Continuous Brix measurement of soft drinks

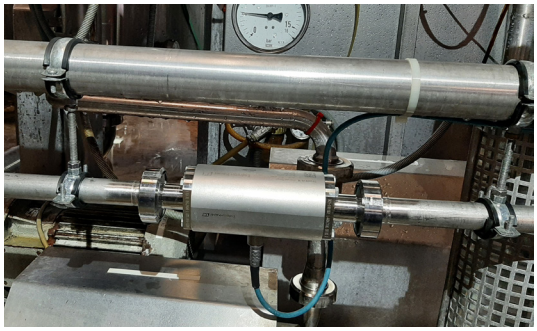
Teqwave H replaces manual refractometer measurement at Kreuzberg Quelle

Kreuzberg Quelle Ackermann has been producing over 20 different non-alcoholic beverages since 1971. These include a variety of sodas, tea beverages, fruit juices, mineral waters and spritzers, all produced with water sourced from the Kreuzbergquelle. The soft drink producer, headquartered in Hallerndorf in Germany's Upper Franconia region, is also active as a contract bottling company.

"Teqwave H from Endress+Hauser is a major relief to us with its continuous and automatic monitoring of the sugar concentration. During filling, for example, it is now no longer necessary to carry out time-consuming manual measurements using the refractometer. I am very satisfied with the device and appreciate the accuracy and reliability of the concentration measurement."

Jürgen Ackermann
Managing Director
Kreuzberg Quelle Ackermann GmbH

Jürgen Ackermann, Managing Director



Teqwave H monitors sugar concentration directly in the filling process

Kreuzberg Quelle Ackermann wanted to automate the monitoring of the sugar/invert sugar content during the soft drink filling process and was therefore looking for an inline measuring device. Endress+Hauser offers the ideal solution with the Teqwave H concentration meter. Its state-of-the-art calculation methods enable compensation for cross-influences on a product-specific basis. This makes it possible to determine the sugar content of a wide variety of non-alcoholic beverages very accurately in the process.

The customer requirement When manufacturing soft drinks, monitoring the sugar concentration plays a major role in ensuring consistent product quality. Kreuzberg Quelle had previously used a handheld refractometer for monitoring the Brix content of soft drinks during the filling process. The sampling and manual measurement, necessary for each batch, were very time-consuming. Moreover, this monitoring method meant that potential product fluctuations could not be discovered until late in the process. Therefore, Kreuzberg Quelle was looking for a concentration meter that monitors the Brix content continuously and reliably during the filling process – even for challenging soft drinks with CO_2 and higher acid contents. Another goal was to eliminate the effect of cross-influences to increase the reproducibility and accuracy of the measured values. To reduce the manual work steps and, as a result, make the work sequence more efficient, Kreuzberg Quelle wanted to have the ability to monitor the measured values from various workstations.

Our solution With Teqwave H, Endress+Hauser offers an EHEDG- and 3A-certified concentration meter that continuously measures the sugar content in various soft drinks in real time. It can also be used to compensate for existing cross-influences such as acid or CO_2 in the beverage as well as the process pressure and thus further

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boost the measuring accuracy. This setting can be configured on a product-specific basis by creating various recipes. Depending on the sugar type and the previous reference measuring method one can choose between various output options. This enables excellent reproducibility between individual products and various measuring methods.

Recipes can be switched over after a product change on the production line either directly via the touch screen of the transmitter, via Modbus TCP or using the Teqwave Viewer operating software on a laptop. Therefore, the recipe can be selected and the measured value displayed from any workstation, regardless of the positioning of the transmitter.

Furthermore, the history of the measured sugar concentration can be displayed as a graph. This makes it possible to identify any deviation of the sugar concentration from the set point as well as large fluctuations in the measured values very quickly. In this way, Teqwave H enables users to prevent filling products with a deviating sugar content.

An internal data storage makes it easy to read out measured values and use them for documentation purposes. This guarantees accurate traceability as well as observance of quality management systems with little manual effort. The sensor is cleaned directly in the pipeline, for example during a CIP cleaning of the filling plant, and it does not have to be removed to do so, saving even more time.

The transmitter of Teqwave H enables easy switching of recipes before a product change – directly in the plant or via laptop

Device used

- Teqwave H with the “Softdrink” concentration app for measuring the sugar concentration and creating product-specific recipes for soft drinks with different acid and CO_2 content
- Teqwave Viewer operating software for reading out stored data

The result

- Continuous measurement of the sugar concentration in soft drinks without time-consuming manual sample measurement
- Increased measuring accuracy thanks to product-specific recipes that allow compensation for cross-influences
- Simplified documentation by calling up internally stored measured data
- Enhanced flexibility by reading out measured values and adjusting the recipes thanks to the digital communication protocol (Modbus TCP)
- Robust hygienic design and very simple in-line cleaning of the sensor

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