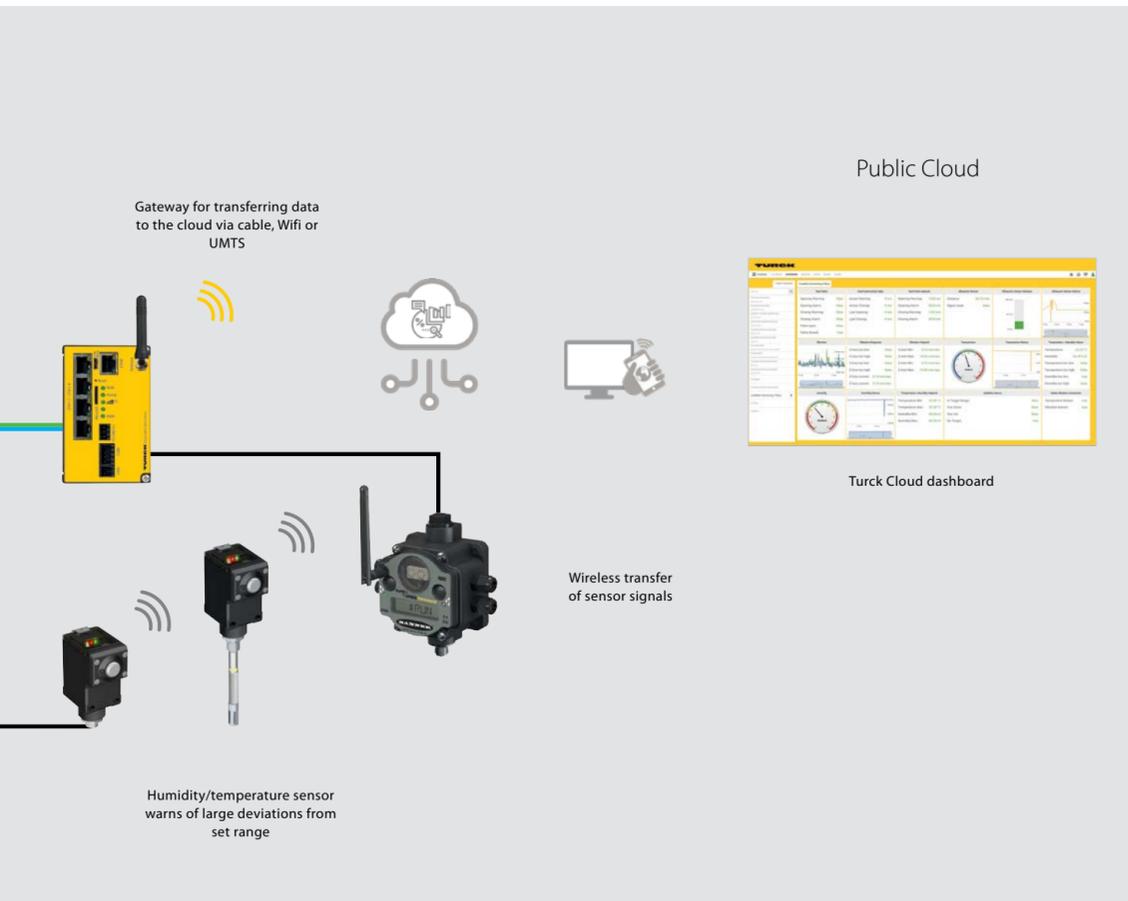


## System Solutions for Condition Monitoring



TBEN-L-PLC

**Compact controller in IP67**

- The TBEN-Lx-PLC-10 CODESYS 3 controller is a compact IP67/IP69K PLC for small or modular machines and can be installed directly in the field, thus enabling cabinet-free machine and plant installation
- Automation concepts close to the machine and pre-assembled cables reduce cabling effort and simplify commissioning
- Master and slave protocols also allow use as a protocol converter



TCG20

**Multi-functional cloud gateways with WiFi and UMTS**

- The EDGE gateways of the TCG20 series offer a variety of interfaces for simple integration in automation networks
- Existing installations can thus also be integrated quickly and easily into cloud systems via UMTS or WiFi without having to replace the existing hardware
- The integrated EDGE PLC enables existing systems to be connected, but can also act itself as a controller and exchange data with cloud systems



Turck Cloud Solutions

**Cloud solutions for industrial use**

- Turck Cloud Solutions make pure user data available on different channels, evaluate it through different analyses and form a digital shadow
- Turck Cloud Solutions and Turck products can not only be integrated in controller architectures and network topologies, but also in the cloud solutions of other manufacturers
- Turck Cloud Solutions offer tailored functions for your specific automation applications as well as local on-premises solutions (private cloud)

Your Global Automation Partner

## System Solutions for Condition Monitoring



**Smart data, clearly prepared for you**

The dashboard of the Turck Cloud Portal shows the current machine data and states at a glance; the GUI can also be adapted by the customer as required.

**Scalable solutions hosted on or on premises**

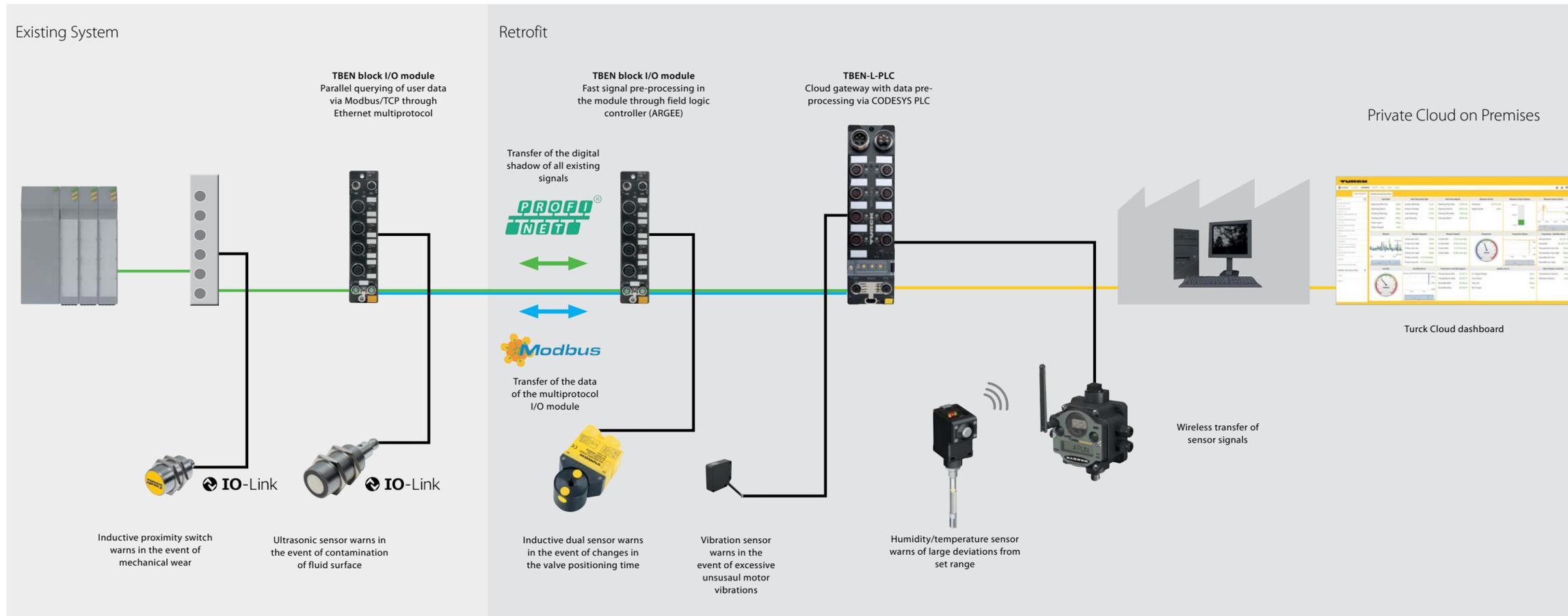
- Encrypted data transfer
- Quick and easy integration
- Relevant data can be accessed worldwide at any time



Over 30 subsidiaries and 60 representatives worldwide!

# System Solutions for Condition Monitoring

# Condition Monitoring in Practice



All condition monitoring solutions depend on the relevant sensor and machine data being transferred to the cloud for processing. The controller can actively transfer the data to the cloud gateway or the gateway can read it directly from a Turck multiprotocol fieldbus station, unnoticed by the controller. If other signals are required, sensors can be connected to the gateway by cable or also wirelessly. Whatever you decide, Turck has the perfect solution for all applications.

### Interlock control in a spreader

The BI20U-M30-IOL6X2-H1141 inductive sensor detects the end position of the interlock unit. The bearing of this unit can change slightly due to mechanical wear and thus slightly alter the distance to the sensor. If this is the case, the sensor indicates this to initiate predictive maintenance.



### Level measurement in a tank

The RU40U-M18E-LIU2PN8X2T-H1151 ultrasonic sensor measures the height of the fluid and transfers this as an analog value. Foam or foreign objects cause the amount of reflected sound to be reduced, thus making measurement more difficult. Before this becomes impossible due to further foam formation, the sensor generates an alarm.



### End position indication of a valve

The NI4-DSU35TC-2AP4X2 inductive dual sensor generates a signal when the rotary valve is opened or closed. A clear change in the positioning time indicates that the condition of the valve or the ambient conditions have deteriorated. The FLC fieldbus station determines this time and generates an alarm if it is too short or too long.



### Vibration measurement on a motor

The QM42VT1 sensor measures the vibration on the surface of motors. If it is too large, the cloud generates an alarm. The sensor signals are transferred to a gateway with the DX80N2Q45VT wireless node or via RS485. Optional battery operation enables retrofitting without the need for additional cables. Temperature monitoring is also possible with this sensor.



### Measurement of the air humidity and temperature in a storage room

The M12FTH4Q sensor measures the air humidity and temperature in storage rooms. The actual values are transferred via the DX80N2Q45TH wireless node. An alarm is generated if the limit values are undershot or exceeded. Optional battery operation enables retrofitting without the need for additional cables.



**Ethernet multiprotocol**  
Each module can talk PROFINET, EtherNet/IP™ or Modbus TCP. The module detects the bus protocol automatically during the ramp-up phase. This reduces the number of device variants required and makes it possible to operate a machine on different controllers.



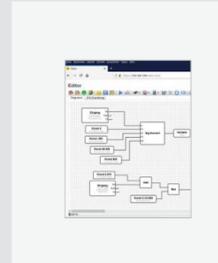
**FLC: ARGEE field logic controller**  
The ARGEE web-based programming environment adds logic functions to Turck's Ethernet multiprotocol block I/O modules. Sensor signals can be pre-processed remotely and warning messages generated. This turns any sensor into a smart sensor.



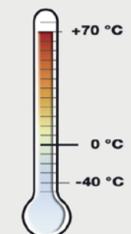
**Wireless signal transfer**  
The DX80 wireless system offers a simple way of transferring process data wirelessly from the field level to higher-level systems. A wide range of sensors and displays can be connected with the wireless system, if required totally cable-free with batteries.



**IO-Link**  
IO-Link typically allows the transfer of two bytes per 2 ms cycle, as well as other information such as parameters or diagnostic messages acyclically. The "last meter" up to the sensors is thus made accessible for seamless communication.



**Web-based EDGE PLC**  
Thanks to the graphical editor, the integrated EDGE PLC can be programmed quickly and easily with any standard browser via the web server on the device, without the need for special software or the purchase of licenses. Data can thus be easily recorded, pre-processed and transferred.



**Harsh environmental conditions**  
Besides the fully potted module electronics, the extended temperature range from -40...+70 °C, as well as the high protection classes IP65, IP67 and IP69K, help to create the robust overall concept. This increases the range of possible applications in industrial environments.