



Improving water distribution the electromagnetic way

SITRANS F M MAG 8000 with GSM/GPRS Wireless Communication Module



Nestled along the Zapalinamé Mountains in northeastern Mexico, the desert city of Saltillo is home to more than 823,000 people and is also a dynamic manufacturing hub, exporting everything from traditional terra-cotta floor tiles to next-generation cars, trucks and home appliances. A reliable water supply is needed to maintain public health and fuel the city's bustling economy, but high temperatures and a scarcity of rain make water distribution a challenge – which is why a comprehensive water management system is critical for Saltillo. Innovative and intelligent process instrumentation from Siemens is helping to ensure that the job is done efficiently and safely.

Simplifying a complex process

Aguas de Saltillo is a water utility responsible for supplying drinking water and wastewater treatment to residential, commercial and industrial customers throughout Saltillo. The utility is a public-private partnership between the city and Aguas de Barcelona, a Spanish company

dedicated to providing water services across four continents.

Some years ago Aguas de Saltillo implemented a water network sectorization (WNS) project to more efficiently manage the complex process of distributing water from multiple reservoirs. The WNS involved dividing the water system into smaller, isolated zones, each with an independent water supply and delimited by boundary valves. Flow and pressure instrumentation was installed at the inlets to serve several important purposes, including leak detection and control to increase water availability and provide insight into which sectors prioritize flow recovery actions, pressure level control to ensure safe network operation and maintain customer satisfaction, quantification of water losses as a result of leaks and malfunctioning domiciliary water meters, and recording of measurement data for greater visibility into sector behavior, which is useful in forecasting demand and evaluating future projects.

The case at a glance

Region: Mexico

Industry: Water distribution

Customer: Aguas de Saltillo

Challenge: Monitor the flow of water at inlets to more efficiently manage distribution from multiple reservoirs

Product: SITRANS F M MAG 8000 with GSM/GPRS Wireless Communication Module

Main benefits:

- Remote monitoring ability
- Long battery life with no maintenance required
- Wide range of installation possibilities
- Minimal pressure loss



More than 100 SITRANS F M MAG 8000 electromagnetic flowmeters are now in operation across the various water distribution zones managed by Aguas de Saltillo.

Remote capabilities in a robust package

Once the WNS was completed and fully operational, Aguas de Saltillo set out to make improvements that would increase network efficiency. Initially they had selected mechanical meters to measure flow, but this technology proved overly difficult to calibrate and couldn't handle the high mineral content of Saltillo's hard water, requiring constant and costly maintenance to remove the mineral deposits and recalibrate the sensors. Even more importantly, accuracy was negatively impacted by wear on the mechanical parts as well as by rotor and bearing drag in low-flow conditions. And these meters required the added expense and time of installing separate datalogging devices in order to record measurements over time.

Knowing how important the success of this project was for Saltillo, the water utility initiated an exhaustive search for new and better measurement technologies. In the early summer of 2012 and with the help of JAR Electronics, a Siemens Mexico channel partner, Aguas de Saltillo tested its first battery-powered SITRANS F M MAG 8000 electromagnetic flowmeter equipped with a built-in GSM/GPRS Wireless Communication Module and optional radiometric pressure transmitter. Throughout the testing period the MAG 8000 logged flow and pressure measurements every five minutes and transmitted this data once a day to the MAG 8000 OPC Server, which made the information available to OPC clients with no interruptions.

The MAG 8000 performed with exceptional accuracy and reliability in all conditions – even flooding caused by rain – due to its IP 68 (NEMA 6P) enclosure. The MAG 8000 offered Aguas de Saltillo many other advantages as well, among them:

- **Remote capabilities.** The GSM/GPRS module makes it possible for users to stay up-to-date on measurement data without having to visit the site.
- **Virtually no maintenance.** The meter demonstrates much higher resistance to mineral deposits than its mechanical counterparts with no impact on performance, and also features a long battery life.
- **Placement flexibility.** The zero-diameter straight-line requirement at the sensor inlet and outlet opens up a much wider range of installation possibilities than previously available.
- **Bi-directional flow monitoring.** Only one meter is required for measurement in both directions.

- **Intelligent operation.** The meter is capable of leak detection and datalogging.
- **Low pressure loss.** The unrestricted flow tube minimizes pressure loss at high flow rates, reducing overall network pressure and helping to prevent leakage from burst pipes and excess stress placed on pumping stations.

A new way forward

When the test concluded, Aguas de Saltillo made the decision to replace all existing mechanical bulk meters with the SITRANS F M MAG 8000 and GSM/GPRS Wireless Communication Module. They standardized the new meter for use across the various water distribution zones and more than 100 electromagnetic flowmeters are now in operation, with plans to install additional units in the near future. Juan Diego Bravo Ruiz, chief of telecontrol and telemetry for Aguas de Saltillo, has this to say about the impact of the newly installed meters: "Including the MAG 8000 with GSM as part of our WNS project has greatly benefited the city of Saltillo. With the consistently accurate flow data we receive from these devices, we're able to make more educated decisions to better protect our water supply – which means we can better protect our people, too."

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