

Live process insights

Maximum quality-control with Teqwave H through simple operation, inline measurement and timesaving analysis

Teqwave H

Benefits at a glance

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Measuring principle

Technical data



Teqwave H

Do you want to ensure inline quality control adapted to your needs, in real time ?

With Teqwave H sensors you can accurately measure liquid concentrations such as Brix levels in juices, soft drinks and syrups in your process. Product-specific recipes stored directly in our Teqwave device ensure on-going accuracy and repeatability of concentration measurement in food and beverage processing. Continuous inline measurement with integrated documentation reduces manual sampling and laboratory analysis helps to save time, lower personnel costs, and increase process reliability.

Available for large nominal diameters from DN 25 to DN 100, Teqwave H enables inline quality measurement directly in the main flow even for demanding hygienic applications.

As part of the Endress+Hauser portfolio for inline quality measurement, Teqwave H makes it possible for demanding applications to be run by a single, hygienic measuring device.

 [Visit the product website](#)



Teqwave H
for food & beverage processes

Benefits at a glance

Customer needs are at the center of our device development. We focus on addressing real process challenges to maximize value for daily operations. Designed for hygienic applications in the food and beverage industry, Teqwave H supports reliable process operation. Process deviations and disturbances are detected in real time, enabling fast and targeted action.

The combination of intelligent functions and practical advantages helps ensure asset integrity while consistently meeting quality standards.

Reliable traceability

Continuous availability of measurement data for audits, quality documentation, and process analysis

Consistent process stability

Intelligent gas bubble compensation delivers stable measured values. Immediate user notification enables fast reaction in case of process disturbances

Stable measurement results

Cross influences caused by deposits are significantly reduced, ensuring reliable concentration measurement over time

Reduced maintenance effort

An integrated inline sensor test minimizes recalibration effort and supports long-term stable operation

Direct and durable installation

Inline implementation without bypass or sensitive surfaces saves time and reduces installation effort

Faster access to measured values

Instant availability of measurement results eliminates delays caused by sampling and laboratory analysis

Applications in food and beverage

With Teqwave H, you can reliably measure the concentration of beverages such as soft drinks, juices, as well as cleaning agents, directly in the process with a single hygienic inline measuring device. Application-specific algorithms enable rapid adaptation to different liquids, while precise monitoring of cleaning agents safeguards food safety, ensures compliance, and optimizes resource consumption.

Teqwave H delivers flexible process control and supports the transition to a digitized factory.



Softdrinks and syrup

Fruit juice and concentrate

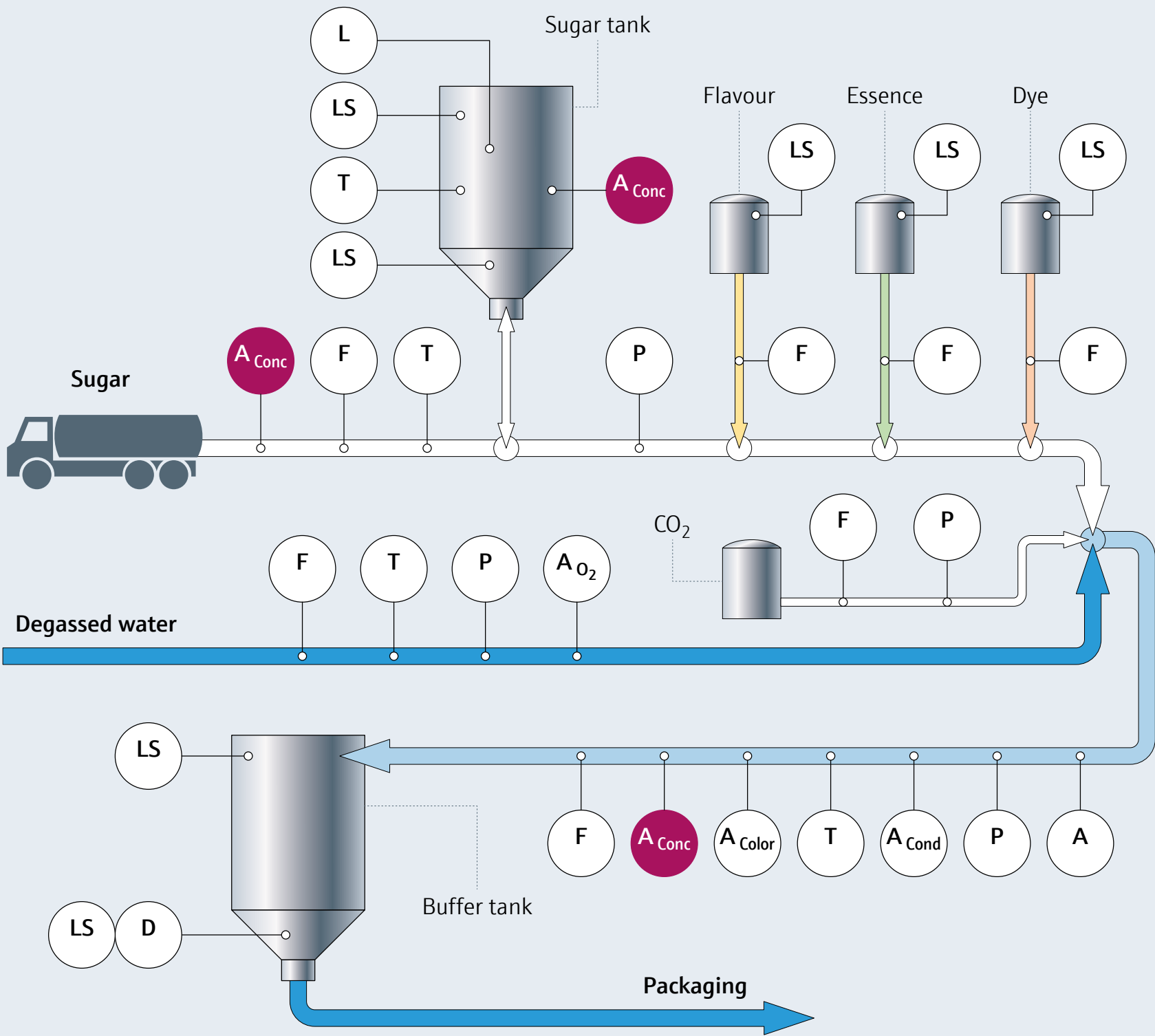
Softdrinks and syrup – sugar measurement

In soft drink and syrup production, sugar concentration is monitored at critical points such as incoming goods inspection and during mixing.

The measurement takes place under varying formulations and CO₂ content, where stable values are essential for accurate dosing and consistent product quality.

Softdrinks and syrup

Fruit juice and concentrate



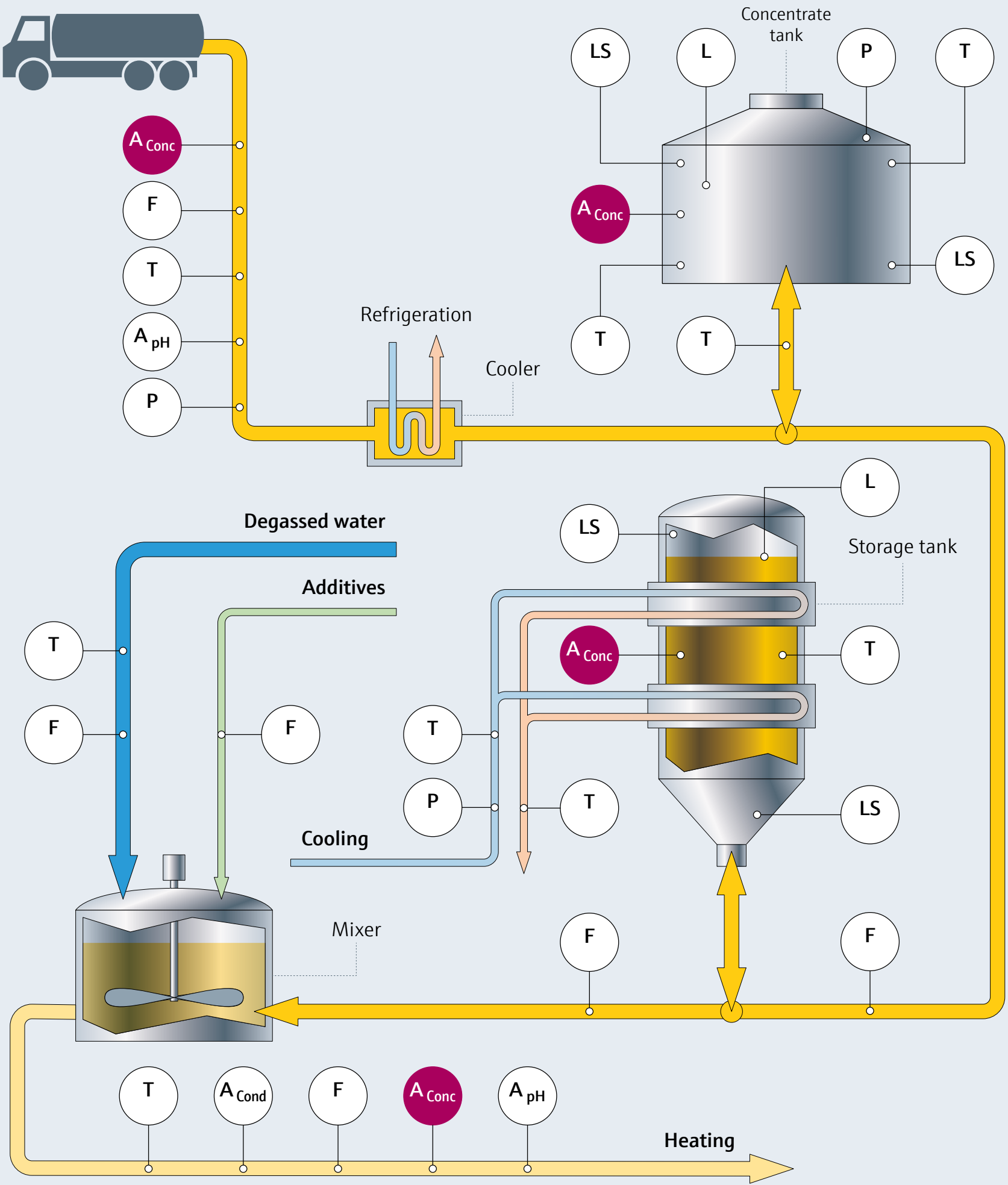
Your challenge
Measuring task: Concentration measurement
Measuring point: Incoming goods inspection
syrup and softdrink mixing
Fluid: Syrup and softdrinks with and without
CO₂ produced from sucrose, invert sugar syrup
or high fructose corn syrup
Process temperature: 2 to 35 °C (36 to 95 °F)
Concentration range: 20 to 70 °Brix (syrup),
0 to 25 °Brix (softdrink)

Our answer
Live inline measurement eliminates delays
caused by manual sampling and provides
immediate access to concentration values.
This enables fast reaction and reliable
process control in softdrink production.
Integrated compensation algorithms (e.g.
CO₂ compensation) ensure precise
concentration control of soft drinks and
syrups directly in the pipeline or tank,
preventing misfills, optimizing resources,
and ensuring consistent product quality in
compliance with industry standards.

Fruit juice and concentrate – sugar measurement

In fruit juice processing, sugar concentration is measured from the point of incoming concentrate inspection through redilution to final juice production. Process conditions such as changing temperatures, product properties, and filling concepts require reliable concentration values for consistent recipes and uniform quality.

- Softdrinks and syrup
- Fruit juice and concentrate



Your challenge
Measuring task: Concentration measurement
Measuring point: Incoming goods inspection
fruit juice concentrate and redilution to juice
Fluid: Fruit juice concentrate and fruit juices
Process temperature: 2 to 35 °C (36 to 95 °F),
40 to 90 °C (104 to 194 °F, hot filling)
Concentration range: 20 to 70 °Brix
(concentrate), 0 to 25 °Brix (fruit juice)

Our answer
For fruit juice production, Teqwave H enables precise inline measurement of sugar and invert sugar concentration directly in the pipeline or tank. This ensures accurate recipe control and consistent product quality. With hygienic design and SIP capability, we optimize filling processes, prevent misfills and support compliance with industry standards.

Surface Acoustic Wave (SAW) measuring principle

Precision by ultrasound

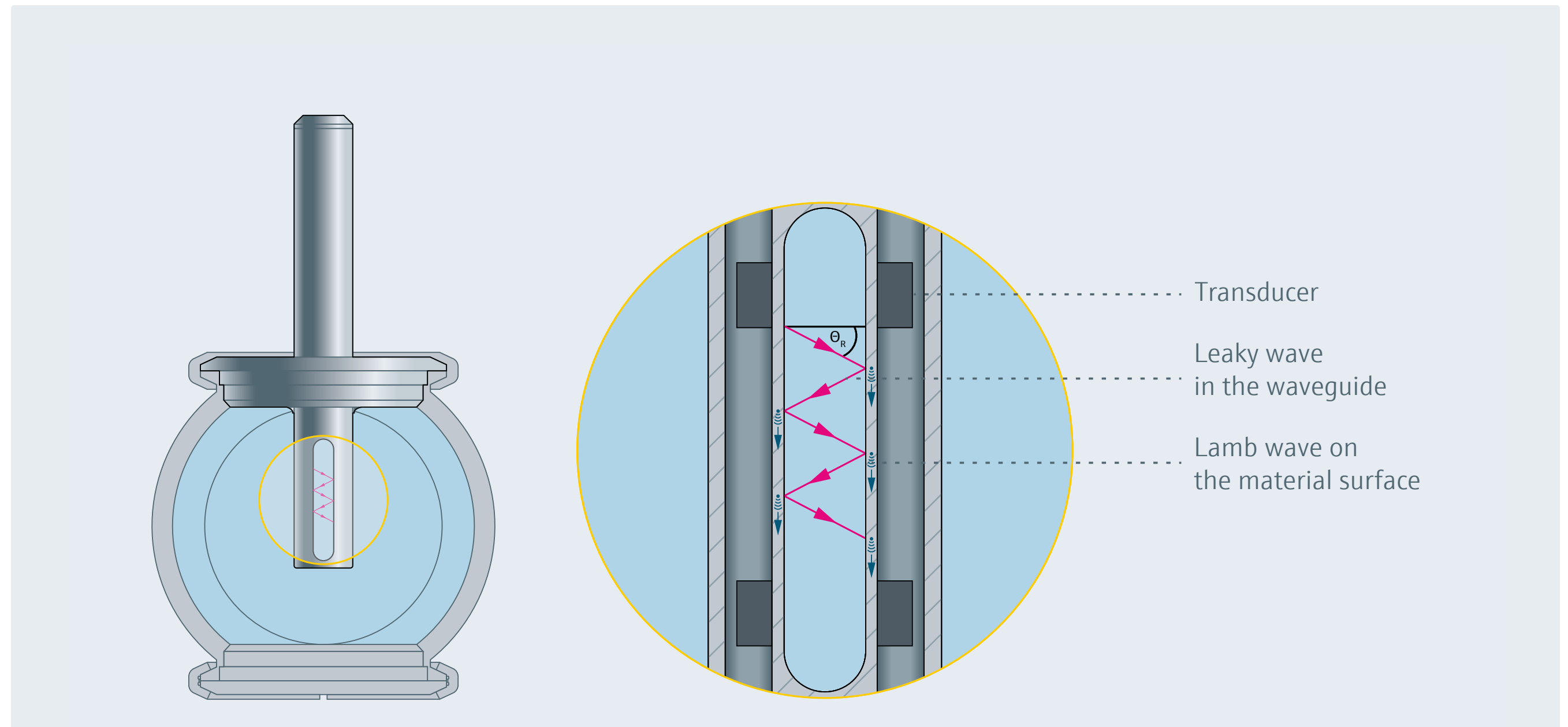
At the heart of Teqwave H is an innovative acoustic waveguide that uses Surface Acoustic Waves (SAW) to measure the concentration and temperature of liquids.

A piezoelectric transducer generates ultrasonic waves. A part of the excited waves leaks to the liquid and propagates in the waveguide. At the same time Lamb waves are excited and propagate along the material surface. A dual arrangement of transmitter and receiver enables highly precise evaluation of the transit times and amplitudes of the Surface Acoustic Waves (SAW).

The measured values are the basis for the algorithm to determine the concentration of the liquid components precisely.

In many processes, dispersion typically occurs in the form of gas bubbles or particles that can interfere with the measuring signals. To support stable process control, Teqwave H enables users to detect such disturbance variables, evaluate their severity and compensate for them to achieve continuous accurate measurements. This in turn provides users with even greater transparency in their processes.

Compared to conventional optical measurement methods such as refractometers, the Surface Acoustic Wave principle offers decisive advantages: it is robust, less susceptible to contamination or abrasion, delivers consistently stable results, and reduces maintenance requirements.



What does this mean for you

- Simultaneous measurement of speed of sound, acoustic density, and temperature within milliseconds
- Concentration calculation based on speed of sound and temperature for maximum accuracy
- Reliable temperature measurement even during rapid changes, thanks to optimal sensor positioning and intelligent signal processing
- Compensation for disturbance variables: Gas bubbles and particles are detected, their influence is evaluated, and they are automatically compensated – ensuring stable and precise measurements even under demanding process conditions
- Direct indications of deviations: Any disturbances are immediately reported, allowing you to react quickly to contamination or leaks
- Integration of additional process parameters: For maximum precision, further measured values such as acidity, or CO₂ content can be included in the calculation
- Approved algorithms: Advanced mathematical models ensure reliable and highly accurate concentration measurements – even for complex liquid mixtures

Technical data

Overview

The measuring system Teqwave H boasts functions and features which result in clear advantages for quality control in food and beverage industry. Every system consists of sensor, transmitter and cable.
Learn more about the technical data of the sensor and transmitter on the following pages.

The Teqwave H measuring system meets EMC requirements in accordance with IEC/EN 61326-1. It is compliant with the requirements of the EU and is labeled with **CE**.

Sensor DN 25

Sensor DN 50 to 100

Transmitter

Transmitter with housing

Sensors

DN 25



DN 50 to 100



- Hygienic design with 3A- and EHEDG-approval
- Integrated inline sensor test reduces recalibration effort
- Robust design without sensitive surfaces

Transmitter

Aluminium (IP40)



Stainless Steel (IP66)



- Continuous data storage with direct and long-term data availability
- Direct concentration measurement ensures exceptionally high accuracy
- Diagnostic functions provide timely and helpful notifications about any deviations
- Teqwave Viewer software enables easy remote operation of the device

Teqwave H

Sensor DN 25

Designed for flexible installation in pipes or tanks, Teqwave H sensors are available in a wide range of nominal sizes.

DN 25 (1") is designed exclusively for pipe installation and is available with welding socket, clamp, coupling, or flange process connections.

- Sensor DN 25
- Sensor DN 50 to 100
- Transmitter
- Transmitter with housing



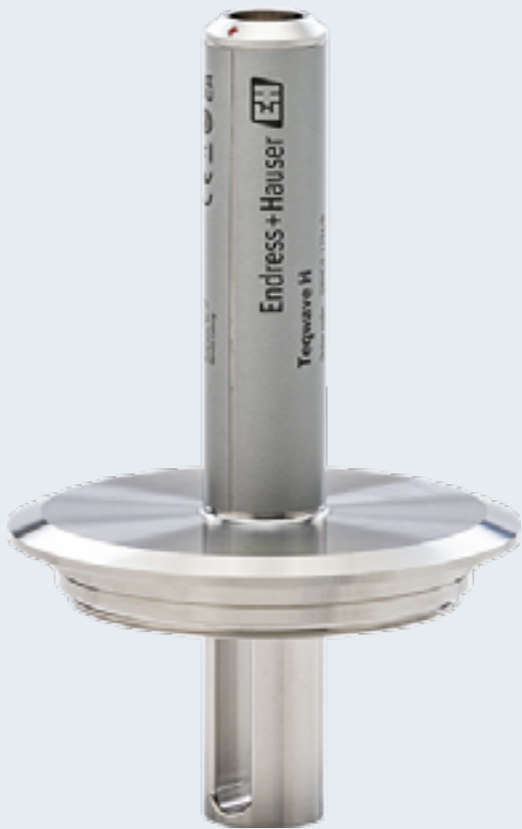
Line size	DN 25 (1")
Process connections	- Welding socket (ASME BPE, EN 10357, ISO 2037) - Clamp (DIN 32676, ISO 2852, ASME BPE-Tri-Clamp) - Coupling (DIN 11851, DIN 11864-1A, SMS 1145) - Flange (DIN 11864-2A)
Process pressure	Max. 16 bar (232 psi)
Process temperature	0 to 120 °C (32 to 248 °F)
Cleaning	CIP
Degree of protection	IP66/67 (Type 4X enclosure)
Materials	- Measuring tube: stainless steel 1.4404 - Welding: EPDM, FKM, VMQ
Approvals	EHEDG, 3-A, seals and wetted parts according to (EC) No 1935/2004, FDA and FCM China
Repeatability (under reference conditions)	- Concentration: depending on fluid profile - Speed of sound: ±0.03 m/s - Temperature: ±0.065 K - Acoustic density: ±0.001 g/cm³
Flow velocity	Max. 10 m/s (max. 32.8 ft/s)
Ambient temperature	0 to 60 °C (32 to 140 °F)

Teqwave H

Sensor DN 50 to 100

Sensors in DN 50 to 100 (2" to 4") are available with a wide range of process connections, including Tri-Clamp 2", VARIVENT® N, external thread ISO 228 (1"), and DN 50 (2") DIN 11851 conical coupling with union nut.

- Sensor DN 25
- Sensor DN 50 to 100
- Transmitter
- Transmitter with housing



Line size	DN 50 to 100 (2" to 4")
Process connections	- Tri-Clamp 2" - VARIVENT® N - External thread ISO 228, 1" - DN 50 DIN 11851 conical coupling union nut
Process pressure	Max. 16 bar (232 psi)
Process temperature	0 to 120 °C (32 to 248 °F)
Cleaning	CIP + SIP (SIP cleaning up to 145 °C (293 °F) – max. 30 minutes)
Degree of protection	IP66/67 (with cable plugged in)
Materials	Measuring tube 1.4404
Approvals	EHEDG, 3-A, seals and wetted parts according to (EC) No 1935/2004, FDA and FCM China
Repeatability (under reference conditions)	- Concentration: depending on fluid profile, up to 0.01 % mas or °Brix - Speed of sound: ±0.02 m/s - Temperature: ±0.01 K - Acoustic density: ±0.001 g/cm³
Flow velocity	Max. 5 m/s (max. 16.4 ft/s)
Ambient temperature	0 to 60 °C (32 to 140 °F)

Teqwave H

Transmitter

The Teqwave H transmitter is available with aluminium housing and touchscreen.



- Sensor DN 25
- Sensor DN 50 to 100
- Transmitter
- Transmitter with housing

Display	Touchscreen
Operation	Configuration via on-site display, RJ45-interface with operating software or via digital communication protocol (Modbus TCP)
Housing material	Anodized aluminium and glas
Power supply	DC 24V ±20 %
Ambient temperature	0 to 60 °C (32 to 140 °F)
Degree of protection	IP40
Outputs/Inputs Communication	■ Modbus TCP ■ Relay (AC 50V, DC30V 1A) ■ 4–20mA/0 to 10V Analog output

Teqwave H

Transmitter with housing

A stainless steel transmitter housing can be ordered as an extension (IP66).

- Sensor DN 25
- Sensor DN 50 to 100
- Transmitter
- Transmitter with housing



Display	Touchscreen (can be operated after opening the housing door)
Operation	Configuration via on-site display, RJ45-interface with operating software or via digital communication protocol (Modbus TCP)
Housing material	1.4301 and plastic
Power supply	DC 24V ±20 %
Ambient temperature	0 to 50 °C (32 to 122 °F)
Degree of protection	IP66
Outputs/Inputs Communication	■ Modbus TCP ■ Relay (AC 50V, DC30V 1A) ■ 4–20mA/0 to 10V Analog output

People for Process Automation



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