

Electrical Equipment Condition Monitoring and Diagnostics

application package

The Electrical Equipment Condition Monitoring and Diagnostics package is an advanced on-line software package for motors, generators, and transformers. It is specifically designed to work with digital protection devices for these assets, collecting both static and dynamic data including: current, voltage, temperature, starts, stops, and select events. The digital asset protection devices connect via serial or Ethernet to any available network port for data transfer to System 1*, GE's Optimization and Diagnostics Platform. This package requires minimal additional electrical wiring and safely connects to online electrical equipment with no shutdown required.

Capabilities of this package include high-resolution data acquisition, trending, sophisticated alarming, exception reporting, and user notification capabilities. Online motor current signature analysis is a critical component of an overall electrical asset predictive maintenance program. Other critical components of a complete electrical asset protection program, such as offline asset testing and OEM developed RulePaks for automated diagnostics, can be provided through GE Energy.

Improving Asset Reliability and Productivity

Avoiding Unplanned Outages

Early detection of equipment degradation or impending failure helps to reduce maintenance costs. Changes in a machine's operating characteristics can be seen before significant damage occurs, allowing operators time to react and prevent more expensive repairs or catastrophic failure. Limiting unplanned failures or significant degradation leads to increased productivity.

Reduction of Outage Duration

A thorough understanding of equipment condition allows for more efficient outages. Unnecessary inspections and

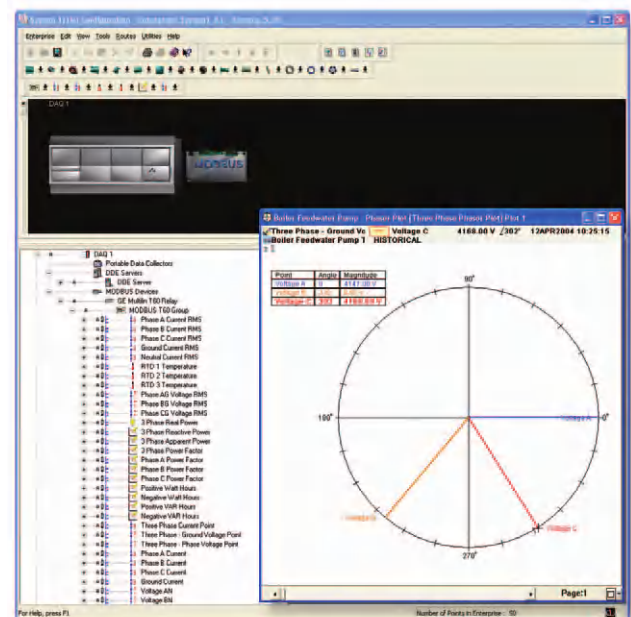
maintenance can be eliminated if an asset's operating characteristics show little or no degradation. Precious maintenance resources can be focused on performing work that is actually required.

Continued Operation of Degraded Equipment

Advanced asset management tools allow for continued operation of damaged or degraded equipment by giving the operators a continuous view of the operating condition. Continuous critical observation of the asset means that continued production is still possible while the necessary repairs are planned. Performing repairs at more convenient times minimizes production losses and increases profitability.

Benefits

- Maximize plant production
- Minimize maintenance costs and risk
- Early event detection
- Monitoring of developing problems
- Real-time condition status



Expanded Benefits

- **Improve decision quality** with data from many sources.
 - **Couple electrical data from motor protection devices with vibration and process data** from Bently Nevada devices and other data sources.
 - **Correlate data from driver and driven** to increase accuracy and quality of fault detection.
- **Save time with online system.** Connecting your electrical equipment protection devices to System 1 brings key information on these devices instantly to the right people which is much easier, faster, and safer than relying on a walk-around system.
- **Utilize existing installed base of electrical equipment protection systems.** The large installed base of stand-alone electrical equipment protection systems can easily be integrated into System 1, GE's Optimization and Diagnostics Platform, to maximize plant profitability.
- **Detect complex asset events using RulePaks.** Electrical Equipment RulePaks, such as Motor RulePaks, are pre-engineered sets of rules designed specifically to detect electrical and mechanical events for the asset. Motor RulePaks include motor events relating to the stator, rotor, bearing, or machine train.
- **Option to predict motor life** using GE's licensed expert system.

Optimizing Asset Operation with Decision Support*

Decision Support functionality, built into every application package, allows machinery engineers or other personnel to automate the analysis of machinery condition and configure targeted advisories of equipment degradation or malfunction. Rules derived from the experience of plant engineers and operators can be used to continuously evaluate equipment condition. Additionally, targeted RulePaks for many types of equipment are available, allowing for more rapid implementation of this critical functionality. Utilizing

Decision Support enables machinery engineers to spend more of their time resolving problems and optimizing the operation of assets.

The notification functionality delivers timely alerts of abnormal operating conditions and impending failures to operators and others. These alerts can also include recommended corrective actions (customized to plant-specific operating procedures) in response to the condition identified by Decision Support.

Better Economic Performance – The Ultimate Goal

In today's competitive environment, understanding and optimizing equipment performance is a critical component to achieving business success – particularly in asset intensive industries. Utilizing the functionality of advanced Optimization and Diagnostic products like System 1, optimizes the availability of critical production assets, allows owners and operators to make better, information-based operational decisions and unleashes the power of the organization to focus on improving the profitability of the enterprise.

Levels of Support

Installation, training, and support services are recommended to help you achieve the most value from this application package. We offer 3 distinct levels of support that include the following:

Bronze	24/7 Tech support from our outstanding team of professionals the latest software upgrades available
Silver	remote software optimization and machinery diagnostics
Gold	onsite asset care

For complete product specifications and ordering information:

- contact your local salesperson
- call 775-782-3611 and ask for "System 1" at the prompt
- e-mail us at system1info@ge.com
- visit our Web site at www.gepower.com/system1

* System 1 and Decision Support are a registered trademark and a service mark of General Electric Company.

