Berchtesgadener Land

Reliable temperature monitoring

Trust is good, control is better

Reliable temperature monitoring in dairy processing

Milk is a high-quality natural product whose processing requires precise temperature settings. The Berchtesgadener Land dairy uses innovative temperature sensors from ifm in key process areas. These special sensors continuously monitor themselves, thus ensuring compliance with the highest safety standards and optimising the quality of the dairy products.

The Berchtesgadener Land dairy, a cooperative organisation situated between the Watzmann and the Zugspitze mountains in the picturesque foothills of the Alps, processes around 300 million kilograms of milk from its farmers every year.

Every year in the idyllic Berchtesgadener Land district, the dairy processes 300 million kilograms of milk produced by its cooperative farmers between the Watzmann and Zugspitze mountains.

At the production site in Piding, in the BL district, the milk is used to make premium products with the utmost care. Berchtesgadener Land's portfolio includes numerous products such as traditionally produced fresh bottled milk, whipping cream, butter, quark, natural yoghurt, kefir and buttermilk.
Lorenz Engljähringer, plant manager at the Berchtesgadener Land dairy, explains the orientation of the business: *"Quality is our top priority. We process the raw milk as carefully as possible and try to produce high-quality products in as few process steps as possible."*

Temperature monitoring

The quality of all milk products depends on maintaining precise temperatures throughout the entire dairy process. High-precision sensors guarantee defined temperatures along the entire process chain, from the inbound delivery of the milk in the tankers to processing and intermediate storage to outbound delivery of the processed final products. The continuous temperature monitoring also extends to secondary processes such as cleaning and sterilisation, to ensure compliance with statutory regulations and hygiene standards.

100% reliable measurement values: self-monitoring temperature sensors from the TCC series with on-board diagnostics in dairy processing.

> *The temperature sensors from ifm can be used to ensure high product quality.*

Reliable measured values

Sensor-manufacturer ifm has developed the TCC temperature sensor for monitoring temperatures at particularly critical points. What makes it special is its integrated permanent self-monitoring function.

Christian Doll, Technical Sales Engineer at ifm, explains: *"The TCC temperature sensor uses two thermally coupled sensor elements, a sensing element and a reference element to conduct precise measurements in the sensor tip. The measured temperature value is generated by the sensing element and provided via the analogue output or IO-Link. The reference element is used for comparison purposes and to verify the process value. Possible effects of ageing cause inaccuracies in temperature measurement and can be identified by a drift between the sensing element and reference element. A warning is triggered if the temperature difference exceeds the predefined calibration check limit. In this case, the LED display on the sensor switches from green to blue and the diagnostic output sends a warning signal to the controller. This unique permanent self-monitoring across the whole measuring range creates trust in the accuracy of the measured value."*

Another advantage of this integrated diagnostic function is that there is no need for a second monitoring sensor to be installed at critical points. This significantly reduces the costs of hardware, installation and calibration. The TCC temperature sensor also revolutionises the conventional cyclical replacement of sensors at sensitive measuring points. Instead of being replaced regularly and preventatively, the TCC can be replaced

Automated processes ensure maximum efficiency.

cost-efficiently as needed. The special feature: the sensor automatically detects when its accuracy tolerance is reached and alerts the user. Only then is replacement necessary – avoiding unnecessary preventative replacement.

The calibrated process values of the TCC sensor can be considered reliable until the accuracy tolerance is reached. This way, the sensor guarantees maximum measurement value reliability and contributes to maintaining consistently high product quality. Every TCC is delivered ex works with a ISO 3-point calibration certificate which also contributes to quality assurance. For maximum reliability, the device serial number can be monitored via IO-Link, representing a new dimension for quality assurance and documentation of the process values.

Digital data transmission and diagnostics with the IO-Link

In addition to the conventional integration of the sensor via analogue output (4–20 mA) and the diagnostic switching output, the TCC can also be connected via IO-Link. This digital communication offers advanced diagnostic options such as being able to separately read the temperature values of the two measuring elements. This allows the user to recognise trends in drift behaviour early, regardless of the set limit. This function enables early identification of calibration requirements and timely planning of device replacement. In addition, the IO-Link is used to conveniently set the parameters for the sensors, for example to determine the drift limit.

Won over by TCC

The dairy has been won over by the advantages offered by the TCC.
"The temperature sensors from ifm can be used to ensure high product quality. We use the TCC sensors for in-process measurement of product temperature, cleaning temperature and sterilisation temperature. Because the sensor contains two temperature probes, the process remains stable even if one of the measurement probes is defective, because the sensor continues to send the measurement signal of the other measurement element to the controller. These sensors were chosen not only based on their attractive price, but also on their food-safe resistance to alkalis, acids and disinfectants," explains **Andreas Holleis**, Head of Process Engineering & Automation at the Berchtesgadener Land dairy.

Partnership with ifm

In addition to the temperature sensors, the dairy also uses numerous other ifm sensors including pressure sensors in pipes and tanks and inductive sensors on valve manifolds. This is no coincidence, as plant manager **Lorenz Engljähringer** explains: *"We've been working in close partnership with ifm for decades. For us, this is an important building block in achieving our goal of manufacturing high-quality products and being able to make the process safe and efficient."*

Conclusion

Having trust in measured values is important, but only continuous self-monitoring guarantees a 100% reliable measured value. This is essential in sensitive processes such as milk production that demand the highest quality. The TCC from ifm makes a key contribution to this.