Application note

Panametrics liquid clamp-on ultrasonic flowmeter optimizes water network and monitors water leakage

Benefits:

- Easy to install
- No process interruption
- No pressure drop
- High reliability
- Low maintenance
- Long term stability and drift characteristics
- Wide turndown ratio

Fig. 1: Cabinet with AT600 electronics, data logger, battery and 4G communication module

Summary

A regional water authrority in South East Asia needed to better map its water networks in order to monitor the flow on its main lines. The goal was to reduce the volume of leaks across its network and save precious water. Increasing network efficiency is a common theme across the water distribution industry, often refered to as non-revenue water (NRW).

Challenge

The customer operates the water grid on a 24/7 basis and therefore required a flow measurement solution that would not cause an intrerruption to the flow, limiting the technical possibilities to ultrasonic clamp on meters only.

Moreover, where the flow measurements were required, across 12 measurement points throughout the network, there was no available power supply. The flowmeters therefore had to be powered independently to ensure continuous operations.

With no communication available, the customer also required remote wireless access to the flowmeter data.

And, of course, the flowmeters had to be accurate and reliable with minimal or no maintenance given the measurement points were unmanned.

Specifications

Fluid:	Water
Pipe size:	From 6” to 24”
Pipe material:	Mild steel
Pressure rating:	PN16
Process Temperature:	Ambient
Process Pressure:	Few barg

Fig. 2: Solar panel powering the AT600 battery in the cabinet which connects to the IP68 C-RS 401 transducers underground

Solution

A successful turnkey pilot installation solution incorporating the cabinet with the solar panel, the battery and a 4G data logger was installed. The logger collected the flow and totalizer data and sent a packet of data (12hr data) twice a day back to the water utility server.

The customer was very satisfied with the performance and found that the low power consumption of the AT600 (5W typically) did not necessitate a large solar panel.

Thereafter, the Panametrics Transport PT900 portable ultrasonic flow meter was installed on various water line sizes with some having insufficient straight runs (typically 10 nominal diameters before and 5 nominal diameters after the measurement point), to ensure the flowmeter would work on all lines.

The pilot solution worked flawlessly. Some of the measurements were compared with fixed electromagnetic flowmeters installed on the line, and the readings matched within 1% to 2% providing the customer with the confidence that the results were accurate.

Panametrics' experience with this application specifically in South East Asia plus the successful pilot convinced the customer to adopt Panametrics technology.

The customer installed 12 ultrasonic liquid clamp-on Aquatrans AT600 flowmeters with C-RS 401 IP68 transducers below ground level water lines. After 18 months of reliable operations, the customer remains very pleased with the performance. In addition to optimizing the network and reducing water leakage, with only one spare unit for all 12 lines, the customer has also reduced its inventory costs.

Panametrics, a Baker Hughes business, provides solutions in the toughest applications and environments for moisture, oxygen, liquid and gas flow measurement.

Experts in flare management, Panametrics technology also reduces flare emissions and optimizes performance.

With a reach that extends across the globe, Panametrics' critical measurement solutions and flare emissions management are enabling customers to drive efficiency and achieve carbon reduction targets across critical industries including: Oil & Gas; Energy; Healthcare; Water and Wastewater; Chemical Processing; Food & Beverage and many others.

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