IvM-PdM®

Predictive Maintenance for Inverters

Predictive Maintenance

OEM-9755 Series - O.E.M. embedded software on inverter drives, with optional hardware integration, for 1ph & 3ph 100/200V - 0.1 ~ 2.2kW induction motors

OEM-9765 Series - O.E.M. embedded software on inverter drives, with optional hardware integration, for 3ph 400V - 0.75 ~ 90kW induction motors

OEM-9775 Series - O.E.M. embedded software on inverter drives, with optional hardware integration, for 3ph 400V - 75 ~ 630kW induction motors

Features and Benefits

Use:
The inverter estimated/measured speed, current, and/or voltage to permanently provide complete static and dynamic performance tests (Torque, Speed, Friction, Friction Spectrum, Spectrum of Torque & Speed Oscillations).

Provides:
- Early detection of problems and identification of the need for maintenance
- Three levels of defect detection.
- Optionally, software support for Ethernet/LAN/WAN use for alarm calls
- Valuable measurements unique to M.E.A. technology (For example: Friction Torque for detection of mechanical defects)

Detects:
- Unbalance/vibration problems
- Bearing faults and defects
- Mechanical looseness
- Noisy gear

Simplifies:
- Maintenance service procedure in the field, while any problem occurs in the system

Consists of:
- Embedded software installed on 64KB of the inverter's free NVRAM
- Optional additional hardware, according to customer requests

Different Application Versions:
- Constant load (Fans)
- No load (Elevators)
- Variable load (Pumps)

Predictive Maintenance

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Predictive Maintenance

Introduction

In electrical systems/machines, especially on critical applications, high quality and availability for spare parts is required. For example, it is important to avoid any fault that might interfere with the manufacturing process. Such a failure, if it occurs without any advanced warning, may cause very high financial losses.

The IvM-PdM® [Predictive Maintenance for Inverters] is a solution especially designed and developed for a well-known international company, and now is available for other inverters.

IvM-PdM® consists of M.E.A. embedded software with special Digital Signal Processing algorithms developed especially for inverters.

IvM-PdM® uses all of the built-in capabilities of the inverter.

IvM-PdM® uses unique measurements, such as Friction Torque, to determine mechanical defects

IvM-PdM® permanently performs complete performance tests and gives an alarm before the fault appears, giving invaluable monitoring data. It provides early detection of problems and identifies the need for maintenance, helping the user to be prepared, saving valuable time and money.

Based on the condition of the complete dynamic and static monitored equipment, IvM-PdM® allows maintenance to be performed in a planned and systematic manner before equipment failure occurs.

Performance Tests

Key Advantages

- Basic solution is the embedded software installed on 64KB of the inverter's free RAM, without any additional hardware (O.E.M. Solution).
- Optionally, additional hardware with minimum installation needs and costs.
- Complete dynamic and static performance tests from stall up to no load speed.
- Early detection of the problem and in specific cases identification of maintenance needs.
- Increases the effectiveness of the maintenance staff.
- Gives the option to test regularly the system without any additional efforts and costs.
- Simplifies the service procedure.

Software Capabilities

- Data recorder (export).
- Automatically built limits with three different failure severity levels.
- Reports of failure causes.
- Capabilities to use UART, allowing remote control and monitoring.

Dynamic Tests (*)	Static Tests (*)	Failure Detection
Torque Spectrum Signature	Torque vs. Speed	Unbalance / Vibration
Speed Spectrum Signature	Current vs. Speed	Bearing Deterioration (and other bearing faults)
Broadband Torque Spectrum	Torque vs. Current	Mechanical Looseness
Broadband Speed Spectrum	Friction Torque vs. Speed	Noisy Gear
Torque vs. Speed Oscillations	Voltage vs. Speed	Magnetic Fault, such as: • Damaged seals • Misalignment • Electrical Symmetry
Friction Spectrum Analysis	Power Out vs. Speed	
Oscillation Torque During Acceleration	Time vs. Speed	

(*) Not all the tests are available on all the applications.

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