Great Things Accomplished When Two Townships Team Up With Singer Valve

The Client
Millcreek Township Water Authority (MTWA), Erie, Pennsylvania

The Challenge
To maintain an effective and reliable water system for a growing customer base and commercial district

The Solution
Singer Valve's Presurre Reducing Valve with Integral Back-up (PR-SM)

The Result
- Allowed MTWA to maintain water pressure to its customers continuously even during power outages

The Millcreek Township Water Authority (MTWA) near Erie, Pennsylvania was created in 1974 to provide water to the rapidly growing Millcreek Township customer base. The MTWA purchased several small water systems which have been upgraded and grown to 112 miles of pipeline ranging in size from 2 inches / 50 mm to 24 inches / 600 mm with 10 pump stations to maintain water pressure, 5 water towers for storing a total of 5 million gallons and one groundwater well. The water distribution system has elevation changes of about 400 feet / 122 meters and an average daily flow of approximately 2.5 millions of gallons per day (MGD). With 7,300 customers and growing, it is essential that the Township of Millcreek continues to maintain an effective and reliable water system.

"The double diaphragm valve gave us the confidence to make the interconnection and allow it to operate completely automatically", said Hill Engineering's Clayton J. Fails, P.E.

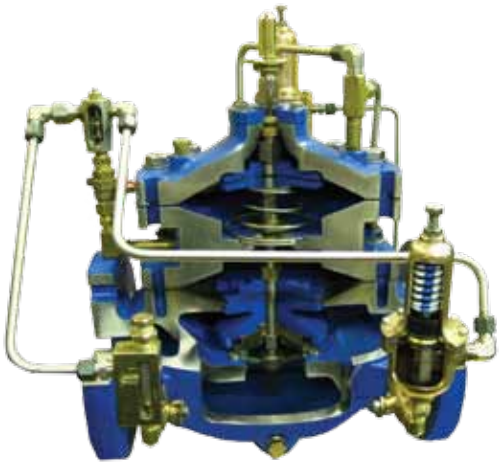
In recent years growth in the Peach Street commercial district, which is the main shopping and restaurant area of Erie County, had taxed the capability of MTWA's Peach Street Pump Station. This station provides water to the neighboring communities of Summit Township and McKean Township, and its reliable operation is essential to all three communities. MTWA retained the consulting firm of Hill Engineering, Inc. to evaluate the future demands of the Peach Street pressure district, and to develop a long term plan to meet those needs. The Hill Engineering report recommended construction of a larger Peach Street Pump Station with greater capacity, and construction of more distribution system storage to meet fire demands. Construction of these improvements will take years to plan, design and build due to the multiple Authorities and Townships involved. Interim upgrades were essential to make it through the next few years.

During this planning process, the owners of the Millcreek Mall, (the largest shopping center in the area) approached MTWA, requesting to be connected to Millcreek's system to avoid costly repairs to their own private water tower which was in need of upgrade. MTWA's Peach Street Station could provide the Mall with sufficient water to meet its daily demands, but the availability of adequate fire flow from the station could not be guaranteed.

The solution was to develop a reliable interconnection between the Millcreek system and the Summit system, so that the Summit Township Water Authority's (STWA) existing Waterview water storage tank could automatically backfeed into the Millcreek system in the event of a fire or loss of electric power at MTWA's Peach Street station. A manually operated Pressure Reducing Valve (PRV) had been installed years before to provide such emergency backflow, but it was not considered to be 100 percent reliable. In addition to being a single (non-redundant) device, the valve was located in a buried vault and its activation required an operator to be present to open a gate valve. With a pressure differential of about 100 psi at the interconnection point, an automatically operated, fail-safe PRV was needed to avoid damage in the event of valve failure.

"We considered putting two PRVs in line acting as a safety backup, but this added to the cost and doubled the maintenance required", said Keith Malone Water Operations Superintendent of MTWA. "When we heard about Singer Valve's pressure reducing valve with integral backup (PR-SM), it seemed to be the best solution." The PR-SM control valves are engineered to be used anywhere pressure reducing valve failure is unacceptable.

The PR-SM control valves have a second and independent operating system superimposed upon the standard primary system. Under normal pressure reducing conditions, the primary pilot senses the downstream pressure through a connection at the valve outlet. Under flowing conditions, the pilot reacts to small changes in pressure to control the valve position by modulating the pressure above the diaphragm in the lower operating chamber. The downstream pressure is maintained virtually steady at the pilot set-point which is adjustable.



Should the primary pilot system and / or main valve fail to control the downstream pressure, the independent back-up pilot system will begin to operate. It controls the pressure above the diaphragm in the second operating chamber. The back-up pilot is set slightly higher than the primary pilot. The forces now operating in the top chamber assume control of the inner valve assembly and maintain pressure reducing control.

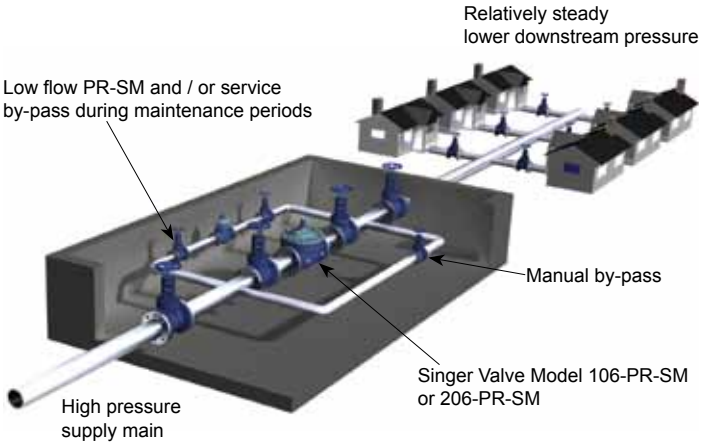
The secondary pilot continually senses the downstream pressure. Should there be a rapid rise in downstream pressure for any reason, the secondary pilot will respond quickly, and will pressurize the top chamber. This will compliment the primary pressure reducing controls and provide faster response.

"The double diaphragm valve gave us the confidence to make the interconnection and allow it to operate completely automatically", said Hill Engineering's Clayton J. Fails, P.E.

Through inter-authority cooperation, MTWA purchased the materials and because it was located in Summit's system, STWA installed the pressure reducing valve in an above ground heated enclosure for ease of maintenance and inspection. The installation took about two weeks to complete once the materials were on hand.

This project has allowed MTWA to maintain water pressure to its customers and the Millcreek Mall continuously even during power outages. The cooperation between the two authorities has shown how great things can be accomplished when people work together to solve critical problems.

Illustration of a Typical Application



Singer Valve Inc.
12850 - 87th Avenue • Surrey • British Columbia • Canada • V3W 3H9
Tel: 604 594 5404 • Fax: 604 594 8845 • Toll-Free Fax: 1 800 663 7266 (USA, Canada)
E-mail: singer@singervalve.com • Web Site: singervalve.com
An ISO 9001 Registered Company

PR-SM, August.11 v.1