



Case Study

Yavne, Israel

Hydraulic flow-modulated PRV for pressure-management across the city of Yavneh

Background

Established in 2009, the Mey Yavne utility provides water and sewerage services to approximately 35,000 consumers in the city of Yavne and a further 23,000 consumers in the nearby municipal area of Gan Yavne. Water consumption in the areas served reaches about 6 million m³ per year, all of which is supplied by the national water company, Mekorot.

Challenges Enabling a reliable water supply despite changes in pressure

As the flow rate changes according to water use, pressure during low consumption can be high. It reduces as consumption increases, to compensate for changes in the internal pipe friction, and to provide sufficient constant and stable pressure at a target point, distant from the location of the valve.

Mei Yavneh needed a product capable of handling different water pressures while still enabling a completely reliable supply of water to the large city. The ideal solution would also be able to interface with its existing management system.

Solution Managing local water pressure

Aquestia identified DOROT S300 PRM(HyMod) - a large-scale, dynamic, flow-regulated pressure-reduction system effectively used in many major cities around the world - as the ideal solution.

The DOROT S300 PRM(HyMod) control system is designed to manage the outlet water pressure of a PRV, and modulate it in a way that compensates for the variation of in-pipe friction losses due to changing demand flow. If not managed, these changes in the system's friction often result in increased wear and tear to the water system. Installed at the inlet to the local water system, the DOROT S300 PRM(HyMod) manages the local water pressure according to the changing flow-rate through the system. It is pre-calibrated based on data provided by Mei Yavne utility, and adjusted according to changes in the rate of flow. Uniquely, the DOROT S300 PRM(HyMod) system does this using a reliable and relatively simple hydraulic system, rather than battery-dependent electronic controllers.

To enable the monitoring of the DOROT S300 PRM(HyMod) system by Mei Yavne's 'Wizcon' SCADA (Supervisory Control and Data Acquisition) system, Aquestia also integrated the valve with an off-the-shelf PLC (Programmable Logic Controller), adapted to the specifications of the customer. This created a communications infrastructure on a cellular network that transmits data from the front-end valve to a back-end data input system on the server, enabling the water corporation to monitor the network so as to reduce response times to unexpected changes in the process - for example if there is an increase in the flow rate caused by a water leakage in the supplied area.



Results

Happy customer

This DOROT S300 PRM(HyMod) system has operated flawlessly since it was commissioned and put into operation.

Using a distant system of pumps, the system maintains steady water pressure and when there is high consumption, the DOROT S300 PRM(HyMod) system supplements the flow, together with the pumps. In the event that the pumps stop working, the DOROT S300 PRM(HyMod) system responds immediately, supplementing the missing flow from the other side of the network.

Since the system was installed, Mei Yavne has improved its service level and customer satisfaction, due to the reduced failure rate achieved. The monitoring system is powered solely by a solar photovoltaic panel, while the DOROT S300 PRM(HyMod) system requires no power supply nor batteries for its operation. So, even on cloudy winter days, the monitoring system works continuously, transmitting data regarding pressure upstream and downstream of the pressure reducer, and the status of the reducer itself. Interfacing with Mei Yavne's existing SCADA system, it enables the water corporation to maintain the history of data transmitted from the controller.