Focus on the food industry
The best product fit for your applications
Nourishing your productivity

Your global partner for accurate measurements and expert support in Food and Beverage automation

For decades, global and local producers, as well as plant and machine builders have profited from our support and innovations designed to increase productivity and reduce costs. Looking for answers? From hygiene regulations and food safety to the basic demands of reliability and uptime, high quality food & beverage producers profit from our experience in more than 100 countries.

Get it right the first time and make your safe choice:

Ensure food safety, quality and compliance
Meet global hygiene regulations for food safety with robust proven in-use products. Benefit from traceable and accredited calibration services at your facility or in our lab.

Accurate, hygienic inline measurements conserve resources
Get real-time, accurate data from your critical process points and save money on raw materials, water, energy and labor, without interruption in your production.

Helping you focus on your core business
Receive quality guidance of the optimum-fit products for your specific needs from a network of global and local experts who stay by your side through the entire life cycle.
Raw material reception

Monitoring volume flow and raw material quality

Monitoring the quality and quantity of material flows in the process starts from the moment the raw materials are received. This area of the facility is of particular importance as it directly influences the calculation of the facility's output. Efficient and extremely reliable measuring technology are thus required in this area.

**Monitoring volume flow: Promag H 100 flow measurement**

This electromagnetic device is remarkably compact and efficient and it also boasts a new, completely hygienic design whose cleanability has been certified by the EHEDG. A characteristic feature of the device is its measuring properties which allow the volume flow to be calculated with maximum precision.

**Monitoring of massflow: Flow measurement Promass S 100**

Promass S is at the forefront in hygienic design – Endress+Hauser’s industry-optimized measurement solution meets all the hygienic requirements for installation in the Food and Beverage industry. Combined with the smallest transmitter housing available today it delivers full performance on the smallest footprint.

The latest generation ultra-compact transmitter offers functions for self-monitoring and online testing. Device disassembly for servicing or recalibration is therefore not necessary thus avoiding downtime in this strategic part of the production facility.

**Monitoring the quality of raw materials: Ceramax CPS341D pH measurement**

The pH value is often used to monitor the quality of raw materials. For example, in the dairy industry, the pH value is used to test the quality and freshness of the milk on its arrival to the facility and ensures its traceability. Combined with the Liquiline CM42 or CM44 transmitter, the Ceramax CPS341D pH electrode is the non-glass alternative for continuous measurement of the pH value.

It is CIP-tolerable and EHEDG-certified thanks to the robust and hygienic design of porcelain-enameled steel metal. Memosens technology with non-contact, digital signal transmission ensures data security and optimum integration even in humid conditions. Due to the high stability and reproducibility of the measurements, the number of calibrations can be reduced by one cycle per year.
Storage management

Level measurement with Micropilot, Levelflex and Cerabar

Good storage management of raw materials and cleaning products is key to the optimum control of production and supply. The tanks must be equipped with reliable and accurate measuring instruments for this purpose. Whatever the composition of the process media (liquid or powder form), their chemical properties or the shape of the tank, we offer a suitable device for level measurement in every situation. Furthermore, temperature monitoring of the process medium and cooling circuit consistently guarantees perfect storage quality.

Non-contact level measurement for liquid process media: Micropilot FMR52
Non-contact level measurement is an efficient and hygienic technique for tanks ranging from a couple of liters in size to nearly a hundred cubic meters.

The new, FMR52 free space radar device is not affected by the process medium density, conductivity, viscosity or build-up. The easy electrical and mechanical integration of the device, which can be used in both liquid and pasty substances, is one of its outstanding features.

Level measurement with guided radar: Levelflex FMP52
Levelflex FMP52 for level measurement in aggressive liquids with chemically resistant gap-free PTFE-coated probe. All wetted parts are FDA listed materials. FMP52 guided radar offers maximum reliability even in case of moved surface. Levelflex FMP52 is used for continuous level measurement of liquids and pastes. The measurement is not affected by changing media, temperature changes, gas blankets or vapors.

Level measurement based on hydrostatic pressure: Cerabar PMC51
Thanks to its new design, this sensor offers exceptional long-term reliability even in damp environments. Its extremely robust oil-free measuring cell minimizes the risk of plant downtime as the cell immediately detects a breakage caused by extreme pressure or vacuum peak.

The most important features and benefits:
- Simplified operation with change of measuring range without pressure simulation
- Longer maintenance intervals thanks to exceptional long-term stability
- Optimum safety and quality due to self-monitoring of process isolating diaphragm

www.endress.com/fmr52
www.endress.com/fmp52
www.endress.com/PMC51
Device innovations

Deltapilot FMB50  The compact Deltapilot FMB50 transmitter with the condensate resistant Contite measuring cell is typically used in the process and hygienic applications. It is made for level measurement in liquid and paste-like media in open or closed containers and unaffected by possible foam formation.

Temperature measurement and monitoring: Easytemp TMR35  Made entirely of stainless steel, and typically used in tanks and pipes, TMR35 thermometers are designed for temperature measurements from -50 °C to +200 °C. These ultra-compact sensors are easy to install and can be adapted to any process without exception thanks to their hygienic connections and the M12 plug-in connector.

The most important features and benefits:

- Hermetically sealed Contite measuring cell with condensate-resistance,
- High reference accuracy: ±0.2%, optionally ±0.1% and minimum temperature effects
- Hygienic approvals

www.endress.com/fmb50

The most important features and benefits:

- Extremely short response time (t90 < 2s)
- Excellent price/performance ratio

www.endress.com/tmr35
Production preparation

Level detection with Liquiphant and Liquipoint

The components are filled into the production containers in this section of production. Filling must be monitored precisely to ensure that the container does not overflow and to prevent the pumps from running dry. It may be necessary during this production step to check the quality of the components inline, e.g. with density or viscosity measuring devices. Monitoring the filling of containers and dry running protection for pumps: Four solutions to cover every medium and every installation position.

Universal level detection: Liquiphant FTL33
The Liquiphant, the first level limit switch with vibration technology, has been recognized for its exceptional detection reliability for many years. The advantage of the Liquiphant FTL33 is its hygiene-compliant design allowing the use of materials required by the stringent standards of the food industry.

The most important features and benefits:
- Universal limit detection, not sensitive to fluctuations in temperature, density, viscosity, conductivity etc.
- Sensor self-monitoring for maximum process safety
- Loop check without disassembling the measuring device
- No calibration or adjustment required

www.endress.com/ftl33

The Liquipoint FTW23 is developed and built for the food industry and meets all international hygiene requirements. It is intended for use in applications in liquid media without build-up.

The most important features and benefits:
- Capacitance point level sensor
- Cost-effective sensor for aqueous media (DC ≥ 20)
- Meets international hygiene requirements

www.endress.com/ftw23

Universal process connection If the FTL33, FTW23 and FTW33 devices are ordered with an M24 connection, they can be adapted to Varivent, DIN 11851 and other process connections.
Flush-mounted level detection: Liquipoint FTW33
The Liquipoint FTW33 sets entirely new standards when it comes to operability and hygiene with its hygienic, 100% flush-mounted construction and detection without medium adjustment.

Liquiphant FTL50H is a point level switch for use in hazardous areas with all international certificates. Especially useable in the food industry with hygienic certificates (3-A, EHEDG).

The most important features and benefits:

- Ideal for processes with cleaning pigs and cleaning balls thanks to flush-mounted installation
- Not sensitive to buildup – ensures reliable detection even in the case of media containing particles, pasty or viscous media
- No readjustment of the switching point during product change
- Universally applicable in aqueous media, oils and greases (DC ≥ 2)

www.endress.com/ftw33

www.endress.com/ftl50h
Inline monitoring of process media quality

**Viscometer, density measuring device and flowmeter: Promass I** The Promass I mass flowmeter is a measuring device with huge potential. Its multiparameter functionality increases quality and productivity in production processes.

The measured error of 0.1% guaranteed by factory calibration enables extremely accurate material flow and management of supply. Simultaneous measurement of multiple parameters such as mass flow, density, temperature, viscosity and volume flow, or any combination thereof, can be used for example to improve product quality, to track the Brix degree of a fruit juice accurately or to determine the cooking degree of a cheese. This flowmeter is thus the perfect tool to carry out an inline quality check of the ingredients or the end product.

**Density measurement in pipes or directly in the container: Liquiphant M combined with the FML621 computer** When used in conjunction with the FML621 computer, the Liquiphant M vibration point level switch can simultaneously measure the level and density of a liquid. Density measurement allows process optimization through continuous monitoring of the product; this leads to improved product quality without interrupting production. Medium detection is also possible. Combined with the FML621 computer, the Liquiphant M can be used to measure the density in the preparation vessels or in the pipe when transferring process media.

Liquiphant Density allows intelligent medium detection, quality control and phase separation. It is able to calculate reference densities and concentrations of a liquid by converting measuring values to various units, e.g. Brix, Baumé, alcohol etc.

www.endress.com/promass-I100

www.endress.com/fml621
Thermal treatment

Reliable measuring devices guarantee optimum process safety

Thermal processes such as pasteurization are critical production steps requiring very accurate monitoring and observation. Only quality measuring devices fitted with the latest technology can guarantee a high product quality, measuring reliability and optimum process safety all at the same time.

iTHERM TM411 thermometer
It is essential that a thermometer offering exceptional capabilities be used to monitor the temperature increase during the pasteurization process accurately. A low measured error, fast response time and easy recalibration are required in this scenario. The new TM411 thermometer meets all of these requirements.

The most important features and benefits:
- High level of measurement accuracy (sensor-transmitter matching)
- Uniquely fast response time (t90 = 1.5s)
- Simplified maintenance and calibration: tool-free, quick dis-assembly of the insert
- The innovative QuickNeck system means that it is not necessary to remove the connecting cable and insert. This avoids wiring errors.

www.endress.com/tm411

Available as of June 30, 2016.

The Cerabar PMP23 pressure transmitter
with fully welded and flush-mounted metal sensor for use in hygienic applications is a price-attractive compact pressure transmitter.

The most important features and benefits:
- Fully welded sensors ensures highest hygienic requirements
- Certified by EHEDG and 3-A, compliant to FDA
- Cleanability from outside is given with a IP69K version, also Ecolab testing has been successful performed
- An easy and fast cleaning through CIP or SIP is possible

www.endress.com/pmp23

Audit-proof data storage: Memograph M RSG45
The RSG45 data logger enables the tamper-resistant recording of all data relevant to the heating process, providing documentary evidence of an intact process and proof of product safety. An integrated web server means that operation, visualization and curve presentation are not only possible onsite. The data can be made available to all authorized personnel within the company via the Ethernet output.

www.endress.com/rsg45
Spotlight on the food industry

Cleaning and disposal

Cleaning production facilities and reducing raw material waste

**CIP process: Indumax CLS54D and Liquiline CM44x** Many production facilities in the food industry have one or more onsite cleaning systems that use acid substances such as nitric acid or alkaline substances such as natron. Conductivity is one of the most important parameters for monitoring and controlling the concentration of cleaning agent. It is used not only to separate the water from the product (e.g. milk) but also to separate the water from the cleaning agents as they return to the CIP facility.

Combined with up to eight inductive CLS54D sensors, the Liquiline CM44x transmitter provides a cost-effective solution for cleaning-in-place.

It measures precisely even in the case of deposits containing fat, proteins or minerals and has a high repeatability of measurements. Memosens technology prevents the risk of electromagnetic interference and stores the sensor’s process, calibration and adjustment data. It is easy to install in your facility without any special configuration.

**CLD18** Smartec CLD18 is the cost-effective solution for all applications in beverage plants where small tubes are used and where the toroidal measurement is used as a switch function. The combination of a transmitter and a sensor is interference-free, easy-to-use and features a hygienic design that protects your products and processes from contamination. Smartec CLD18 ensures the Overall Equipment Effectiveness (OEE) of your plant thanks to fast and reliable CIP and phase separation measurements.

The most important features and benefits:

- Unique hygienic design avoids contamination
- 3-A approval
- Suitable for cleaning-in-place (CIP)
- Compact design permits installation in small tubes without restricting the flow

www.endress.com/cl54d
www.endress.com/cm44x

www.endress.com/cld18
Minimizing product loss: OUSAF11 One of the main objectives of food production is to minimize product loss. Every liter of milk that gets into the wastewater not only reduces sales revenue but also leads to additional operating costs in wastewater treatment. Whether it is a case of tank cleaning that started too early during milk collection or product loss caused by incorrect operations in the process, wastewater monitoring using the OUSAF11 alerts the personnel responsible in good time.

Product loss is reduced in the process by precise phase separation, e.g. when changing or discharging the product. If the phases have the same conductivities but different optical absorption properties, the phase changes can be reliably and continuously detected using the OUSAF11.

With its stability at high temperatures, glass free and abrasion resistant properties it is a perfect fit for food processes. Up to two OUSAF11 sensors can be connected simultaneous with the Memograph CVM40 transmitter thereby reducing the investment cost of each loop. Additionally it offers storage functions that not only ensure traceability of the turbidity measurement but also of connected measurements such as flow rate or display of pH or conductivity values. Therefore it is the ideal sensor to monitor product loss when installed in the facility’s sewage system or drains.

Memosens technology

This patented technology is a digital data communication protocol. The innovative system enables non-contact data transmission between the sensor and transmitter. It uses a new connection type without metal contact and is completely waterproof.