

Influent Flow Monitoring at Water Treatment Plant

Venice, Italy



LaserFlow sensor installed over 4 m wide channel upstream the inlet of WTW.

A Signature Flowmeter with 360 TIENet LaserFlow® sensor was installed at the inlet channel of a Water Treatment Plant in Venice, Italy. Non-contact Doppler laser technology allowed the customer, Veritas S.p.A, to measure the water collected from the surface intake and entering the WTP.

Background

The customer, VERITAS, provides waste water management and integrated water cycle services in the Venice District in Italy, in an area of over 2,650 km² and 930,000 inhabitants. Responsible for providing clean water to Italy's most iconic city is a great responsibility and one where VERITAS excels.

The water flow monitoring was fundamental for the customer to ensure required surface water volume is supplied to the Water Treatment Plant.

Site Challenges

VERITAS determined it needed to find a way to measure nearly stagnant water flow. The velocity was near zero, just 0.10 m/s and below. The job was made more difficult by an annual algae bloom in the channel.

Due to a need to reduce maintenance costs to the minimum, any contact measuring technique had to be rejected. In addition, the difficult flow profile with near zero velocities and very smooth water surface turned out to be impossible for the surface velocity sensors using radar technology.

VERITAS turned to Teledyne ISCO to find an economical solution to their needs.

LaserFlow Solution

RT ENVIRONMENT S.R.L., the distributor of Teledyne ISCO in Italy, recommended using the non-contact LaserFlow sensor for the difficult site conditions.

A variety of mounting options allowed the LaserFlow to be positioned above the water, so it didn't interfere with the flow stream. The ability to get velocity readings from

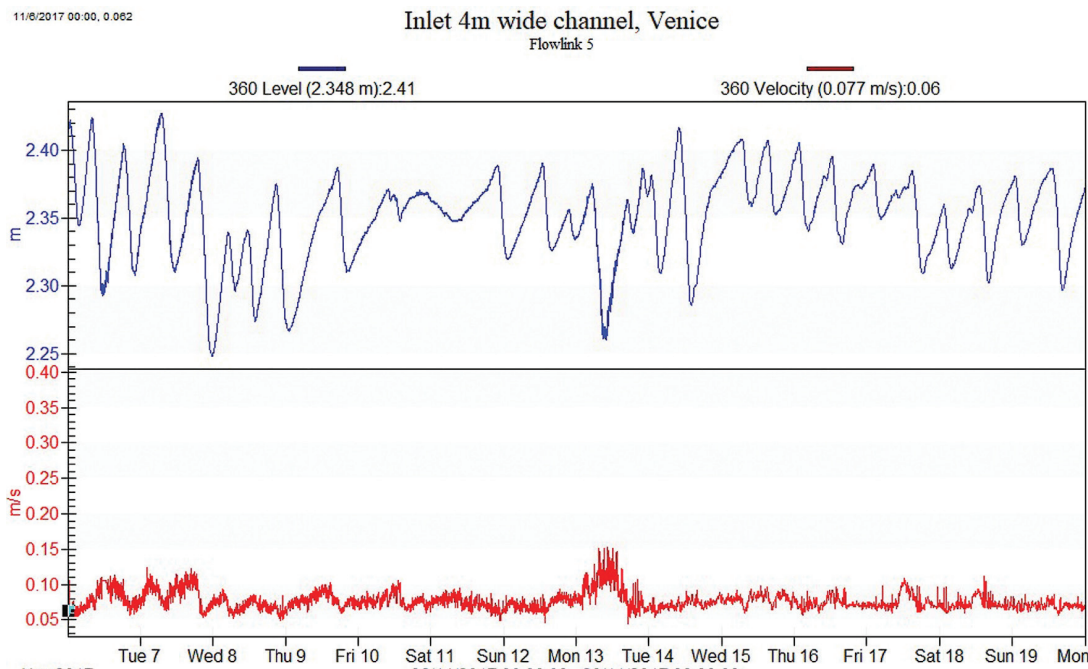
different depths below the surface of the water was crucial to avoid any interference from wind, rain, or algae that could compromise data, especially at the extremely low velocities.

LaserFlow's was the only technology that could overcome the challenges presented at this site.

The values in brackets represent average level and velocity in the recorded timespan. Thanks to the unique laser non-contact technology, 360 LaserFlow sensor can solve just about every water flow challenge. From bidirectional flow, varying velocity and level, including submerged conditions and velocities even below 0.1 m/s, the sensor continues to relay precise information because it automatically adjusts to changing conditions.



LaserFlow sensor attached to the bridge



Measuring Results from the inlet channel to Water Treatment Plant.

Feedback from the customer

"2-years of continuous flow readings proved the reliability of the LaserFlow. We could meet two goals, monitor flow rate at the inlet of the Water Treatment Plant and reduce maintenance to a minimum, despite the difficult site conditions."

TIENet® 360 LaserFlow Sensor

The TIENet 360 LaserFlow sensor is an area-velocity flow and water-level measurement device that remotely senses flows in open channels using non-contact Laser Doppler Velocity Sensing and non-contact Ultrasonic Level Sensing technologies. The sensor uses advanced technology to measure velocity with a laser beam directed at single or multiple points below the surface of the wastewater stream. Therefore, unlike radar technology, it does not require the creation of ripples on the surface of the stream.



- Zero deadband from measurement point in non-contact level and velocity measurements Continuous measurements in submerged conditions
- Advanced velocity diagnostics for data quality evaluation and analysis
- Bidirectional velocity measurement
- Low level velocity measurement

Signature® Flowmeter

The Signature flowmeter from Teledyne ISCO, designed for open channel flow monitoring, supports flow measurement methods including bubbler, non-contact laser area velocity, ultrasonic, and submerged Doppler ultrasonic area velocity.



With the ability to connect up to 9 sensors, the Signature flowmeter provides a broad range of I/O and communications options:

- pH and temperature
- SDI-12
- RS485
- 4-20 mA output
- Ethernet
- GSM/GPRS modem

The Signature flowmeter is rugged (IP 66) even if the cover of the lid is open. It performs data logging with variable rate data storage and data integrity verification, and has the ability to connect a USB drive for data/report retrieval and programming.

About Teledyne ISCO

Teledyne ISCO is a leading manufacturer of a wide range of innovative products designed to increase productivity while improving the quality of life on our planet. Our standard and customized products are used across multiple sectors including water and wastewater, pharmaceutical, academia, oil exploration, and reactant feed. Teledyne ISCO is continually improving its products and reserves the right to change product specifications, replacement parts, schematics, and instructions without notice.

For further information contact your local Teledyne ISCO representative.