



DOROT DIGITAL SOLUTIONS

MUMBAI 24/7 SMART CITY

PRESSURE-MANAGEMENT

Use of Dorot 300 Series Valve & ConDor Controller

CUSTOMER: THE CITY OF MUMBAI

CASE STUDY

BACKGROUND

Mumbai city, with an estimated population of nearly 20 million, is one of the largest megacities in the world.

The water sources supplying Mumbai city originated from both lakes and rivers, both pumped and gravity fed.

The Brihanmumbai Municipal Corporation (MCGM) supplies water to India's financial capital for no more than six hours a day. Surprisingly, according to a World Bank study, Mumbai can supply its 14 million citizens with a 24/7 service:

"Mumbai has enough water for a 24-hour supply, but water gets wasted because there are too many leakages in the old pipe network," says David Ehrhardt, Chief Executive of Castalia Ltd*.

The water distribution system in Mumbai is about 100 years old. The MCGM is able to supply between 70% and 75% of the city's water needs.

With Dorot Digital Solutions, we will enable effective water pressure management using Dorot electronically controlled & pressure-regulating valves, aimed to reduce NRW and enable 24/7 water supply at a second stage.

(*)World Bank Study – Mumbai Water Supply, 2008



THE CHALLENGE

Regulate pressure in a water network system with intermittent supply and very harsh operating conditions & environment:

- Underground chambers are often flooded, mainly in the monsoon season.
(See image on page 4)
- Water quality in the system is very poor.
- The hydraulic valves must be controlled and monitored remotely.
- Intermittent daily water supply pressure rises from near-zero and drops back several times a day.

DID YOU KNOW?

Water supplied by gravity is drawn from lake sources on the island, as well as from the mainland, located between 100 kms. to 160 kms. from the city. These are the Vaitarna, Tansa, upper Vaitarna, Vehar, Tulsi and Powai.

The water supply to Mumbai from various sources is about 2.5 million m³ per day. Water is brought in from the lakes after treatment and stored in 23 service reservoirs. The monsoon precipitation is collected in six lakes and supplied to the city throughout the year. 2 million m³ are treated at the Bhandup Water Treatment Plant, the largest in Asia.



THE SOLUTION

Dorot Digital Solutions supplied 300 series valves together with 2nd generation ConDor - a multi-function dedicated hydraulic controller rated at IP68.



One of the challenges we successfully overcame was to ensure that the entire system continued to function flawlessly even in heavy rains and throughout the monsoon season.

This includes uninterrupted bi-directional communication between the SCADA system and ConDor, even when submerged in the chamber under Mumbai's busy roads.

MCGM now precisely and dynamically remote-control the valves' outlet pressure. As an added value, valves can also be opened and closed as necessary for scheduled maintenance or in reaction to bursts in the pipeline.

MCGM has testified that this drastically reduce the amount of time maintenance field teams had to travel between valve locations via Mumbai's heavily congested roads.



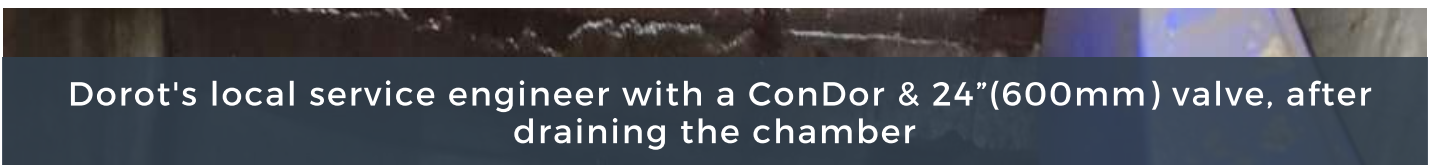
THE RESULT

During the monsoon season of 2019, valve chambers were completely flooded up to the street level for days at a time, totally submerging the ConDors and hydraulic control valves.

Despite these extreme conditions, Dorot's ConDors and valves maintained uninterrupted service!



Street view of a flooded valve chamber (undground chambers)



Dorot's local service engineer with a ConDor & 24\"(600mm) valve, after draining the chamber

