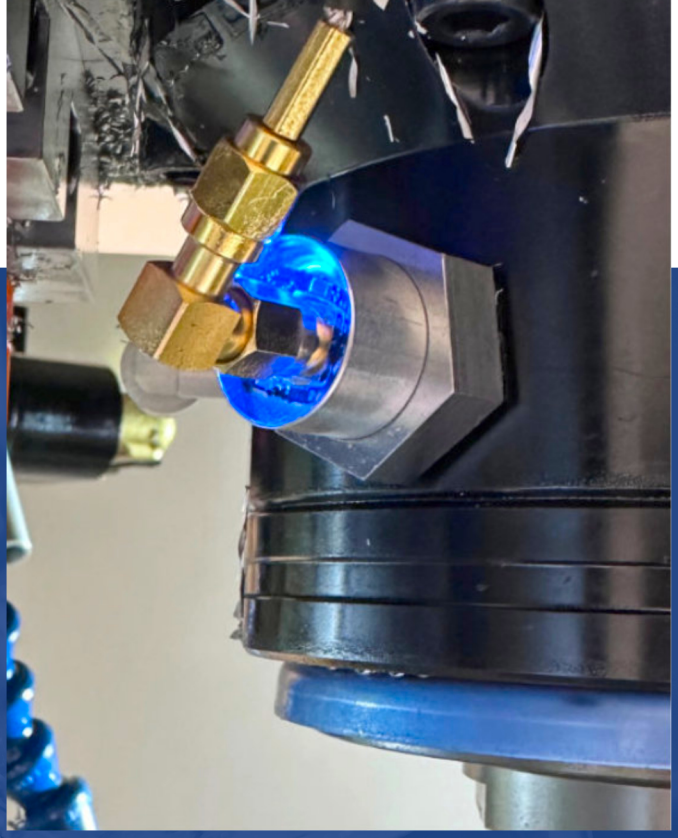
DTect IT
CNC Sensor Analysis System



Detect Problems — Before They Disrupt Production

Modern manufacturing demands precision, uptime, and quality. DTect-IT delivers all three — combining high-precision sensors with advanced analysis software to detect, diagnose, and act on machining irregularities in real time.

Detect issues early. Eliminate costly downtime.

Predict and prevent issues

Reduce scrap and rework

Eliminate unplanned downtime

Real-Time CNC Sensor Analysis

DTect-IT turns raw sensor data into actionable process intelligence, detecting anomalies early and enforcing control limits in real time. Automated machine feedback prevents scrap and equipment damage, while integrated trending and historical analysis support predictive maintenance strategies. The result is greater uptime, stronger quality control, and a more stable machining process.

Prominent Applications

- **Tool Wear & Breakage Detection:** Catch worn or broken tools in real-time to prevent scrap and rework.
- **Spindle Bearing Health Monitoring:** Analyze vibration signatures to identify bearing degradation before failure.
- **Bar Feeder Vibration Control:** Detect bar inconsistencies and reduce spindle RPM automatically to maintain part quality.
- **Surface Roughness & Probe Scanning:** In-process measurement for advanced quality assurance.
- **Analog Signal Monitoring:** Supports 4–20 mA and 0 to ±10 VDC sensor inputs for customized monitoring solutions.

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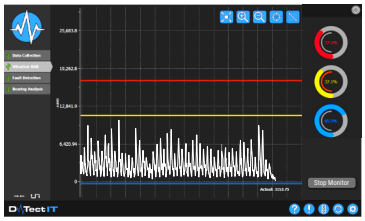
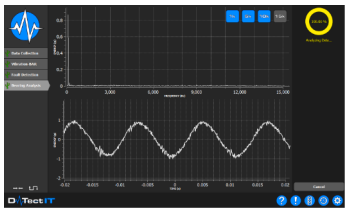
Analysis Modes

Limit Analysis



Applies lower, warning, and upper thresholds — automatically learned or manually set — to detect abnormal conditions

Bearing Analysis

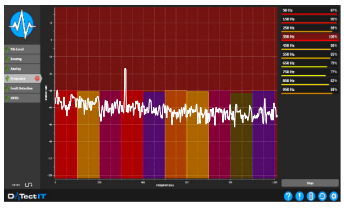


Analyzes spindle vibration in real time to assess bearing health, imbalance, misalignment, and looseness — delivering results in seconds.

Fault Detection

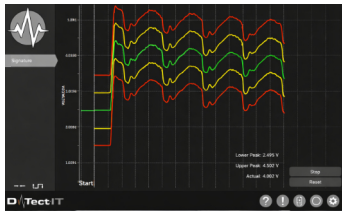
Detects excessive conditions, time-stamps the event, captures surrounding data, and records peak values for fast diagnosis.

Frequency Analysis



Monitors defined frequency bands with decibel-based magnitude limits to detect anomalies and trigger alarms when thresholds are exceeded.

Signature Analysis



Learns the complete sensor signature and enforces defined upper and lower boundaries to alarm when deviations occur.

Powerful Analysis. Clear Insight.

All monitored data is stored and accessible through the DTect-IT Viewer for charting, trending, and advanced analysis. **Run multiple analyses simultaneously** — even from a single sensor — and toggle between views instantly through an intuitive graphical interface.

Operating on any Windows PC, **DTect-IT runs standalone or integrates seamlessly with your CNC control** — delivering flexible, powerful monitoring from a single platform.

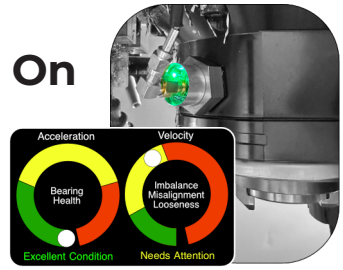
High Precision Sensors

DTect-IT integrates with a wide range of high-precision sensors so you can monitor nearly any aspect of your CNC machine's performance:

- **Vibration Sensors:** Track dynamic forces and vibration patterns to detect imbalance, impacts, and bearing issues early.
- **Strain Sensors:** Measure force and structural load to monitor tool clamping, fixture loads, and material stresses.
- **Power Sensors:** High-resolution three-phase power measurement for detecting tool wear, breakage, and cutting inefficiencies.
- **Analog Sensors:** Accept 0 to ±10 VDC or 4–20 mA signals from a wide variety of external sensors such as pressure, temperature, distance, or custom probes.
- **Roughness Gauges:** High-resolution surface roughness measurement for in-process quality verification.
- **Scanning Probes:** High-speed, precision probes for surface scanning and dimensional measurement.
- **Audio Sensors:** Utilize microphone or audio inputs to monitor acoustic signatures for cutting anomalies.

Results You Can Count On

- Reduced scrap and rework
- Improved machine uptime
- Stronger process control
- Fewer unexpected maintenance events



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