



Case Study

Mumbai, India

Regulating water pressure in extreme conditions

Background

With an estimated population of nearly 20 million, Mumbai - the commercial capital of India - is one of the largest megacities in the world. Every day, 2.5 million m³ of water is both pumped and gravity-fed for a distance of between 100 and 160 kilometers from lakes and rivers to supply the city's growing demand. It is treated at the Bhandup Water Treatment Plant - the largest in Asia - stored in 23 service reservoirs and supplied to lower demand zones.

Challenges An old, leaky water distribution system

The governing civic body of Mumbai, the Brihanmumbai Municipal Corporation (MCGM), has been supplying water to the city intermittently, for no more than six hours a day. Even though there was plenty of water to meet consumer demand 24/7, most of the supplied volume was being wasted due to extensive leakage in the pipe network of the 100-year-old distribution system.

As part of a leakage-reduction program, the MCGM needed a solution that would regulate pressure in the water network system, and perform reliably and accurately under extremely harsh operating conditions. Specific challenges included frequent flooding of underground chambers (mainly in the monsoon season), very poor water quality, the need for remote control and monitoring of hydraulic valves, and an intermittent water supply with pressure varying from near-zero to high pressure and back again, a few times a day.



Solution Multi-function pressure management

To enable effective water-pressure management, MCGM decided to install DOROT S300 EC valves, with ConDor - a multi-function, specialized, IP68-rated hydraulic controller, performing dynamic pressure reduction. The remotely-monitored and controlled system aimed to reduce physical losses, moving towards a 24/7 water supply at a second stage.



The ConDor and DOROT S300 24"/600mm valve, after the chamber had been drained.

Results Uninterrupted service

Following installation of the valves, the entire water system has continued to function flawlessly, despite heavy rains. During the monsoon season of 2019, the valve chambers were completely flooded, up to street level, for days at a time, totally submerging the ConDor controllers and the hydraulic control valves. Yet, despite these extreme conditions, the ConDor controllers and the valves maintained uninterrupted service, with bi-directional communication between the SCADA system and ConDor controllers.

MCGM can now precisely and dynamically remotely monitor and control the supplied pressure in each of the systems. As an added value, the valves can also be opened and closed as needed for scheduled maintenance, or in response to bursts in the pipeline. This has drastically reduced the amount of time spent by maintenance field teams travelling between valve locations along Mumbai's heavily-congested roads.