AEGEA Implements a Digital Twin at Manaus’ São Jorge District to Improve Water Quality and Asset Management Decisions

OpenFlows WaterSight Helps the Brazilian Utility Improve Leak Detection and Optimize Operational Workflows

**IMPROVING WATER SERVICE QUALITY**
AEGEA, one of Brazil’s largest private water and sanitation companies, serves more than 21 million people in 153 cities across the country. Founded in 2010, the utility manages water infrastructure assets through full or partial common concessions, sub-concessions, and public-private partnerships (PPPs). The utility manages public concessions in the entire water cycle, including supply, collection, and sewage treatment, according to the profile and needs of each town.

“We play a fundamental role in supplying vital resources for the quality of life of millions of Brazilians,” said Lais Regis Salvino, digital infrastructure engineer at AEGEA. “Our operations are guided by respect for society, the environment, and ethical principles. We are a transforming agent in the lives of people and the cities where we operate.”

In 2021, AEGEA turned its attention to improving the quality of water services and asset management decisions in Manaus, the capital and largest city in Amazonas. The utility initiated a pilot project in the district metered area of São Jorge, which serves 10,000 customers, to optimize operational activities and prevent pipe bursts.

**SEARCHING FOR A SOLUTION TO MEET THEIR NEEDS**

Situated in the Amazon rainforest and isolated from other main cities, Manaus’ position and geography created a unique challenge for water providers. As a result, AEGEA needed to find a solution capable of remotely monitoring and analyzing Manaus’ water systems. Such a system would also prevent them from having to conduct multiple site visits that lead to increased fuel and labor costs. Moreover, it would enable them to focus on predictive maintenance, which extends the operating life of the infrastructure and, in turn, reduces the resources required to keep it running safely and reliably.

**INNOVATIVE TECHNOLOGY ESTABLISHES A CONNECTED DATA ENVIRONMENT**

Using OpenFlows WaterSight, they created and curated a digital twin that brought SCADA, GIS, hydraulic modeling, and customer information into a connected data environment. With a digital twin, they could deliver cost-effective operations and maintenance strategies in real time. Because digital twins can be used at different scales, OpenFlows WaterSight utilizes real-time data to create a model that continuously monitors all infrastructure assets, including pipes, pumps, valves, and tanks.

The scalable environment provides utilities access to critical system and individual asset performance information to enhance operations, maintenance, and decision-making.

“Powered by a single water infrastructure digital twin, the application provides visibility of nonperforming assets or anomalous network conditions, as well as efficient analysis of present, historic, and forecasted performance for all assets,” said Regis Salvino. “OpenFlows WaterSight also helps us uncover areas of improvement.”

**LEVERAGE HYDRAULIC MODELS TO SIMULATE NETWORK EVENTS**

During system deployment, the Bentley support team assisted AEGEA during the first eight weeks after gaining access to the system’s sensors, billing, and hydraulic modeling information. Two separate sensor databases were connected—one in Oracle and the other in SQL Server—pushing historical and live data with 15 minutes registration frequency, as well as enabling the pattern curve calculation to increased fuel and labor costs. Moreover, it would enable them to focus on predictive maintenance, which extends the operating life of the infrastructure and, in turn, reduces the resources required to keep it running safely and reliably.

**PROJECT SUMMARY**

**ORGANIZATION**
AEGEA

**SOLUTION**
Water

**LOCATION**
Manaus, Brazil

**PROJECT OBJECTIVES**

- To integrate all data stored across different systems into one single platform.
- To improve leak detection, asset management decisions, and operational workflows.

**PROJECT PLAYBOOK**
OpenFlows™ WaterSight®

**FAST FACTS**

- AEGEA is one of Brazil’s largest private water and sanitation companies, serving over 21 million people in 153 cities.
- AEGEA wanted to improve the quality of water services and asset management in Manaus, the capital and largest city in Amazonas.
- The utility initiated a pilot project in São Jorge to optimize operational activities and prevent pipe bursts.

**ROI**

- The deployment of the infrastructure digital twin at São Jorge integrated all data stored in the different systems into one single platform.
- OpenFlows WaterSight increased awareness and reduced response times to network events with real-time simulation and automatic events generation capabilities.
"Bentley's OpenFlows digital twin solutions allow us to improve our system. With digital twins, we can analyze the behavior of our systems with real data and determine the best way to operate our systems. We can check the level of the tanks and the efficient point of our pumps, and determine if we have any leaks in our network before they turn into a problem."

– Lais Regis Salvino, Digital Infrastructure Engineer, AEGEA