Case study
Calpe, Alicante, Spain

Aguas de Calpe

Improving distribution network performance up to 89% and optimizing efficiency during flood events

Aguas de Calpe is a joint venture created in 1999 by the Calpe Town Council and Serhico, S.A. to manage water services in the municipality. The utility provides drinking water to over 18,400 subscribers by managing a distribution network of 280 km of pipelines, 11 pumping stations and 16 storage and regulation tanks with a capacity of over 57 million liters. It also manages a sewerage network consisting of over 82 km of pipelines, 17 pumping stations and a treatment plant.

The challenge

Water demand increases dramatically in the municipality of Calpe in the summer period, with over 400% more customers. The increasing tourism along with the lack of prior planning that considered the evacuation of runoff, has generated flooding issues and contamination of the Salinas wetland, an emblematic local area of major environmental value. In addition, the municipality has a large number of reservoirs and pumping stations which are needed to overcome its complicated orography.

The aim of the utility was to implement a series of digital solutions to optimize drinking water and wastewater services provided to citizens. Aguas de Calpe was looking to reduce non-revenue water, increase network performance, improve responses to flood episodes and optimize human resources management. This project has included the deployment of several Xylem Vue applications to help Calpe meet these challenges.

The solution

The **Unified Network Management** application for drinking water, which is part of the Xylem Vue platform, was implemented in the drinking water distribution system to develop the digital twin of the network. Aguas de Calpe effectively monitors the hydraulic operation of its entire network using this technology to modify the system operation and simulate the results and forecast network behavior in the following 24 hours.

The **Unified Network Management** application has also enabled the utility to generate hypothetical simulation scenarios with real-time information related to the closing/opening of valves, valve configuration changes, the starting and stopping of pumps, operating set point modifications, and simulations under different

An example of MSD's operational dashboard.

Program highlights:

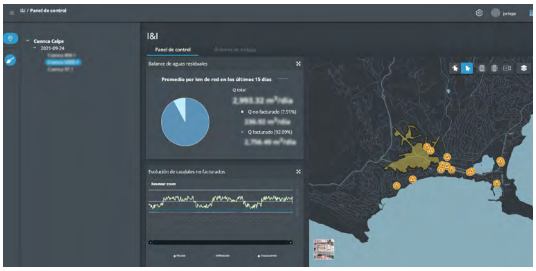
- 35% reduction in non-revenue water
- 89% increase in distribution network performance
- 26 urban flood risk early warnings triggered in one year
- Optimized human resource management
- Improved customer service

demand conditions. It also helps to detect problems immediately or anticipate them, plan network interventions efficiently and display system status indicators in a visual and configurable environment.

Other drinking water applications implemented were **Meter Data Analytics** for advanced consumption monitoring, and **Leak Detection for non-visible leaks.**

The utility also implemented several applications to help optimize their wastewater network. Aguas de Calpe was able to build a digital twin of their wastewater network with the **Real-Time What-If Scenarios** application, which enabled them to predict and detect urban flooding events, locating affected areas, flood levels and their changes over time. It has also helped to simulate what-if rainfall scenarios with real-time information from the network, and create a decision-support system.

The project also included the deployment of additional wastewater management applications. These were **Clog Monitoring**, for early clog detection and the automatic generation of advanced cleaning plans; **Sewer Protect**, to detect infiltrations, rainwater connections in the wastewater network and illegal discharges, and **Unified Network Management** for wastewater, for autonomous, smart control of chemical dosing for odor elimination. In addition, the management and monitoring of pipeline inspections with CCTV cameras has also been digitized.



Flood scenario simulation dashboard

The results

Thanks to the implementation of the Xylem Vue applications in the municipality, **Calpe has reduced non-revenue water by 35% in the last five years and has increased distribution network performance to 89%. In relation to flood management, the platform has triggered 26 urban flood risk early warnings in one year**, optimizing human resource management in these episodes.

The Xylem Vue platform has helped Aguas de Calpe optimize drinking water and wastewater services provided to citizens, reducing complaints and improving customer perceptions of the utility.

This project has also contributed to Aguas de Calpe becoming the first European water utility to be certified under the UNE 178101-1 standard for Water Network Management in the Smart Cities environment.

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