

DCM-20 Inline Optical Brix Monitor of Unique Aseptic Design Complying with 3-A and EHEDG

The food and pharma communities make efforts through global programs in ensuring use of inline instrumentation and components with verified aseptic design. Very few inline liquid optical Brix monitors provide EHEDG certification for a scalable process instrument integration yet alone high-pressure design for critical whey protein separation processes.

KxS Technologies develop, manufacture and market inline optical Brix monitors based on refractive index technology. The Refractive Index Unit RIU corresponds with ICUMSA standards for Brix measurements. The DCM-20 monitor is EHEDG certified for a wide range of process pipe sizes, in parallel with high pressure conditions adopted in membrane separation systems in whey processing. The uniqueness is found in the complete EHEDG certified sensor and single-piece flow cell combination for process integration. The combination is mounted in straight process pipe sections which entails flexibility in defining Brix monitor installation positions in process lines.

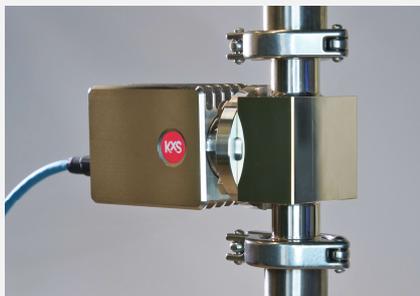
Dairy, food ingredient and beverage producers and their system integrators are encouraged to call out Brix monitor manufacturers for a detailed EHEDG declaration. The declaration will rule out potential uncertainties in the instrumentation compatibility in given process conditions and integration setups.

Background

The European Hygienic Engineering & Design Group (EHEDG) is a global network of equipment manufacturers, food processing companies, research institutes and public health authorities, founded in 1989 with the aim of promoting hygiene during the production, processing and packaging of food products.

The DCM-20 inline Brix monitor is designed for liquid applications in food ingredient, dairy and beverage processing.

DCM-20 is **designed with 1.5" process connections** for new mechanical pipe work, while a 2.5" process connection serve replacement installations in existing 2.5" pipe connections.



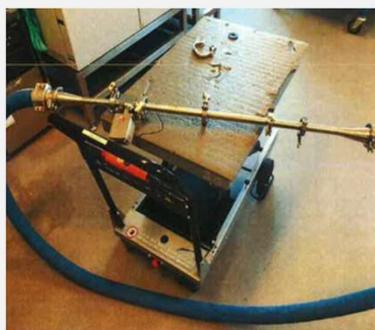
Instrument design

During design-in of instrumentation in dairy and beverage processes, the **entire combination of sensor and process connection assembly** needs to be carefully specified for EHEDG compatibility.



The DCM-20 inline Brix monitor is mounted to a single-piece flow cell SFC exceptionally machined out of one metal block without welding joints to ensure surface finishing quality. The sensor and flow cell wetted parts are of stainless steel 316L. The flow cell dimension is scalable for mounting in corresponding **1", 1.5", 2", 2.5", 3" or 4" process line sizes**.

Methods



KxS Technologies commissioned a EHEDG Authorized Testing Laboratory to perform the cleanability test method (EHEDG Doc. 2) of food contact faces of the inline Brix monitor.

The reference pipe and item under test were mounted together and soiled under pressure using a buttermilk solution containing 10^5 - 10^6 spores/ml of the test strain *Geobacillus Stearothermophilus*.



The buttermilk was drained out of the system and the system was allowed to dry. Following drying the auxiliary pipes were mounted in front of the reference pipe and after the test item. A rinse-detergent sequence was conducted with a defined liquid flow velocity. At end of rinsing procedures, a sample of the outlet water was taken, and aliquots were plated with MSH agar. After the agar had become solid, the test item and reference pipe were placed in an incubator with defined conditions. After the incubation, the test item and reference pipe were examined for the presence of yellow discoloration in the agar. The degree of discoloration of test item and reference pipe were compared.

Results

Consecutive test runs showed that the inline Brix monitor and SFC flow cell under test were cleanable in place CIP at least to the same level as the reference pipe.



The DCM-20 Brix monitor is **uniquely EHEDG certified for high pressure applications (55 bar, 800 psi)** for whey separation in membrane filtration systems adopting Reverse Osmosis and Ultra Filtration technology.

Simultaneously 3-A certification is approved by authorized third party for conformity to Sanitary Standard for Refractometer and Energy Absorbing Optical Sensors, Number 46-04.

