

case study

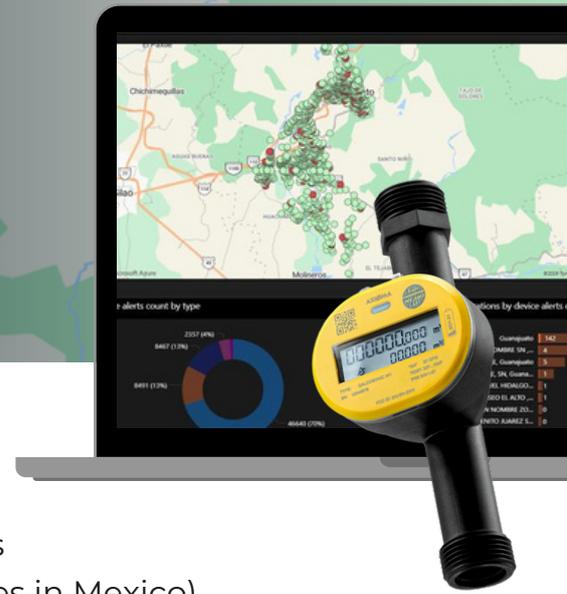
From Mechanical Inaccuracy to Trusted Water Data: How Smart Metering Transformed Utility Operations in Mexico

About The Project

Location: Guanajuato, Mexico

Property type: Single-family housing in dense urban areas

Service provider: Equysis (service provider for water utilities in Mexico)



Challenge

The utility's existing metering infrastructure relied almost entirely on mechanical residential meters. While common in the region, this technology created recurring operational and customer-facing problems:

- **Loss of accuracy over time** in outdoor installations
- **Air registered as water consumption**, leading to inaccurate data and inflated bills, disputes
- **Poor visibility** of low-flow events and leaks
- **High maintenance needs** due to moving parts and meter failures
- **Meter theft**, particularly with brass-bodied devices
- **Manual monthly readings**, consuming labor and introducing human error

In parallel, the utility wanted to establish its own private LoRa® network to support future digital monitoring beyond water meters.

Solution

Equysis implemented an integrated smart metering solution tailored to utility operations.

Solution Overview

- **around 4,000 ultrasonic water meters** for residential use deployed (hot & cold) (6,400 planned in total)
- **3 outdoor LoRa® gateways**, positioned to cover dense urban areas surrounded by terrain
- **Centralized data management platform** for device management, network monitoring, alerts, and billing data export

The utility performs meter installation, while Equysis manages network performance and system operations. Mainlink supported network design with radio propagation studies to ensure reliable coverage and scalability.

Why this solution

Equysis evaluated multiple ultrasonic metering options before selecting this setup for residential deployment. Key decision drivers included:



Long-term measurement stability without mechanical wear



Reduced maintenance requirements



Accurate low-flow and leak detection



Competitive cost for large-scale rollouts



Elimination of air measurement errors



Unified approach covering meters, network, and data operations

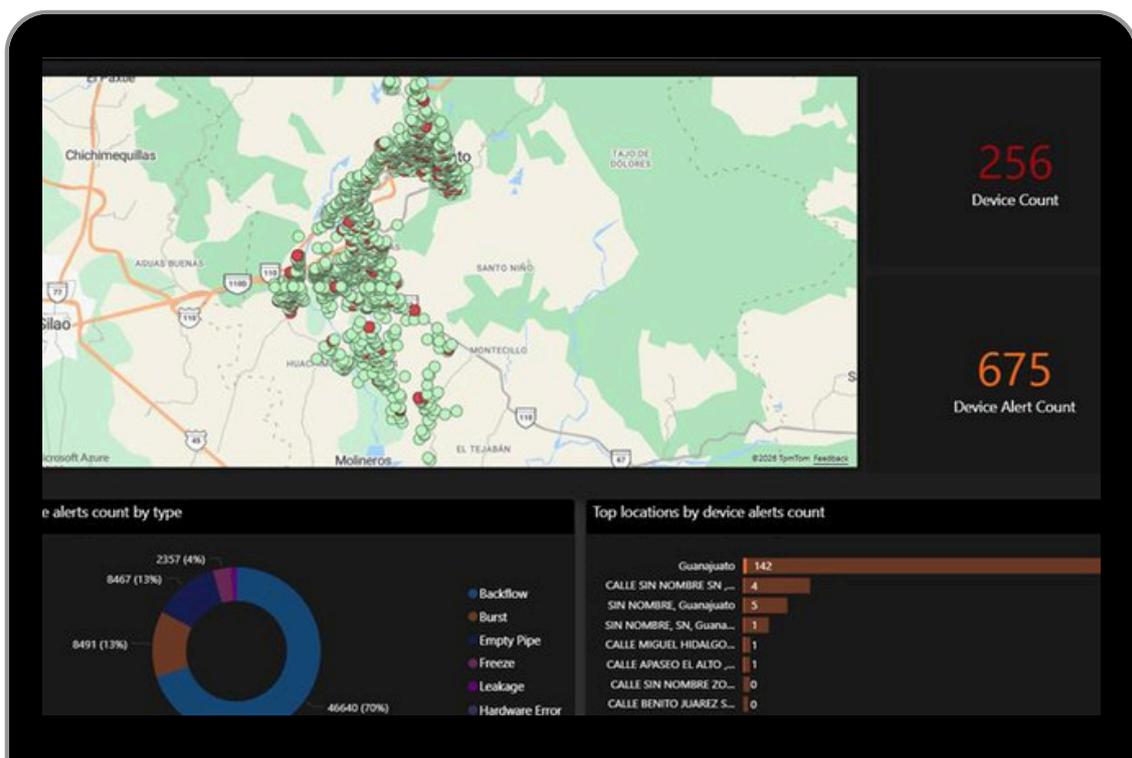
Platform Use in Daily Operations

Equysis uses the platform primarily for utility-scale operations and monitoring.

Core functionalities in daily use include:

- **Device management:** centralized control of meters, locations, and bulk imports
- **Network monitoring:** visibility into gateway uptime, signal quality, and network health
- **Status dashboards:** rapid identification of offline devices or alerts
- **Event monitoring:** map-based alerts enabling faster response to leaks or anomalies

Utilities access the same data for monitoring and billing exports, with integration capabilities available for future use.



Key Results & Impact

The shift from mechanical to ultrasonic smart metering produced immediate operational benefits:

- **Accurate, fair billing** based on real water consumption
- **Elimination of air-related overbilling**, a major source of disputes
- **Early detection of leaks** and low-flow events, reducing non-revenue water
- **Removal of manual meter reading**, lowering labor costs and errors
- **Stable accuracy over time**, even in outdoor conditions
- **Reduced theft risk** through composite meter design
- **Full remote visibility** of the private LoRaWAN network for faster issue resolution and full control.



“*Due to the aforementioned advantages, continuous remote monitoring of the metering network has proven to be highly valuable, significantly reducing unnecessary operational costs, theft incidents, and response times for critical events such as leaks, while ensuring accurate measurement of the water resource.*”

— Project Manager, Giovanni Rogel.

Conclusion

This case shows how long-standing issues associated with mechanical water meters—accuracy loss, air measurement, manual workload, and theft—can be effectively resolved through ultrasonic smart metering and remote network monitoring. By combining ultrasonic meters, a private LoRa® network, and centralized data management, **Equysis and its utility partner achieved reliable measurement, fair billing, and improved operational visibility creating a scalable foundation for modern water utility operations.**

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