



Case Study

Limassol, Cyprus

An effective and profitable pressure management solution.

Background

Limassol is the second-largest city in Cyprus in terms of population, and the largest in geographical size.

Challenges Optimizing pressure to reduce leakages

The Water Board of Limassol continuously strives to improve the operational performance of its network. An especially challenging case was the harbor zone which generally has a normally low demand, with exceptionally high flow rates whenever a docking ship charges its tanks with fresh water. To be able to supply the required pressure at these peak demand periods, the input-pressure into the zone had to be high. This resulted in a high water-loss rate during the rest of the time, when only low flow was consumed. With the goal of optimizing pressure to reduce leakage from the system, the Limassol utility turned to Aquestia to explore its advanced techniques, such as Dorot flow modulation or multi-point control valves.

Solution Flow modulation

The Water Board had previously installed a number of Dorot S-300 PRVs, with fixed downstream control as a standard for all DMAs. Such a fixed-outlet PRV was installed at the inlet to the harbor zone. Dorot supplied a simple and affordable auxiliary device and a solenoid-valve that were added to the existing valve, converting it from a fixed-outlet control into a dual set-point PRV.

Data from a local RTU (by the utility) is fed into the system's SCADA, which in turn controls the dual-point PRV to maintain the desired pressure in the system, according to the flow rate in the system at any given moment. This enables the system's pressure to be kept low most of the time, with an immediate response to any flow-change in the system so that a higher pressure reduction can be achieved during increased water demand.

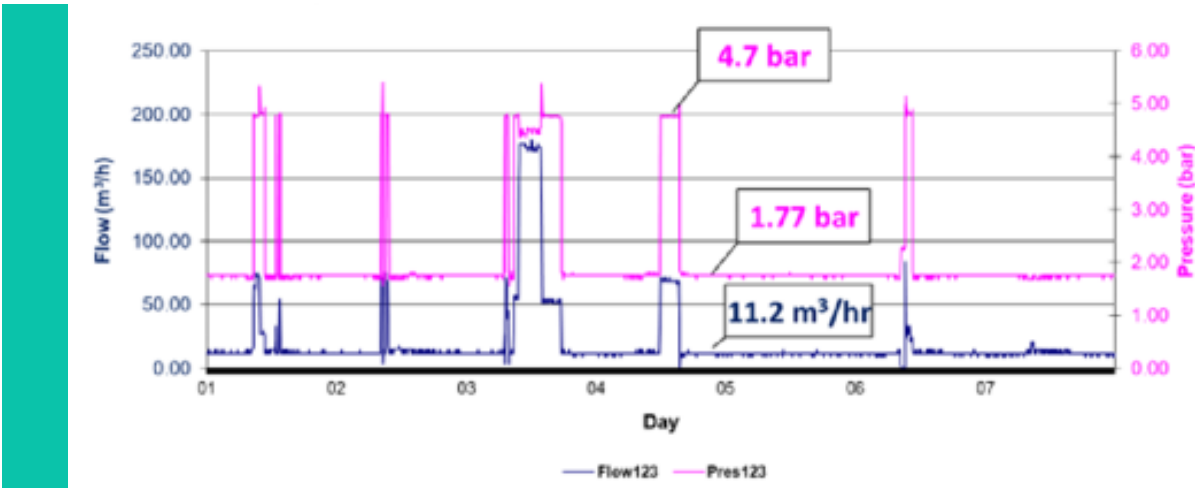
For flow rates of up to 20 m³/hr - sufficient for all activities in the port area apart from providing water to any ships docked in the harbor - the pressure setting is at 1.7 bar (compared to the previous continuous level of 3.4 bar). When water is supplied to a ship, the flow immediately increases beyond 20 m³/hr, and the pressure changes to the second setting of 4.7 bar.

Results Impressive water savings, fast ROI

The system provides high pressure only a few hours a day while maintaining much lower pressure the rest of the time. This system is an improvement to the fixed outlet used previously, in that pressure surges have been eliminated and the normal (minimal) input flow has been reduced from 13.8 m³/hr to 11.2 m³/hr, resulting in a saving of about 2.6 m³/hr (~19% saving) for ~70% of operation time. This accumulates to an estimated annual saving of about 15,000 m³.

Time to ROI was a matter of days, since the additional cost for converting the fixed outlet PRV to a dual set-point PRV was so low.

Limassol Harbor Zone Dual Set-Point Outlet PRV



Limassol Harbor Zone Fixed Outlet PRV

