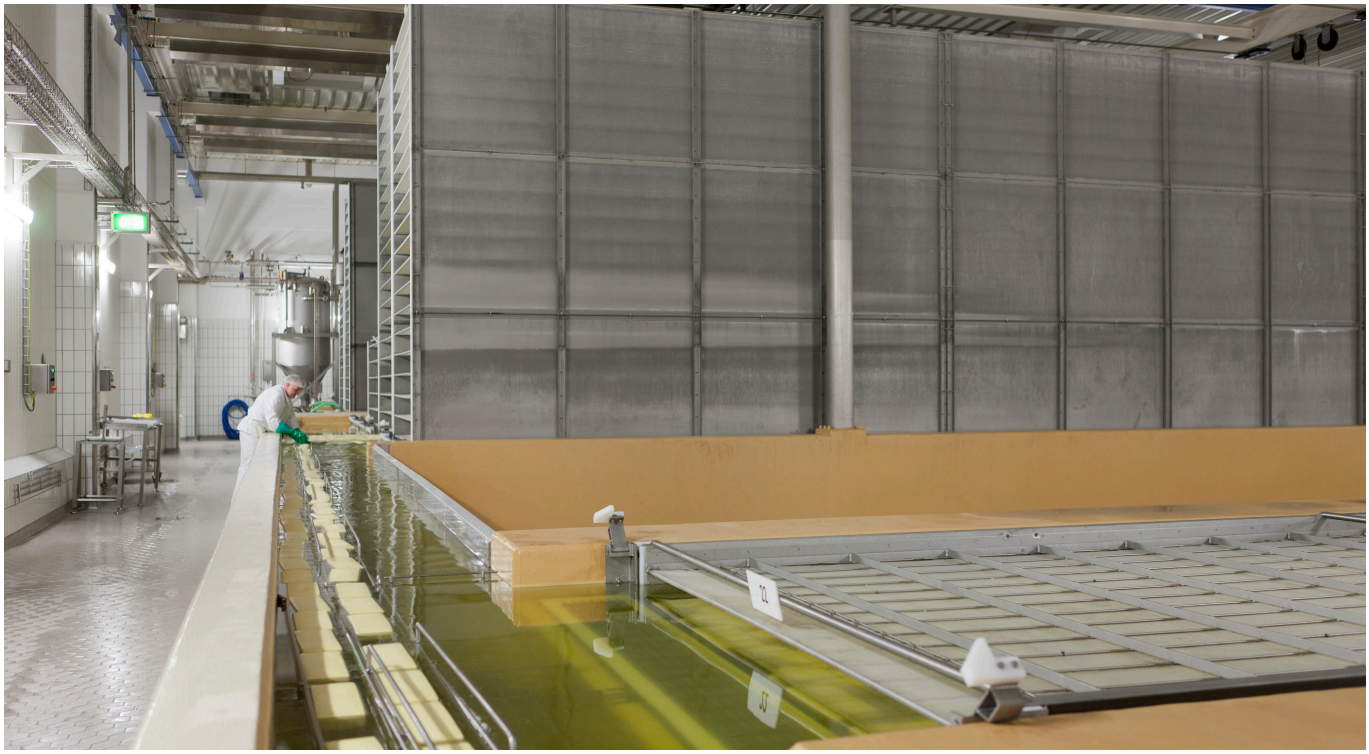


APPLICATION NOTE

Food & Beverage

Determining the concentration of salt in cheese production

- Measuring density in the supply line of a brine bath
- Monitoring the salt concentration for the proper ripening of cheese
- Automated process to control the water to salt ratio in salt brine

1. Background

A European manufacturer of soft cheese produces Camembert cheese at one of its sites. This cheese plant has a brine bath in which the cheese wheels stay submerged for a certain period of time. The salt is absorbed from the brine by the Camembert which allows it to ripen properly.

2. Measurement requirements

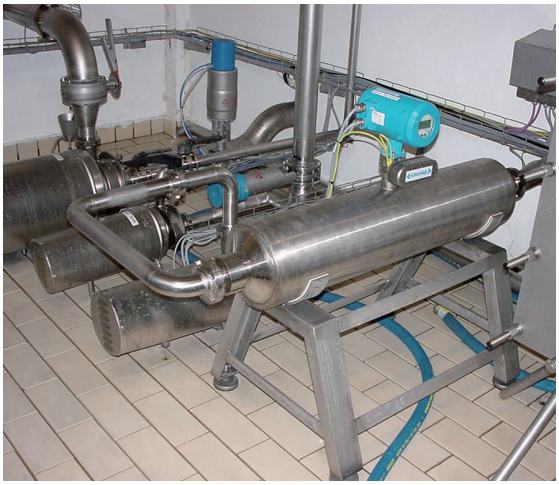
For an even ripening process and to avoid deficient products, the water to salt ratio in the brine bath must remain at 70:30. As unsteady salt concentration has an immediate impact on the cheese quality, the cheese dairy recently tried to monitor the ratio using an electromagnetic flowmeter. However, this device turned out to be too inaccurate for this application. Therefore, the cheese dairy considered testing an alternative measuring principle. In order to avoid the need for heavy duty pumps, the pressure loss caused by the meter was to be negligible. It was also required that the device meet the hygienic requirements of this application.

Product	Salt brine (salt concentration: 30%)
Pressure	2 bar / 29 psi (max)
Density	1180 kg/m3 / 73.6 lb/ft³

KROHNE

3. KROHNE solution

The customer decided on the OPTIMASS 7300 C Coriolis mass flowmeter. It has a straight tube design and was installed with hygienic process connections into a DN 50 / 2" line feeding the brine bath with salt brine. The flowmeter measures not only the mass flow but also the density of the salt brine reliably, allowing it to also determine the salt concentration. If the density falls under a certain threshold, salt is added accordingly.



Mass flow measurements in pipeline for salt brine

4. Customer benefits

The cheese dairy is now able to precisely monitor the salt concentration in the salt brine. This allows the customer to run an automated process to maintain the desired water to salt ratio in the brine bath for an equally high product quality. The customer particularly benefits from the precise density measurement of the OPTIMAS 7300 which in a comparative test proved to be virtually as accurate as laboratory analysis. Due to its single straight tube, no pressure drops occur when using the OPTIMASS 7300. Thus, there is also no reason for the customer to raise the pump capacity.

5. Product used

OPTIMASS 7300 C

- Coriolis mass flowmeter for the measurement of mass and volume flow, density, temperature, concentration and liquids with solid content for demanding applications
- Straight tube without constriction
- Supports a wide range of industry standard hygienic connections
- No installation restrictions, easily drained and easy to clean
- High measuring accuracy, even when process conditions change

Contact
Would you like further information about these or other applications?
Do you require technical advice for your application?
application@krohne.com

Please visit our website for a current list of all KROHNE contacts and addresses.

www.krohne.com