Product Data Sheet

*Motor*STATUS™
Condition Monitoring Sensor

- **Completely Self-Contained**
  - **Multi-sensors**
  - **Data storage**
  - **Battery powered**
- **Available for induction NEMA and TITAN® motors**
- **Easy Installation**
- **User-Friendly Software**
  - **Tracks operating history**
  - **Tracks cumulative effects of parameters**
  - **Unique diagnostic analysis**

*Motor*STATUS Overview

The *Motor*STATUS Unit

The ***Motor*STATUS** Condition Monitoring Sensor is the first monitoring instrument to integrate sensor signal processing and spectrum analysis into a self-contained unit which is installed on the motor. Using an array of integrated sensors and on-board processing, ***Motor*STATUS** looks for the damaging effects which cause most mechanical and electrical faults and tracks those faults once they occur.

There are many possible electrical and mechanical faults associated with electric motors. These faults may be detected through increases in three parameters: motor temperature, vibration and flux (see Table 1). By measuring and trending parameter amplitude and tracking cumulative damage potential for the problems' indicators, the ***Motor*STATUS** unit provides:

1. Present condition evaluation.
2. Identification of operating and random effects which intermittently damage motors.
3. Cumulative tracking of potential damaging factors to assess motor aging.
4. Operating history to better evaluate motor rating and quality requirements.

TABLE 1 Motor Fault Indicators

Fault type	Frame Temp	Vibration	Flux
Over or under voltage	Yes		
Frequency Deviation for 60Hz	Yes		
Voltage Imbalance	Yes		Yes
Harmonic Content	Yes		
High Ambient Temperture	Yes		
Dirty / Blocked Cooling Passages	Yes		
Excessive Load	Yes	Yes	
Broken Rotor Bars			Yes
Stator Shorts			Yes
Bearing Degradation		Yes	
Over / Under Lubrication		Yes	
Imbalance		Yes	
Misalignment		Yes	Yes
Looseness		Yes	
Air Gap Eccentricity		Yes	

Mounting

***Motor*STATUS** mounts with a single 3/8" x 16 UNF stud. The machine's mounting surface requires a flat area of 1.5 inch diameter for the base and a 6 inch diameter area to accommodate the ***Motor*STATUS** unit without interference.

Alarms

The ***Motor*STATUS** unit evaluates each measured parameter for condition-based alarms to identify operational, environmental, mechanical or electrical problems. These alarms are available in summary form at the data collector and from the **STATUS**Report software. Severe alarms in overall vibration, roller bearing vibration, frame temperature and load are also signaled by a flashing red LED on the unit.

Communications

All ***Motor*STATUS** units provide data transmission through an infrared (IR) link which can communicate and upload data to either the CSI 2120 Machinery Analyzer or palmtop PDA units that run Windows CE®. At any time, plant maintenance or motor overhaul facility personnel may collect the ***Motor*STATUS** information and download it to a desktop PC for condition analysis.

*Motor*STATUS Software

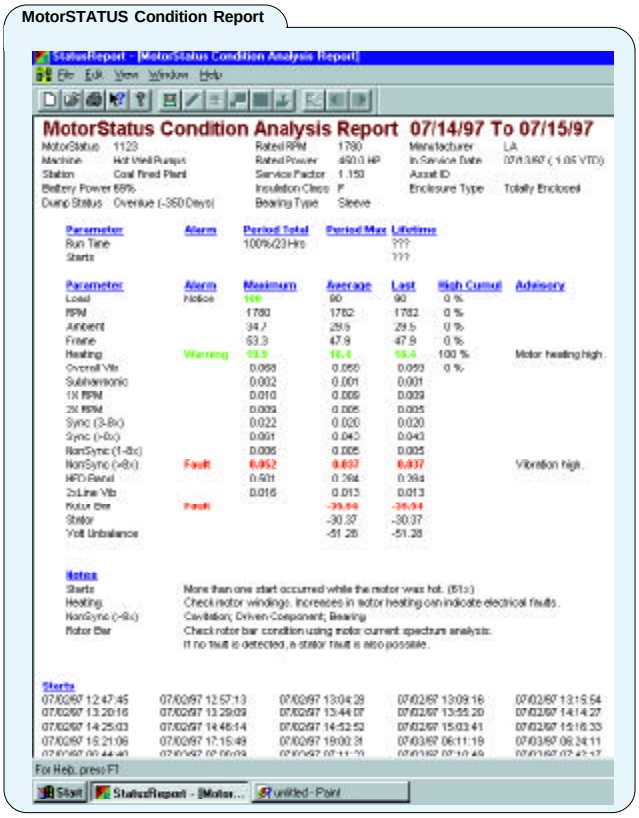
Diagnostics

The ***Motor*STATUS** unit performs a ***FFT Spectrum Analysis*** in order to calculate the vibration and flux parameters used to determine machine condition. Often, viewing the complete spectrum is useful in enhancing or confirming the diagnosis of a problem. To facilitate viewing of a complete spectrum, ***Motor*STATUS** stores a 300Hz vibration spectrum and a 185Hz flux spectrum. To make the analysis easier, the **STATUS**Report software package has been created specifically to database, analyze and display machinery condition information collected by ***Motor*STATUS** monitoring units.

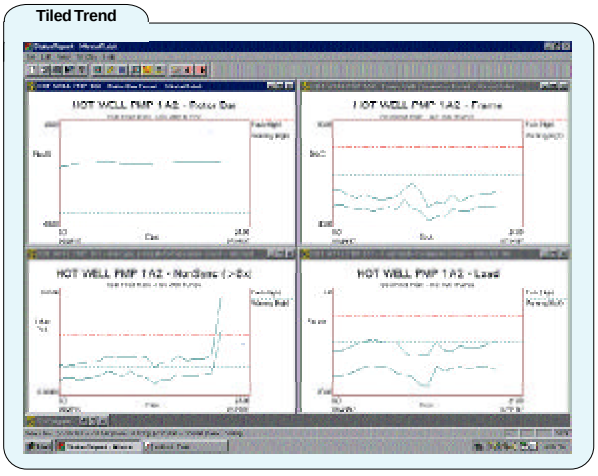
Diagnostic display

STATUSReport ***diagnostic displays*** are designed to allow personnel untrained in predictive maintenance to visually 'see' when a machine is operating outside generalized 'normal' conditions. Using the diagnostic displays, the user can get a feel for what conditions are out of bounds and whether the problem is intermittent, random, cyclic, load or temperature related, or rapidly trending higher.

MotorSTATUS Condition Report

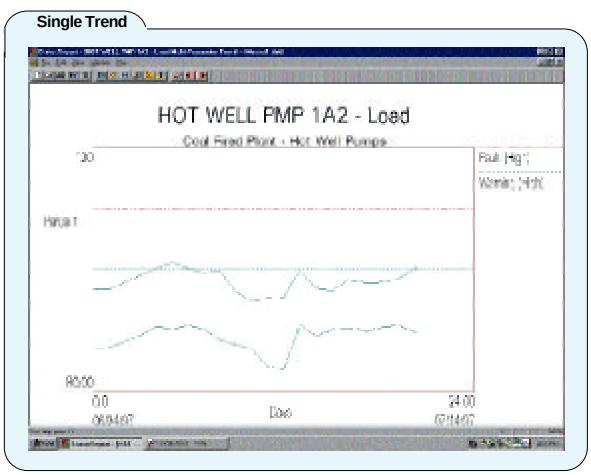


Tiled Trend



Parameter Trends can be displayed individually or tiled with synchronized cursors to evaluate and corrolate measurement parameters.

Single Trend



Rapid, Accurate Machinery Analysis

Individual STATUS unit condition analysis reports highlight conditions and individual parameter values. This allows the operator to pinpoint the potential problems for further RBM analysis.

About CSI

Headquartered in Knoxville, Tennessee, with offices and affiliates throughout the U.S. and around the world, Computational Systems Inc. (CSI) is the global leader in advanced maintenance systems. Each one of the more that 400 employees who comprise CSI is dedicated to providing the tools, technology, process improvement, and training needed to changed the way the world performs maintenance.

In December of 1997, Emerson Electric Co. acquired CSI to compliment its already strong industrial motors, gears and drives divisions. The ever-developing synergies between CSI, U.S. Motors and other Emerson divisions will allow our customers to be more competitive in today's global marketplace.

CSI's family of Reliability-Based Maintenance (RBM) products and related services is based upon specific process improvement strategies and integrated technologies: vibration analysis, oil analysis, infrared thermography, motor diagnostics, ultrasonics, alignment and balancing. Each of these technologies has an important individual role, and can be quite useful when used separately to detect and diagnose machinery problems. What sets CSI, and RBM, apart from the rest of the maintenance industry is the ability to provide a complete analysis of machinery health through technology integration and process improvement.

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