Advanced manufacturing and Industry 4.0 rely on sensor data for predictive maintenance, operational efficiency, and process optimization. Smart sensors are interconnected with IIoT, have integrated Artificial Intelligence, and the capability to obtain real-time, relevant information from all corners of the smart factory.

The Intelitek CBM (Condition Based Monitoring) Sensor Lab training 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 internally and over the cloud.

SMART SENSORS IN INDUSTRY 4.0
- Minimize unplanned downtime - Condition Based Monitoring (CBM) to prevent future faults
- Reduce maintenance costs - Maintenance on demand and not based on schedule
- Increase production efficiency - 100% control of production assets
- Extend asset lifetime - Optimized maintenance cycles

CONDITION BASED MONITORING (CBM)
The lab includes the smart sensor unit and accompanying software. Students can install the smart sensor and use this configuration to understand the concepts of sensors, CBM, AI, and predictive maintenance.

SKILLS YOU WILL LEARN:
- To understand sensors & how they work
- About different types of sensors
- The role of smart sensors in Industry 4.0 ecosystems
- To install, configure, calibrate, and monitor sensors
- Sensor maintenance, data management and configuration
- Setting up sensor communications
- How sensors integrate into manufacturing systems
- The role of sensors in predictive maintenance
- Troubleshooting
WHAT IS A SMART SENSOR?

Sensors provide real-time operational and diagnostic information about physical variables and are used by controllers to enable, disable, control and monitor the health of processes. Smart Sensors collect and interpret the information locally, and using advanced interconnectivity, share the information with process management systems enabling smarter maintenance, automated process optimization and design efficiency improvements.

Smart sensors are a core part of industry 4.0 systems and personnel on all levels and in all roles need to understand this technology and how to benefit from it. Intelitek Smart Sensor training is designed for students to learn about smart sensors, and how to utilize them.

CBM (CONDITION BASED MONITORING) SENSOR LAB

The CBM Lab is a complete solution that integrates theory, practical and system level learning experiences to the classroom. The solution includes:

- Lab equipment—a sensor package for hands on exercises
- Curriculum—instructor led or self-paced courseware
- Exercises—student lab activities for hands on learning
- Teacher aids—study guides, course assistance, sample solutions and class management tools
- Software tools—to setup, configure, monitor & learn from the sensors and how they work in real world operations
- Fault insertion—to change the normal behavior & learn fault detection, trend analysis, fault correction & how to use this 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
- 10/100Base-TX Ethernet PoE port for power and communications
- 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