



APPLICATION NOTE Chemical

Custody transfer loading of chloroacetic acid

- Measuring system according to MID MI-005
- Mass flow measurement of chloroacetic acid
- Detection of air in the addition water

1. Background

An international chemical company produces chloroacetic acid for other manufacturers supplying to the agri-chemical and pharmaceutical industries. The chemical is delivered in road tankers. The road tankers can be filled with between 2 and 20 tons per vehicle.

2. Measurement requirements

In order to ensure correct billings the customer must use process measurement instrumentation that fulfils the requirements of the continuous and dynamic measurement of liquids other than water as it is described in the Measurement Instruments Directive (MID) MI-005.

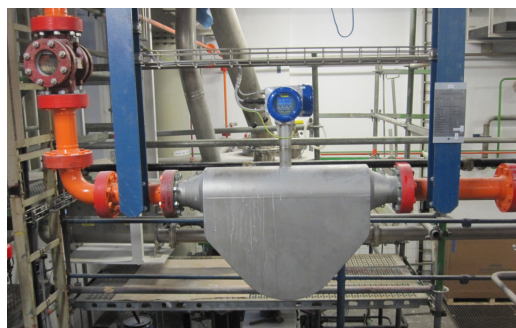
Measuring system:	
Medium:	Chloroacetic acid (70%)
Measuring range:	10...85 t/h
Minimum measured quantity:	2 tons
Temperature:	+20...+40 °C / 68...104 °F
Pressure:	2.5 barg / 36 psig

Until today the customer has used a weighbridge to weigh the filled trucks. Because this measuring solution is very time consuming the chemical company looked for an alternative solution which provides direct measurement of the filled and sold quantity.

3. KROHNE solution

For this filling solution KROHNE delivered an OPTIMASS 6400 C. The Coriolis mass flowmeter with twin bent tube has approval according to OIML R117 and the required EC Type Examination certificate according to MI-005. This meter has been delivered in compact integral version with a stainless steel measuring tube (DN 80 / 3").

For this loading process the customer uses an additional OPTIMASS 6400 for gas bubble detection in the addition water. Compared to the other traditional mass flowmeters on the market the OPTIMASS 6400 is immune to the influence of gas bubbles on the measurement. By using the patented functionality of "Entrained Gas Management" (EGM™) the instrument continuously measures the density even when air is present in the medium.



Custody transfer loading with the OPTIMASS 6400 C

4. Customer benefits

The OPTIMASS 6400 C meets all custody transfer requirements of OIML R117 and MI-005. The exceptional linearity of the mass flowmeter as well as the high measurement accuracy provides incomparable performance measurement and reduced installation costs for CT systems. The reliability of the measurement also ensures low cost of re-verification. The time consuming measurement using the weighbridge can be omitted saving time and maintenance. Secondly the company can reliably detect gas bubbles in the addition water. Because the meter can continuously measure the density of the fluid the meter can detect the presence of gas bubbles and automatically stop the custody transfer loading process. Therefore, the customer can guarantee the quality of the loaded product. Finally the company does not have to use a gas separator.

5. Product used

OPTIMASS 6400 C

- Coriolis mass flowmeter for liquids and gases
- Flow rates up to 1500 t/h
- Entrained Gas Management (EGM™):
Stability with entrained gas, even with gas concentrations 0...100%
- Suitable for cryogenic (-200 °C / -328 °F), high-temperature (+400 °C / +752 °F) and high-pressure (200 bar / 2900 psi) applications
- Measuring tube in stainless steel (316L), Hastelloy or Duplex
- High levels of accuracy for custody transfer (approved according to OIML R117, R137, MI-005, MI-002)
- HART®, FF, PA, DP, Modbus



Contact

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



www.krohne.com