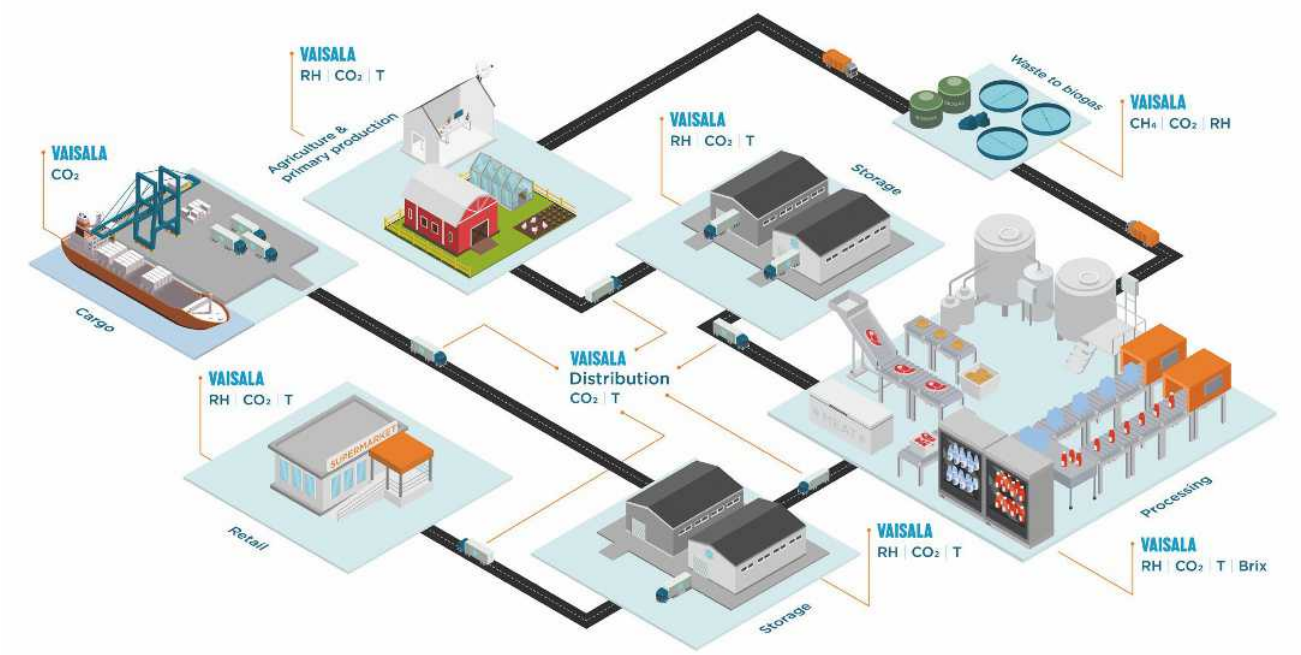
VAISALA

Efficiency and sustainability for circular food and beverage industry

WITH VAISALA'S INDUSTRIAL MEASUREMENT SOLUTIONS

- relative humidity
- temperature
- carbon dioxide
- smart cloud monitoring systems
- in-line Brix and dry solids measurements
- biogas production

Optimized food and beverage processes and the latest industrial measurement solutions



Food chain sustainability and efficiency can be improved with the help of accurate process control and environmental monitoring equipment

Food and beverage industry produces globally consumed commodities. Agricultural goods are harvested on the farms, greenhouses or laboratories, and then transported to cold storages for the best preservation of freshness and taste. Raw agricultural produce also continues to the processing plants where among other products consume-on-the-go foods and ready-to-drink beverages are produced. Finally, the goods arrive to the retail and stay on the shelves nutritious and safe to consume.

In order to ensure food safety, high product quality, shelf-life and optimize the production processes and storage life of goods, a range of parameters need to be monitored and controlled, and optimal storage conditions created. Throughout the food chain, monitoring of such parameters as humidity, temperature, dew point, carbon dioxide (CO_2), and accurate in-line Brix and dry solids measurement can help to streamline food logistics, reduce product waste, and provide customers in different destinations with a variety of foods that are of high quality, safe to consume and nutritious.

Finally, it is possible to make food industry a circular economy by recycling, upcycling and reusing its by-products. For example, waste from greenhouses, livestock and food processing can be utilized to produce biogas from which electricity and heating can be generated. Next step is to upgrade the biogas to biomethane.

Measuring relative humidity and dew point

In many high-temperature baking and drying processes, measuring humidity requires specialist instruments that are not only stable, reliable, and accurate, but are also suitable for demanding conditions.

For example, the drying of demineralized whey can be optimized using Vaisala's transmitters to measure humidity and temperature in the dryer inlet and outlet air.

The inlet air humidity data is used to control the process, while the outlet air humidity data correlates with the moisture content of the powder and thus can be used as an indicator of final product quality. This saves time and energy by avoiding overdrying.

- Other applications where measurement of humidity for process optimization is of utmost importance are fluid bed and spray drying, and controlling in baking ovens.

Vaisala offers reliable and stable relative humidity and dew point measurements for different applications, based on our proven HUMICAP® and DRYCAP® technology.

- Try our interactive drying simulator to understand better how humidity measurements can lead to more efficient energy use and higher yields.

Measuring CO_2

All living organisms produce carbon dioxide as a part of photosynthesis. In food logistics and production, CO_2 needs to be maintained at certain level to ensure working safety, productivity and product quality.

Fruits and vegetables storage and transportation

In fruits and vegetables storage and transportation, the right level of CO_2 is important to keep fruits fresh, ensure the safety of storage personnel and prevent the risk of machinery damage. Controlled CO_2 helps to slow down the aging process or start the ripening of crop.

- Read about controlled atmosphere storage requirements
- Learn about the benefits of measuring CO_2 in cold storage applications.

CO_2 as a refrigerant

Carbon dioxide CO_2 (R744) is a non-flammable, natural, low-cost refrigerant with negligible direct global-warming impact and ozone-depletion potential compared to traditional hydrofluorocarbons (HFC).

For safety reasons, CO_2 must be measured in CO_2 refrigerated facilities where leaks can occur. Also, the efficiency of the refrigeration equipment suffers if there's insufficient refrigerant circulating in the system.

- Get more information about measuring CO_2 in refrigeration applications from the application note.

CO2 in breweries, wineries and fermentation facilities

In beer brewing, wine production and other fermentation facilities there is potential health risk due to elevated CO_2 levels resulting from exhaust gas release to the surrounding environment.

- Read about monitoring CO_2 in Chateau St. Jean in Sonoma Valley, California.

CO_2 in beverage bottling process

Carbon dioxide is used to carbonate soft drinks. While the containers are being filled during the bottling process, large volumes of CO_2 can escape from the fillers into the surrounding atmosphere. Monitoring of CO_2 levels in the filling rooms and working areas helps to avoid accumulation of CO_2 and set adequate ventilation. More information can be found here.

Vaisala CO_2 measurement devices are based on our unique CARBOCAP® technology, which ensures exceptional stability and exposure levels.

- Find smart probes, transmitters and data loggers for your specific needs here or contact us.

Cloud-based monitoring system

Humidity and temperature, as well as environmental condition monitoring data can be managed using Vaisala's cloud-based solution. Wireless Vaisala Jade Smart Cloud monitoring system allows for easy measurement data logging, storage, reporting and alerting, for example, in livestock facilities, warehouses, cold storages and supermarkets' refrigeration systems.

Customers can use the data to gain better visibility over their applications, improve processes, streamline maintenance and optimization plans, and provide site analytics.

Vaisala Jade Smart Cloud monitoring system

In-line Brix and dry solids measurement

In-line measurement of Brix and dry solids can help to solve a range of tasks of food and beverages producers and bring real cost savings by making production more efficient. As a result, customers receive improved product quality and safety, energy efficiency and maximized yield.

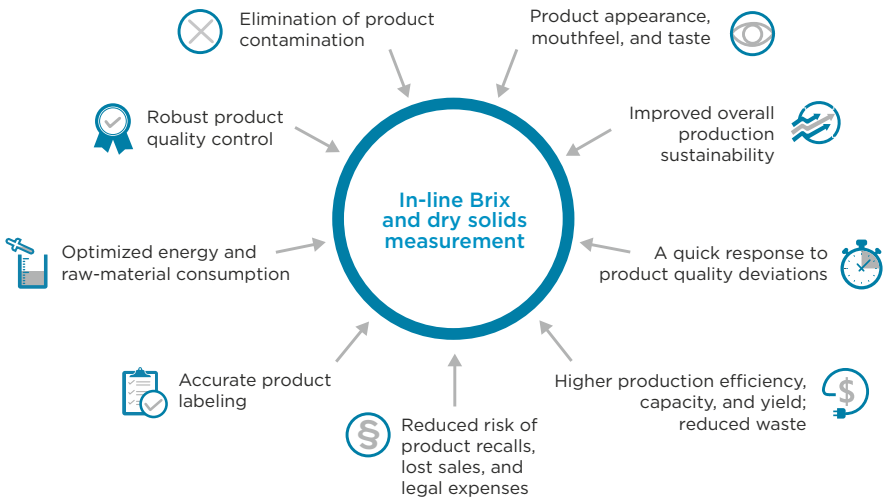
Vaisala offers extensive field-proven application knowledge and digital technology for remote process diagnostics and control in a wide range of applications such as soft and alcoholic beverages, juices, dairy and infant formula, sweeteners and confectionary, egg products, fish and meat, food ingredients, fruit and vegetables and ready-made desserts.

- Read how data can be collected and shared easily using wireless Jade Smart Cloud monitoring system.

- Read about the power of in-line Brix in the eBook.
- Find your application here or contact us for support.

Vaisala in-line digital sanitary refractometer can help to optimize all typical food processes such as cooking, evaporation, spray-drying, extraction, ultra and nano-filtration, reverse osmosis (RO), crystallization, dissolving, and distillation. Moreover, the refractometer is an ideal tool for identification of product-to-water, product-to-CIP liquid and product-to-product interfaces, and quick detection of organics in wastewater streams for compliance with environmental regulations.

- Learn more about the in-line process refractometer technology here.



Accurate in-line Brix and dry solids monitoring for efficient food and beverages production

Production of biogas from food and agricultural waste

Even the most optimized food production process creates byproducts that can be recycled, upcycled, and reused in farming or energy production.

For example, greenhouses and livestock produce waste that can be turned into biogas. It is then used for generating electricity for the farm, and heat for warming greenhouses, animal shelters, and other buildings. From this process, a nutrient-rich fertilizer is received, and it can be used to replace resource-heavy mineral-based fertilizers.

Biogas can also be produced from municipal and food processing waste, and further upgraded to fuel-grade biomethane, replacing fossil-based natural gas.

Vaisala has created the world's first 3-in-1 in situ biogas instrument, the MGP261. It combines second-generation CARBOCAP® technology for measuring methane, carbon dioxide, and humidity into a single compact probe that is Ex-certified for operation directly in corrosive, potentially explosive biogas streams.

- Learn more about optimizing biogas production.

Solid technology and application knowledge for food and beverage industry needs

Vaisala has over 80 years' experience in designing and manufacturing reliable, high-quality measurement instruments. Our solutions help customers in various industries to achieve safety, efficiency and sustainability of production.

Visit our dedicated food and beverage industry pages to learn more about our technology and solutions for primary food production & agriculture, food processing, storage & safety, retail& hospitality, and food waste management.

Relative Humidity (RH) and Temperature (T) measurement

Vaisala Indigo product family incl. a selection of transmitters, smart probes and software for easy data monitoring.

- Smart, interchangeable probes for humidity, temperature, dew point, moisture in oil, carbon dioxide, barometric pressure, or vaporized hydrogen peroxide
- Optional Indigo output transmitters for data evaluation and visualization
- Insight PC Software for data visualization, configuration and on-site calibration

Learn more **here**

Vaisala humidity probes HMT120/130 and HMP110 for proofers in bakeries and for manufacturing and packaging facilities of meat and fish products

- Humidity and temperature measurement
- Accurate, reliable, and resistant to dust and most chemicals
- IP65 enclosure

HMT120/130:

- 2-wire loop-powered (4...20mA) or 3-wire voltage output configurations
- Interchangeable probe for easy field calibration
- Optional LCD display

HMP110:

- Modbus RTU or voltage output

Learn more **here**

Vaisala hand-held instruments for demanding humidity spot-checking and calibration

- HM70 for calibration and spot-checking for demanding conditions
- RH measurement range 0 ... 100%
- Three probes with temperature measurement ranges between -70 and +180 °C
- Multi-probe operation; dew point and CO_2 probes can also be connected

Learn more **here**

HM40 for quick inspections and spot-checking

- Compact with four probe options
- Intuitive user interface

Learn more **here**

Cloud-based monitoring system

Jade Smart Cloud monitoring system for easy measurement data logging, storage, reporting and alerting for example in warehouses, cold storages and manufacturing areas

- Cloud application for environmental condition monitoring
- Wireless data loggers for quick & easy installation
- Secure data storage to the cloud
- Alert notifications on exceptional conditions
- Easy access to historical data through graphs & reports
- Mobile optimized remote monitoring
- Simple & smooth IT-setup - just provide Internet connectivity

Learn more **here**

Dew point (Td) measurement

Vaisala dew point and temperature probes DMP5/DMP6 for industrial drying applications compatible with Indigo500 transmitter

- Vaisala DRYCAP® sensor provides accurate, reliable measurement with excellent long-term stability and fast response time.
- Condensation resistant
- Measures humidity at temperatures up to 180 °C (356 °F)
- Wide dew point measurement range -40 ... +100 °C (-40 ... +212 °F) Td
- Dew point measurement accuracy up to ± 2 °C (± 3.6 °F)
- Temperature accuracy up to 0.1 °C (0.18 °F)

Learn more **here**

Vaisala DMT143 and DMT143L (long) for pressurized systems

- Features Vaisala DRYCAP® technology with auto-calibration
- Long calibration interval reduces maintenance costs
- Accuracy: ±2 °C (±3.6 °F)
- Compact size and condensation resistant

Learn more **here**

Vaisala DM70 for calibration and spot-checking

- Dew point measurement
- Two probes with a measurement range of -60 ... +20 °C
- Multi-probe operation; relative humidity and CO_2 probes can also be connected
- Data can be logged and transferred to a PC via MI70 Link software

Learn more **here**

Carbon dioxide measurement

Vaisala Indigo compatible GMP251/2 for versatile CO_2 measurement, for manufacturing and packaging facilities of meat and fish products

- GMP251 for %-level measurements and GMP252 for ppm-level measurements
- Measurement range: 0 ... 20% CO_2 / 0 ... 10,000 ppm
- Indigo compatible smart probe, or cable
- Outputs: 0 ... 20 mA / 4 ... 20 mA or 0 ... 10V
- Can be connected to the Indigo 200 Series Transmitters to extend its features, for example, for a display or relays.
- Two predefined or user-defined relay outputs
- IP65 enclosure

Learn more **here**

Vaisala GM70 for calibration and spot-checking

- CO_2 measurement
- Two probes with a measurement range of 0 ... 20% CO / 0 ... 10 000 ppm
- Multi-probe operation: relative humidity and dew point probes can be connected
- Data can be logged and transferred to a PC via MI70 Link software

Learn more **here**

In-line Brix and dry solids measurement

Vaisala K-PATENTS® Sanitary Refractometer PR-43-A for in-line Brix and dry solids measurement

- Accurate on full measurement range Refractive Index (nD) 1.3200 – 1.5300, which corresponds to 0-100 Brix
- 3-A sanitary and EHEDG certified
- Withstands CIP and SIP processes and cleaning and rinsing of facilities
- Completely digital system: particles and bubbles do not affect operation or accuracy
- CORE-optics: no drift, no re-calibration, no mechanical adjustments.
- Process temperature for compact model: -40°C...130°C (-40°F...266°F), for probe model: 40°C...150°C (-40°F...302°F).
- Fast process temperature measurement by built-in Pt1000 and automatic temperature compensation
- Easy on-site instrument verification within users' own quality assurance system and standard Refractive Index liquids.
- Recalibration-free and maintenance-free

Learn more **here**

Biogas production

Vaisala CARBOCAP® MGP261 for measuring methane, carbon dioxide and humidity

- Compact in situ probe
- Suitable for high humidity conditions
- Certified for EX zones 0 and 1

Learn more **here**

kenelec scientific

Distributed by:

Kenelec Scientific Pty Ltd
1300 73 22 33
sales@kenelec.com.au
www.kenelec.com.au

VAISALA

Please contact us at
www.vaisala.com/contactus

www.vaisala.com

Scan the code for more information