Mechanical Solutions, Inc.
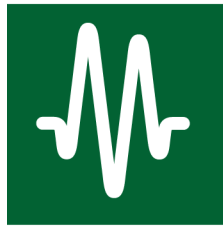
Test ▪ Analyze ▪ Solve ▪ Design ▪ Products

MSI Sentry® Data Sheet

Diagnostic Advisor and Enhanced Condition Monitoring for Critical Rotating Machinery
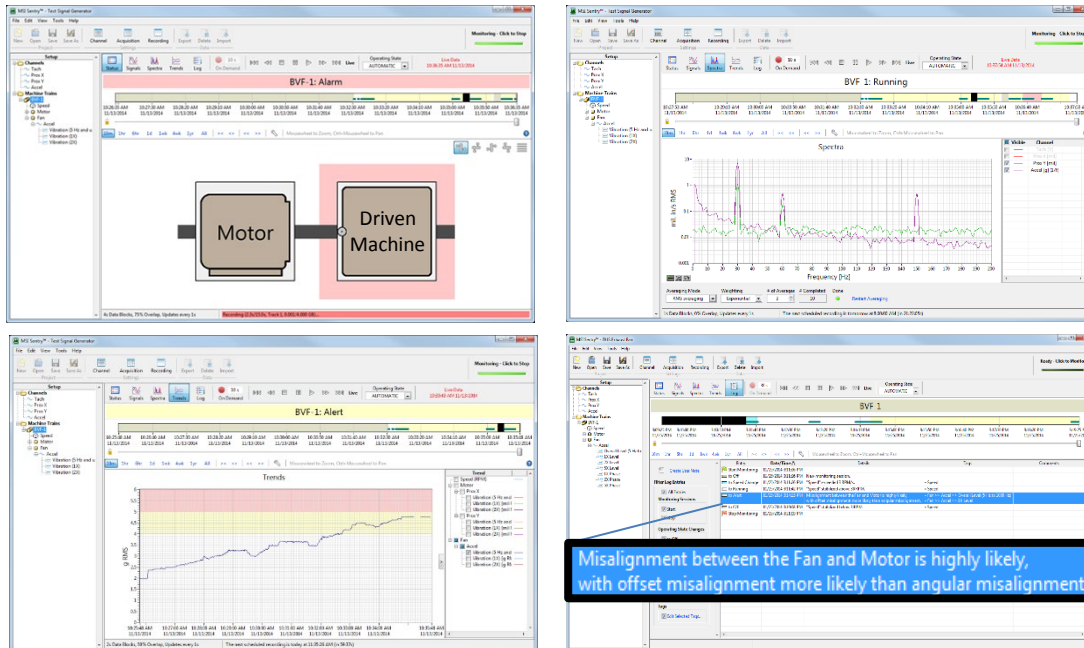
MSI Sentry® is a physics-based, highly configurable, user friendly machinery health management tool for critical service rotating machinery and balance of plant equipment. It can be used for permanently installed condition based maintenance and predictive health monitoring, as well as for temporarily installed troubleshooting and fault diagnostics.

Automated Diagnoses

Physics-based understanding of monitored equipment provides automated diagnostic recommendations for the following fault types:
- Off-BEP Operation
- Imbalance
- Misalignment (Angular & Offset)
- Roller Bearing Deterioration
- Journal Bearing Rub
- Structural Looseness
- Gear Deterioration
- Oil Whip/Whirl
- Overheating of Seal/Stuffing Box
- Pump Flow Obstruction
- Cavitation
- Soft Foot
- Cracked Rotor Bar
- Motor Static Air Gap Eccentricity
- Motor Dynamic Air Gap Eccentricity
- More under development…

Trending & Diagnostic Tools

- Efficiency tracking for diagnostic and operational objectives
- Mean, crest factor, kurtosis
- Overall level in frequency band
- Synchronous level and phase
- Blade pass/vane pass/gear mesh level
- Rolling element bearing and gear defect tracking
- Shaft orbits and centerline tracking
- Real-time diagnosis of machinery faults
- Bode plots, polar plots
- ODS data collection

Recording Options

- Continuous
- On demand
- On schedule (hourly, daily, weekly)
- On alarm (e.g. overall vibration level exceeds threshold)
- On speed change

Supports Multiple Types of Users

- Yellow light/Red light health overview screen
- Easy to understand diagnostic messages, include recommended action
- Log provides tracking of operational and diagnostic events
- Condition indicators provide physics-based assessment of specific conditions related to machine health
- Raw sensor data provides in-depth view of machinery health

Machinery Types Supported

- Pumps
- Compressors
- Motors
- Generators
- Gear Boxes
- Turbines
- Fans
- Fluid Film Bearings
- Rolling Element Bearings

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FFT Features

- Basic magnitude and phase, relative magnitude and/or relative phase
- Common window types (Hanning, Force, Exponential, etc.)
- Integration from acceleration to velocity or displacement on a per-channel basis
- Scaling to RMS, 0-Peak, or Pk-Pk on a per-channel basis
- Averaging types: none, RMS, vector, peak-hold
- Linear or exponential weighting for RMS and vector averaging
- Cursor types: none, basic, level in band (overall or maximum), harmonic, sideband
- Frequency domain or order domain (requires speed reference)

Sampling Rate

- Up to 204.8 kS/s with the PXIe-4492 or 4497 for a frequency span of up to 80 kHz

Compatible Data Acquisition Hardware Types

- IOtech 672u
- NI 9203
- NI 9232
- NI 9213
- NI 9234
- NI 9217
- PCI-4472
- PXI-4472
- PXIe-4330
- PXIe-4492
- PXIe-4497
- Need something else? Just ask.

Compatible Sensor Types

- Voltage & Current Signals
- Accelerometers
- Proximity Probes
- Tachometers
- Microphones
- Dynamic and Static Pressure Transducers
- Thermocouples
- Current Clamps
- Strain Gages and more

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