



APPLICATION NOTE Food & Beverage

Equipping a dairy plant with flow measuring devices

- Flow measurement in the production of dairy goods
- Dosing control of cream and viscous fruit additives
- Flow control of CIP cleaning agents and fresh water

1. Background

One of the leading dairy food companies produces soft fresh cheese, cream and stirred yoghurt at one of their French manufacturing plants. The facility comprises of various proportional mixing and dosing lines as well as Clean-in-Place (CIP) systems. The whole dairy plant has recently been completely overhauled and upgraded according to the requirements of the production process.



Dosing jams and fruit sauces with the OPTIMASS 1300

2. Measurement requirements

1. Producing the various dairy goods requires fat standardisation. In order to decrease the milk and add milk fat back again, a mass flow and density measurement of the cream is necessary.
2. During the production of stirred yoghurt, additives such as sugar, jam, fruits or fruit sauces are added to a homogeneous mixture. The dosing and mixing processes require the continuous flow measurement of the various ingredients.
3. Subsequently, the control of the main product's volumetric flow is needed.
4. Since the production lines have to be cleaned on a regular basis, the flow measurement of the detergents and the cleaning water provided by separate tanks is essential.

3. KROHNE solution

Having tested several measuring devices of various suppliers, the food company decided to equip their whole dairy plant with 20 units of the Coriolis mass flowmeters OPTIMASS 1300 and OPTIMASS 7300 as well as with 150 units of the electromagnetic flowmeter OPTIFLUX 6100.

KROHNE

APPLICATION NOTE

The straight tube Coriolis flowmeter OPTIMASS 7300 is used during the separation of milk into cream and skimmed milk as well as while the cream is added back to skimmed milk again. The mass flowmeter measures the concentration of the fat to determine the fat content of the cream. In order to add viscous additives like sugar or jams with fruit pieces to the yoghurt, the flow of the mediums is measured by the OPTIMASS 7300 and the OPTIFLUX 6100. The devices were precisely sized according to the requirements so as to guarantee a high accuracy in practice. All devices can be easily cleaned and are suitable for all CIP processes. Besides, the OPTIFLUX 6100 is used for the volume measurement of the freshwater and cleaning agents in the flushing circuit. The device also measures the quality of water (at an electrical conductivity of at least 20 $\mu\text{S}/\text{cm}$).

4. Customer benefits



Fruit dosage with the OPTIFLUX 6100



Fat standardisation with the OPTIMASS 7300



CIP cleaning with the OPTIFLUX 6100

The OPTIMASS and OPTIFLUX flowmeters provide repeatable measuring results which allow precise dosing of expensive ingredients such as cream, fruits and fruit coulis or sugar. During the CIP cleaning processes uneconomical dosages can also be avoided. Thanks to the flowmeters only the required quantities of fresh water and agents are used for cleaning. The devices were installed with minimal installation footprint.

5. Products used

OPTIMASS 1300 Coriolis mass flowmeter

OPTIMASS 7300 Coriolis mass flowmeter

OPTIFLUX 6100 Electromagnetic flowmeter



ETA Process Instrumentation

www.etapii.com

sales@etapii.com

tel 978.532.1330

Martech Controls

www.martechcontrols.com

sales@martechcontrols.com

tel: 315.876.9120