Water company uses clamp-on flowmeter for accurate measurement on large penstock

Situation
A major municipal water company in Northern California supplies water to residential, commercial, and irrigation customers. Additionally, the water plant has the ability to generate hydro-power through the energy produced from water flowing from a reservoir through a penstock (a pipe used to carry water to a turbine).

Challenge
The customer needs to measure the water flow in the 54-inch penstock as well as an 8-inch bypass line. Accurate and very repeatable flow measurement is required on penstocks because turbine efficiency is directly related to the flow, and reduced efficiency typically indicates the need for system maintenance. The original specification called for installing a transit-time flowmeter with insertion-type transducers on the 54-inch penstock line. The insertion-type sensors require precision welding and installation of hot tap devices, significantly increasing installation costs.

Solution
The local Siemens representative worked with the contractor to present the SITRANS FUS1010 ultrasonic clamp-on flowmeter to the customer. The Siemens representative proposed a 4-path system that provides increased accuracy for the 54" penstock and a single path system for the 8" line. Consequently Siemens clamp-on systems were installed on both lines.

Water flowing from the reservoir through the 54-inch line generates power at the turbine. The water in the 54-inch line can flow at very high

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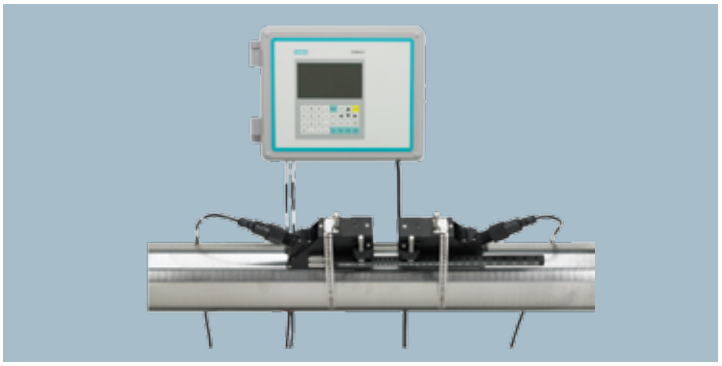
velocities (penstocks occasionally operate above 40 fps). By using the 4-path unit on the larger line, errors (common on large lines) caused by pipe eccentricity are reduced. The Siemens FUS1010 clamp-on flowmeter is designed to measure accurately at the very high flow velocities associated with hydro-power applications.

By using the clamp-on design flowmeter, installation costs were considerably reduced because there is no need to cut into the pipe. The insertion-type flowmeter installation would have been double the cost of the Siemens clamp-on flowmeter. The Siemens clamp-on flow system also eliminated the need to shut down the plant during installation.

Benefits

- **Cost savings**
  No need to cut into pipe – no need to shut down plant during installation.
- **Time savings**
  Installation done at a time convenient to the customer – no need to shut down flow.
- **Improved process reliability**
  4-path system has redundancy.
- **Customer service**
  Local service and support.
- **System diagnostics**
  Allow confirmation of correct installation and operation.
- **Ensures higher accuracy**
  Allows multiple sets of transducers on one pipe – the measurements are averaged.



About the SITRANS FUS1010 flowmeter

The SITRANS FUS1010 is the most versatile clamp-on ultrasonic flowmeter available. Because it can operate in either WideBeam transit time or Doppler mode, there is no need to change the meter when operating conditions change. This makes it suitable for virtually any liquid, even those with high aeration or suspended solids.

The SITRANS FUS1010 is available in single, dual, and optional four channel/path configurations. There are three enclosures to choose from: wall-mount, wall-mount explosion-proof, and compact explosion-proof.

Siemens Industry, Inc.
Industry Automation
3333 Old Milton Parkway
Alpharetta, GA 30005

1-800-241-4453
info.us@siemens.com

www.usa.siemens.com/pi

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