




Flow Control at a Hydroelectric Power Plant

Problem-free retrofitting through a non-intrusive measuring procedure. Installation and start-up without underground construction, work on pipes, and interruptions of operation. Cost advantage as compared with inline measuring technology.

Measuring Task		Method		Medium	
	Flow measurement		Ultrasound		Stream water

Features

- Medium: stream water from a reservoir
- Pipes: \varnothing 1200 mm
- Material: steel
- Flow: ca. 3 m³/s



The alternative to costly underground construction and expensive inline measuring equipment: A non-intrusive flow measurement using the ultrasonic clamp-on procedure.

Connection cables and housing of the solid transducers are of stainless steel.



The transmitter FLUXUS[®] ADM 7407 measures and controls the flow reliably.

Measuring Task.....?

The discharge from a flood reservoir is being used with a small power plant to generate electricity. There, two Francis turbines, which are supplied with operating water from the reservoir by a steel pipe of ca. 40 length and 1200 mm diameter, drive a 250 kW generator. The flow has to be controlled to maintain 3 m³/s to ensure optimum efficiency. The plant does not have any kind of measuring system for determining the flow rate.

Solution.....!

Retrofitting with a FLUXUS[®] ADM 7407 ultrasonic flow meter, which uses a non-invasive clamp-on technology to measure the flow, proved to be the ideal solution: The measuring system is compact enough to be transported to its place of use in a box or case, and no costly underground work is required. The ultrasonic transducers are simply clamped onto the outside of the pipe, consequently no work on the pipe itself is involved in mounting the equipment, and therefore no interruption of operation is necessary. The K transducers used cover nominal diameters ranging from 200 mm to 6500 mm – with no extra costs entailed by varying nominal diameters. The high-performance FLUXUS[®] ADM 7407 enabled the implementation of a highly accurate measurement set-up using two sound paths in reflection mode. The flow proportional 4 -20 mA transmitter output signal is sent through a buffer amplifier not only to a programmable logic controller (PLC) for controlling the inflow volume, but also to a control system where it is used for calculation and recording purposes. Before purchasing the equipment, the customer was shown a mobile test measurement, demonstrating the high quality of the equipment technology and proving that the ultrasonic procedure was a perfect solution for the measuring task at hand.

Advantages.....+

- Reliable, non-invasive measurement and automatic control of inflow volume
- Cost efficient in procurement, installation and maintenance
- Compact measuring system; can be transported and mounted without excavation work
- Installation and start-up without interrupting operations
- Non-wearing and maintenance-free
- Good accuracy, typically 1% deviation from reading