MACHINE CONDITION MONITORING

What is it and why should you monitor the condition of your machines?

- This is one of the ways to implement a predictive maintenance strategy.
- It provides the necessary data for process optimization, analysis, and business decision-making.
- It ensures operational safety, availability, durability and reliability of machinery and equipment.

Machine and equipment condition monitoring

Condition monitoring systems and their components contribute to the efficient and trouble-free operation of machinery and equipment in industry. By using sensors, disruptions to the production process due to unplanned downtime can be prevented. Monitoring sensors (e.g. temperature, pressure, level, vibration sensors) provide data on the system health. Analyzing such data is key to planning and optimizing machine maintenance. Condition monitoring allows faster detection of changes, such as wear and tear on individual components, and better coordination of machine maintenance.

What does Balluff offer?

From evaluating your needs, through solution concept, to implementation. With its extensive range of products, Balluff provides the right solutions for effective analysis of machine operation data. This ranges from sensors that transmit data via an IO-Link interface for efficient condition monitoring, through standard systems with software for alerts, visualization and data archiving, to individual tailor-made solutions.

- What may the failure to monitor machinery condition lead to?
- Without constant monitoring, we do not have the data to optimize production and cost.
- Unexpected failures reduce the productivity of machines and reduce the OEE factor.
- Unplanned downtime prevents efficient production management and causes financial loss.
- Quality problems have a negative impact on production efficiency.

MEASUREMENT

I want to use a sensor for measurement and analysis.
I will do the set up and prepare the data visualization myself.

I need a sensor that:

- Provides information on vibration level, contact temperature, pressure, and humidity
- Has pre-defined machine profiles and alert and warning levels
- Returns statistical data e.g. RMS, Peak-to-Peak
- Communicates in the IO-Link standard

READY-MADE SOLUTIONS

I want the machine monitoring solution to
be complete and yet fast and easy to implement.

I need a ready-made system that:

- Requires little installation time
- Performs measurements, provides visualization, data archiving and alerts
- Choose the right path for you and we will do our best to accompany you

MEASUREMENT

	BCM0001	BCM0002
Description	Vibration and temperature monitoring sensor. Thanks to its adapted design with high protection class (IP69K), the sensor can also be used in harsh environments.	The sensor records up to four different variables: vibration, temperature, humidity, and ambient pressure. All in one compact enclosure with IP67 protection.
Overview/features/environmental conditions		
Dimension	20 × 26 × 10 mm	20 × 26 × 10 mm
IP rating	IP67[1], IP69K	IP67[1], IP69K
Ambient temperature	0...70 °C	0...70 °C
Weight	30 g	30 g
Material	Stainless steel (grade 1.4404), diaphragm: ePTFE with nylon fibre[1]	Stainless steel (grade 1.4404), diaphragm: ePTFE with nylon fibre[1]
IO-Link interface (Version 1.1)		
Speed	COM3 (230.4 kBaud)	COM3 (230.4 kBaud)
Process data cycle time Min.	10 ms	10 ms
Signal	2 × green and orange LED[1]	2 × green and orange LED[1]

READY-MADE SOLUTIONS

	CMTK: CONDITION MONITORING TOOLKIT	PMSYS: PORTABLE MONITORING SYSTEM
Machinery monitoring	Machinery and equipment, production lines, process lines	Decentralised rotating and sequential machinery and equipment
Data archiving and access	The data is stored in the local database of the CMTK. Access via embedded software.	Data is stored in the cloud. Remote access via a browser.
Analysing the collected data	Setting warning and alarm thresholds for the measured values possible	Setting warning and alarm thresholds for the measured values is possible
Data transmission	Through LAN	Via mobile wireless communication (2G/LTE/NB-IoT)
Alerts	Visualisation on synoptic screens (Dashboard), e-mail	Visualisation on synoptic screens (Dashboard), e-mail, SMS
Data acquisition	Data logging max. every 50 ms	Data recording up to max. once per second
Measuring quantities	All values measured by sensors with IO-Link interface	Contact temperature, vibration, ambient pressure, relative humidity
System components	1. Up to four IO-Link sensors (all manufacturers) 2. Local module/server/computer collecting data from sensors 3. Visualisation on any device connected to the module via LAN	1. BCM sensor 2. Gateway 3. Visualisation on any device with Internet access

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