

The advantages of insertion flowmeters

Minimize cost and disruption using ABB's AquaProbe insertion flowmeters

Maximize measurement flexibility using insertion flowmeters

Measurement made easy

Introduction

The need to carefully manage water supplies and to reduce the energy costs associated with pumping those supplies around water networks, is leading to a growing realization of the importance of accurate flow measurement.

Ideally, the flow of water around a network should be measured as widely as possible in order to provide the most comprehensive overview of conditions. However, the cost and disruption associated with installing full bore flowmeters means that this may not always be a practical or economical proposition.

These problems can be overcome using insertion type flowmeters. With recent advances in technology, these devices can be deployed in an expanded range of locations, either on a temporary or permanent basis, offering the same accuracies and other benefits offered by conventional full bore meters.



The Application

There are various instances where using an insertion type flowmeter can be advantageous.

In one real-life example, a water operator wanted to implement a strategic project to assess and optimize the way it pumped water around its distribution network. With much of the company's network located in relatively flat areas, large quantities of water had to be actively pumped rather than being moved around under gravity.

With rising energy prices, the company was keen to measure its overall pumping efficiency and to find ways in which to optimize pumping performance and reduce energy consumption.

To enable it to do this, the company wanted to meter its water supply at several points around its network in order to gain the most comprehensive overall picture of pumping performance.

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The Challenge

A key requirement in the project was the ability to implement the metering programme without disrupting the water supply, which effectively ruled out the installation of full-bore flowmeters. Instead, the company requested flow meters that it could hot-tap into its trunk mains without interrupting the water supply. The company also wanted devices that it could repeatedly remove and install at other points in the network as necessary, which again would have been impossible with full-bore meters.

The Solution

The company installed ABB's AquaProbe insertion flowmeters around its network. With an electromagnetic sensor head mounted on a rod that passes through the pipe wall, the AquaProbes have provided an ideal solution to the company's requirements.

What can ABB offer

ABB's AquaProbe insertion flowmeter offers a convenient, low cost answer for a wide range of temporary or permanent installations, from short term surveys through to long-term leakage monitoring.

Designed in close consultation with the water industry, the AquaProbe offers an economic alternative to full-bore metering. It comprises an electromagnetic sensing head mounted on the end of a support rod. The sensing head can be installed in existing pipelines without the need for the major excavations or alterations to pipework associated with full-bore meters. It can be fitted without interrupting the water supply and can be removed easily for periodic calibration or inspection.

The AquaProbe can be fitted without interrupting the normal water supply with its 'hot tap' capability. This makes the AquaProbe a flexible, reliable and highly accurate solution for both temporary and permanent installations.

The AquaProbe is available in two versions – the FEA100 and the FEA200.

The AquaProbe FEA100 brings all of the proven benefits of the AquaProbe to a range of applications. Using the WaterMaster transmitter, the AquaProbe FEA100 provides the single insertion metering solution for everything from site surveys through to water distribution networks. The combination of the WaterMaster transmitter with the AquaProbe sensor offers users a wide range of benefits, including:

- Choice of PROFIBUS DP or HART 4...20mA communication protocols
- Advanced Digital Signal Processing (DSP), enabling reliable and accurate real-time measurements
- Self-calibrating transmitter offering high stability and repeatability
- OIML-type continuous self-checking with alarms, helping to maintain sensor and transmitter accuracy
- Comprehensive self-diagnostics compliant with NAMUR NE107
- Advanced infrared service port, supporting remote HMI, HART, cyclic data out and parameter dump

The AquaProbe FEA200 features the new AquaMaster 3 transmitter, which adds the option of renewable power to the traditional choices of mains and battery power. Capable of now drawing power from a solar panel or wind turbine, the AquaMaster 3 makes the AquaProbe FEA200 the ideal solution for locations where there is no external power.

For further reliability, even the mains-powered units have a super capacitor back-up to preserve flow measurement in the event of a power shortage.



Fig. 1: Using the WaterMaster transmitter, the AquaProbe FEA100 provides the single insertion metering solution for everything from site surveying to water distribution networks

Key features and benefits include:

- Choice of power options offering flexibility to customers
- Bi-directional flow capability over a wide flow range offers accurate measurement of peak daytime flows and minimal night flows
- Extended battery life of up to 10 years
- Multi-speed, multi-channel, dual variable datalogger, offering precise high resolution datalogging capabilities

ABB has extensive experience in the design, manufacture and lifelong support of electromagnetic flowmeters for water, wastewater and process applications.

For more information, visit www.abb.com/measurement or contact your nearest ABB representative.



Fig. 2: The AquaProbe FEA200 features the new AquaMaster 3 transmitter, which adds the option of renewable power to the traditional choices of mains and battery power

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