

Case-In-Point

Pulse Doppler Hot Tap Flow Meter Gets WWTP Out of Tight Spot

Teledyne Isco Inc.

Background

The President Street Water Quality Control Facility in Savannah, Ga. is the city's primary wastewater treatment facility. Serving both municipal and industrial customers in the Savannah area, it has a permitted flow of 27 MGD.

Flow in the 42-inch influent line was measured with a Venturi meter, which was installed in the mid-70s. The plant had been upgraded in 1994, but the meter was not addressed at that time. However, scaling and deterioration in the meter's internal flow tubes began causing inaccurate flow readings. "We initially thought it was the pressure transmitter," said Lester Hendrix, Plant Operations Superintendent, "but the meter itself needed to be replaced."



Lester Hendrix with Hot Tap installation

from the grit chamber and primary clarifiers, so it was nearly impossible to bypass the metering location without causing backflow.

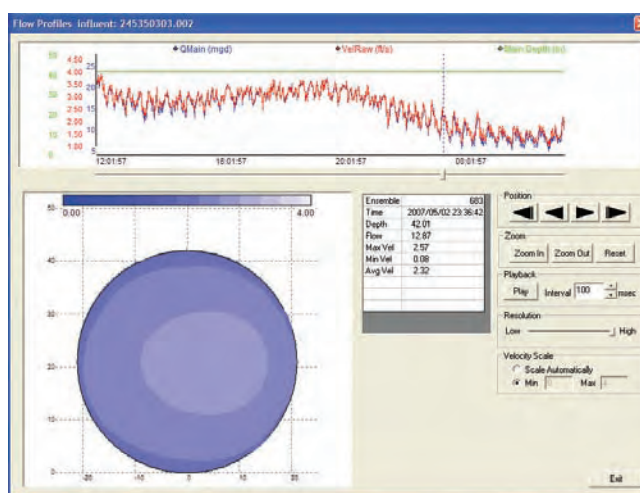
Because the pipe did not have a straight-run configuration, the logistics weren't right for installing a magmeter. Additionally, the cost of a magmeter and the construction to accommodate it was prohibitive. A strap-on transit time meter was installed, but it failed to give accurate readings. Plant staff explored alternative metering points of the plant influent. However, each location that would allow metering of the influent posed its own obstacles. The plant was running out of options.

Solution

After some research, Hendrix decided to try an ADFM® Hot Tap Velocity Profiler from Teledyne Isco Inc. The straightforward installation involved

Challenges

Removing the meter was an expensive and challenging option. The influent line was located in a piped tunnel alley. "The plant was basically built around it," Hendrix noted. In addition, the meter was below grade



Flow Data and Velocity Profile for Savannah WWTP

inserting the sensor into an industry standard two-inch tap through the pipe wall. The flow was not disturbed, and they did not have to bypass or remove the original meter.

Unlike an insertion magmeter, the Hot Tap uses range gated pulse Doppler velocity profiling technology. This enables accurate flow rate measurement in full and pressurized pipes 18 inches or greater in diameter. It does not require the lengthy upstream and downstream straight-run conditions required by other technologies. The Hot Tap measures flow rate to within $\pm 2\%$ of actual flow in closed pipes, even in installations near bends, short straight runs, near pumps, or in other difficult hydraulic conditions. The flow is not disrupted during installation or maintenance, nor is a bypass required.

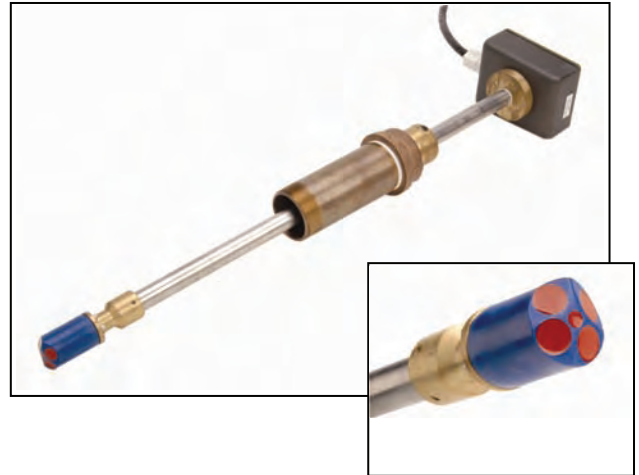
Hendrix observed that the Hot Tap is performing well, saying that it "has proven itself in some adverse situations that we've had", and the plant is satisfied with the results. "Very infrequently do you find something that falls into place like this," he said. "It worked easier than I thought it would. There was nothing else on the market that would do what the Hot Tap does."

(800)228-4373
 iscoinfo@teledyne.com
 www.isco.com/flow

The ADFM[®] Hot Tap Flow Meter is Ideal for Closed Pipes

Teledyne Isco's ADFM Hot Tap Flow Meter provides precise and accurate flow rate measurement in full and pressurized pipe applications where the pipe diameter is 18" (460 mm) or greater. You can use the Hot Tap in difficult hydraulic conditions, such as those often found in force mains, siphons, process lines, and other full-pipe applications.

The ADFM Hot Tap is a variant of Isco's standard, open channel ADFM flow monitoring system. The Hot Tap combines the widely used ADFM range gated pulse Doppler velocity profiling technology with a unique sensor assembly suitable for insertion into full, operating pipes.



Applications

- ◆ Wastewater collection systems
- ◆ Combined sewer systems and outfalls
- ◆ Wastewater treatment facilities
- ◆ Irrigation canals and channels
- ◆ Industrial process and discharges
- ◆ Stormwater conveyance and outfalls

The Hot Tap does not require lengthy upstream and downstream straight-run conditions. It measures flow rate to within $\pm 2\%$ of actual flow rate in closed pipes, even when installed near bends, short straight runs, near pumps, or in other difficult hydraulic conditions.

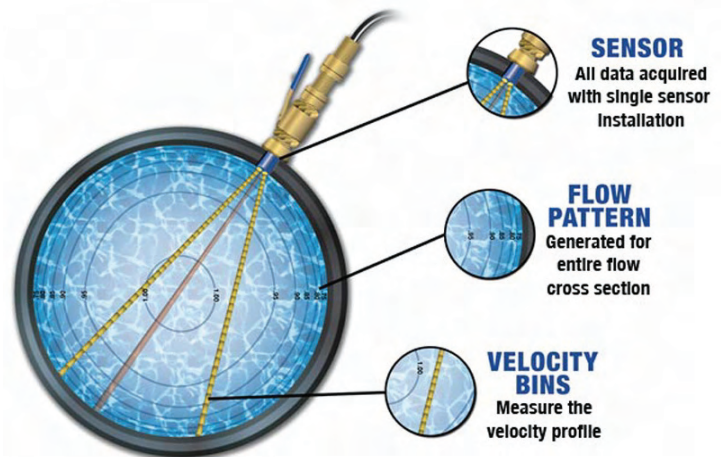
Installation is straight-forward and quick. You insert the sensor into an industry standard two-inch tap through the pipe wall, and have easy access to the sensor for routine inspection and maintenance when needed. The Hot Tap is constructed of robust materials insuring years of worry-free operation.



The ADFM Hot Tap sensor installs through a standard two-inch tap.

Key Features

- ◆ Pulse Doppler velocity profiling technology
- ◆ Quad-redundant velocity sensors in a single, compact housing
- ◆ Data quality verification information (signal strength and correlation)
- ◆ In-situ calibration never required
- ◆ Rugged, long lasting construction
- ◆ Real-time data output



Teledyne Isco, Inc.
4700 Superior Street, Lincoln NE 68504 USA
Tel: (402) 464-0231 USA and Canada: (800) 228-4373 Fax: (402) 465-3022
iscoinfo@teledyne.com www.isco.com