MONITOR ANY
AREA OF CONCERN
ON YOUR CNC MACHINE
TOOL OR FIXTURE

SMART MANUFACTURING SOLUTIONS

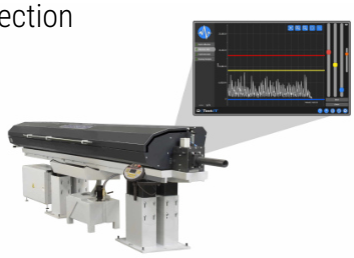
DTect IT

Sensor/Software Monitoring Suite

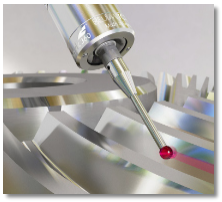
DTect-IT combines high-precision sensor technology with advanced analysis capability to monitor, detect, and (depending on the application), correct anomalies occurring in the machining process. Using sensors for vibration, strain, high-resolution power, and/or analog (connecting any sensor with a 0 to ± 10 VDC signal), the user can monitor specific parameters to alarm and signal the CNC when irregularities are present. All data is recorded and accessible in the historical viewer to analyze and trend monitored data over time.

PROMINENT APPLICATIONS

- Bar Feeder Vibration Detection
- Tool Clamping Integrity
- Vibration Analysis
- Tapping Operations
- Spindle Bearing Analysis
- Temperature and Displacement



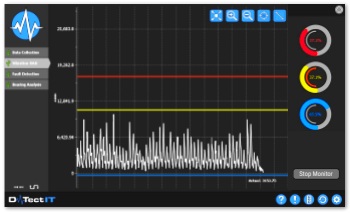
- Tool Wear and Breakage Detection
- Surface Roughness Measurement
- Collet Clamping Force Detection
- Probe Surface Scanning
- Signature Analysis
- Machine Health and Preventative Maintenance



MONITORING AND ANALYSIS MODES

LIMIT ANALYSIS

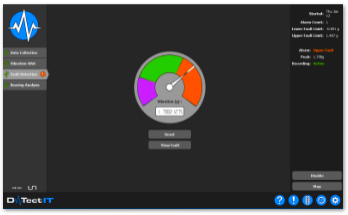
VIBRATION STRAIN DAQ AUDIO POWER METROLOGY



- Limits can be learned automatically or set manually using the adjustable sliders
- Work (area under the curve) limits can be enabled to calculate tool wear

FAULT DETECTION

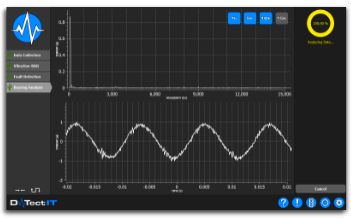
VIBRATION STRAIN DAQ AUDIO POWER METROLOGY



- DTect-IT recognizes when set upper and lower limits are exceeded, identifying an excessive condition (e.g. machine impact, overheating, extreme vibration)
- Indicates and time stamps machine faults and records data on either side of the fault for analysis

BEARING ANALYSIS

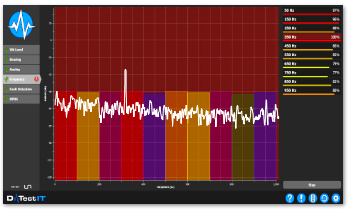
VIBRATION



- DTect-IT measures spindle vibration to monitor bearing health for analysis
- Vibration signal is analyzed for the (1) Acceleration signature which tells the health of the bearings, (2) Velocity signature which detects misalignment, imbalance and looseness

FREQUENCY ANALYSIS

VIBRATION STRAIN DAQ AUDIO POWER METROLOGY



- Set magnitude limits to monitor and detect anomalies within specific frequency bands
- Alarms and notifications are generated when magnitude limits (in decibels) are exceeded

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CARON ENGINEERING

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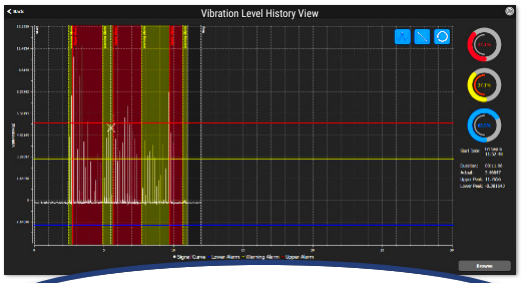
FEATURES

DTect IT

- Ideal for monitoring up to 4 tools
- Run multiple analyses simultaneously with a single sensor
- Application runs standalone or easily integrates with the CNC control
- Monitoring can be initialized from the user interface, CNC control, or digital input
- Collects raw data from any sensor (up to 62,500 data points/sec)
- Easily detects excessive bar feeder vibration (i.e. bent bar), and signals the CNC to automatically adjust spindle RPM, if needed



Analyze historical monitoring data using the **Analysis Viewer!**

SENSOR SPECIFICATIONS

VIBRATION

Vibration Sensor
Wireless and USB options

- Dynamic Range: 0 - 32 g
- Frequency Response: 100 Hz - 20 kHz at 41.667 ksps
- Temperature Sensor: -40 - 85°C NTC thermistor
- 40mm x 16mm (1.575 x 0.623 inch) including the anodized aluminum case

POWER

High Precision Power Sensor

- 3 phase power transducer
- Over 650 hp (480 KW) power handling
- Sample rate: 256,000 samples per second
- Auto-scaling display sensitivity

METROLOGY

Blum Measurement Devices

- Roughness Gauge
- Scanning Probes

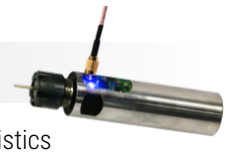
DAQ

Analog Sensor

- 4 channel inputs
- 0 to ±10 VDC analog signals
- 4 - 20 mA current signals
- Allows monitoring with power, pressure, coolant flow, etc.

STRAIN

Strain Sensor



- Capability depends on mounting characteristics
- Temperature Sensor: -40 - 100°C NTC thermistor

AUDIO

Audio Sensor (using microphone)

- Records from any recognized audio device on the DTect-IT Windows PC

Operating System Requirements
- Windows 7, 10
- Linux (x86/x64/arm)

Stored Data Format
- CSV
- SQLite
- XML

MTConnect compliant

Control Compatibility
- Fanuc
- Okuma
- Fagor
- Heidenhain
- Mitsubishi
- Siemens
- Citizen
- Brother
- Makino
- Mazak

Communication
- TCP/IP Ethernet
- RS232
- Physical I/O - Ethernet
- Physical I/O - USB

OTHER PRODUCTS FROM CARON ENGINEERING

TOOL CONNECT powered by MTCONNECT

TMAC

AUTOCOMP

CEI SMART LIGHT

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MADE IN THE U.S.A.

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