

# Onsite Check Metering

By Brian Roughan

*When a flowmeter in operation has to be verified, it usually has to be removed from its location and transported to a facility where the necessary verification or check metering can take place; however, an onsite verification device makes this task faster and easier for a fraction of the cost. Using the right meter can yield results as accurate as any offsite verification.*

Portable check metering kit enables verification of virtually any flowmeter

Many process plants within the water and wastewater industry have installed flowmeters to ensure efficient operation. They are located in strategic positions where they feed control systems with vital flow rate information that can be used as a base for adding or dosing chemicals, as well as measuring the water consumption or the efficiency of the installation. Optimal performance is required to secure growth and sustainability; if an application is not performing at its best, it can cause the plant to lose money. For example, an undetected leak in a large distribution pipe carrying purified water can amount to large financial losses.

### Offsite vs. Onsite Verification

In order for plants to operate efficiently, the plant manager must be certain that each flowmeter is operating 100% correctly. Upon delivery, meters are usually calibrated; thus, the operator can be sure that they measure correctly.

Therefore, an onsite verification of the flowmeter is very beneficial. When performing such a task, a portable measurement device is used to verify the performance and accuracy of the flowmeter. This allows the verification to occur while the meter is in operation, eliminating the need for a temporary shutdown. Accuracy is very important; therefore, plant operators must be sure the onsite verification process is as accurate and reliable as the offsite one.

### Metering Kit Solution

Among the various options typically used for verification today, the Sitrans FUP1010 clamp-on check metering kit stands out. Because the meter is based on the ultrasonic flow measurement principle, it has functionalities that set it apart from other flow technologies. It can measure most conductive or nonconductive liquids (clean or moderately aerated) and liquids with suspended solids. This allows the kit to verify or check the performance of existing meters that measure raw sewage, effluent or freshwater at any given water and wastewater plant. Other application areas include temporary leak detection in large intake or



**LEFT:** The onsite verification process can be performed on several types of flowmeters and installations within the water and wastewater industry.

**RIGHT:** The Sitrans FUP1010 check metering kit is delivered with all the tools necessary to perform flowmeter verification.

However, rugged conditions, long use and other factors often make it necessary to verify the meter is still running at 100%. This can be very time-consuming and difficult because the equipment often has to be removed from its location and sent to a factory for testing. This operation requires a plant shutdown in order to remove the device, resulting in lost production time and money.

distribution pipes in the irrigation industry. The accuracy is typically around 0.5 to 1%. A repeatability of better than 0.015% makes it ideal for verifying high-precision measurement tasks such as the addition of chlorine to drinking water.

## Dual-Operation Modes

The meter offers two operation modes: transit time and Doppler. Transit time operation is the preferred mode for relatively homogeneous liquids because the ultrasonic transit time pulses require a trouble-free passage of the pipe in order to deliver a signal that can be processed. If this requirement is met, accuracy can be up to 0.5% of the flow. Homogeneous liquids are found in primary sludge, mixed liquor or drinking water applications.

Doppler operation, on the other hand, relies on solids or debris in the liquid to offer a precise signal. Hence, Doppler operation is the preferred measurement method for liquids with extensive suspended solids or aeration. Such conditions are typically relevant for measuring thickened and digested sludge. Accuracy with Doppler mode is usually up to 1% of the flow.

The system can be set up to automatically switch from one mode of operation to the other as conditions change, eliminating the need to alternate between meters.

The dual-mode capability enables an operator to use the check meter on almost any application at a water and wastewater plant because its operation can be adjusted and optimized to the specific measurement tasks regardless of aeration and solid percentages. It enables verification of any brand or type of flowmeter based on the traditional flow measurement principles, including electromagnetic, ultrasonic, orifice or rotary piston technologies.

## Verification Versatility

Portability makes this particular check meter versatile. The battery-powered kit comes with a selection of transducers that fit the most common pipe sizes and types within the industry. Because the kit is of the clamp-on meter type, it utilizes external transducers that can quickly and easily be installed on the outside of the pipe. This allows the meter to be transported from one installation to another, facilitating the performance of surveys and monitoring of temporary or permanent flowmeter installations.

Onsite clamp-on ultrasonic check meters used to verify the performance of existing meters offer plant operators and managers several benefits. Above all, they allow the plant to continue operations without having to perform a costly and time-consuming offsite verification. [www](http://www)

**Brian Roughan is product manager for Siemens Energy and Automation, Process Solutions Div. For more information, call 800.743.6367 or e-mail [usa.800siemens.us@siemens.com](mailto:usa.800siemens.us@siemens.com).**

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