



## APPLICATION NOTE Chemical

### Mass flow measurement for asphalt reception

- Continuous and repeatable measurement results for truck unloading of a viscous medium
- High accuracy flow measurement of asphalt at temperatures of +150°C / +302°F
- Coriolis mass flowmeter with integral heating jacket and insulation to prevent solidification of process product

#### 1. Background

A leading South American company in the construction market offers waterproofing solutions for walkable areas with reduced access termination, of contact application, underfloor solutions and complementary products for the installation and maintenance of membranes.

#### 2. Measurement requirements

The primary raw material to manufacture waterproofing products for this customer is asphalt. The asphalt needs to be kept at 150°C / 302°F to maintain the liquid in a low viscosity liquid state to avoid blockages during the truck unloading. Therefore, the reception of asphalt plays a vital role in the process.

The company was searching for a Coriolis mass flowmeter to accurately and reliably measure high temperature and highly viscous asphalt with flow rates ranging from 20,000...37,000 l/h. The density of the product is approx. 1150 kg/m<sup>3</sup>. It has a viscosity of 150 cP at a temperature of +150°C / +302°F.

## 3. KROHNE solution

The OPTIMASS 6400 Coriolis mass flowmeter turned out to be the ideal choice for unloading asphalt. The KROHNE flowmeter is designed for applications with higher temperature ranges of up to +400°C / +752°F. It features an optimised twin V-shaped measuring tube design, providing a low pressure drop as well as high measurement accuracy and performance in flow measurement of viscous media.

The twin bent tube of the Coriolis meter is made of stainless steel (316L) and supplied in nominal size S100 with 4" flanges (ASME Cl 150). The meter design without sharp bends or any moving parts in the flow stream allows for easy cleaning. The cleaning is performed monthly using gasoil.

Due to the process temperature and for convenient read-out on-site, the flowmeter version with remote field housing (F) was selected. The Coriolis meter was also fitted with an integral heating jacket to help maintain the temperature of the fluid as the product will solidify in the flowmeter at lower temperatures. The heating jacket was fitted with ½" connections (ASME Cl 150).



Field-mount converter of the KROHNE Coriolis mass flowmeter



Flow sensor of OPTIMASS 6400 F with integral heating jacket

## 4. Customer benefits

The KROHNE flowmeter directly measures the mass flow rate of the asphalt, providing accurate and repeatable readings that allow the operator to precisely monitor and control the truck unloading. In this way, the production quality criteria can also be better met. Using the OPTIMASS 6400 with Entrained Gas Management (EGM™) functionality has enabled the customer to increase plant uptime. EGM™, a standard feature on all latest generation OPTIMASS flowmeters, allows the OPTIMASS 6400 to maintain operation over a wide range of gas fractions and complex flow conditions, e.g. air entrainment at the start and end of the unloading process.

Uniquely in the Coriolis market, all OPTIMASS flowmeters, including the OPTIMASS 6400, are calibrated at 3 different temperatures to compensate for the influences of temperature changes on the measurement. In this way, the customer benefits from long-term stable flow measurement even in the event of temperature fluctuations that cause deviations from the target temperature of +150°C / +302°F.

The customer also took advantage of the free 3-year extended warranty. This guarantees long-term support from KROHNE which was another factor that tipped the scales in favour of the OPTIMASS 6400 F Coriolis meter in the end.

## 5. Product used

### OPTIMASS 6400 F

- Twin bent tube Coriolis mass flowmeter for measurement of high temperature liquids up to + 400°C / +752°F
- High accuracy mass, density and volume flow measurement (optional ±0.05% of MV)
- Entrained Gas Management (EGM™): maintains operation over a wide range of gas fractions and complex flow conditions
- Available with integral heating jacket
- HART®, FF, PROFIBUS-PA/DP, Modbus, PROFINET and Ethernet IP



### Contact

Would you like further information about these or other applications?  
Do you require technical advice for your application?  
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