Milesight

Optimize Rural Aqueducts Management through Digital Innovation

Achieve Water Distribution Monitoring and Reduce Technical Losses

📍 Pensilvania, Caldas, Colombia

LoRaWAN®

Milesight Partner	Location	Number of Devices Deployed	Applications	
Siot Ingenieria S.A.S.	Pensilvania, Caldas, Colombia	2*EM500-SWL, 2*UC501, 1*UG56	Rural Aqueducts Management, Water Distribution Monitoring	⬇ Success Story

Background

Water is a fundamental resource for life. In Colombia, rural communities use aqueduct infrastructures that collect water from surface or groundwater sources, and then conduct it to the users' properties through a conventional water pipe or using other rudimentary methods. These rural aqueducts often operate with limited budgets, making it essential to optimize investments. Additionally, the conditions in rural areas for monitoring critical variables in the provision of water distribution services are difficult and there are few connectivity options. Technical losses are also significant due to failures in pipes and storage tanks.

The rural aqueduct AUSCOLIBOL of Bolivia, Caldas in Colombia, needed to be able to remotely monitor the conditions of storage tanks and the flow rates and volumes at some points in its drinking water distribution network. It required a flexible, long-range and easy-to-implement wireless solution that could operate for a long time without the need for constant visits to the sites.

Challenges

Budget Constraints
Rural aqueducts have limited funds to invest in advanced technologies, necessitating cost-effective and efficient solutions.

Technical Losses
Significant water losses occur due to failures in pipes and storage tanks, which need to be addressed to improve efficiency.

Remote Monitoring Requirement
The conditions of storage tanks and flow rates/volumes across the distribution network on an intuitive need to be monitored remotely.

Ease of Implementation
They require a solution that is easy to implement without extensive infrastructure changes.

Solutions

EM500-SWL Submersible Water Level Sensor

LoRaWAN®

UG56 LoRaWAN® Gateway
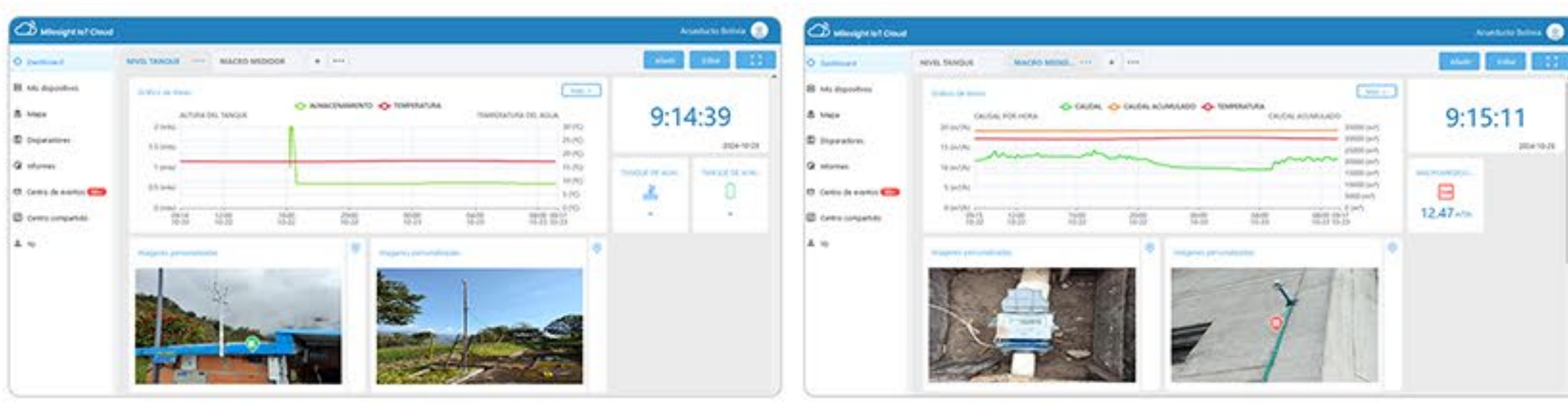
Milesight IoT Cloud

UC501 Multi-interface Controllers

To address the challenges, Milesight and its partner SIOT INGENIERA provided an IoT solution using LoRaWAN® technology to assist rural aqueducts in their digital transformation. In the rural aqueduct of Bolivia, Caldas, two EM500-SWL submersible water level sensors were implemented to monitor the level of the drinking water storage tanks. These sensors, equipped with submersible probes, allowed the sensing device to be submerged into depths of water and grasp on precise water level measuring. Additionally, a pair of flow meters with Modbus output that were integrated with the Milesight UC501 multi-interface controllers to measure flow rates and volumes. All these sensors and controllers processed the measurements, and transmitted the data to the UG56 gateway via LoRaWAN® technology.

Milesight IoT Cloud provides unparalleled levels of vertical integration with Milesight LoRaWAN® sensors and controllers. It received, processed and visualized the data, and enabled users to monitor remote conditions of storage tanks and flow rates/volumes across the distribution network on an intuitive dashboard. It also supported trigger reception, report, sharing, transferring etc., offering extraordinary flexibility of managing connected devices.

Through real-time data collection and analysis, the system was able to monitor the different critical variables in the provision of quality water distribution service, with the traceability of the supply in terms of water storage tank levels and flow measurements in the distribution pipes.

Featured Products

EM500-SWL
Submersible Water Level Sensor
- Not Affected by Foam, Wind, or Rain
- Customizable Measuring Range
- Customizable for Oil and Other Non-corrosive Media
- Impressive IP67 Rated Waterproof Performance
- 10 Years Long Battery Life
- LoRaWAN® Wireless Deployment
- Easy Configuration via NFC

UC501
Multi-Interface Controllers
- Rich Industrial Interfaces: GPIO, AI, RS232/RS485 & SDI-12
- SDI-12 Interface for Environmental Data Acquisition
- Internal and External Antenna Versions Optional
- IP67 Rated Enclosure for Harsh Environments
- Flexible Power Supply Options
- Data Threshold Reporting
- Easy Configuration via NFC
- Data Integrity and Reliability

Milesight IoT Cloud
- Transform Real-time and Historical Data into Drag-and-Drop Widgets on Dashboard
- Control Access and Monitor Projects from Anywhere
- Email and Mobile Push Notifications Based on Triggered Events
- Built on AWS to Provide Confidential and Reliable Infrastructure for Your Data
- Licensing with Ease: Just Copy and Paste and Upgrade Is Done

Results

By remotely monitoring the different variables of the treated water distribution process, it was possible to optimize the operation and traceability of the aqueduct. Furthermore, it was possible to demonstrate that it is possible to generate the digital transformation of rural aqueducts in Colombia.

Cost-effective Solution
Implementing IoT technology and Milesight devices provided a budget-friendly approach to upgrading and maintaining the water system, reducing overall costs.

Reduction in Technical Losses
Significant reduction in water losses due to the ability of better monitoring and quick response to failures.

Remote and Wireless Monitoring
The system enabled real-time data transmission and monitoring from remote locations, eliminating the need for costly and inefficient manual checks.

Simplicity of deployment
The battery-powered sensors and solar-powered controllers provided a flexible, non-intrusive solution, overcoming cabling difficulties and enabling easy deployment.
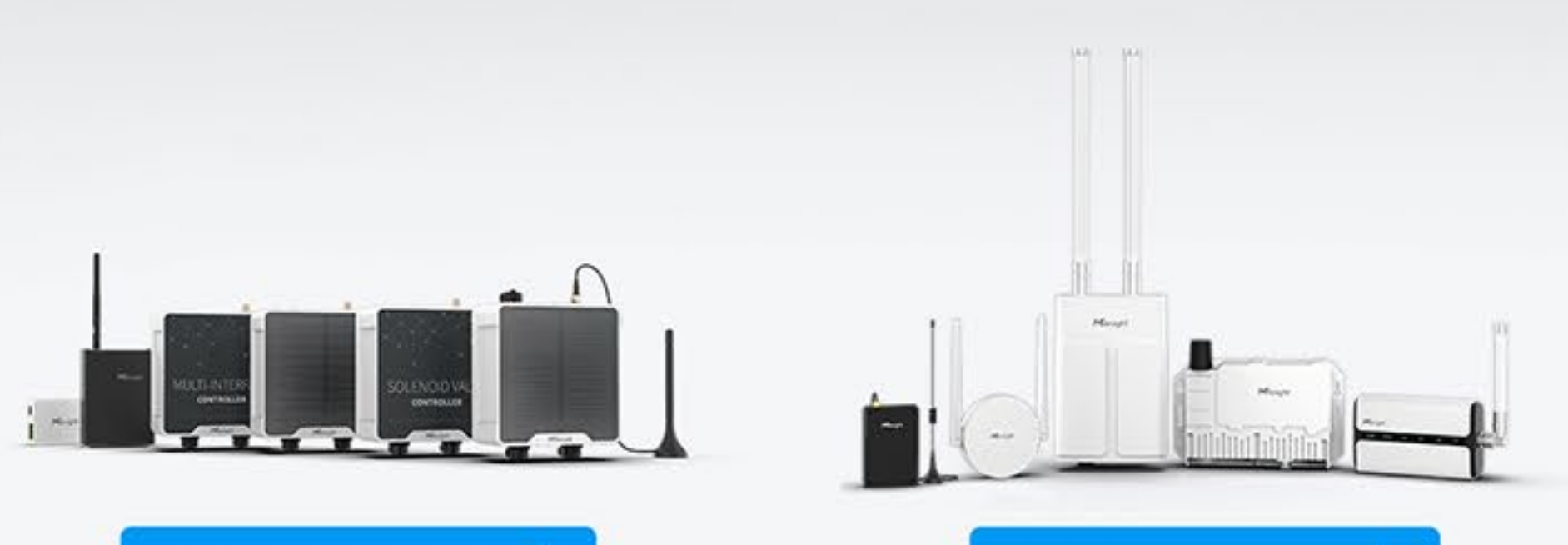
Operational Optimization
Data-driven decision-making improved the accuracy and efficiency of water distribution, ensuring optimal resource management and reducing unnecessary waste.

Digital Transformation
The solution demonstrated the feasibility of digital transformation for rural aqueducts in Colombia, paving the way for future advancements in similar settings.

Discover More about Milesight Product

LoRaWAN® Controllers →

LoRaWAN® Gateways →

Why Choose Milesight

"The Milesight solution was chosen since it meets the requirements of flexibility, long range, good battery life and easy implementation. The project owners have seen an improvement in the traceability of their water distribution processes and have been able to reduce technical losses in the process.

Partner

About Siot Ingenieria S.A.S.

SIOT INGENIERIA is a Colombian company that offers IoT solutions for the digital transformation of industry, agriculture and cities. It sells telecommunications equipment and specialized sensors. It focuses on collaborating with industries and companies that need to digitize and automate their processes in the field to have them at their fingertips, integrating the latest IoT and cloud technologies to offer a customized solution.