intelitek®
INDUSTRY 4.0
Condition Based Monitoring Lab

IoT • **AUTOMATION** • **AI** • **CLOUD COMPUTING** • **BIG DATA** • **CYBERSECURITY**

SMART SENSOR CONDITION BASED MONITORING LAB FOR INDUSTRY 4.0 SMART MANUFACTURING

Predictive maintenance is one cornerstone of Advanced manufacturing and Industry 4.0. Using Smart sensors to obtain real-time, relevant information from all corners of the smart factory, artificial intelligence can sense and foresee failures, triggering maintenance before downtime occurs.

The Intelitek CBM (Condition Based Monitoring) Sensor Lab is a complete kit of hardware, software, learning materials and exercises to enable students to understand how sensors work and how to use them in real industrial processes for predictive maintenance.

Smart sensors in Industry 4.0 manufacturing share critical information over open communication protocols with SCADA control systems like PLCs, MES, and ERP locally and over the cloud.

PREDICTIVE MAINTENANCE IN INDUSTRY 4.0

- Minimize unplanned downtime - Condition Based Monitoring (CBM) is used to prevent future faults

- Reduce maintenance costs - Maintenance on demand and not based on schedule

- Increase production efficiency - 100% control of productions assets

- Extend asset lifetime - Optimized maintenance cycles

CONDITION BASED MONITORING (CBM) LAB

The lab includes the smart sensor unit, accompanying software and exercises. Students can install the smart sensor and use this configuration to understand the concepts of sensors, CBM, AI, and predictive maintenance.
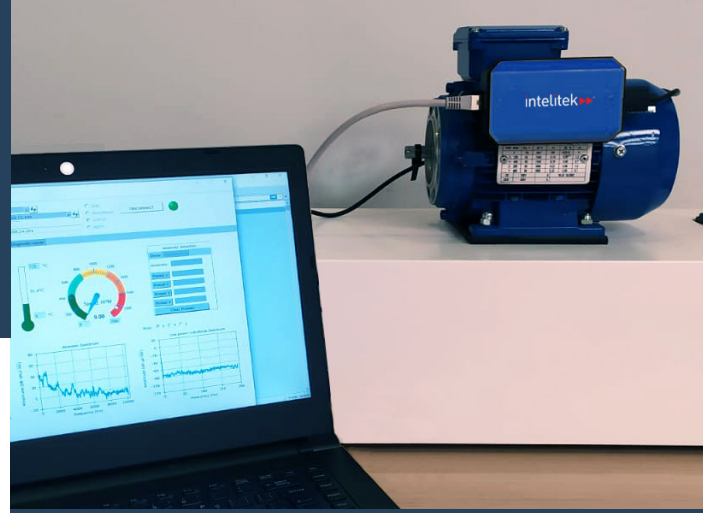
CONDITION BASE MONITORING LAB FOR INDUSTRY 4.0

This integrated education solution for Industry 4.0 education includes curriculum, labs and software tools to help students learn all about smart sensor technology, their role in the eco-system and how to use the information they collect.

Features:

- Multi-sensor probe with vibration, sound, magnetic field and temperature sensors

- Standalone lab or integrated the Job-Master Mechanical training bench

- Software for monitoring activity & trends

SKILLS YOU WILL LEARN:

- About different types of sensors and how they work

- The role of smart sensors in Industry 4.0 ecosystems and the benefits of CBM sensors

- To install, configure, calibrate, and monitor sensors

- Setting up sensor communications and to read and analyze the data and graphs received from the Smart Sensor

- The role of sensors in predictive maintenance

- Identifying faults and resolving them

- Setting up thresholds and automated alerts and alarms about anomalies in the system
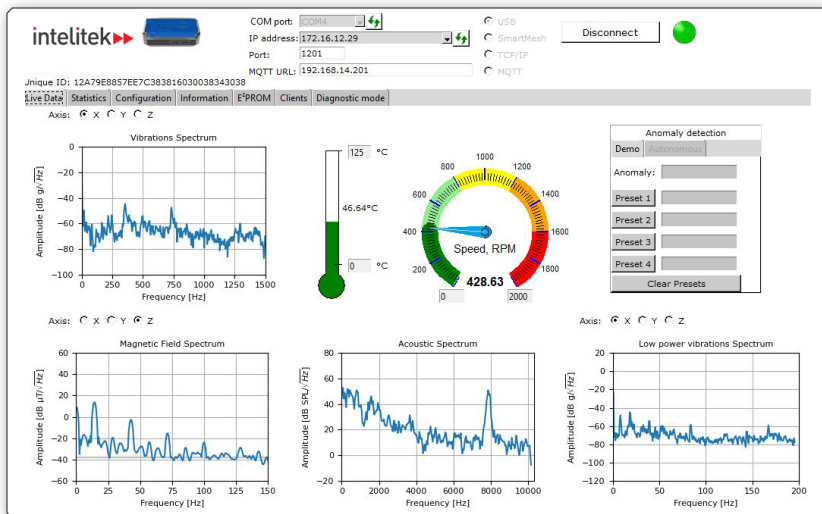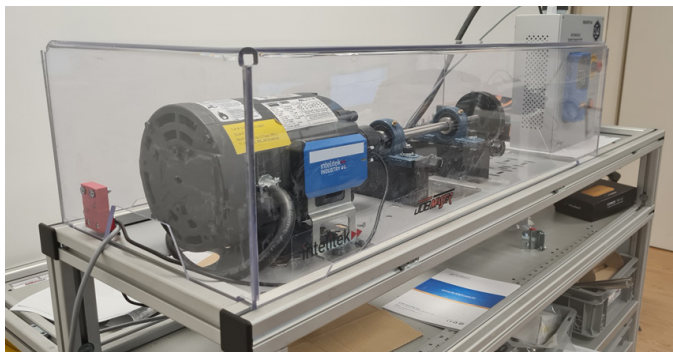
- Troubleshooting

The CBM Lab Smart Sensor dashboard, accessible locally or via the cloud, can map realtime data, data trends and setup thresholds and alarms for operators and maintenance tasks

WHAT IS A CBM SMART SENSOR?

CBM Smart Sensors monitor and report real-time status information from equipment in an industrial process and use anomalies or trends to identify potential failures and prompt pre-emptory service to avoid costly downtime

CBM SENSOR LAB

The training lab is a complete solution that integrates theory, practical and system level learning experiences into the classroom. The solution includes:

- A sensor package for hands on exercises
- Student lab activities for hands on learning
- Smart monitoring software for configuration and monitoring machine status
- A cloud application for learning remote monitoring and use of condition indicators
- Fault insertion to create change from normal behavior and learn fault detection, trend analysis, fault correction and how to use data for predictive maintenance

SMART SENSORS STARTER KIT

The CBM Sensor Lab for Industry 4.0 is built around a multisensor hardware pack designed for Condition Based Monitoring and for use on a variety of systems. The lab kit is for use in a education learning environment.

- Open architecture connected-to-cloud platform
- Compact form factor multi-sensing unit includes vibration, magnetic field, temperature and sound sensors
- NB-IoT technology communications (cellular modem)
- Embedded AI library for asset typical behavior and anomalies identification
- Warning and alarm levels and timestamp events for each sensor
- Various mounting adapters to accommodate a wide range of monitored equipment
- Cellular modem for direct internet access to the Cloud Management Software

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