Case study
Tuscany, Italy

Publiacqua S.p.A.

Decision support platform to reduce water losses

Publiacqua is the main utility managing water services in the Tuscany region, including the city of Florence and its surrounding areas. It serves 46 municipalities in the provinces of Florence, Pistoia Prato and Arezzo. It supplies water to around 1,400,000 people through 400,000 supply points.

The challenge

Since its inception, Publiacqua has been working to become a modern integrated water utility for the citizens it serves. The utility is responsible for the entire urban water cycle of one of the most important tourist regions in Italy. Thus, it planned an ambitious modernization project to improve water quality and reduce its non-revenue water (NRW) levels by up to 40% thanks to the integration of data from different systems and enhanced infrastructure monitoring. The project was included in the Italian government's National Recovery and Resilience Plan (PNRR) portfolio for the deployment of the EU's Next Generation funds.

The solution

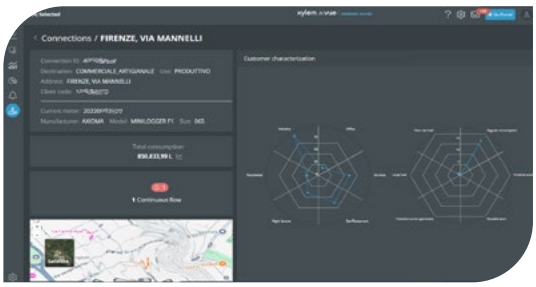
The Xylem Vue platform was implemented to tackle the challenges faced by Publiacqua. The implementation of this solution began with the deployment of the Smart Water Engine (SWE), which is a comprehensive big-data platform that includes a Domain Master Data (DMD) module, an IoT platform and an advanced analytics layer. Thus, data from different company systems were integrated to support an efficient, unified approach to water management.

An on-cloud deployment using Publiacqua's AWS was carried out to integrate the utility's system with tools such as GIS, SAP, meters, and SCADAs. A user experience design approach was followed, ensuring that the platform met the specific needs of operational, planning, and maintenance teams, both in the offices and in the field. Additionally, mathematical models were integrated and calibrated in real time using data from the telecontrol system.

Prior work was carried out on data processing, including the definition of data structure and data quality. The project also involved the integration and uploading of large volumes of historical data from 2021, providing a comprehensive dataset for analysis.

Program highlights:

- Data collection management from several sources
- GIS infrastructure improvement thanks to a mathematical simulation engine
- Real-time forecasts, identification and early warnings of anomalies for operators
- Water and energy efficiency improvements thanks to data analysis models
- Better customer service and reduced incident resolution times



Meter data analytics.

Moreover, additional Xylem Vue applications were deployed during the project. These included Leak Detection to enhance loss-reduction capacity, Meter Data Analytics to manage the smart meter infrastructure, including alarms, incidents and customer service quality, and Pipe Planner to monitor infrastructure status and optimize investment.

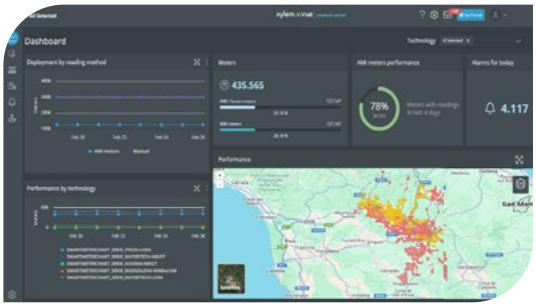
Unified Network Management was also deployed to provide better water quality monitoring, and Real-time What-if Scenarios to create models, simulate scenarios, and provide network and asset status information. The operational intelligence module, comprising the Service Operation Center (SOC) and the Business Intelligence panel (BI), was also set up during the project to facilitate decision-making.

The results

The project enabled real-time monitoring and improvement of water and energy efficiency in the utility's DMAs. The system contributed to loss reduction and enhanced sustainability through advanced data analysis and water balance monitoring. Additionally, the consumption and operating data of the entire smart meter infrastructure were continuously tracked, providing valuable insights for decision-making.

Intervention planning for infrastructure maintenance and replacement became more efficient thanks to this project, which also facilitated the operational monitoring of key indicators required by the regulatory authority (ARERA) and the International Water Association (IWA). Another highlight was the migration from a reactive to a predictive maintenance and operational system.

Furthermore, the system supported the monitoring of water security plans, enabling a comprehensive risk assessment of the resource.



Meter asset management.

Leak Detection.

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