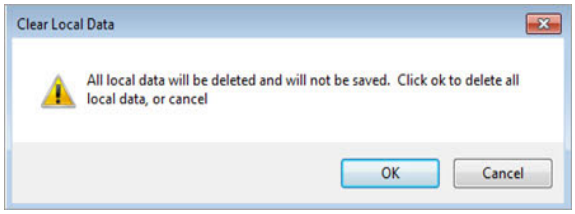
4. Click on the MCEGold Database Server Update.exe file.

5. The Server Information window opens. Fill in the Server, Database, Login, and Password information. The Login and Password will depend on your authentication (Windows/SQL).

6. Click **Run Update**. The progress status will display on the window.

7. When the update complete message displays, close the window.

8. From the next Clear Local Data window, click **OK** to delete all local data.



Uninstall

Note: If you have MCEGold icons pinned to your Taskbar, it is necessary to unpin them before beginning the uninstall. Right click on the icon and select "Unpin from taskbar".

1. Select Start, Settings, Apps and locate MCEGold.

2. Highlight the MCEGold Version X.X.X.

3. Click **Uninstall** and follow on-screen prompts.

4. Click **Finish** when the "Uninstall Complete" message is received.

5. Locate the PdMA MCEMAX Tester (Driver Removal) file. Highlight it and click **Uninstall/ Change** located above the list and follow the on-screen prompts.

6. Click **Finish** when the "Uninstall Complete" message is received.

7. Locate the C:\PdMACorporation folder and delete it. The subfolders will be deleted also. After the installation of MCEGold 3.1.2 SP3 the new folder location will be C:\PdMA Corporation\....

8. Reboot your computer.

9. Go to MCEGold 3.1.2 SP3 Installation.

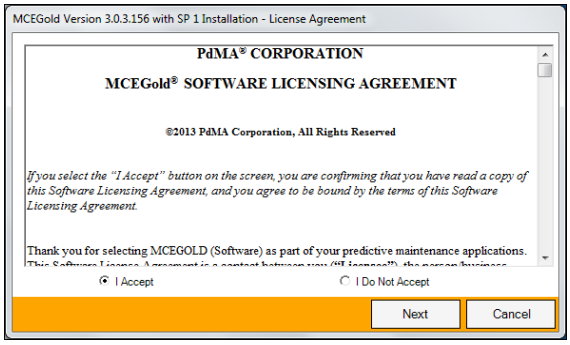
MCEGold 3.1.2 SP3 Installation

1. If installing on a tester, disconnect the USB cable from the tester computer.

2. Insert the MCEGold 3.1.2 SP3 USB flash drive into the USB port. If the installation does not begin automatically, run setup.exe from the USB flash drive. (Select Run, setup.exe from the AutoPlay window).

3. Right click on setup.exe and select Run as administrator.

4. The License Agreement window opens. Read the PdMA license and select the "I Accept" option button. The **Next** button becomes visible. Click **Next**.
   Note: If you do not accept the terms, the **Next** button is not visible, you can only click **Cancel**, which closes the software without installing it.



5. In the License Key window enter your Company Name and License Key exactly as provided by PdMA. You may copy and paste the license key using the paste button.

6. When the license has been verified a green check appears. The **Next** button appears. Click **Next**.

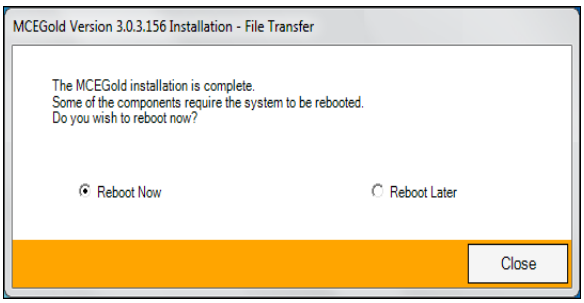
7. In the Installation Path window, accept the default shown in the text box (recommended) for the location to install the MCEGold program folder or use the browse (...) button to select an alternate location, make a note of it for your future use, and click **Next**. Note: It is not suggested to use an alternate location because that can cause conflict and Windows rights problems.

8. When prompted, click **Install Components**. Some components may require additional prompts.

9. When the installation of components is complete the **Next** button appears. Click **Next**.

10. A progress bar shows the progress of copying files to your computer.

11. When the installation is complete you must reboot your system. Select the Reboot Now option and click **Close**.



12. After rebooting, locate and copy the backup Emaxprb.xml file and the Template folder back into their appropriate locations in

    C:\PdMA Corporation\MCEGold\Emax
    C:\PdMA Corporation\MCEGold\Report

13. Answer Yes to "Merge the folder?" inquiry.

14. Remove the MCEGold 3.1.2 SP3 USB flash drive from the computer.

15. If installing on a tester, re-connect the USB cable to the tester computer.

FIELD TESTER DATABASE SETUP

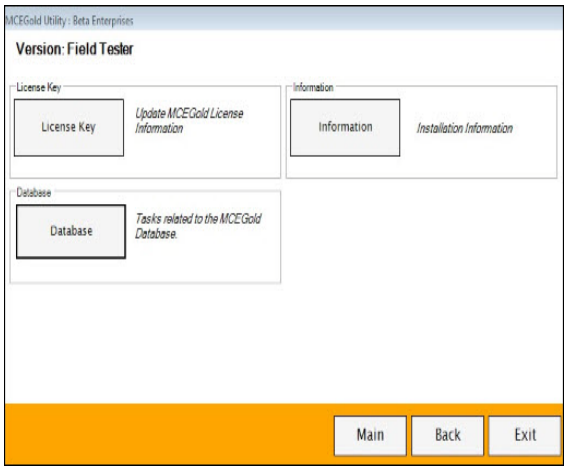
NOTE: For the following, please use the information provided by your IT department.

Field testers utilize a local database for storage of assets. These assets can then be synchronized with the Network database. In order to perform field testing in local tester mode, assets must be down-synced to the local database. In order to perform testing using MCEGold Lite, assets must be in a WatchList and down-synced to the local database.

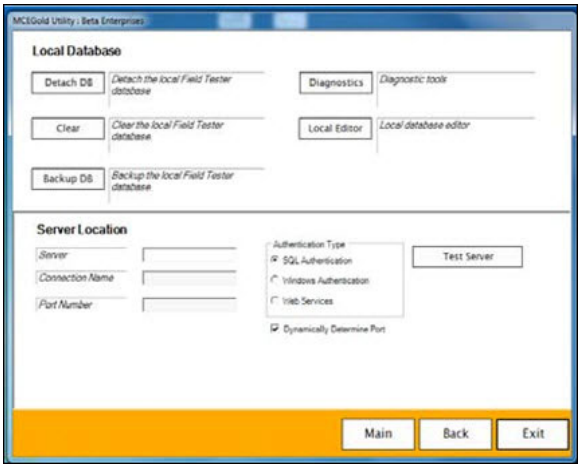
To connect to the existing network database, please follow the instructions below.

1. Open the MCEGold Utility program.

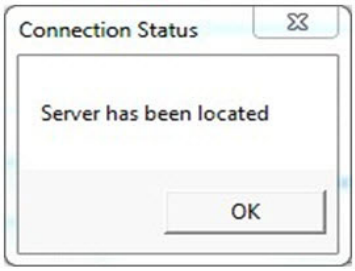
2. Click **Database**.



3. Enter the server information provided by your IT department.

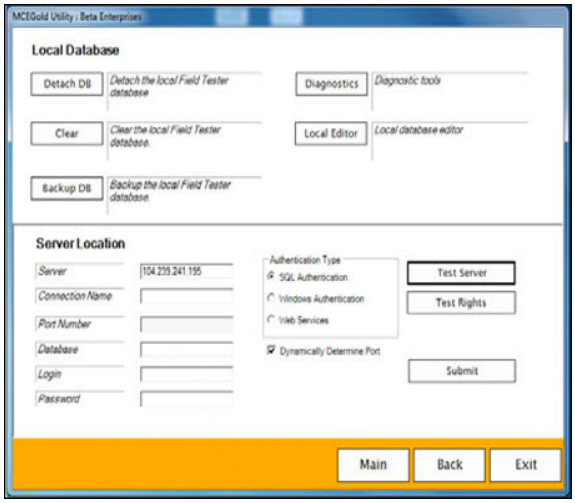


4. Once the server information has been entered, click **Test Server**. You should receive a message indicating "Server has been located".

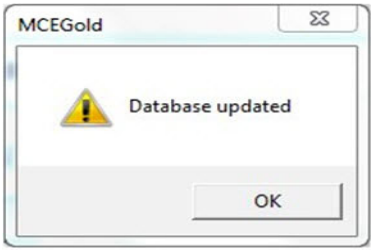


5. Click **OK** on the Connection Status window.

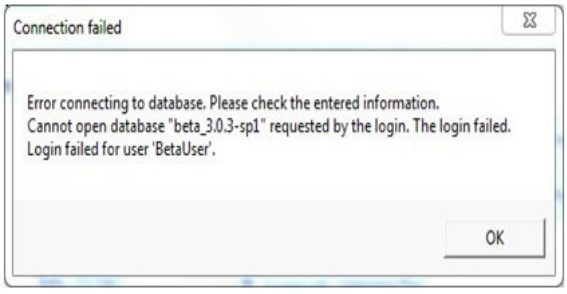
6. Enter the following connection information provided by either your Administrator or IT Department: Connection Name, Database Information, Login Information, and Password.



7. Click **Submit**. You will receive a message indicating "Database updated". Click OK.



8. If you receive an error as shown below, verify the information you entered is correct. If it is correct, click OK and contact your Administrator.



9. If you do not receive an error message, click **Exit** on the Utility window.

10. Start MCEGold and enter the name and password for the tester. Select the Field Tester Network mode.

11. It is necessary to clear the local database a second time. Instructions are found on page 2 of this document titled Clear Local Database. Disregard the instructions in the "Note".

12. Once you have opened MCEGold, cleared the local database, and have verified MCEGold is correctly communicating with the database. You are now

Upgrading From MCEGold 3.1.2 or Later

Backup

In the possibility that you may need these files after the install, it is a good idea before beginning the MCEGold install to copy the Emaxprb.xml file only (not the folder) and the complete Templates folder to a safe location and make note of the location.

The default location for the files is listed below, however you may have chosen a different location during the original installation.
C:\PdMA Corporation\MCEGold\Emax
C:\PdMA Corporation\MCEGold\Report

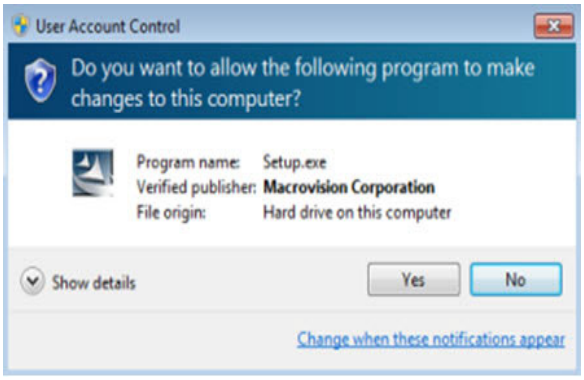
MCEGold 3.1.2 SP3 Installation

NOTE: Some on screen prompts and messages during the installation process are controlled by the Windows operating system and are out of PdMA's control. Every effort has been made to include their possible appearance and the action you should take. However, if you are unsure please contact our technical support department for help.

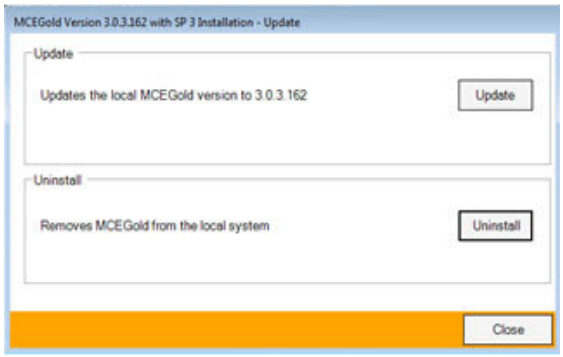
1. If installing on a tester, disconnect the USB cable from the tester computer.

2. Insert the MCEGold 3.1.2 SP3 USB flash drive into the USB port. If the installation does not begin automatically, run setup.exe from the USB flash drive. (Select Run, setup.exe from the AutoPlay window).

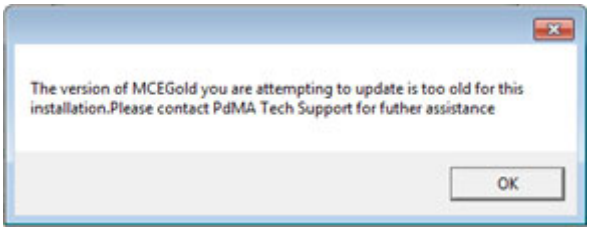
3. If you see the User Account Control screen, click **Yes**.



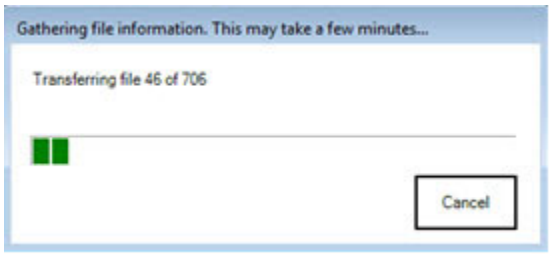
4. If there is an existing MCEGold version installed on your computer, you will see the MCEGold Update screen. click **Update**.



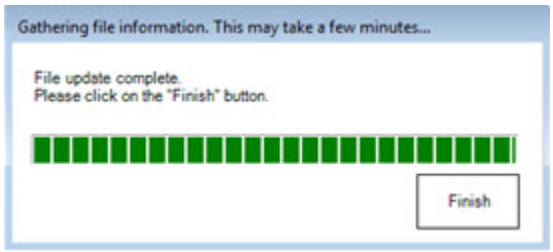
NOTE: If you have a version prior to MCEGold 3.1.2 you will receive the error message shown below. Do **NOT** proceed. Contact technical support.



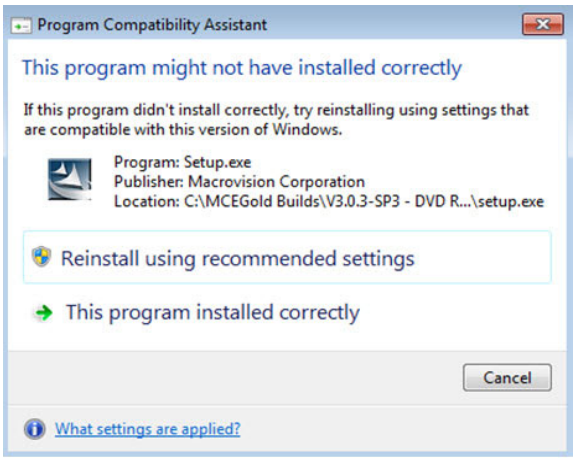
5. The status update window displays.



6. When the update is complete, click **Finish**.



7. If the Program Compatibility Assistant screen displays, select *This program installed correctly.*



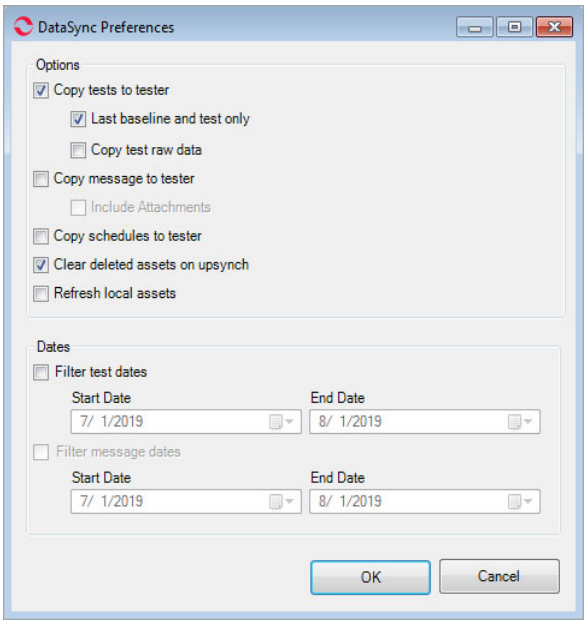
8. If installing on a tester, re-connect the USB cable to the tester computer.

9. Go to the *Field Tester Database Setup* section on page 4.

DataSync Preferences Window

MCEGold 3.1.2 SP3 includes changes to the DataSync Preferences window shown below. “Copy test raw data” has been added to the “Copy test to tester” section.

A function is activated/inactivated by clicking in the box preceding the function, which causes a check mark to appear (active)/disappear (inactive).



Options

Copy tests to tester: If this option is selected, all history chart data back to the last baseline or dates selected in the Filter test dates section and all raw data from the last baseline and last test only will be synchronized to the tester.

Last baseline and test only: Raw data from the last baseline and last test only will be synchronized to the field tester.

Copy test raw data: All raw data back to the last baseline or dates selected in the Filter Test Dates section will be synchronized to the tester. This is potentially a very large amount of data and could result in exceeding the monthly usage limit for cloud services.

Copy message to tester: All messages recorded in the message center back to the baseline test or dates selected in the Filter Test Dates section will be synchronized to the tester. No attachments will be transferred.

Include Attachments: All attachments embedded in the Message Center back to the baseline test or dates selected in the Filter Test Dates section will be synchronized to the tester. This is potentially a

very large amount of data and could result in exceeding the monthly usage limit for cloud services.

Copy schedules to tester: All schedules from the Scheduler will be synchronized to the tester.

Clear deleted assets on upsync: Local assets that are identified as deleted from the server during the sync process will be deleted from the local database and sync window.

Refresh local assets: Nameplate data for each asset on the Field Tester will be replaced with the information from the server.

Dates

Filter test dates: For the motors selected in the Sync Window, tests acquired on the Start Date and End Date as well as all dates in between the Start Date and End Date will be selected for synchronization preferences.

Filter message dates: For the motors selected in the DataSync Window, messages acquired on the Start Date and End Date as well as all dates in between the Start Date and End Date will be selected for synchronization preferences.

TECHNOTE 1903-S10

ISSUED

November 2019

SUBJECT

Release of MCEGold® 3.1.2 SP3 Stand Alone for Windows 10.

DESCRIPTION

MCEGold 3.1.2 SP3 is an upgrade from MCEGold 3.1.2 SP2.

NOTES

- MCEGold 3.1.2 SP3 is *only* compatible with Windows 10 and M-Series testers.

- Upgrading from a version prior to MCEGold 3.1.2 requires a new license key. Contact PdMA (813-621-6463 ext. 251) for a new license key.

- MCEGold Word Add-in is only compatible with MS Word 2007 and 2013. MCEGold Word Add-in is NOT compatible with MS Word 2010.Templates created with other versions of MS Word may not be functional and may cause conflicts with the MCEGold software.

- To ensure application accessibility, the default installation location has been set to C:\PdMA Corporation.

- Databases attached to MCEGold 3.1.2 SP3 must be from MCEGold 3.0.3 SP2 or later and once updated with MCEGold 3.1.2 SP3 *will not* be compatible with older versions of MCEGold.

- Please make sure you allow sufficient time to update your database. Depending on the size of your database, updates may take an hour or longer.

- Assets exported with MCEGold 3.1.2 SP3 *will not* be compatible with older versions of MCEGold.

- If during installation you receive a message telling you "SQL Server System CLR Types requires the .Net Framework", contact tech support for assistance.

- If you have any questions, please contact PdMA Technical Support (813-621-6463 ext. 251).

Minimum Requirements

Computer	Dell Latitude 5490 Laptop*
Processor	2+ GHz Intel i5 or equivalent
Resolution	1600 x 900/1920 x 1080 (small font)
Operating System	Microsoft® Windows 10 (64 bit)
Memory	4.0+ G RAM
Ports/Drives	(1) USB Port in Rear or Side
Hard Disk	30G Available

* Using any other computer manufacturer in conjunction with the PdMA software may result in erratic computer behavior; not limited to but including:

- Power Management Issues
- Lock-up
- Communication Port Malfunction
- Driver Incompatibility
- Display Errors
- SQL Database Incompatibility
- Network Synchronization Issues.

PREPARE WINDOWS 10 FOR MCEGOLD 3.1.2 SP3 INSTALLATION

NOTE: If you have MCEGold 3.1.2 or later follow the instructions in *Upgrading From MCEGold 3.1.2 or Later* on page 5.

If you have any version prior to MCEGold 3.1.2 a full uninstall is required before installing version 3.1.2 SP3. See *Upgrading From a Version Prior to MCEGold 3.1.2.*

Upgrading From a Version Prior to MCEGold 3.1.2

Upgrading from a version prior to MCEGold 3.1.2 requires a new license key. Contact PdMA (813-621-6463 ext. 251) for a new license key.

Backup

Before beginning the MCEGold uninstall, copy the Emaxprb.xml file only (not the folder) and the complete Templates folder to a safe location and make note of the location.

The default location for the files is listed below, however you may have chosen a different location during the original installation.
C:\PdMA Corporation\MCEGold\Emax
C:\PdMA Corporation\MCEGold\Report

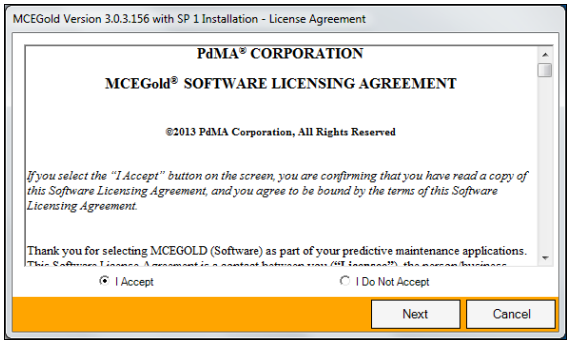
Uninstall

Note: If you have MCEGold icons pinned to your Taskbar, it is necessary to unpin them before beginning the uninstall. Right click on the icon and select "Unpin from taskbar".

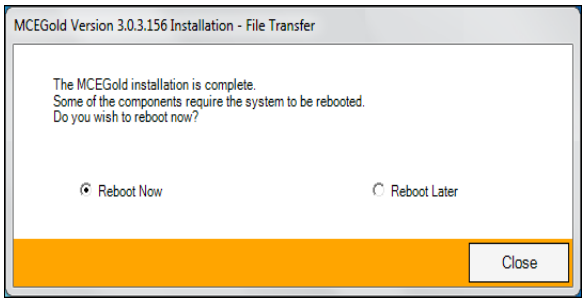
1. Select Start, Settings, Apps, and locate MCEGold.
2. Highlight the MCEGold Version X.X.X.
3. Click **Uninstall** and follow on screen prompts.
4. Click **Finish** when the "Uninstall Complete" message is received.
5. Locate the PdMA MCEMAX Tester (Driver Removal) file. Highlight it and click **Uninstall/ Change** located above the list and follow the on screen prompts.
6. Click **Finish** when the "Uninstall Complete" message is received.
7. Locate the C:\PdMA Corporation folder and delete it. The subfolders will be deleted also. After the installation of MCEGold 3.1.2 SP3 the new folder location will be C:\PdMA Corporation\....
8. Reboot your computer.
9. Go to MCEGold 3.1.2 SP3 Installation.

MCEGOLD 3.1.2 SP3 INSTALLATION

1. If installing on a tester, disconnect the USB cable from the tester computer.
2. Insert the MCEGold 3.1.2 SP3 USB flash drive into the USB port. If the installation does not begin automatically, run setup.exe from the USB flash drive. (Select Run, setup.exe from the AutoPlay window).
3. The License Agreement window opens. Read the PdMA license and select the "I Accept" option button. The **Next** button becomes visible. Click **Next**.
   Note: If you do not accept the terms, the **Next** button is not visible, you can only click **Cancel**, which closes the software without installing it.



4. In the License Key window enter your Company Name and License Key exactly as provided by PdMA. You may copy and paste the license key using the paste button.
5. When the license has been verified a green check appears. The **Next** button appears. Click **Next**.
6. In the Installation Path window, accept the default shown in the text box (recommended) for the location to install the MCEGold program folder or use the browse (...) button to select an alternate location, make a note of it for your future use, and click **Next**. Note: It is not suggested to use an alternate location because that can cause conflict and Windows rights problems.
7. When prompted, click **Install Components**. Some components may require additional prompts.
8. When the installation of components is complete the **Next** button appears. Click **Next**.
9. A progress bar shows the progress of copying files to your computer.
10. When the installation is complete you must reboot your system. Select the Reboot Now option and click **Close**.



11. After rebooting, locate and copy the backup Emaxprb.xml file and the Template folder back into their appropriate locations in

    C:\PdMA Corporation\MCEGold\Emax
    C:\PdMA Corporation\MCEGold\Report

12. Answer Yes to "Merge the folder?" inquiry.

13. Remove the MCEGold 3.1.2 SP3 USB flash drive from the computer.

14. If installing on a tester, re-connect the USB cable to the tester computer.

Upgrading From MCEGold 3.1.2 or Later

Backup

In the possibility that you may need these files after the install, it is a good idea before beginning the MCEGold install to copy the Emaxprb.xml file only (not the folder) and the complete Templates folder to a safe location and make note of the location.

The default location for the files is listed below, however you may have chosen a different location during the original installation.
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C:\PdMA Corporation\MCEGold\Report

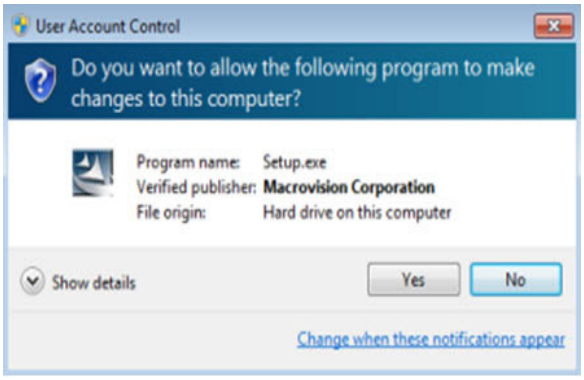
MCEGold 3.1.2 SP3 Installation

NOTE: Some on screen prompts and messages during the installation process are controlled by the Windows operating system and are out of PdMA's control. Every effort has been made to include their possible appearance and the action you should take. However, if you are unsure please contact our technical support department for help.

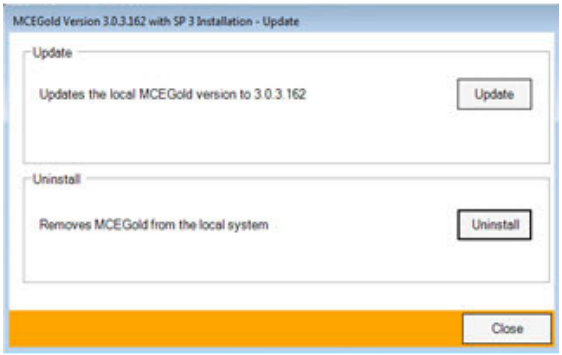
1. If installing on a tester, disconnect the USB cable from the tester computer.

2. Insert the MCEGold 3.1.2 SP3 USB flash drive into the USB port. If the installation does not begin automatically, run setup.exe from the USB flash drive. (Select Run, setup.exe from the AutoPlay window).

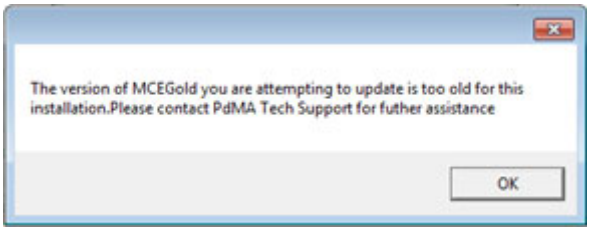
3. If you see the User Account Control screen, click **Yes**.



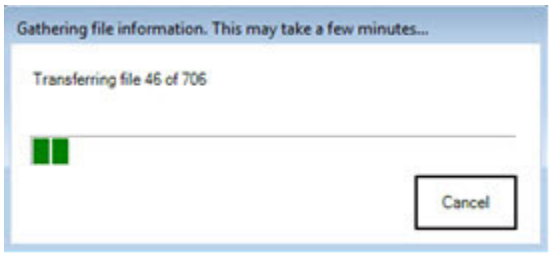
4. If there is an existing MCEGold version installed on your computer, you will see the MCEGold Update screen. click **Update**.



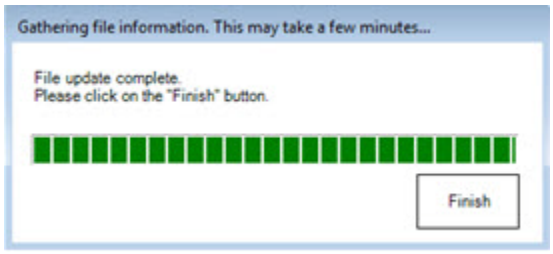
NOTE: If you have a version prior to MCEGold 3.1.2 you will receive the error message shown below. Do **NOT** proceed. Contact technical support.



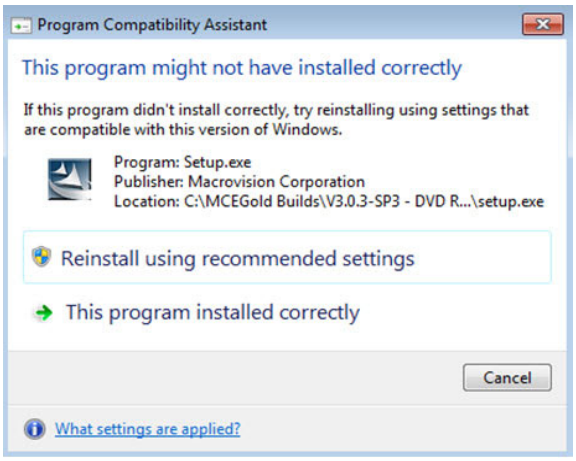
5. The status update window displays.



6. When the update is complete, click **Finish**.



7. If the Program Compatibility Assistant screen displays, select *This program installed correctly.*



8. If installing on a tester, re-connect the USB cable to the tester computer.

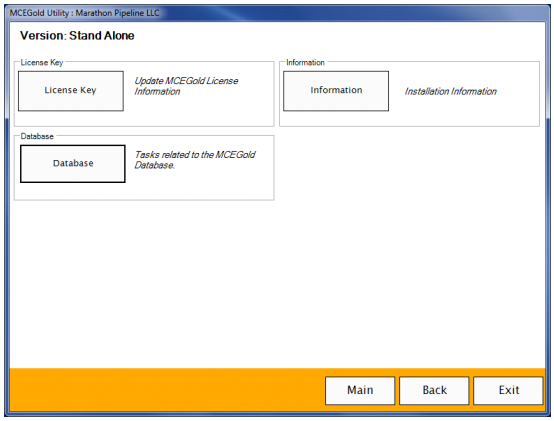
9. Go to the *Database Setup* section.

DATABASE SETUP

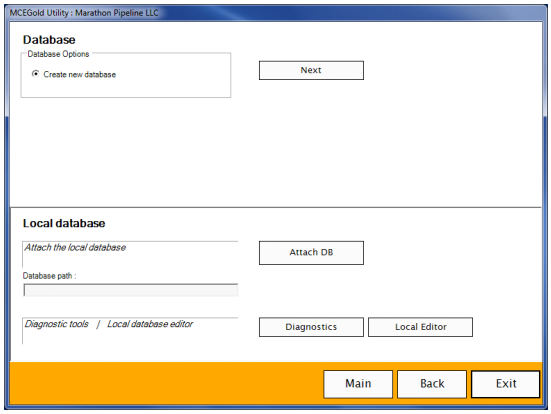
Note: This procedure is for connecting to an existing database that is to be upgraded to MCEGold 3.1.2 SP3. To connect to an existing database, please follow the instructions below.

1. Ensure you have properly backed up the database you are converting.

2. Open the Utility program and click the **Database** button.

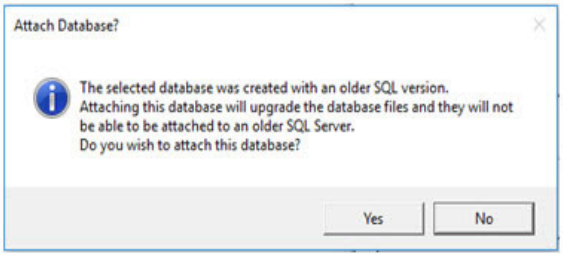


3. Click **Attach DB** as shown in the screen below.

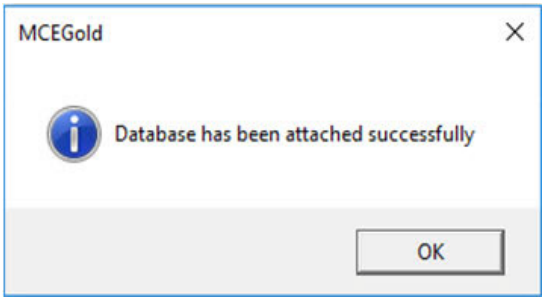


4. Navigate to the database location on your computer and select the desired database.

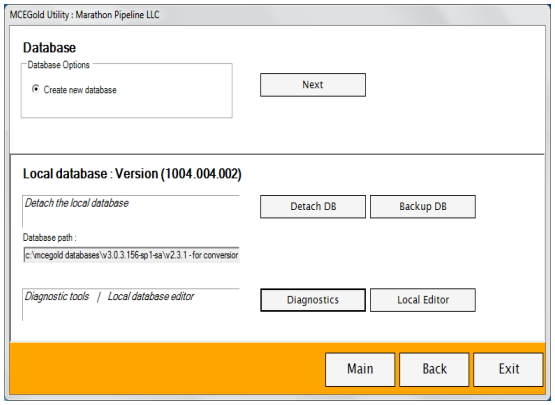
   If you receive the following message: "The database you selected was created with an older SQL version", the database needs to be upgraded to SQL 2008. **Stop!** Click **No.** Do **NOT** proceed! Contact Technical Support.



5. If the database attached properly you will see the following window. Click **OK**.



6. The MCEGold Utility Database Window opens. Click **Exit**.



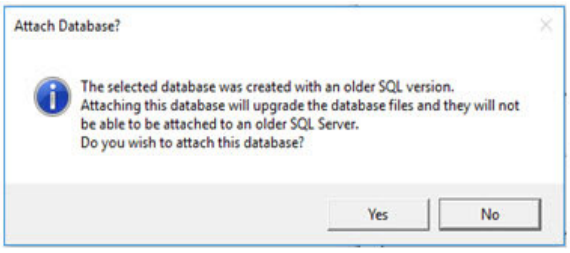
START MCEGOLD

1. Start MCEGold.

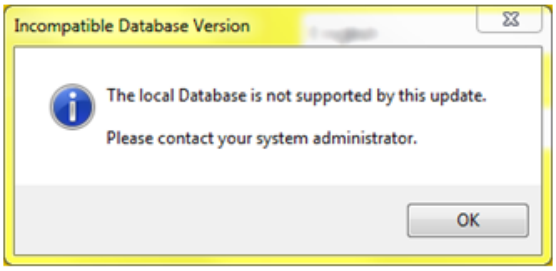
2. If the database window is empty, select a database using the Search button (...) located on the right side of the Site textbox. This opens your computer navigator window which allows you to search for a database. When the database has been selected, click **Open**.

3. Verify login parameters on the right side of the window are correct and click **OK**.

   NOTE: If no databases are available, click **Cancel** to exit out of MCEGold, and contact PdMA Technical Support at 813-621-6463 ext. 251.

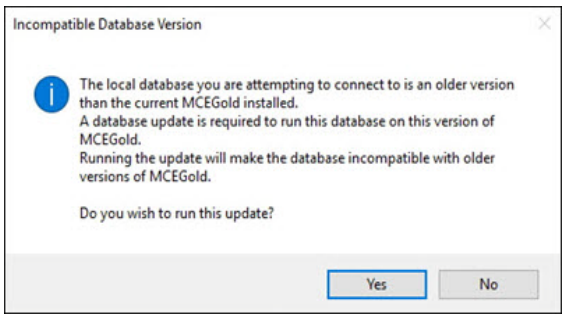


If you receive the following "local database is not supported by this update" message, the attached database is too old for conversion and needs to be updated to MCEGold 3.0.3 SP2 or later prior to updating to MCEGold 3.1.2 SP3. Contact your system administrator.



If you receive the following "Incompatible Database Version" message when trying to start MCEGold, you are attempting to run MCEGold with a database that is older than MCEGold 3.1.2. You will be prompted to update the database. If you have properly backed up your existing database, click **Yes** to run the update. If you have not backed up your existing database, click **No**, backup the database, and then perform the Database Setup procedure.

NOTE: Please make sure you allow sufficient time to update your database. Depending on the size of your database, updates may take an hour or longer.



TECHNOTE 2001-N10

ISSUED

March 2020

SUBJECT

Release of MCEGold® 3.1.2 SP4 Network Version for Windows 10.

DESCRIPTION

MCEGold 3.1.2 SP4 Network Version is an upgrade from MCEGold 3.1.2 SP3.The upgrade includes optimization of the PdMA Cloud download times of the History Charts for Rotor Evaluation, Power, and Eccentricity. Also, the Chinese, Portuguese, Russian, and Spanish language packs have been added.

PDMA CLOUD SERVICES

The network edition of MCEGold 3.1.2 SP4 supports access to PdMA Cloud Services. Please contact PdMA Technical Support (813-6216-6463 ext. 251) to discuss this option.

NOTES

- MCEGold 3.1.2 SP4 is *only* compatible with Windows 10 and M-Series testers. This upgrade is for Windows 10 users only.

- **Windows 7 users** - **DO NOT TRY TO UPDATE** to MCEGold 3.1.2 SP4. Windows 7 compatibility ended with MCEGold 3.1.2 SP2. If you do try to update MCEGold will become inoperable.

- Upgrading from a version prior to MCEGold 3.1.2 requires a new license key. Contact PdMA (813-621-6463 ext. 251) for a new license key.

- MCEGold Word Add-in is only compatible with MS Word 2007 and 2013. **MCEGold Word Add-in is NOT compatible with MS Word 2010.** Templates created with other versions of MS Word may not be functional and may cause conflicts with the MCEGold software.

- To ensure application accessibility, the default installation location has been set to C:\PdMA Corporation.

- Databases attached to MCEGold 3.1.2 SP4 must be from MCEGold 3.0.3 SP2 or later and once updated with 3.1.2 SP4 *will not* be compatible with older versions of MCEGold.

- Please make sure you allow sufficient time to update your database. Depending on the size of your database, updates may take an hour or longer.

- Assets exported with MCEGold 3.1.2 SP4 *will not* be compatible with older versions of MCEGold.

- If during installation you receive a message telling you "SQL Server System CLR Types requires the .Net Framework", contact tech support for assistance.

- If you have any questions, please contact PdMA Technical Support (813-621-6463 ext. 251).

Minimum Requirements

Computer	Dell Latitude E5400 Laptop*
Processor	1.6+ GHz Intel i5 or equivalent
Resolution	1600 x 900/1920 x 1080 (small font)
Operating System**	Microsoft® Windows 10 (64 bit)
Memory	8.0+ G RAM
Ports/Drives	(1) USB Port in Rear or Side
Hard Disk	30G Available

* Original Windows 10 model shipped with PdMA testers. It is not compatible with Windows 7. Using any other computer manufacturer in conjunction with the PdMA software may result in erratic computer behavior; not limited to but including:

- Power Management Issues
- Lock-up
- Communication Port Malfunction
- Driver Incompatibility
- Display Errors
- SQL Database Incompatibility
- Network Synchronization Issues.

**MCEGold 2.0 - 2.6.2 is not compatible with Windows 10.

PREPARE WINDOWS 10 FOR MCEGOLD 3.1.2 SP4 INSTALLATION

NOTE: If you have MCEGold 3.1.2 or later follow the instructions in *Upgrading From MCEGold 3.1.2 or Later* on page 8.

If you have any version prior to MCEGold 3.1.2 a full uninstall is required before installing version 3.1.2 SP4. See *Upgrading From a Version Prior to MCEGold 3.1.2.*

Upgrading From a Version Prior to MCEGold 3.1.2

Upgrading from a version prior to MCEGold 3.1.2 requires a new license key. Contact PdMA (813-621-6463 ext. 251) for a new license key.

Backup

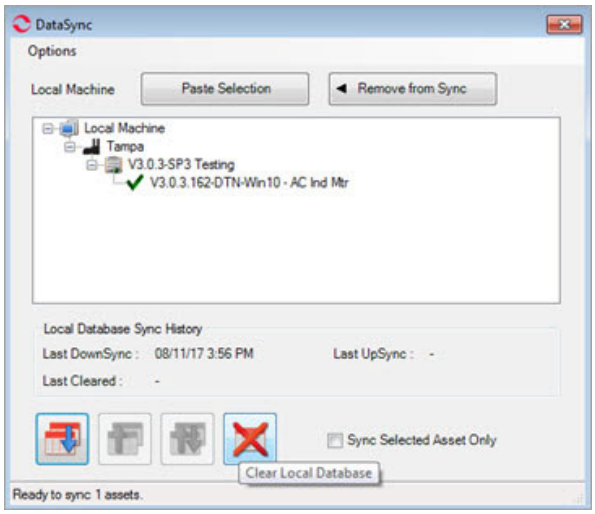
Before beginning the MCEGold uninstall, copy the Emaxprb.xml file only (not the folder) and the complete Templates folder to a safe location and make note of the location.

The default location for the files is listed below, however you may have chosen a different location during the original installation.
C:\PdMA Corporation\MCEGold\Emax
C:\PdMA Corporation\MCEGold\Report

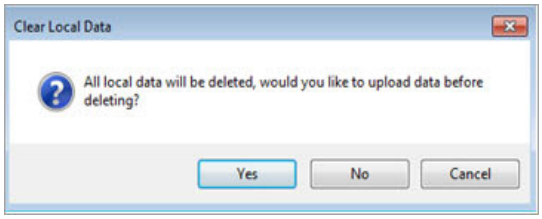
Clear Local Database

NOTE: Before proceeding ensure all local database synchronization has been performed. Failure to synchronize before clearing the local database will result in loss of data. This procedure must be completed before the server database is updated.

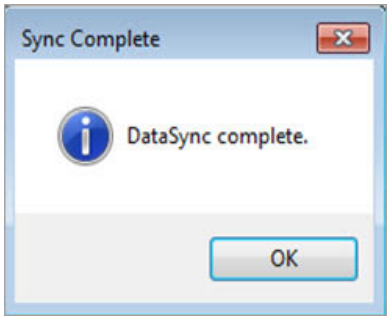
1. From the DataSync window, click **Clear Local Database**.



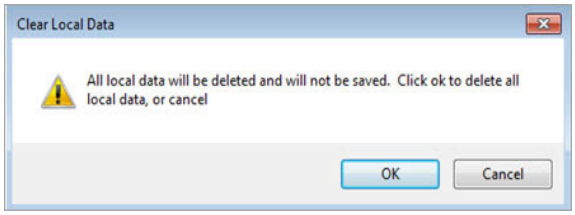
2. From the Clear Local Data window, click **Yes** to upload (UpSync) data, click **No** if you have already synchronized the data.



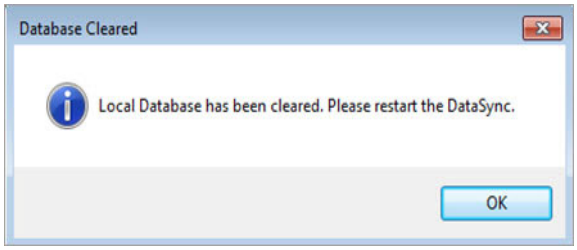
3. From the Sync Complete window, click **OK**.



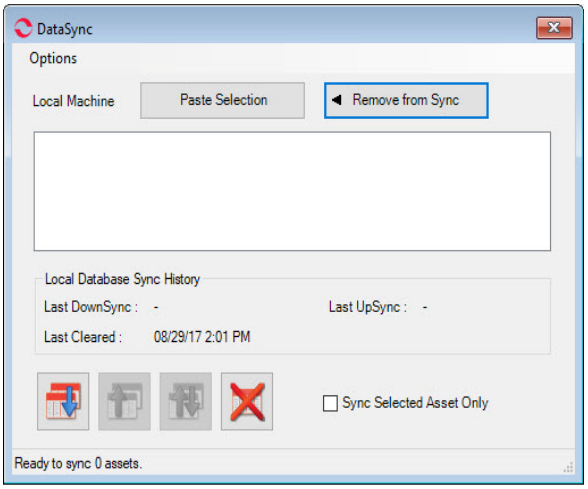
4. From the next Clear Local Data window, click **OK** to delete all local data.



5. From the Database Cleared window, click **OK.**



6. Reopen the DataSync window to ensure the database has been cleared, as shown in figure below. If it did not clear contact Technical Support.



Update Server Database for Network Users

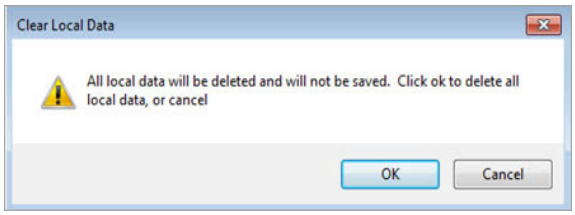
NOTE: Ensure the user account being used to update the server has "sysadmin" permissions.

Please make sure you allow sufficient time to update your database. Depending on the size of your database, updates may take an hour or longer.

There is a separate application on the Installation USB flash drive to update the network database on the server. ***The database must be updated on the server first, then the desktops and field testers.***

If the update is installed on a network field tester before the server database is updated, a warning message appears informing you the database is an old version and to contact your system administrator.

1. Backup the MCEGold server database.
2. Insert the MCEGold 3.1.2 SP4 USB flash drive into the USB port. If the drive starts automatically, click **Exit** and proceed to the next step.
3. Locate the MCEGold Database Server Update folder on the MCEGold 3.1.2 SP4 USB flash drive.
4. Click on the MCEGold Database Server Update.exe file.
5. The Server Information window opens. Fill in the Server, Database, Login, and Password information. The Login and Password will depend on your authentication (Windows/SQL).
6. Click **Run Update**. The progress status will display on the window.
7. When the update complete message displays, close the window.
8. From the next Clear Local Data window, click **OK** to delete all local data.



Uninstall

Note: If you have MCEGold icons pinned to your Taskbar, it is necessary to unpin them before beginning the uninstall. Right click on the icon and select "Unpin from taskbar".

1. Select Start, Settings, Apps and locate MCEGold.
2. Highlight the MCEGold Version X.X.X.
3. Click **Uninstall** and follow on-screen prompts.
4. Click **Finish** when the "Uninstall Complete" message is received.
5. Locate the PdMA MCEMAX Tester (Driver Removal) file. Highlight it and click **Uninstall/ Change** located above the list and follow the on-screen prompts.
6. Click **Finish** when the "Uninstall Complete" message is received.

7. Locate the C:\PdMACorporation folder and delete it. The subfolders will be deleted also. After the installation of MCEGold 3.1.2 SP4 the new folder location will be C:\PdMA Corporation\....

8. Reboot your computer.

9. Go to MCEGold 3.1.2 SP4 Installation.

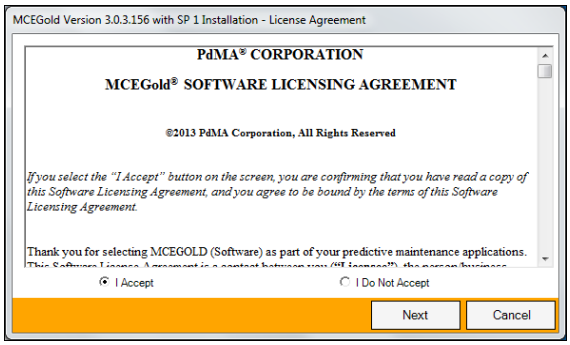
MCEGold 3.1.2 SP4 Installation

1. If installing on a tester, disconnect the USB cable from the tester computer.

2. Insert the MCEGold 3.1.2 SP4 USB flash drive into the USB port. If the installation does not begin automatically, run setup.exe from the USB flash drive. (Select Run, setup.exe from the AutoPlay window).

3. Right click on setup.exe and select Run as administrator.

4. The License Agreement window opens. Read the PdMA license and select the "I Accept" option button. The **Next** button becomes visible. Click **Next**.
   Note: If you do not accept the terms, the **Next** button is not visible, you can only click **Cancel**, which closes the software without installing it.



5. In the License Key window enter your Company Name and License Key exactly as provided by PdMA. You may copy and paste the license key using the paste button.

6. When the license has been verified a green check appears. The **Next** button appears. Click **Next**.

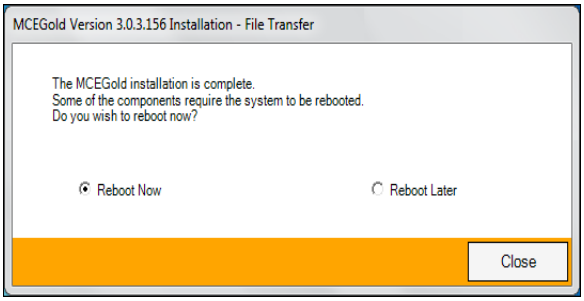
7. In the Installation Path window, accept the default shown in the text box (recommended) for the location to install the MCEGold program folder or use the browse (...) button to select an alternate location, make a note of it for your future use, and click **Next**. Note: It is not suggested to use an alternate location because that can cause conflict and Windows rights problems.

8. When prompted, click **Install Components**. Some components may require additional prompts.

9. When the installation of components is complete the **Next** button appears. Click **Next**.

10. A progress bar shows the progress of copying files to your computer.

11. When the installation is complete you must reboot your system. Select the Reboot Now option and click **Close**.



12. After rebooting, locate and copy the backup Emaxprb.xml file and the Template folder back into their appropriate locations in

    C:\PdMA Corporation\MCEGold\Emax
    C:\PdMA Corporation\MCEGold\Report

13. Answer Yes to "Merge the folder?" inquiry.

14. Remove the MCEGold 3.1.2 SP4 USB flash drive from the computer.

15. If installing on a tester, re-connect the USB cable to the tester computer.

FIELD TESTER DATABASE SETUP

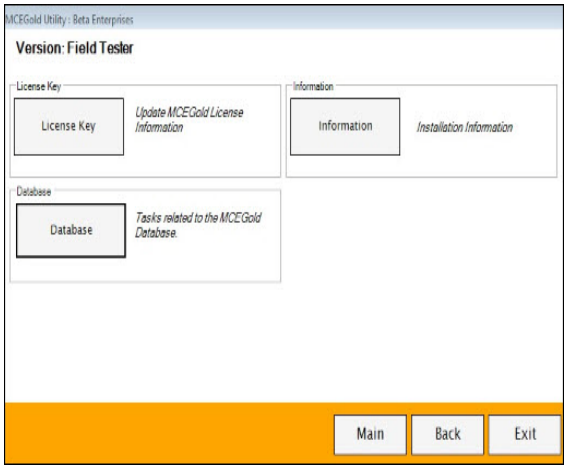
NOTE: For the following, please use the information provided by your IT department.

Field testers utilize a local database for storage of assets. These assets can then be synchronized with the Network database. In order to perform field testing in local tester mode, assets must be down-synced to the local database. In order to perform testing using MCEGold Lite, assets must be in a WatchList and down-synced to the local database.

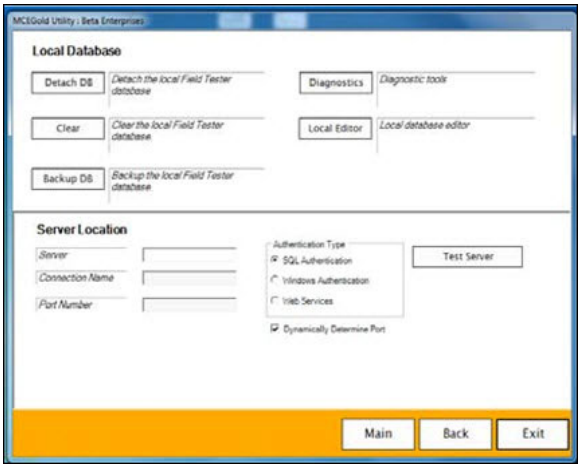
To connect to the existing network database, please follow the instructions below.

1. Open the MCEGold Utility program.

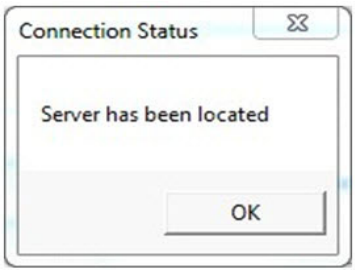
2. Click **Database**.



3. Enter the server information provided by your IT department.

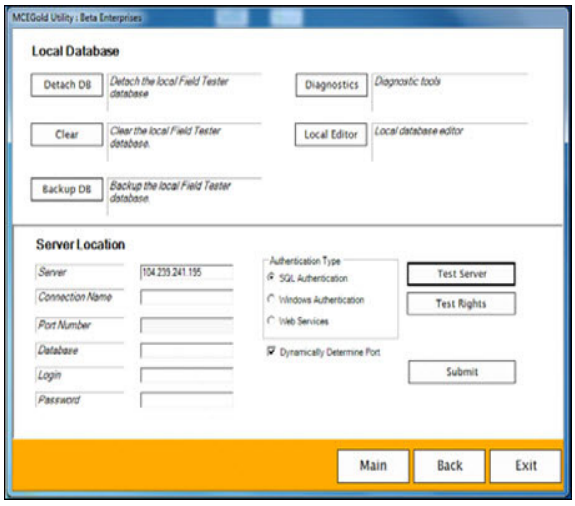


4. Once the server information has been entered, click **Test Server**. You should receive a message indicating "Server has been located".

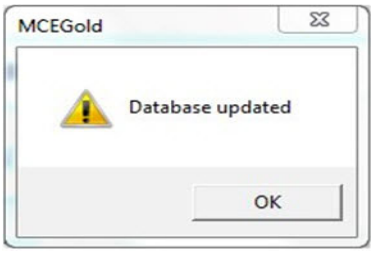


5. Click **OK** on the Connection Status window.

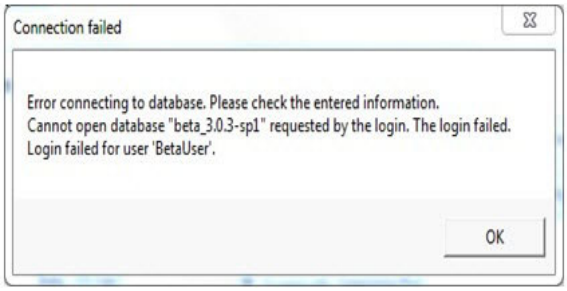
6. Enter the following connection information provided by either your Administrator or IT Department: Connection Name, Database Information, Login Information, and Password.



7. Click **Submit**. You will receive a message indicating "Database updated". Click OK.



8. If you receive an error as shown below, verify the information you entered is correct. If it is correct, click OK and contact your Administrator.



9. If you do not receive an error message, click **Exit** on the Utility window.

10. Start MCEGold and enter the name and password for the tester. Select the Field Tester Network mode.

11. It is necessary to clear the local database a second time. Instructions are found on page 2 of this document titled Clear Local Database. Disregard the instructions in the "Note".

12. Once you have opened MCEGold, cleared the local database, and have verified MCEGold is correctly communicating with the database. You are now

Upgrading From MCEGold 3.1.2 or Later

Backup

In the possibility that you may need these files after the install, it is a good idea before beginning the MCEGold install to copy the Emaxprb.xml file only (not the folder) and the complete Templates folder to a safe location and make note of the location.

The default location for the files is listed below, however you may have chosen a different location during the original installation.
C:\PdMA Corporation\MCEGold\Emax
C:\PdMA Corporation\MCEGold\Report

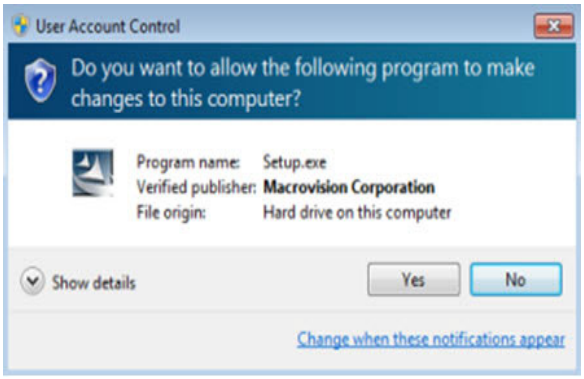
MCEGold 3.1.2 SP4 Installation

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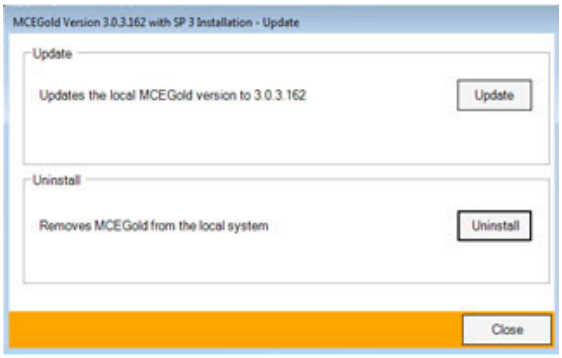
1. If installing on a tester, disconnect the USB cable from the tester computer.

2. Insert the MCEGold 3.1.2 SP4 USB flash drive into the USB port. If the installation does not begin automatically, run setup.exe from the USB flash drive. (Select Run, setup.exe from the AutoPlay window).

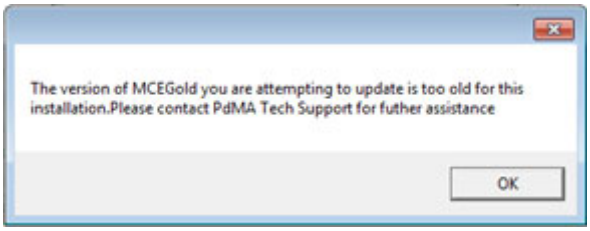
3. If you see the User Account Control screen, click **Yes**.



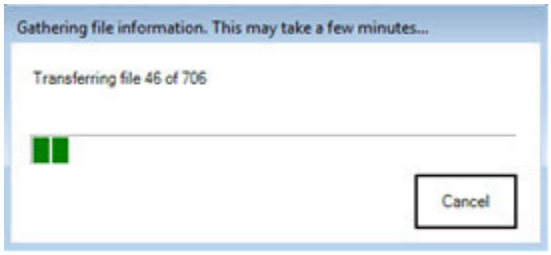
4. If there is an existing MCEGold version installed on your computer, you will see the MCEGold Update screen. click **Update**.



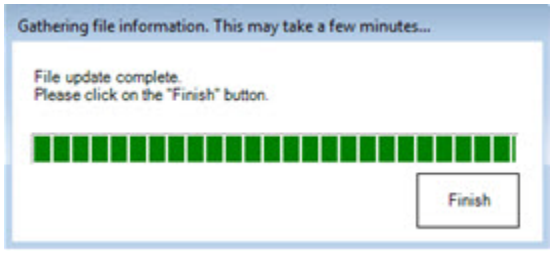
NOTE: If you have a version prior to MCEGold 3.1.2 you will receive the error message shown below. Do **NOT** proceed. Contact technical support.



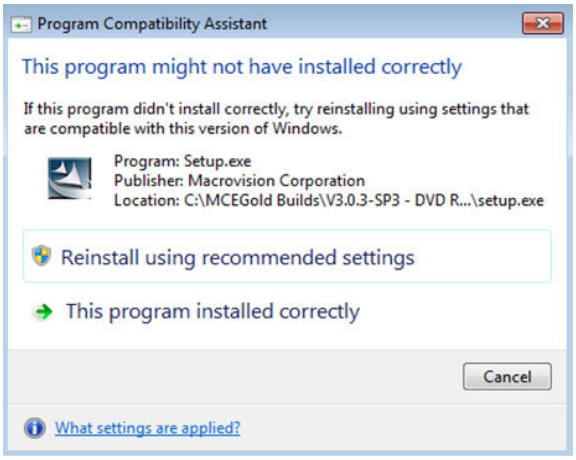
5. The status update window displays.



6. When the update is complete, click **Finish**.



7. If the Program Compatibility Assistant screen displays, select *This program installed correctly.*



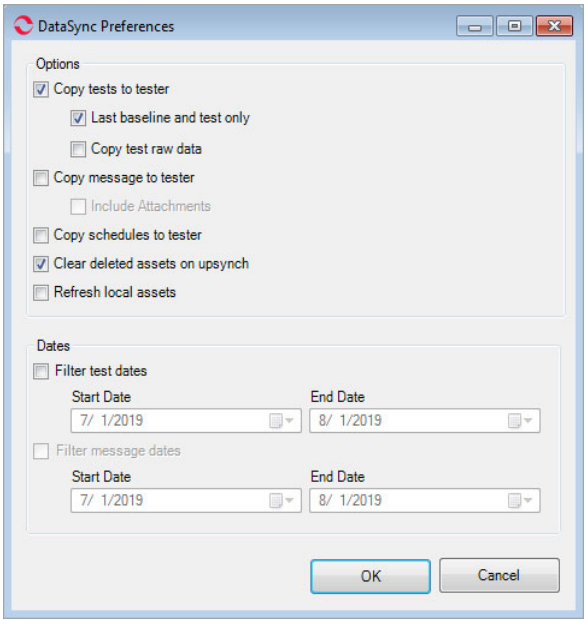
8. If installing on a tester, re-connect the USB cable to the tester computer.

9. Go to the *Field Tester Database Setup* section on page 4.

DATASYNC PREFERENCES WINDOW

MCEGold 3.1.2 SP4 includes changes to the DataSync Preferences window shown below. “Copy test raw data” has been added to the “Copy test to tester” section.

A function is activated/inactivated by clicking in the box preceding the function, which causes a check mark to appear (active)/disappear (inactive).



Options

Copy tests to tester: If this option is selected, all history chart data back to the last baseline or dates selected in the Filter test dates section and all raw data from the last baseline and last test only will be synchronized to the tester.

Last baseline and test only: Raw data from the last baseline and last test only will be synchronized to the field tester.

Copy test raw data: All raw data back to the last baseline or dates selected in the Filter Test Dates section will be synchronized to the tester. This is

potentially a very large amount of data and could result in exceeding the monthly usage limit for cloud services.

Copy message to tester: All messages recorded in the message center back to the baseline test or dates selected in the Filter Test Dates section will be synchronized to the tester. No attachments will be transferred.

Include Attachments: All attachments embedded in the Message Center back to the baseline test or dates selected in the Filter Test Dates section will be synchronized to the tester. This is potentially a very large amount of data and could result in exceeding the monthly usage limit for cloud services.

Copy schedules to tester: All schedules from the Scheduler will be synchronized to the tester.

Clear deleted assets on upsync: Local assets that are identified as deleted from the server during the sync process will be deleted from the local database and sync window.

Refresh local assets: Nameplate data for each asset on the Field Tester will be replaced with the information from the server.

Dates

Filter test dates: For the motors selected in the Sync Window, tests acquired on the Start Date and End Date as well as all dates in between the Start Date and End Date will be selected for synchronization preferences.

Filter message dates: For the motors selected in the DataSync Window, messages acquired on the Start Date and End Date as well as all dates in between the Start Date and End Date will be selected for synchronization preferences.

TECHNOTE 2001-S10

ISSUED

March 2020

SUBJECT

Release of MCEGold® 3.1.2 SP4 Stand Alone for Windows 10.

DESCRIPTION

MCEGold 3.1.2 SP4 is an upgrade from MCEGold 3.1.2 SP3. The upgrade includes optimization of the PdMA Cloud download times of the History Charts for Rotor Evaluation, Power, and Eccentricity. Also, the Chinese, Portuguese, Russian, and Spanish language packs have been added.

NOTES

- MCEGold 3.1.2 SP4 is *only* compatible with Windows 10 and M-Series testers. This upgrade is for Windows 10 users only.

- **Windows 7 users** - **DO NOT TRY TO UPDATE** to MCEGold 3.1.2 SP4. Windows 7 compatibility ended with MCEGold 3.1.2 SP2. If you do try to update MCEGold will become inoperable.

- Upgrading from a version prior to MCEGold 3.1.2 requires a new license key. Contact PdMA (813-621-6463 ext. 251) for a new license key.

- MCEGold Word Add-in is only compatible with MS Word 2007 and 2013. MCEGold Word Add-in is NOT compatible with MS Word 2010.Templates created with other versions of MS Word may not be functional and may cause conflicts with the MCEGold software.

- To ensure application accessibility, the default installation location has been set to C:\PdMA Corporation.

- Databases attached to MCEGold 3.1.2 SP4 must be from MCEGold 3.0.3 SP2 or later and once updated with MCEGold 3.1.2 SP4 *will not* be compatible with older versions of MCEGold.

- Please make sure you allow sufficient time to update your database. Depending on the size of your database, updates may take an hour or longer.

- Assets exported with MCEGold 3.1.2 SP4 *will not* be compatible with older versions of MCEGold.

- If during installation you receive a message telling you "SQL Server System CLR Types requires the .Net Framework", contact tech support for assistance.

- If you have any questions, please contact PdMA Technical Support (813-621-6463 ext. 251).

Minimum Requirements

Computer	Dell Latitude E5400 Laptop*
Processor	1.6+ GHz Intel i5 or equivalent
Resolution	1600 x 900/1920 x 1080 (small font)
Operating System**	Microsoft® Windows 10 (64 bit)
Memory	8.0+ G RAM
Ports/Drives	(1) USB Port in Rear or Side
Hard Disk	20G Available

* Original Windows 10 model shipped with PdMA testers. It is not compatible with Windows 7. Using any other computer manufacturer in conjunction with the PdMA software may result in erratic computer behavior; not limited to but including:

- Power Management Issues
- Lock-up
- Communication Port Malfunction
- Driver Incompatibility
- Display Errors
- SQL Database Incompatibility
- Network Synchronization Issues.

**MCEGold 2.0 - 2.6.2 is not compatible with Windows 10.

PREPARE WINDOWS 10 FOR MCEGOLD 3.1.2 SP4 INSTALLATION

NOTE: If you have MCEGold 3.1.2 or later follow the instructions in *Upgrading From MCEGold 3.1.2 or Later* on page 5.

If you have any version prior to MCEGold 3.1.2 a full uninstall is required before installing version 3.1.2 SP4. See *Upgrading From a Version Prior to MCEGold 3.1.2.*

Upgrading From a Version Prior to MCEGold 3.1.2

Upgrading from a version prior to MCEGold 3.1.2 requires a new license key. Contact PdMA (813-621-6463 ext. 251) for a new license key.

Backup

Before beginning the MCEGold uninstall, copy the Emaxprb.xml file only (not the folder) and the complete Templates folder to a safe location and make note of the location.

The default location for the files is listed below, however you may have chosen a different location during the original installation.
C:\PdMA Corporation\MCEGold\Emax
C:\PdMA Corporation\MCEGold\Report

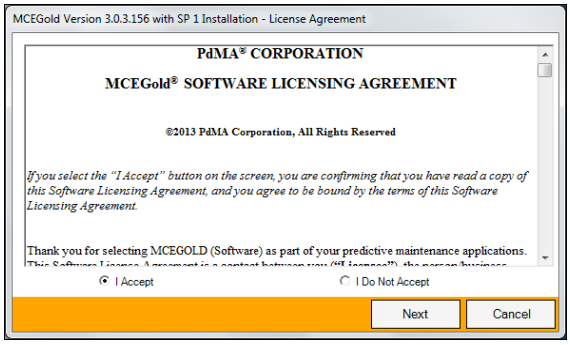
Uninstall

Note: If you have MCEGold icons pinned to your Taskbar, it is necessary to unpin them before beginning the uninstall. Right click on the icon and select "Unpin from taskbar".

1. Select Start, Settings, Apps, and locate MCEGold.
2. Highlight the MCEGold Version X.X.X.
3. Click **Uninstall** and follow on screen prompts.
4. Click **Finish** when the "Uninstall Complete" message is received.
5. Locate the PdMA MCEMAX Tester (Driver Removal) file. Highlight it and click **Uninstall/ Change** located above the list and follow the on screen prompts.
6. Click **Finish** when the "Uninstall Complete" message is received.
7. Locate the C:\PdMA Corporation folder and delete it. The subfolders will be deleted also. After the installation of MCEGold 3.1.2 SP4 the new folder location will be C:\PdMA Corporation\....
8. Reboot your computer.
9. Go to MCEGold 3.1.2 SP3 Installation.

MCEGOLD 3.1.2 SP4 INSTALLATION

1. If installing on a tester, disconnect the USB cable from the tester computer.
2. Insert the MCEGold 3.1.2 SP4 USB flash drive into the USB port. If the installation does not begin automatically, run setup.exe from the USB flash drive. (Select Run, setup.exe from the AutoPlay window).
3. The License Agreement window opens. Read the PdMA license and select the "I Accept" option button. The **Next** button becomes visible. Click **Next**.
   Note: If you do not accept the terms, the **Next** button is not visible, you can only click **Cancel**, which closes the software without installing it.



4. In the License Key window enter your Company Name and License Key exactly as provided by PdMA. You may copy and paste the license key using the paste button.
5. When the license has been verified a green check appears. The **Next** button appears. Click **Next**.

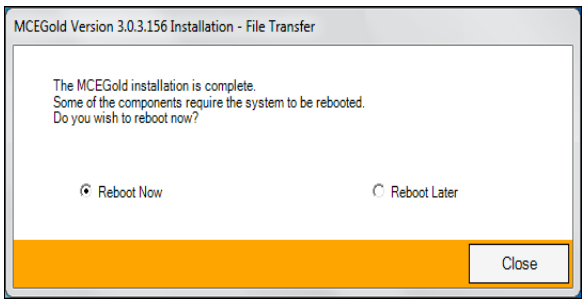
6. In the Installation Path window, accept the default shown in the text box (recommended) for the location to install the MCEGold program folder or use the browse (...) button to select an alternate location, make a note of it for your future use, and click **Next**. Note: It is not suggested to use an alternate location because that can cause conflict and Windows rights problems.

7. When prompted, click **Install Components**. Some components may require additional prompts.

8. When the installation of components is complete the **Next** button appears. Click **Next**.

9. A progress bar shows the progress of copying files to your computer.

10. When the installation is complete you must reboot your system. Select the Reboot Now option and click **Close**.



11. After rebooting, locate and copy the backup Emaxprb.xml file and the Template folder back into their appropriate locations in

    C:\PdMA Corporation\MCEGold\Emax
    C:\PdMA Corporation\MCEGold\Report

12. Answer Yes to “Merge the folder?” inquiry.

13. Remove the MCEGold 3.1.2 SP4 USB flash drive from the computer.

14. If installing on a tester, re-connect the USB cable to the tester computer.

Upgrading From MCEGold 3.1.2 or Later

Backup

In the possibility that you may need these files after the install, it is a good idea before beginning the MCEGold install to copy the Emaxprb.xml file only (not the folder) and the complete Templates folder to a safe location and make note of the location.

The default location for the files is listed below, however you may have chosen a different location during the original installation.
C:\PdMA Corporation\MCEGold\Emax
C:\PdMA Corporation\MCEGold\Report

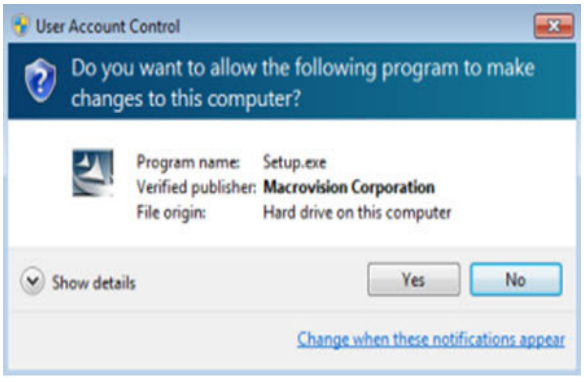
MCEGold 3.1.2 SP4 Installation

NOTE: Some on screen prompts and messages during the installation process are controlled by the Windows operating system and are out of PdMA’s control. Every effort has been made to include their possible appearance and the action you should take. However, if you are unsure please contact our technical support department for help.

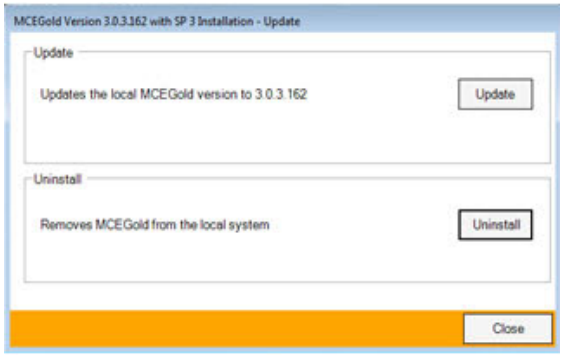
1. If installing on a tester, disconnect the USB cable from the tester computer.

2. Insert the MCEGold 3.1.2 SP4 USB flash drive into the USB port. If the installation does not begin automatically, run setup.exe from the USB flash drive. (Select Run, setup.exe from the AutoPlay window).

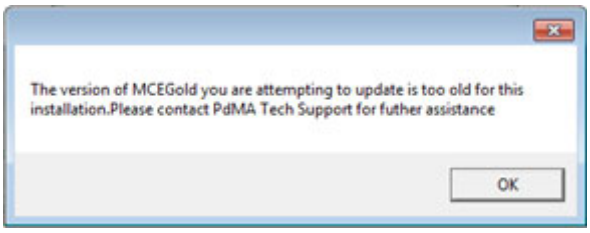
3. If you see the User Account Control screen, click **Yes**.



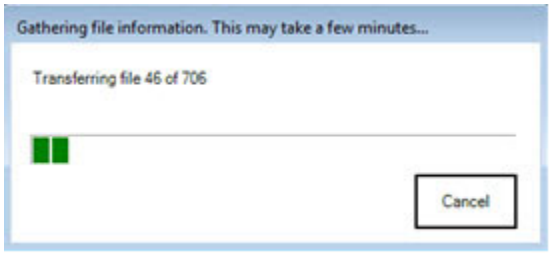
4. If there is an existing MCEGold version installed on your computer, you will see the MCEGold Update screen. click **Update**.



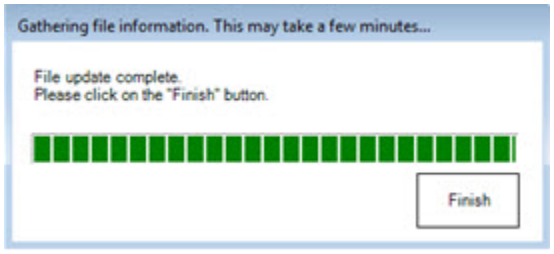
NOTE: If you have a version prior to MCEGold 3.1.2 you will receive the error message shown below. Do **NOT** proceed. Contact technical support.



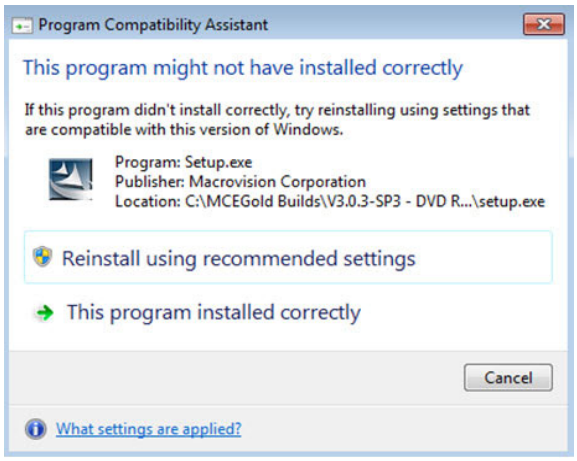
5. The status update window displays.



6. When the update is complete, click **Finish**.



7. If the Program Compatibility Assistant screen displays, select *This program installed correctly.*



8. If installing on a tester, re-connect the USB cable to the tester computer.

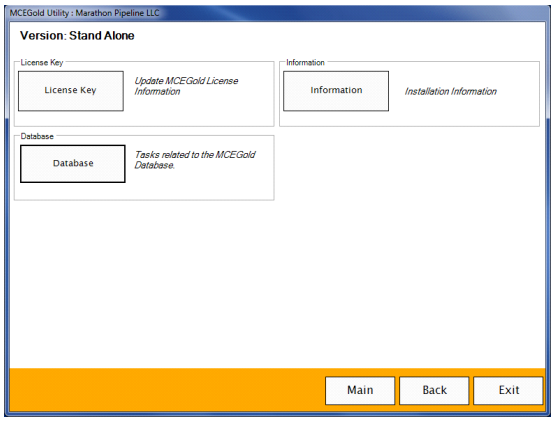
9. Go to the *Database Setup* section.

DATABASE SETUP

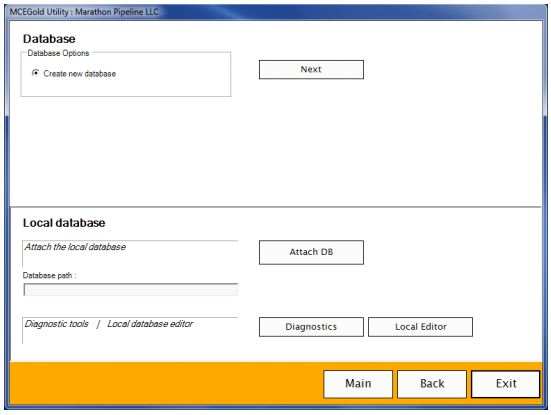
Note: This procedure is for connecting to an existing database that is to be upgraded to MCEGold 3.1.2 SP4. To connect to an existing database, please follow the instructions below.

1. Ensure you have properly backed up the database you are converting.

2. Open the Utility program and click the **Database** button.

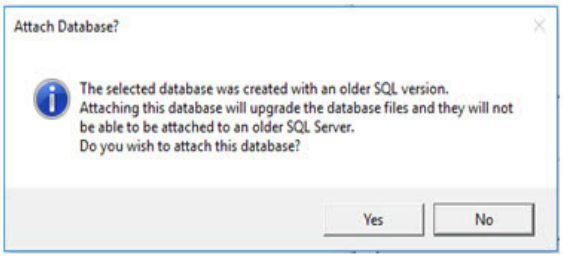


3. Click **Attach DB** as shown in the screen below.

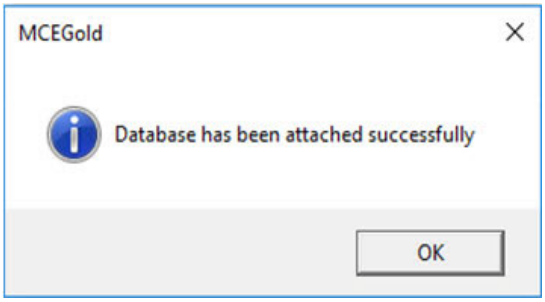


4. Navigate to the database location on your computer and select the desired database.

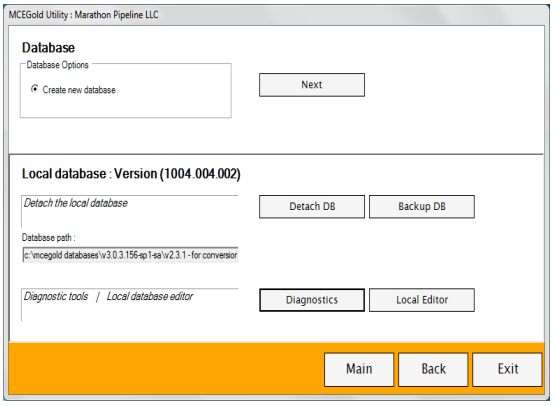
   If you receive the following message: "The database you selected was created with an older SQL version", the database needs to be upgraded to SQL 2017. **Stop!** Click **No.** Do **NOT** proceed! Contact Technical Support.



5. If the database attached properly you will see the following window. Click **OK**.



6. The MCEGold Utility Database Window opens. Click **Exit**.



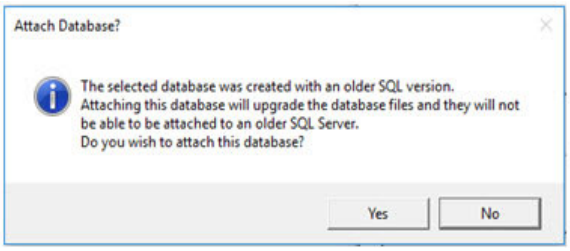
START MCEGOLD

1. Start MCEGold.

2. If the database window is empty, select a database using the Search button (...) located on the right side of the Site textbox. This opens your computer navigator window which allows you to search for a database. When the database has been selected, click **Open**.

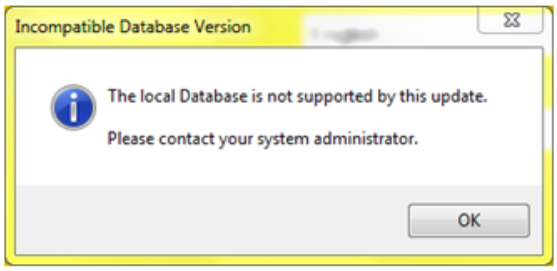
3. Verify login parameters on the right side of the window are correct and click **OK**.

   NOTE: If no databases are available, click **Cancel** to exit out of MCEGold, and contact PdMA Technical Support at 813-621-6463 ext. 251.



If you receive the following "local database is not supported by this update" message, the attached database is too old for conversion and needs to be

updated to MCEGold 3.0.3 SP2 or later prior to updating to MCEGold 3.1.2 SP4. Contact your system administrator.



If you receive the following "Incompatible Database Version" message when trying to start MCEGold, you are attempting to run MCEGold with a database that is older than MCEGold 3.1.2. You will be prompted to update the database. If you have properly backed up your existing database, click **Yes** to run the update. If you have not backed up your existing database, click **No**, backup the database, and then perform the Database Setup procedure.

NOTE: Please make sure you allow sufficient time to update your database. Depending on the size of your database, updates may take an hour or longer.

