



SEVERN TRENT ELIMINATED UNSCHEDULED SHUTDOWN OF WATER WELLS AND REDUCED MAINTENANCE COSTS

Application

Ground water flow measurement from an aquifer

Application Characteristics

High level of bacteria in ground water causing scaling aquifer

Customer

Severn Trent in Southwest Florida, United States

Challenge

Severn Trent Services operates several water and waste water treatment facilities in Florida. One of their facilities in southwest Florida draws, treats, and delivers over two million gallons of ground water per day from eight wells. Managing the system requires Severn Trent to accurately measure the amount of water withdrawn from the aquifer and report it to the South Florida Water Management District in compliance with Water Use Permit (WUP) state license. Frequent meter failures and increased maintenance required to keep the meters in service added to the operating costs which ultimately had to be passed on to the local water customers. Additionally, metering failure or inaccuracy risked noncompliance with the WUP license which could result in significant fines.

Severn Trent had been using propeller flow meters to measure water flow from the water well. High levels of bacteria in the ground water caused scale to frequently build up on the propeller meters. This scaling affected the meter operation and accuracy, requiring the wells to be shut down so that meter performance could be restored.

The unplanned shutdowns, often occurring in peak seasons, reduced the plant's treated water output as they had to remove, clean, recalibrate, and reinstall the meters.

Results

- Improved well availability by eliminating plant shutdown due to failed meter
- Reduced maintenance cost
- Compliance with Water Permit Use license reporting requirement

Rosemount™ 8750W Magnetic Flow Meter with Smart Meter Verification eliminated unscheduled downtime due to meter failure.

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Additionally, the plant needed to schedule an annual maintenance of the propeller meters where they sent it to the manufacturer for recalibration to insure accuracy. These scheduled, and unscheduled, maintenance costs consumed a large part of Severn Trent’s maintenance budget.

Solution

Severn Trent replaced all critical reporting meters with Rosemount Magnetic Flow Meters with Smart Meter Verification. Careful selection of liner and electrode material minimized bacterial growth and eliminated the scaling. The Smart Meter Verification diagnostic simplified regulatory compliance. This advanced functionality recorded a baseline sensor signature when the new magnetic flow meters were installed. After the signature was established, the meter continuously verified the health of the system by comparing the initial signature to current values of the meter which ensured there was no degradation of performance. Verification is done from the transmitter with no additional equipment, without removing the meters from the line, and with minimal disruption of flow measurement.

The financial impact of the solution was instantaneous and the plant paid for the flow meter upgrade in a very short amount of time due to the savings they made from their maintenance budget. One year after installation, the meters were verified and all passed the regulatory criteria. Furthermore, there has been no downtime or no scaling problems in any of the wells since installation. Severn Trent has recognized this as a best practice and stresses the importance of establishing a baseline by recording the meter signature at installation.



A Rosemount 8750W Magmeter installed in one of the water wells.



Rosemount 8750W Magnetic Flow Meter

EMERSON		Meter Verification Magnetic Flowmeter	ROSEMOUNT
		Wednesday, October 13, 2021 8:10:20 AM	
Instrument Owner: Test Owner	Company: Test Co	Note: Transmitter Serial Number 12345678	Contact Name/Tested By: Test Name Telephone: 123-456-7890
Transmitter Identification	Transmitter Tag: DEMO 555	Transmitter Model: 8712EM/8732EM	Test Conditions and Verification Limits
Transmitter Serial Number: 14727698	Device ID: 1069735	Descriptor: 1234567890123456	Test Condition: Flow, Full Pipe
Transmitter Configuration	Calibration Numbers: 1000005010000000	Upper Range Value: 1000.00000 US gal/min	No Flow Limit: 5 %
	Lower Range Value: 0.00000 US gal/min	Damping: 2.00000 Sec	Flowing Limit: 5 %
Sensor Health Verification Results	Coil Resistance: 15.76005 ohm	Measured Coil Resistance: 15.82587 ohm	Empty Pipe Limit: 5 %
Coil Circuit Test Result: Pass	Electrode Resistance Baseline: 9.75713	Measured Electrode Resistance: 28.06877	Sensor Calibration Verification Results
Electrode Resistance Baseline: 9.75713	Measured Electrode Resistance: 28.06877	Electrode Circuit Test Result: Pass	Coil Inductance Baseline: 37.76116
			Measured Coil Inductance: 37.94042
			Sensor Deviation: 0.20991 %
			Sensor Calibration Test Result: Pass
			Meter Verification Test Result
			Result: Pass
			Transmitter Calibration Verification Result
			Simulated Velocity: 30.00000 ft/sec
			Actual Velocity: 30.04408 ft/sec
			Transmitter Deviation: 0.14694 %
			Calibration Test Result: Pass

Rosemount 8750W Magmeter Flow Meter Calibration Verification Report

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