



## **Your Solution: MCE**

### ***The Most Powerful Addition to Your Motor Program***

Complete your electrical maintenance program with the addition of motor circuit analysis – the single most powerful component in your 'toolbox'. Once you've made that decision, the next choice is an easy one – selecting PdMA's MCE.

MCE provides more information in five minutes than any single other predictive technology; both for effective condition monitoring and assuring the quality of new motors. Use it for:

#### **Quality Assurance**

To prequalify motor upon receipt and/or evaluate quality before and after repair or cleaning.

#### **Trending**

To identify out-of-specification parameters and facilitate condition-based rather than time-based repairs.

#### **Diagnostics/Troubleshooting**

To define problems, analyze data, and isolate the root causes of failure in each motor.

### ***Your Benefits:***

#### **Comprehensive**

MCE tests all potential fault zones: stator, rotor, insulation, airgap, and power circuit.

#### **Versatile**

MCE tests AC induction, synchronous, wound rotor, DC and specialty motors such as servo and spindle.

#### **Convenient**

MCE test at the motor control center, local disconnect, or directly at the motor.

#### **Correlative**

MCE correlates with most predictive technologies to refine or confirm your troubleshooting efforts.

#### **Accurate**

The proprietary software provides a precise and objective method of reviewing, tracking, trending, and comparing data, as well as generating immediate reports.

#### **Safe**

All MCE tests are nondestructive to the motor and circuits.

#### **Portable**

MCE is lightweight and battery-powered.

## Your Assurance:

The MCE provides precise measurements for QA, trending, and troubleshooting of the following fault zones:

### Stator

Phase to phase inductance and resistance measurements are used to assess the coil integrity of the stator. The *Rotor Influence Check (RIC)* is a collaborative test to confirm turn to turn or phase to phase current leak paths.

### Rotor

The RIC allows for rotor and stator condition assessment based on phase to phase inductance relative to rotor position. Displayed as a graph, it allow for determination of a variety of faults, including eccentricity, broken rotor bars, cracked end rings, uneven air gap, turn to turn or phase to phase current leak paths.

### Insulation

500 and 1000 volt test signals are available for insulation resistance (IR) testing. Capacitance and Resistance to ground measurements provide data for insulation system condition assessment. Temperature correction is provided for IR trending. Polarization Index Profile (PIP) provides a graphic representation of the IR vs. time for a more thorough assessment of the insulation system.

### Power Circuit

The power circuit condition is assessed when MCE testing is conducted from the motor control center. Phase to phase resistance and capacitance and resistance to ground measurements are used to identify loose and corroded connections and grounded cables.

### Motor Cleared

MCE testing can clear the electric motor circuit by assessing it to be in good condition, thereby preventing unnecessary maintenance on motors. MCE is a valuable tool for determining the root cause in electric motor problems.

## Your Options:

### Components of a Predictive Maintenance Program

A comprehensive predictive maintenance program requires going beyond testing for mechanical failures to include electrical testing. After all, that's where many of the root causes of motor failure lie.

Compare the capabilities of various electrical predictive maintenance technologies:

Task	MCA	MCSA	Hi-Pot	Surge	Infrared	Megger
Test stator windings	✓			✓		
Tests squirrel cage rotor	✓	✓				
Tests power circuit	✓				✓	
Test armature & synchronous rotor	✓			✓		
Tests insulation system	✓		✓	✓		✓
Identifies air gap eccentricity	✓	✓				
Statistical analysis	✓					
Quality assurance	✓		✓	✓		✓
Troubleshooting	✓	✓	✓	✓	✓	✓
Trending	✓	✓				✓
Battery powered	✓	✓			✓	✓

*Clearly, Motor Circuit Analysis (MCA) is the best single testing vehicle.*

## **Features:**

The MCE System 3000 gives you a complete picture of electrical motor health in minutes. A portable motor circuit analyzer, MCE furnishes diagnostic results and trendable data on the insulation system, power circuit, stator, rotor, armature, field, and resistor bank.

### **Easy**

Windows-based software ensures easy operation through toolbars and menus, all supported by context-sensitive help.

### **Fast**

The MCE runs the standard test in less than 3 minutes and immediately displays the results on the screen. Charts and graphs are instantly accessible in the field.

### **Non-Destructive**

Tests are conducted with low-voltage and low-current signals.

### **Versatile**

Tests all major motor types – Induction, DC, Synchronous, Wound Rotor – and identifies multiple faults and conditions:

- High-resistance connections
- Insulation system faults
- Open or shorted windings
- Phase-to-phase and coil-to-coil leakage paths
- Eccentricity
- Broken rotor bars and end rings
- Poor or incorrect rework
- Shorted commutator segments

### **Portable**

The MCE is self-contained, weighing only 17 pounds.

### **Battery-Powered**

The MCE requires no external power source.