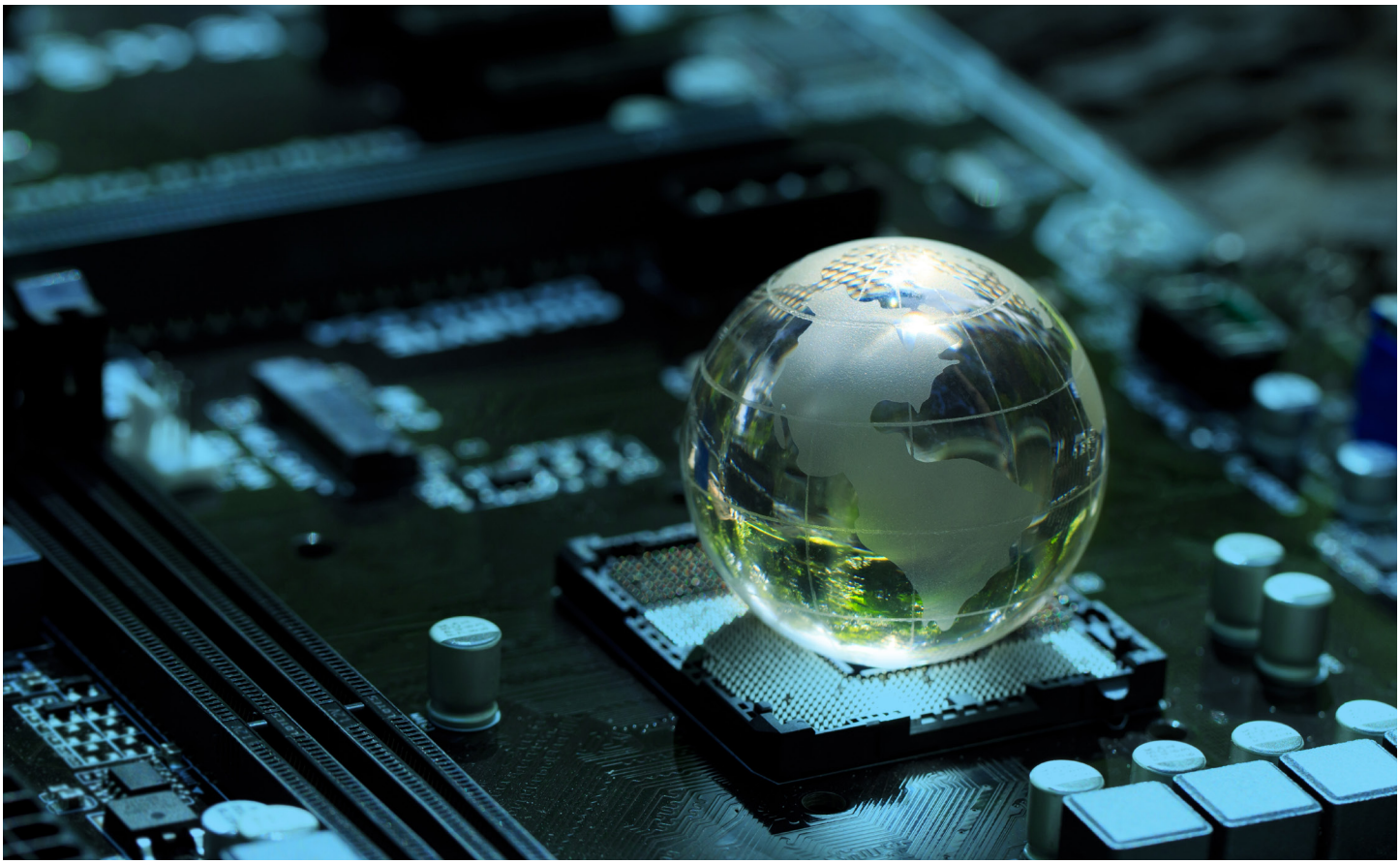
Data-Driven Water Quality Management at Aigües de Barcelona



Incorporated in 2013, Aigües de Barcelona is a forward-thinking water utility managing the supply and treatment of water across 23 municipalities, catering to the needs of over three million residents in the Barcelona metropolitan area. The company has systematically addressed the complexities of managing disinfection byproducts (DBPs) in its extensive distribution network. It has adopted AMS' Data-as-a-Service (DaaS) technology to monitor its water quality, provide process control and ensure regulatory compliance analysis.

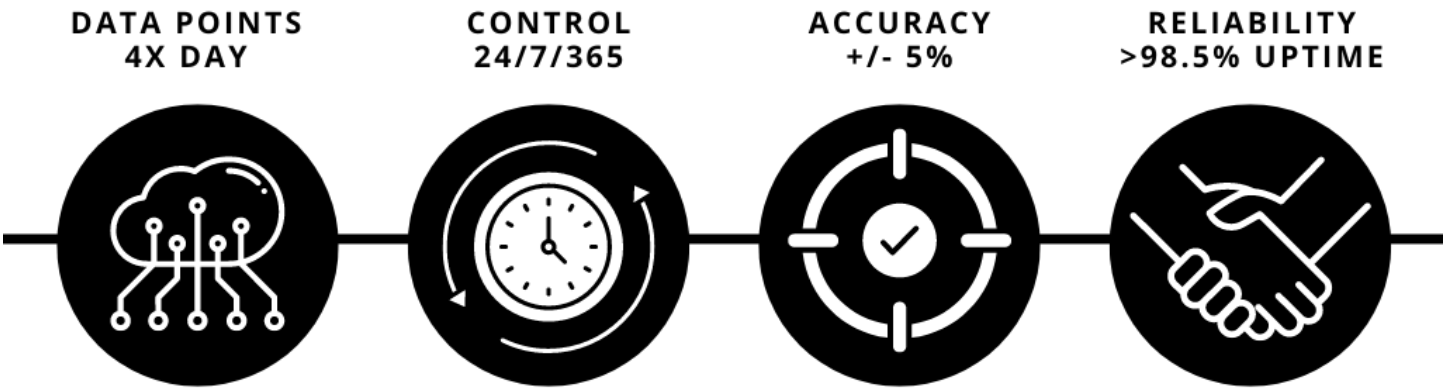
The primary challenge for Aigües de Barcelona was managing trihalomethane (THM) levels, which often surpassed the European parametric threshold of 100 µg/L due to environmental changes and diverse water source qualities. The frequency of laboratory sampling and analysis proved inadequate for the utility to understand the real-time THM levels within its water distribution system at any given moment. The fluctuations in THM levels necessitated a sophisticated real-time solution to monitor, adjust and optimize water treatment processes to manage DBP formation.

Technological Implementation

The introduction of THM-100™, an online THM and THM Formation Potential (FP) analyzer with > 98.5% data availability and uptime from AMS, revolutionized Aigües de Barcelona's approach to DBP management. The installation of these THM analyzers has been pivotal in identifying rapid water quality changes, thus enabling the utility to respond swiftly and effectively. The automation facilitated by this technology not only optimized THM levels but also expedited the measurement process, delivering THM and THM-FP readings in 120 to 180 minutes, respectively. By integrating this data into the SCADA system, the utility enhanced its alert management capabilities, while remote monitoring by the DaaS provider ensured around-the-clock vigilance.

Additionally, Aigües de Barcelona received accreditation to ISO/IEC 17025:2005 Standard from Entidad Nacional de Acreditación (ENAC) for the use of the analyzers. The THM-100 is unique in its self-calibration, remote monitoring diagnostic feedback, and online or offline analysis. These features are critical to its ability to provide the utility with accurate and repeatable results required to meet the ISO accreditation. No other commercially available online THM analyzer operates or is validated to such rigorous standards.

Aigües de Barcelona purchased the THM analyzers with an annual preventative maintenance contract, including a factory-authorized service engineer onsite every quarter to undertake routine preventative maintenance to ensure the instrument effectively meets operational needs.



Results

The strategic integration of the online THM-100™ analyzers and subsequent process optimizations have led to significant achievements. THM levels at the treatment plants saw an 86% decrease, with a parallel 53% reduction throughout the distribution network. These improvements have also translated into a substantial economic benefit, saving the utility an estimated 30,000€ monthly in operational costs, minimizing energy costs and reducing carbon emissions.

Insights Gained

The experience of Aigües de Barcelona with the AMS online THM-100™ analyzers has provided invaluable insights. It has shown that real-time monitoring is crucial for treatment process optimization, enabling the utility to improve water quality significantly at various points in the distribution network. These improvements have not only led to cost reductions but have also ensured compliance with regulatory standards, thus reinforcing the confidence of both regulators and customers in the utility's commitment to quality and transparency.

The success of Aigües de Barcelona with DaaS and online THM analyzers underscores the utility's dedication to leveraging state-of-the-art technology to ensure the provision of safe, high-quality water services. This approach is a benchmark for utilities worldwide, demonstrating the benefits of embracing digital transformation in water quality management.

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