APPLICATION REPORT

Chemical

Water consumption measurement at a chemical plant

- Flow monitoring of water quantities for the dilution of chemicals
- Cost-effective electromagnetic flowmeter enables precise balancing of water feed-in and product output
- Various measuring parameters are provided in the control room via Modbus

Draslovka

1. Background

Czech Republic-based family-owned company Draslovka a.s. is a global leader in cyanide-based specialty chemicals as well as agrochemicals. Their products are widely used in mining, agriculture or pharma, to name but a few. One of their largest production plants is located in the Central Bohemian city of Kolín.

2. Measurement requirements

For the dilution of chemicals, clean water is fed into the production process at a desired ratio.To precisely balance water feed-in and product yield, the two water supply lines to the dilution plant need monitoring.

The customer had so far either used a mechanical propeller flowmeter or no flow measurement at all. The mechanical meter was not up to the task as the added water quantities measured never really corresponded with the product output. For balancing purposes, the total water consumption had to be double checked on-site every six months. Readings on the actual use of water had never been available. Flow monitoring from the control room had not been possible. Draslovka was therefore looking for a suitable flowmeter able to accurately measure the flow rates of water in the pipes and seamlessly integrate into the existing control system.

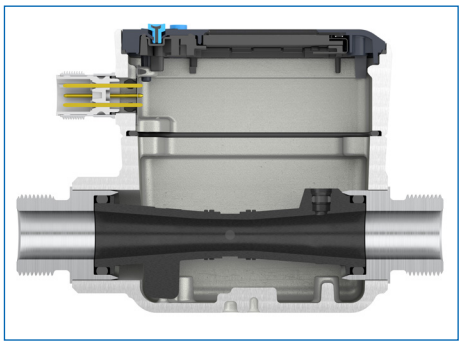
Application parameters	
Measured medium	Drinking water
Volume flow rate	9 m^3/h
Pressure	4.5 barg / 65.3 psig
Temperature	~+10°C / ~+50°F

KROHNE

3. KROHNE solution

The chemical company equipped their two main water supply lines with the AF-E 400. The electromagnetic flowmeter (EMF) is designed for reliable and long-term-stable flow measurement in applications with water and other conductive media in small line sizes.

The KROHNE flowmeter was installed into DN25 plastic pipes using threaded connections. Straight inlet and outlet runs were considered. Due to the flow tube with reduced round bore, inconsistencies in the flow profile are also straightened by design, enabling reliable measurements under challenging installation conditions. In keeping the pressure drop to a minimum, there is virtually no risk of cavitation in the tube. This also contributes to the high overall perfomance of the AF-E 400 that boasts best-in-class accuracy in every flow range.



Cross section of AF-E 400 flowmeter

Given the compact and small design of the mag meter, there was no additional bracket or holder necessary to support the pipeline. Unlike many conventional EMF, the flow tube of the EMF is made of high-quality, glass-reinforced injection-moulded PEEK instead of comparatively expensive metals with lining material. Due to its IP65/67 rugged design, the flowmeter also withstands the harsh installation environment at the chemical plant.

The AF-E 400 seamlessly integrated into the control system of the customer. The flowmeter transmits all readings to the PLC using Modbus communication. The EMF outputs the actual flow rate, the totalised volume flow and – given its integrated temperature measurement – also the process temperature. In addition, many other application data and status information according to NAMUR NE 107 can be transmitted.

4. Customer benefits

Using the AF-E 400 has already paid off for the customer after a short period of time. There has been a considerable improvement in terms of measurement accuracy and reliability as compared to the previous propeller flowmeter. There is now conclusive information available on the water consumption to achieve a clear and consistent balancing of the water amounts used for dilution and product output.

Integration into the customer's PLC also worked out fine, satisfying the company. All readings are immediately made available in the control room via Modbus communication. Routine checks every six months are a thing of the past, saving on time-consuming manual effort. Another convincing argument was the price point as the compact AF-E 400 provides a more cost-effective solution for this kind of application than conventional EMF.

5. Product used

AF-E 400

- Electromagnetic flowmeter for utilities and industrial automation
- Flow measurement of conductive liquids, e.g. cold/hot water, coolants, etc.
- Best-in-class temperature range, accuracy, pressure drop and flow range
- Ultra-compact design for parallel installation and tight spaces
- 4...20 mA, pulse, frequency, Modbus, IO-Link

Contact
Would you like further information about these or other applications?
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