

Additional safety for hygienic processes

The first device for continuous measurement of buildup thickness enters the market

Since 2015 Endress+Hauser has been offering a level device that uses both conductive and capacitive measuring signals for level switching. The idea of using these signals to develop a continuous evaluation to optimize cleaning processes has now been put into practice. As world debut in the food and beverage industry, the Liquitrend QMW43 reliably measures the product buildup thickness when it occurs in tanks and pipelines. It helps customers to optimize processes, increase plant safety and provides reliable criteria to verify the product quality.

Process optimization and increase of plant safety by means of buildup thickness and conductivity measurement

Part of the production time is spent on cleaning the plant. This is of great importance in the food and beverage industry, as it guarantees the production of high-quality and hygienic products for the end user. Many of the production processes in the food sector take place in closed systems. When pipelines or tanks are opened, there is a risk of contamination of the system through the penetration of bacteria. For this reason, Cleaning-In-Place (CIP) is used, an automated cleaning in a closed process. To ensure that tanks and pipelines are sufficiently cleaned, conductivity and turbidity values of the CIP return flow, for example, are evaluated and documented. In many cases, processes and the duration of cleaning are determined based on empirical data. To prevent insufficient cleaning, the cleaning time is often increased in practice.

How can this unproductive time be minimized without risking product safety and lacking documentation? The Liquitrend QMW43 provides the answer. By evaluating the measurement signals, the plant operator knows whether buildup still adheres in tanks or pipelines and how strong it is. The additional conductivity measurement also provides information about the cause of the buildup, i.e. whether it is caused by product residues or cleaning agents. The Liquitrend thus supports the plant operator in determining the cause of the contamination. Due to the direct connection of the device to the control system, the measurement data is available in real time and is automatically documented. If the sensor shows no more buildup and conductivity, it can be concluded that the critical points have been successfully cleaned. Thereby, the Liquitrend QMW43 provides insights into the process which allow the cleaning time to be optimized. Valuable production time can be gained without losing the certainty of bringing flawless products to market.

Constant product quality by measuring product-specific parameters

End consumers expect consistent product quality. This requires comprehensive quality control in the manufacturing companies with regards to appearance, smell, taste, consistency and shelf life of the products. For this purpose, numerous laboratory samples are taken in practice and the parameters mentioned are tested. This procedure costs time and, due to the necessary sampling, does not provide continuous measurement data. By means of the highly repeatable continuous measurement of conductivity value (conductive) or dielectric constant (capacitive) by the Liquitrend QMW43, the electrical properties of the products can be continuously determined and monitored.

In the control system, limits can thus be set to immediately identify and reject qualitatively differing products. This makes it possible to reduce laboratory measurements without compromising process reliability and product quality.

Field of application

The Liquitrend QMW43 was developed for the food and beverage industry. It can be used to measure liquid or pasty media. It is irrelevant whether the media are electrically conductive or not. Due to the unique use of both conductive and capacitive measuring cycles, the device automatically detects the most accurate measuring mode and uses it automatically. This means that the device can be used without any prior knowledge of the type or strength of the contamination or the medium and without any presettings. Application and location in the respective plants are varied. The Liquitrend fulfils the guidelines applicable in the food and beverage industry and has been constructed with food safe and FDA compliant materials.

The advantages of the new Liquitrend QMW43 at a glance

- Universal measuring principle for use in the food and beverage industry
- Reliable and accurate measurement of buildup thickness and conductivity regardless of media type
- Hygienic safety by Design: 3A, FDA, EHEDG and EG1935/2005 conformity, as well as a verifiable surface roughness of $R_a < 0.76\mu\text{m}$ and traceability of the materials used in accordance with EN10204- 3.1 are a matter of course
- Conductive as well as capacitive measuring cycles in one compact measuring device
- Flush-mounted stainless-steel sensor offers the perfect insight into the conditions in pipelines or tanks
- Plug and Play - simple commissioning without presettings
- Easy reading of the measuring signals in the control system
- Integrated digital communication option via IO-Link