

Meeting Growing Water Demand

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How to maximize value in water applications with flow measurement capabilities.

The Village of Mundelein, Ill., 35 miles northwest of Chicago, had a growing water demand and needed options for managing the increasing demand.

Rob Haley, village water superintendent, wanted an energy saving design. Operating with two separate pressure zones, Mundelein needed a third zone to allow control of flow and pressures without excess pumpage. The village retained Rezek, Henry, Meisenheimer & Gende (RHMG) as their engineering consultant on the project.

The design scope included the addition of five interconnection points using five separate pressure reducing stations.

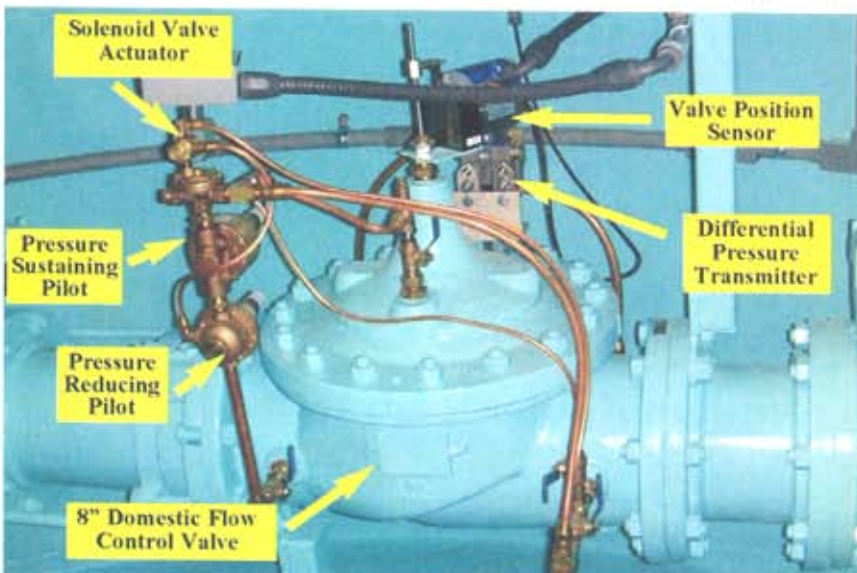


Two pressure reducing stations arriving at the job site in Mundelein, Ill., on a tractor trailer

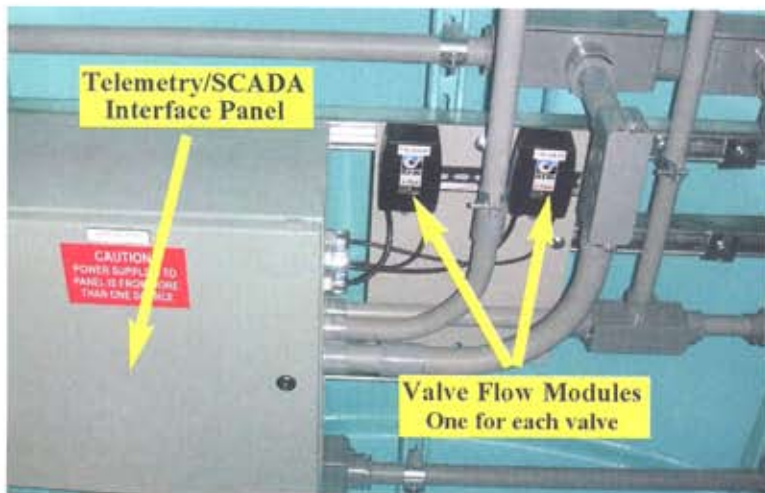
RHMG called us, through our representative Joe Esposito of Norquip, Inc., to collaborate on the design of the five different pressure reducing stations.

The hydraulic and control requirement leads for the design came from a series of meetings, correspondence and design iterations. In the final form, each of the five stations varied in their configuration and capacity. Because of the flow variation between minimum off-hour flow to peak domestic flow and up to high flow fire demand, the stations had multiple pressure reducing valves arranged in parallel. Other valve functions were added to CLA-Val PRVs for special remote control through SCADA.

When the design was almost complete, Rob Haley determined it would enhance system control if flow measurement could be added to the function of the stations. Normally, adding flowmeters



Valve station



Telemetry/SCADA



3-in low flow control valve



One of the pressure reducing stations being set into place. After installation is complete, a factory service technician will start-up the stations and train the operators.

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would either elongate the capsules or require separate flow-meter stations in tandem with the pressure reducing stations.

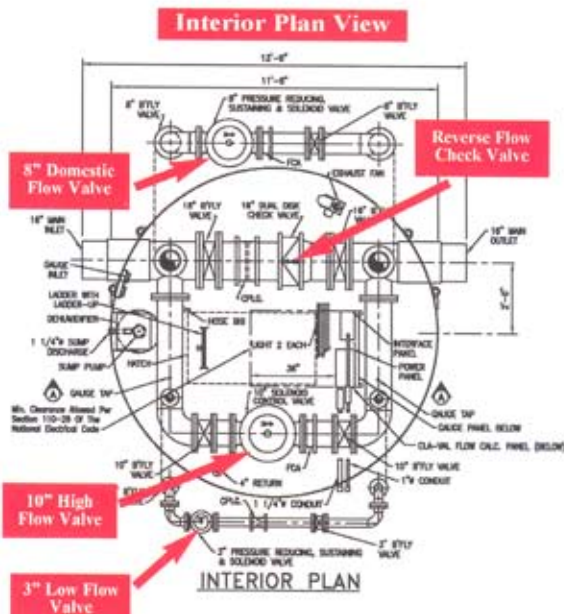
Another option for flow measurement was to add flow measurement capability to each pressure reducing valve. The flow measurement system reports an accurate flow rate signal across the full operating range of each individual valve. The data is acquired by measuring both the position of the valve diaphragm and the pressure differential across each valve. These individual signals are integrated into one total flow rate for the station.

Adding the flow measurement option kept the station designs, the site designs and the project documents from needing modifications, which saved time and money. Measuring flow with the control valves, instead of adding separate flowmeters, saved up to \$350,000 in equipment cost and construction cost.

Following the station design, mechanical and electrical equipment was built into pre-engineered and factory-built, steel capsules. The capsules were delivered to the site completely finished and ready for excavation, connection and burial by the installing contractor, Elmwood, Inc.

The five stations are now in service, and Haley has seen the benefit of the additional control and information these stations provide to his system management.

P&S



Interior plan view of station

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