

APPLICATION NOTE: NO. 1

Chemical- Additive Flow Detection

THE APPLICATION

The water treatment industry uses a variety of methods to treat potable water in order to bring it into compliance with taste, odor, appearance and health standards. A fundamental part of the treatment process is the use of chemical additives such as alum, polymer, caustic soda, and ferric chloride. Chemicals are added at different points in the treatment process to help purify and clarify the water.

To dispense and meter the chemical additives, positive displacement pumps are commonly used. The quantities of

chemicals added to the water are very small and flow rates of 1 to 2 gallons per hour (gph*) are typical. Because the chemical content of the water is critical to its quality and safety, treatment plant operators must assure that the chemical additives are flowing.

THE PROBLEM: Reliable Low-Flow Detection

It is common industry practice to assume the chemical additives are flowing as long as the actuators in the displacement pumps are moving. However, plant operators soon find out that monitoring the actuator move-

ment does not guarantee chemical flow. Chemical reservoirs run dry, blocking valves are accidentally closed, lines leak and injectors clog; yet, the pump's actuator continues its cyclic motion.

Monitoring the flow of the chemical additives is a more dependable way to assure chemical flow. Unfortunately, flow monitors typically are not sensitive enough to detect extremely low flow rates nor robust enough to withstand corrosive chemicals.

PROJECT PARAMETERS

User:	North Bay Regional Water Treatment Plant
Location:	Fairfield, California
Typical Flow Rate:	1.27 to 1.59 gph (80 to 100 mL/min.)
Target Setpoint:	0.48 to 0.65 gph (30 to 40 mL/min.)
Media:	Alum, Sodium Hydroxide, Hydrofluosilicic Acid

THE SOLUTION: FCI'S VelociTee™ Flow Conditioner

FCI created the VelociTee Flow Conditioner in response to the water treatment industry's need for a reliable, chemical-additive flow monitor. The VelociTee is a special PVC tee designed to boost the velocity and dampen the flow pulsation

of the chemical additives. Its unique construction also maintains a flooded measurement cavity.

The VelociTee is intended to be used with FCI's Model 12-64 Flow Switch. The Model 12-64 has been an industry flow switch standard of reliability since 1964. Pairing an all-welded 12-64 along with the VelociTee creates a chemical-additive flow

monitoring system that exceeds the water treatment industry's dependability, sensitivity, and ruggedness requirements.

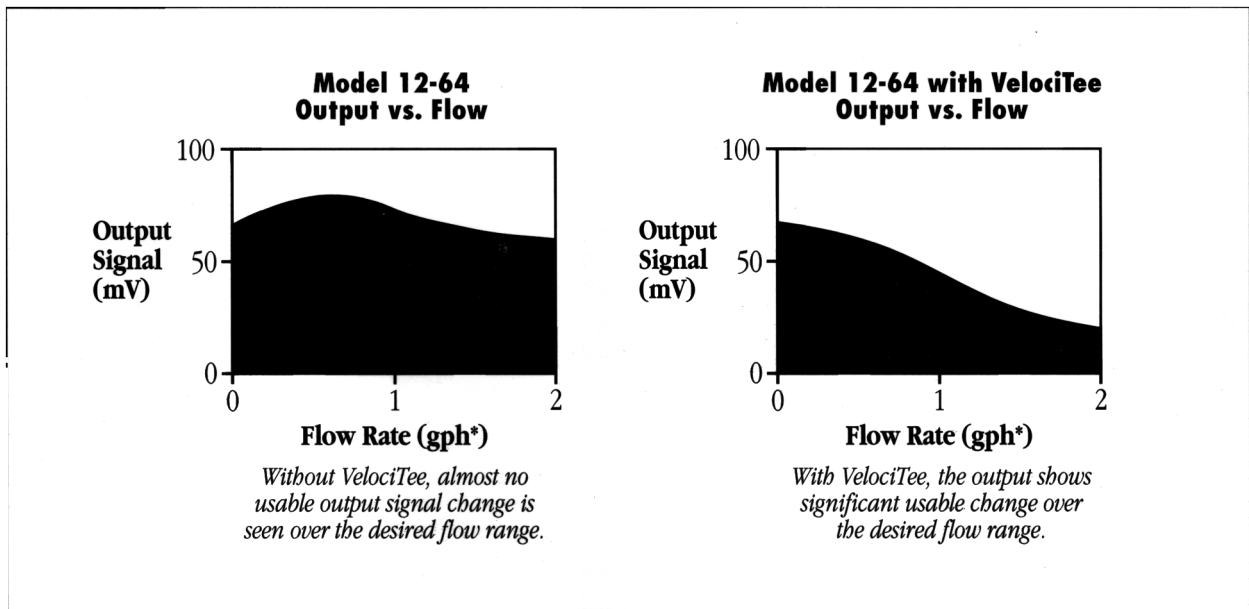
VELOCITEE FLOW CONDITIONER

- Compatible with 1/2", 3/4", and 1" pipes
- Bi-directional in horizontal orientation
- Flow detection down to 0.3 gph*

MODEL 12-64 FLOW SWITCH

- Thermal Dispersion theory of operation
- All-welded, no moving parts design
- Available in stainless steel, Monel, Hastelloy and titanium

FLOW PERFORMANCE COMPARISON



* 1 gph is equivalent to 63 millimeters per minute (mL/min.)

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