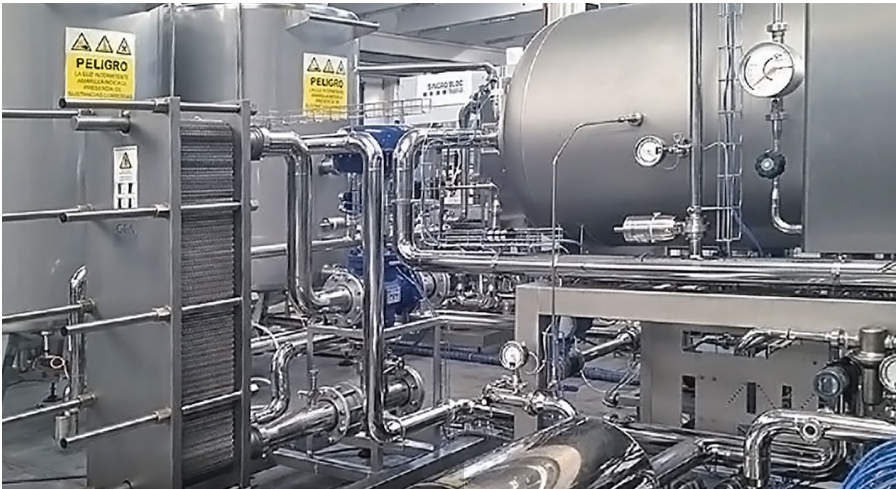


Application report: Level control in a carbonation skid
FOOD

NSL: Precise hygienic level measurement even with high pressures, vacuum, foam, heat and boiling water

The Italian systems manufacturer S.I.P.A. has earned an international reputation for quality and reliability in the field of beverage plants. In a soft drink plant for a customer in Scandinavia, for reasons of cleanability and hygiene, a float level sensor was not accepted. On the advice of the application specialists at Smeri srl, the Anderson-Negele sales partner in Italy, a test was carried out with the potentiometric level sensor NSL-M: And thanks to its perfect function, it was not removed any more before the handover to the end customer. Since then, the system has functioned smoothly for the end customer, and S.I.P.A. will use NSL technology for their systems in the future.

Degassing

The entire soft drink system consists of several components that create great challenges for the measurement and control technology. In the first part, the degassing tank, oxygen is removed from the water to prevent taste deviations due to oxidation. For this purpose, a vacuum is created in the tank and the gas is extracted. For reliable processes, maximum efficiency and consistent quality, highly precise volume measurement, even under vacuum, is essential here.

Carbonation

After the mixing process of water and syrup according to different recipes, in the next step, the liquid is enriched with CO₂. This carbonation takes place under high pressure up to the specified value. The end product is stored in a stacking tank while maintaining the pressure until filling. Here, too, the precise and above all fast (less than 100 ms) measurement of the level is decisive for controlling the process and to maintain a constant level.

Advantages in the Application

- » Hygienic, easy to clean level measurement
- » Reliable function and high measuring accuracy even under extreme positive pressure and vacuum
- » Precise level measurement even during the CIP process, unaffected by spray water and boiling water
- » Foam insensitive measurement

“ We were looking for a new, hygienic solution that would work in all processes, and especially also in the CIP process because of the horizontal tank position. Thanks to the competent advice from Smeri and a product test with Anderson-Negele NSL, we were able to more than meet all expectations. The system works perfectly and smoothly for the end customer. We are fully satisfied with the advice and the product. ”

— Michele Ravazzoni, S.I.P.A. Continuing Processing

The Anderson-Negele solution: The hygienic level sensor for extreme process conditions NSL

In the production process itself and in the CIP cleaning processes, the measuring instruments are exposed to extreme conditions. In particular, these are:

- High negative pressure (vacuum) during degassing
- High positive pressure (up to 6.6 bar) during carbonation
- Strong foaming of the media (sparkling soft drinks)
- Fast temperature changes between process, CIP cleaning and rinsing
- Direct spray water on the probe during CIP cleaning, yet full function and measuring accuracy
- Dense steam that can negatively influence other measuring methods

S.I.P.A. has so far installed float sensors for level control in such systems. However, these no longer meet the current requirements for cleanability and hygiene. With the NSL-M, S.I.P.A. has a solution which, thanks to a highly developed potentiometric measuring system, has proven itself with its high precision even under these rough conditions. This ensures smooth operation with maximum product quality, process reliability and efficiency.



Sensor used in this application

Continuous level sensor NSL-M



Advantages

- Maximum resource usage through precise measurement even with demanding media such as foam, paste-like or strongly adhesive media
- Extremely fast response time < 100 ms for filling processes
- Automatic adaptation to media, no adjustment necessary when changing
- Up to 140 °C process temperature and 143 °C (max. 120 min) CIP temperature
- Applicable up to 16 bar pressure
- Mini version with extremely compact installation dimensions (ø 23 mm, head 140 mm)

Alternative Versions

Continuous level sensor NSL-F



Advantages

- Compact version with display and user interface (programming on the device)
- Remote version with separate electronic unit
- IO-Link: Flex hybrid technology with digital and analog interface (IO-Link and 4...20 mA)
- Curved version for side installation
- Two-rod version for non-metallic containers

Modular design: configurable from the low-cost basic version to the high-end model