

# MCE<sup>TM</sup>

## Motor Circuit Evaluator

### *Cost Effective*

- Reduces unplanned shut-downs from premature motor failures
- Reduces motor repair and replacement costs
- Non-destructive signals won't damage equipment

### *Versatile*

- Tests AC, DC and specialty motors
- QA, trending or diagnostic applications
- Can be upgraded to MCEMAX<sup>TM</sup> featuring EMAX<sup>TM</sup> Dynamic motor testing technology

### *Comprehensive*

- Tests five major fault zones: power circuit, insulation, stator, rotor and air gap
- Establishes baseline readings and stores subsequent tests for trending & comparison
- Isolates root cause issues to eliminate redundant failures

### *Field Portable*

- Self-contained in a lightweight, battery powered package
- Perform tests from the MCC, disconnect or motor T-leads
- Trend, graph or create reports in the field

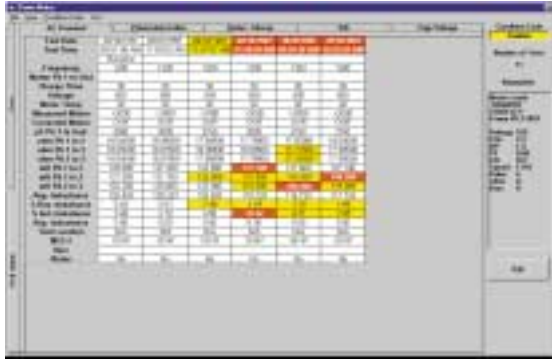
### *User Friendly*

- Short learning curve allows for early effectiveness
- Free industry leading technical support
- Interactive website provides software updates and case studies to keep customers current
- User groups & yearly technical conferences available



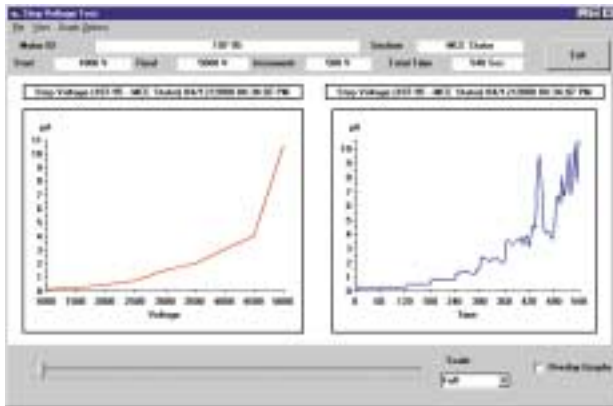
For more information on MCE,  
call (800) 476-6463 or  
visit our website at  
[www.pdma.com](http://www.pdma.com)

**STANDARD TEST:**



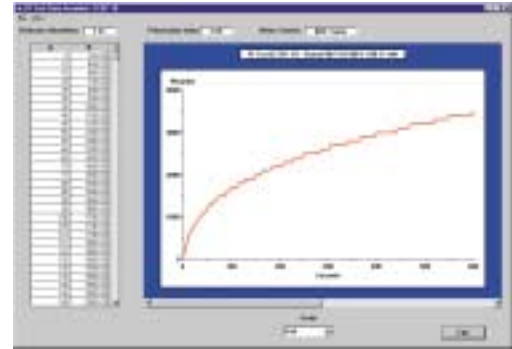
The Standard Test is the most comprehensive of all the MCE analyses. It is a route-based process that provides an overall view of motor and circuit health in less than 4 minutes. Parameters are trended over time for condition based evaluations of the five fault zones. Insulation degradation is determined through the use of temperature corrected resistance to ground measurements and capacitance to ground readings. Phase to phase resistance and inductance parameters are collected at highly accurate levels and calculated into imbalances. High resistive imbalances are indicative of stator faults or connection problems within the power circuit. Average inductance and inductive imbalances can indicate rotor anomalies, turn faults, air gap eccentricity and defective capacitors.

**ADVANCED INSULATION SYSTEM:**



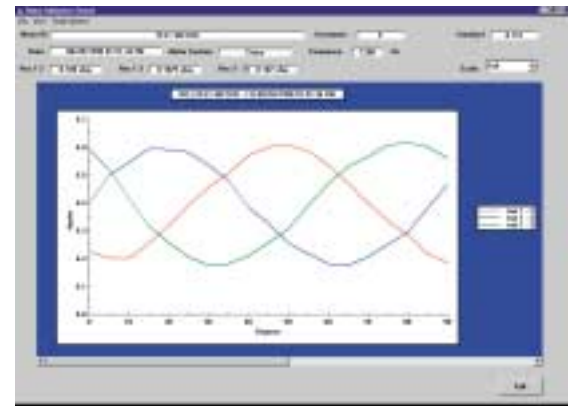
This accessory is the latest addition to the MCE. When utilized with the MCE, the AIS enhances the insulation testing capability by increasing available potential to 5000VDC, expanding the recording range to 30 Teraohms, and incorporating a Step Voltage Test. The Step Voltage Test records leakage current over a 6 minute period (user selectable times are also available) while steadily increasing voltage.

**POLARIZATION INDEX (PI) & DIELECTRIC ABSORPTION RATIOS (DAR):**



The PI and DAR tests are utilized to evaluate insulation condition of the motor and associated circuits. Longer in duration than a standard resistance to ground check, they allow the dissipation of charging current to provide more accurate condition assessment. These tests record and display resistance to ground measurements every 5 seconds to provide the user with a unique and valuable profile of insulation condition. This technique accurately illustrates insulation breakdown in degraded, aged or contaminated systems. The PI ratios the RTG reading at 10 minutes to that at 1 minute. The DAR is 1 minute in duration and ratios the reading at 60 seconds to that at 30 seconds.

**ROTOR INFLUENCE CHECK (RIC):**



The RIC is a highly sensitive diagnostic test that confirms the presence of stator faults, broken or cracked rotor bars, cast aluminum porosity, and air gap eccentricity. Phase to phase inductance readings are graphed during an incremental rotation of the rotor. The resulting pattern is an illustration of the rotor field's influence on stator winding inductance. Healthy motors produce a graph that resembles a traditional three-phase sine wave. Distorted RIC patterns can be related to rotor, stator and air gap defects.

**SPECIFICATIONS:**

Capacitance to Ground

Range: 1,000-999,750 250 pf@1200Hz  
Accuracy : +/- 1%

Resistance Phase to Phase

Range: 0-2,000 Ohms ; Accuracy : +/- 1%

Inductance Phase to Phase

Range: 0-250mH@1200Hz ; Accuracy : +/- 1%  
Range: 100-1,000mH@300Hz ; Accuracy : +/- 1%  
Range: 1,000-2,500mH@300Hz ; Accuracy : +/- 2%  
Range: 2,500-5,000mH@300Hz ; Accuracy : +/- 5%

Resistance to Ground (Standard Test)

Range: 0-100 Megohms ; Accuracy +/- 1%  
Range: 100-500 Megohms ; Accuracy : +/- 2.5%  
Range: 500-2,000 Megohms ; Accuracy : +/- 5%

Resistance to Ground (PI/DA Tests)

Range: 0-500 Megohms ; Accuracy : +/- 5%  
Range: 500-2,000 Megohms ; Accuracy : +/- 10%  
Range: 2,000-3,500 Megohms ; Accuracy : +/- 20%

Advanced Insulation System

Range: 10K-299.9G ; Resolution: 1K-0.1G  
Voltage: 250-5000V  
Accuracy: +/- 3% of reading + 3 Dig  
Range: 300G-2.99T; Resolution: 10G  
Voltage: 1000-5000V  
Accuracy: +/- 3% of reading + 10 Dig  
+/- 1%/T  
Range: 3.0T-9.9T ; Resolution: 0.1T  
Voltage: 5000V  
Accuracy: +/- 3% of reading + 10 Dig  
+/-1%/T  
Range: 10T-29T; Resolution: 1T ; Voltage: 5000V  
Accuracy: +/- 3% of reading + 100 Dig  
+/-1%/G