APPLICATION REPORT

Food & Beverage

Milk reception with entrained gas

- Reducing time and costs required for unloading aerated milk from road tankers
- Continuous and reliable flow measurement even in the event of 2-phase flow
- No more unplanned shutdowns caused by equipment failure

surlat
Amamos lo que hacemos

1. Background

Milk dairy Surlat originated from a group of farmers in the South of Chile in the late 90s. The company specialises in the production and delivery of high quality and rich natural products. Their dairy goods range from basic products such as milk, cream and butter to the latest innovations such as reduced-fat and lactose-free milk products.

2. Measurement requirements

Surlat receives fresh milk from the local dairy farms daily. The milk is delivered from the farms to the dairy processing plant via large road tankers. Each tanker is unloaded at a flow rate of approx. 80,000 kg/h and up to four tankers can be unloaded at the same time. During transportation foam is produced from the movement and vibration of the tankers. The foamy milk is then stored in a common buffer tank where it waits to be processed.

The company had previously used Coriolis mass flowmeters from another manufacturer to measure the milk quantities at the raw milk reception. However, when the milk had entrained gas due to the foam produced during transportation, these Coriolis meters would always struggle and sometimes go into start up mode, i.e. completely stop measuring. These interruptions hindered the process for several reasons: first, the unloading process got interrupted requiring personnel time and manual intervention to restart, which in turn increased unloading time and reduced efficiency; and secondly, the loss of measurement caused commercial disputes over the quantity of milk delivered.

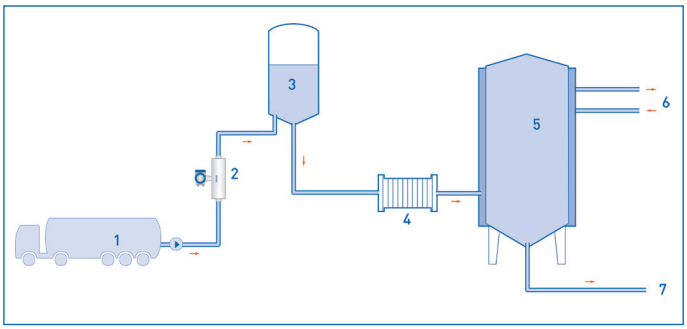
The milk processing plant therefore needed a flowmeter that measures raw milk mass flow, even during phases where entrained gas is present.

KROHNE

3. KROHNE solution

Surlat decided on the OPTIMASS 1400 C to check the ability to handle the raw milk reception with entrained gas. The twin straight tube flowmeter (DN50) was supplied in stainless steel and with hygienic Tri-Clamp connections.

Given its outstanding performance in the test installation, the KROHNE Coriolis mass flowmeter proved to be the right choice. When it comes to flow measurement of liquids with entrained gas, the OPTIMASS 1400 offers compelling advantages as compared to conventional Coriolis flowmeters like those previously installed. The KROHNE flowmeter features Entrained Gas Management (EGM™), providing reliable readings even in the event of gas entrainment in the foamy raw milk. In this way, the Coriolis meter enables continuous and uninterrupted measurement of volume flow and mass, density and temperature – even at difficult milk reception process conditions with 2-phase flow.



1 Road tanker; **2** OPTIMASS 1400; **3** Buffer tank; **4** Filter; **5** Cooled storage tank; **6** Cooling; **7** To separation and standardisation

4. Customer benefits

As the meter maintains operation over a wide range of gas volume fractions and complex flow conditions, the customer no longer has disruption to loading of the milk when entrained gas is present. The quantity measured is thus no longer disputed.

Using the highly accurate and repeatable KROHNE Coriolis mass flowmeter helped the dairy have a continuous measurement at the milk reception. The producer was able to calculate the milk yield and avoid the measurement interruption due to meter start up as was the case in previous Coriolis meters installed.

The dairy is very pleased with the performance of the KROHNE mass flowmeter. The customer decided that the OPTIMASS 1400 would become the default selection for this measurement. It is now the standard Coriolis meter for milk reception and will gradually be replacing other Coriolis meters installed for this application.

Flow measurement at raw milk reception with the OPTIMASS 1400

5. Product used

OPTIMASS 1400 C

- Coriolis mass flowmeter with twin straight tube design for universal hygienic applications
- Mass, density and volume flow of gases and liquids; maintains operation even with entrained gas of up to 100%
- Available with various hygienic connections (clamps, SMS, DIN 11851, etc.)
- 3A and EHEDG certified; conforms to FDA and EC1935/2004 regulations

Contact
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