SUCCESS STORY

atvise®

WATER INDUSTRY

Implementation of Cutting-Edge SCADA System in Hidrocentro: A Technological Leap in Potable Water Management in Venezuela

GP Soluciones and Macxilla Consultores drive the modernization and operational efficiency of Hidrocentro through the integration of atvise SCADA, transforming supervision and control of water facilities in Carabobo and Aragua states.

INTEGRATOR : GPSICA

Vester Business

Project

As part of the modernization of the supervision and control systems of water resources in Venezuela, GP Soluciones and Macxilla Consultores joined forces to implement an advanced SCADA system at Hidrocentro. This project, focused on the regions of Carabobo and Aragua, aims to optimize the capture, treatment, distribution, and storage of potable water using the innovative atvise® SCADA technology.

Solution

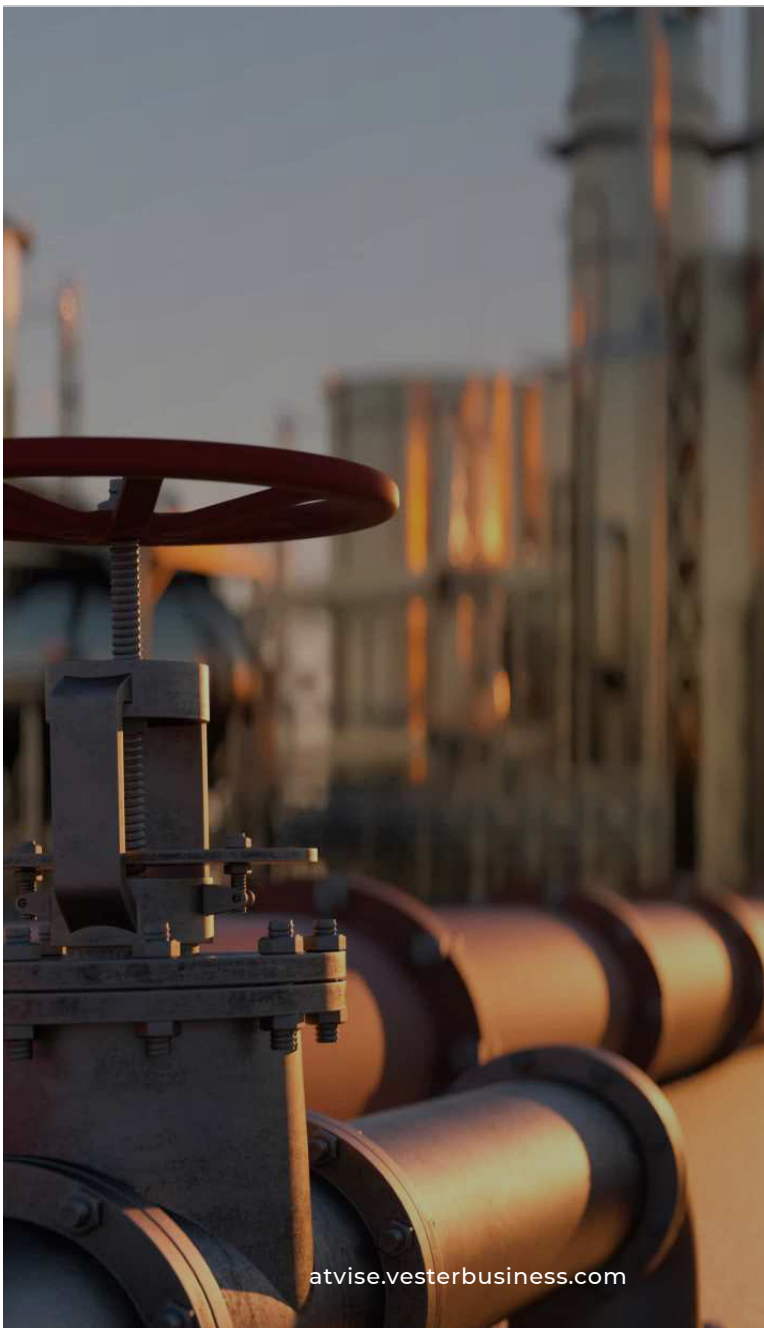
Hidrocentro now benefits from centralized supervision and detailed control of its water facilities. The solution has significantly improved operational efficiency, reduced response times to events, and facilitated decision-making based on precise and up-to-date data. Additionally, water resource management has been optimized, ensuring a more reliable and higher quality potable water service for the population of Carabobo and Aragua.

Client & Partner

GP Soluciones Integrales, C.A. is a leading company in industrial automation, process control, and consulting. Specialized in offering advanced technological solutions, GP Soluciones stands out for its ability to integrate and develop complex projects in critical sectors such as water, energy, and Oil&-Gas.

With a highly trained team and solid market experience, GP Soluciones provides technical advisory, consulting, specialized auditing, and engineering project services. The company is committed to best practices based on international ISO standards, ensuring high-quality products and services, social responsibility, and operational safety.

GP Soluciones is consolidated as a strategic partner for their clients, offering comprehensive solutions that promote modernization and operational efficiency in key sectors for development.



Goals

- **Modernization of the SCADA System:** Replacing the old SCADA system installed in 2001 with a modern, flexible, and scalable solution that meets the current and future needs of Hidrocentro.
- **Optimization of Operational Processes:** Improving the capture, treatment, storage, and distribution of potable water, ensuring a more efficient and reliable service.
- **Integration with Existing Infrastructure:** Ensuring compatibility with existing MOSCAD RTUs, avoiding the need to replace the entire infrastructure and allowing for efficient and cost-effective upgrades.
- **Centralization and Detailed Control:** Providing centralized supervision and detailed control of all water facilities, facilitating operational decision-making based on precise and up-to-date data.

Challenges

- **Budget Constraints:** Design a high-impact, low-cost commercial proposal that fits the budgetary restrictions of water companies in Venezuela.
- **Compatibility and Connectivity:** Integrating the new SCADA system with existing Motorola RTUs, ensuring compatibility and effective communication through various protocols such as OPC UA and MODBUS TCP.
- **Procurement of Equipment and Technical Support:** Overcoming delays in obtaining Motorola equipment and the lack of specialized technical support due to sanctions imposed on Venezuela, which affected implementation timelines.
- **Development of New Applications:** Reorganizing the existing database and develop a new application for the Gateway (ACE-3600), adapting the system to the specific data structure and protocols used in the project, which required additional effort in system programming and configuration.

Results

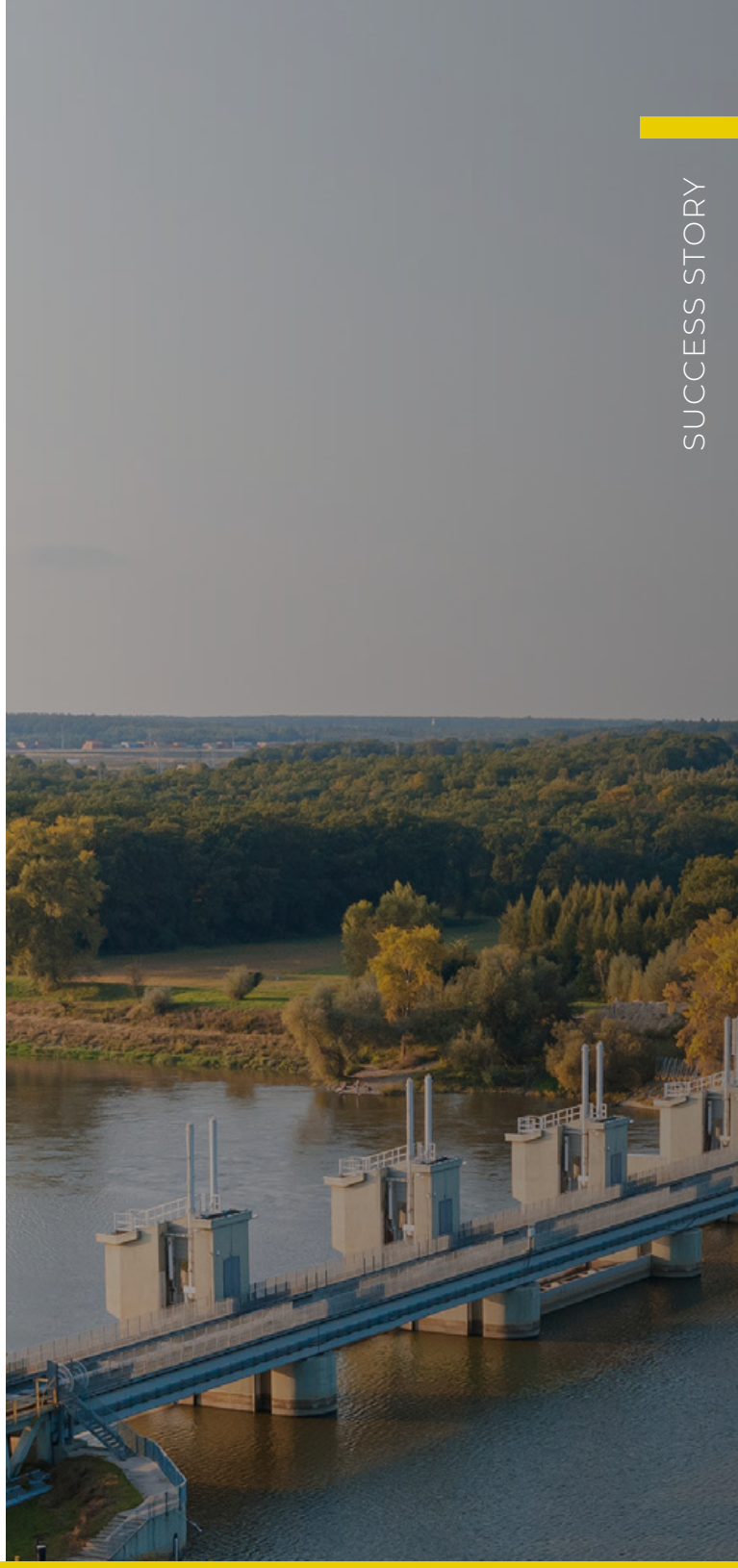
- **Improvement in Operational Efficiency:** The implementation of atvise® SCADA facilitates centralized supervision and detailed control of all water facilities, significantly improving Hidrocentro's operational efficiency.

- **Reduction in Response Times:** Real-time visualization and control results in a notable reduction in response times to events and alarms, optimizing incident and maintenance management.

- **Optimization of Resource Usage:** The solution enables better capture, treatment, storage, and distribution of potable water, ensuring optimal resource usage and minimizing losses.

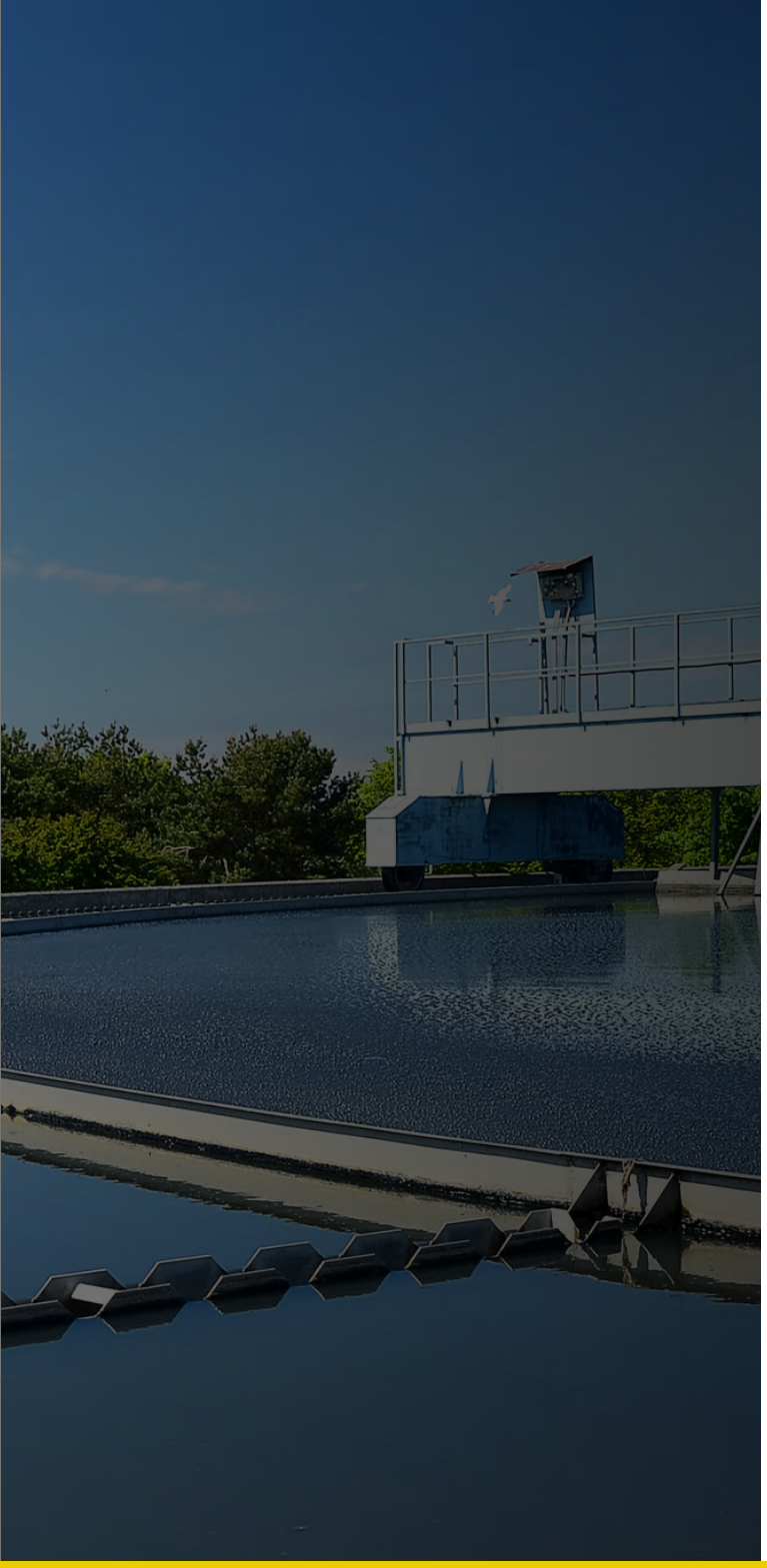
- **Ease of Report Generation:** The new technology facilitates the generation of detailed reports for data analysis, providing precise and up-to-date information for operational and strategic decision-making.

- **Detection and Correction of Poor Operational Practices:** Enhanced visibility and control allows for the detection and correction of poor operational practices previously carried out due to the lack of accurate and timely information.



"Now it is simpler and more practical to carry out various technical analyses to be effective in pumping the different blocks that distribute the vital liquid. Thanks to this monitoring, we can deduce if there is any novelty or problem in the pumping systems, regarding a drop in pressure, flow, or tank levels."

– Sub-Management of Telecommunications and Operations, C.A. Hidrológica del Centro (Hidrocentro).



Background

In 2001, Hidrocentro implemented a SCADA system composed of six subsystems, each controlling a specific geographical area and reporting simultaneously to a main system. Over time, this system became obsolete and presented serious operational limitations. At the time of replacement, only one of the subsystems was operative but had many deficiencies.

Budget constraints were a constant challenge for hydrological companies in Venezuela. In this context, a modern, flexible, and economical solution was required, one that would not only improve the existing infrastructure but also adapt to financial limitations. The project highlighted the need to replace the old SCADA system with cutting-edge technology that ensured continuous operation and aligned with Industry 4.0 standards.

To address this challenge, GP Soluciones and Macxilla Consultores partnered to modernize Hidrocentro's SCADA system. After a thorough analysis of different technologies and international brands, the atvise® SCADA solution was selected for connectivity and adaptability to digital transformation.

"Recovering the SCADA system at C.A. Hidrológica del Centro has been a great achievement for the company, as it allows us to once again have real-time monitoring of values and parameters collected in the field: pressure, flow, and tank levels at the different automated points."

– Sub-Management of Telecommunications and Operations, C.A. Hidrológica del Centro (Hidrocentro).

Solution

The implementation consisted of two atvise® SCADA servers and two operation consoles as web clients, located in two Operations Control Centers (OCC) approximately 80 km apart. Additionally, atvise® Connect software was integrated to establish communication via OPC UA with the SCADA and MODBUS TCP protocol with a Motorola ACE-3600 gateway (front-end), which in turn communicates via radio using the MDLC protocol with 56 Motorola RTUs from the MOSCAD line.

This project at Hidrocentro was a meticulous process involving a series of key steps to ensure its success. From the initial requirements analysis to the commissioning and delivery of the system, each stage was carefully planned and executed by the GP Soluciones and Macxilla Consultores team.

The main steps and approach adopted to carry out the implementation of this strategic project were as follows:

Requirements Analysis and Technology Evaluation

- Meeting with the Hidrocentro team to understand the requirements of the new SCADA system.
- Research and evaluation of different technologies and brands available on the market.
- Selection of atvise® SCADA as the most suitable solution based on its connectivity, scalability, and technological value.

System Architecture Design

- Definition of the system architecture, including servers, operation consoles, communications, and field devices.
- Design of the communication network to ensure robust and secure connectivity between the different system components.
- Specification of the equipment and devices needed for the implementation.

Equipment and Licenses Procurement

- Procurement of the necessary equipment for the implementation, including servers, operation consoles, gateways, and field devices.
- Acquisition of the required software licenses for the installation and configuration of the SCADA system.

Hardware and Software Installation and Configuration

- Physical installation of servers, operation consoles, gateways, and field devices at Hidrocentro's Operations Control Centers (OCC).
- Configuration of atvise® SCADA software on the servers and operation consoles according to the project's requirements.
- Implementation of communication between SCADA and field devices using OPC UA and MODBUS TCP protocols.

System Testing and Optimization

- Performing functional tests to ensure correct communication and operation of the system under real conditions.
- Optimization of the system configuration to improve performance and operational efficiency.
- Training Hidrocentro personnel on the use and maintenance of the new SCADA system.

Commissioning and Project Delivery

- Official commissioning of the SCADA system at Hidrocentro's Operations Control Centers.
- Delivery of the complete project, including technical documentation, user manuals, and post-implementation support.
- Continuous follow-up and technical support by GP Soluciones and Macxilla Consultores to ensure the system's optimal functioning in the long term.

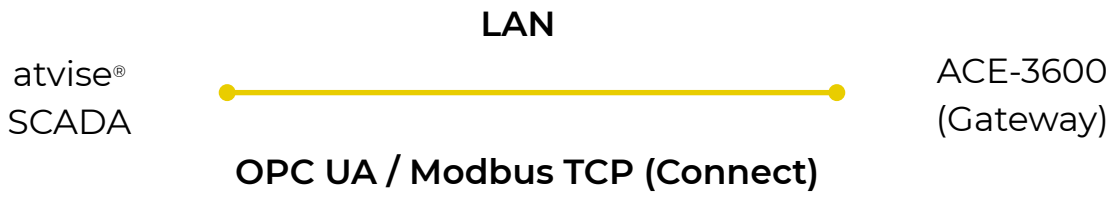
In conclusion, the implementation of the SCADA system at Hidrocentro marked a significant milestone in the modernization of the hydrological infrastructure in Venezuela. Thanks to the collaboration between GP Soluciones, Macxilla Consultores, and Hidrocentro, financial and technical challenges were overcome to implement an innovative and scalable solution. The new SCADA system not only improved operational efficiency and facility safety but also laid the foundation for smarter and more effective water resource management in the region. This success story highlights the potential of technology to address critical challenges in water supply, demonstrating the commitment of the involved companies to excellence and innovation in the sector.

"With our new SCADA, the work becomes easier when performing a maneuver, as we can operate the opening or closing of the automated pressure regulating valves."

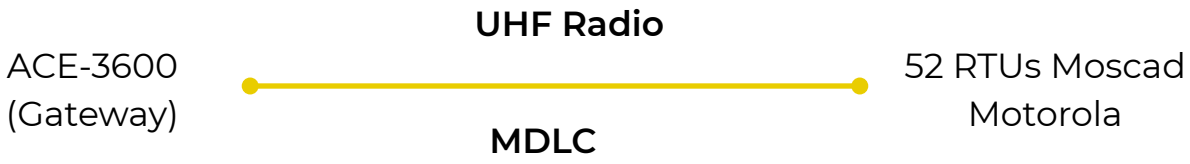
– Telecommunications and Operations Sub-Management, C.A. Hidrológica del Centro (Hidrocentro).

Integration Architecture

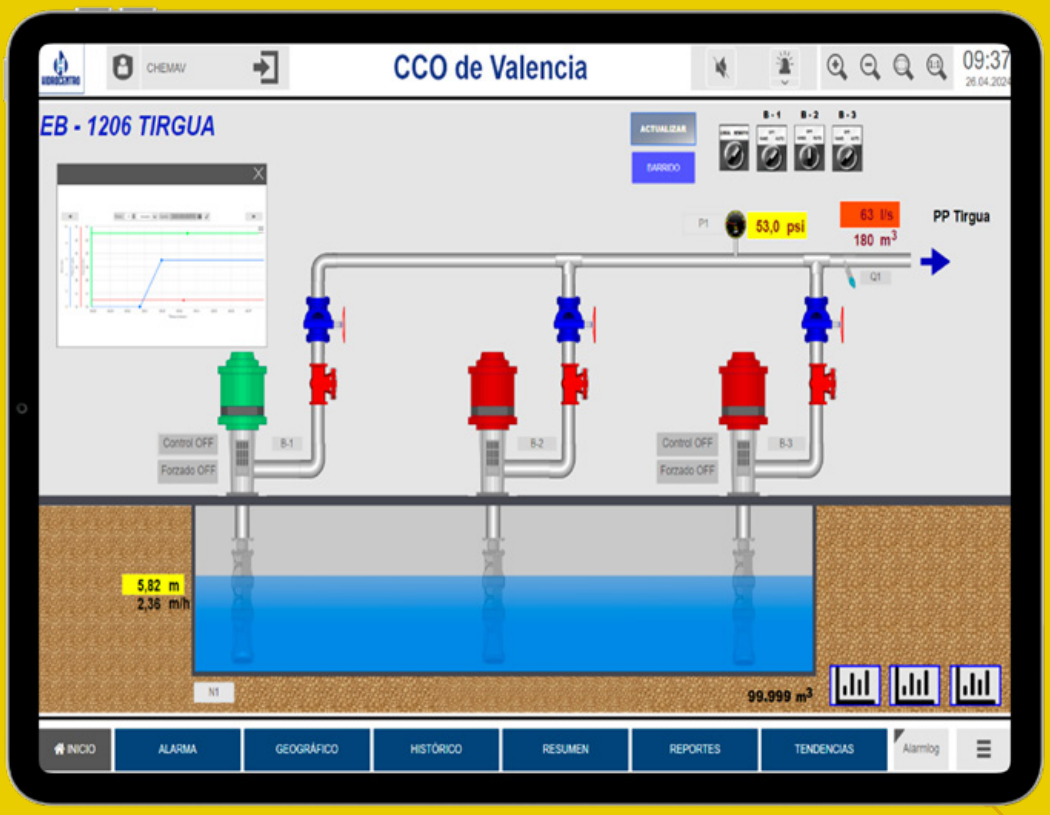
1. Operations Control Center (OCC)



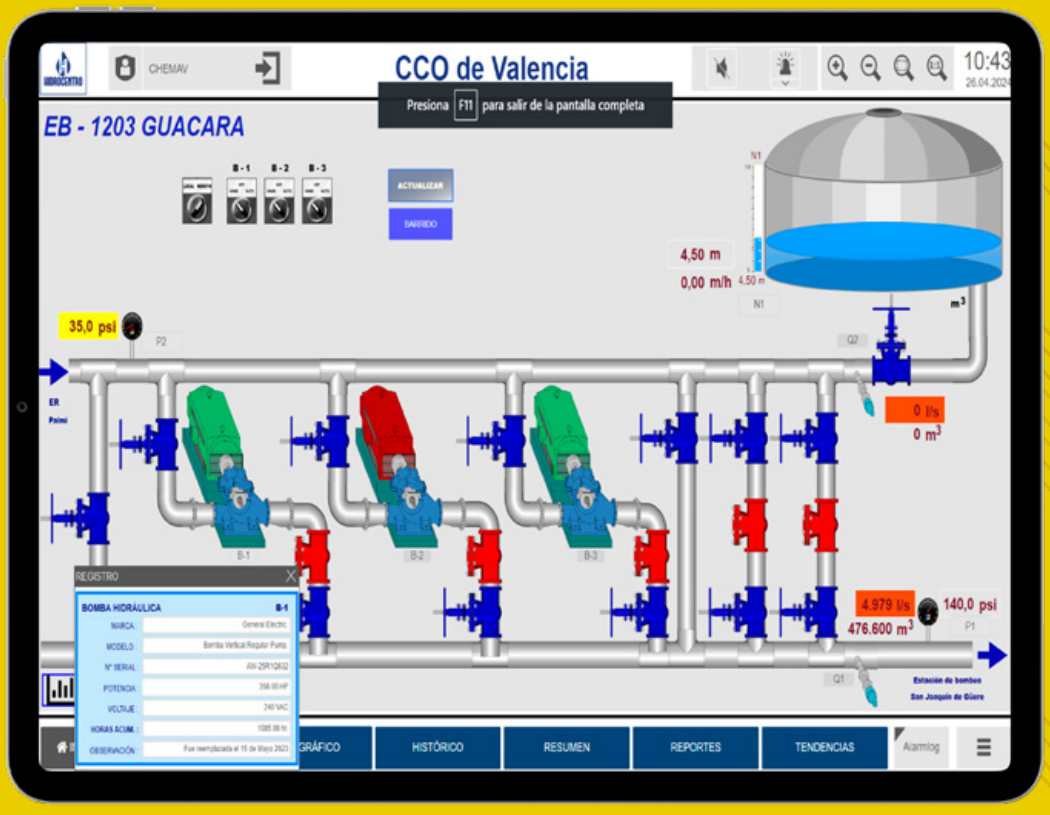
2. Field

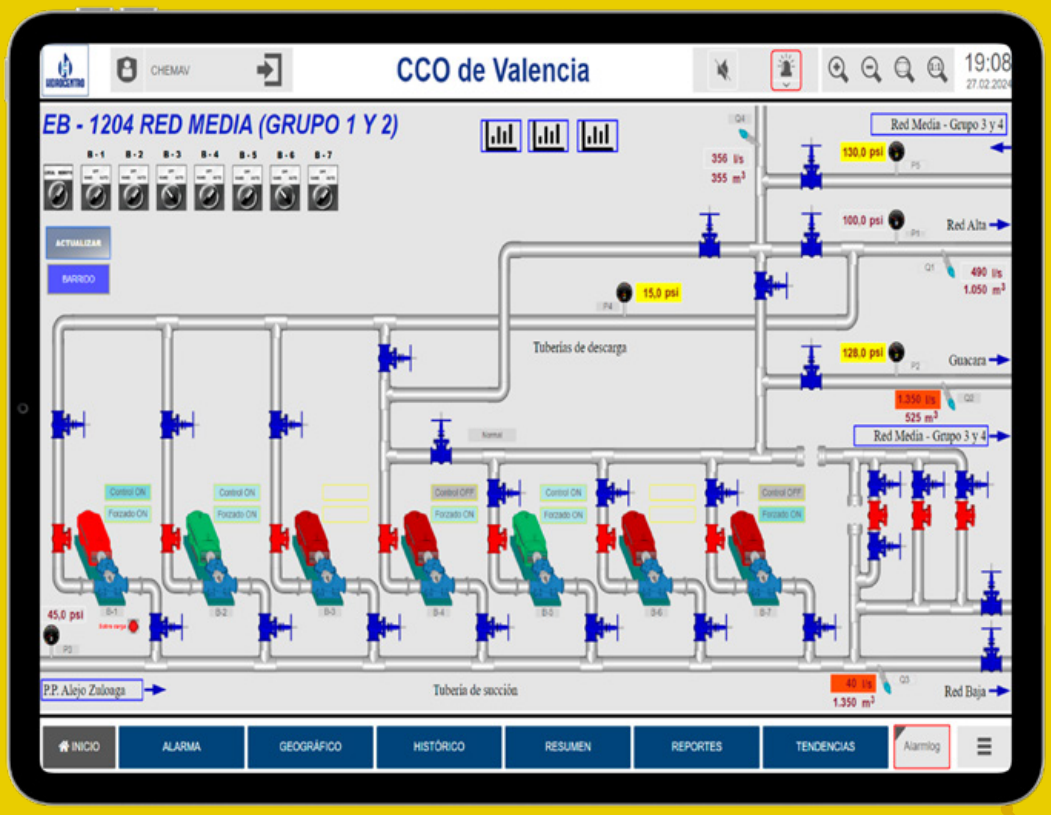


- Pumping station. Vertical Pumps.

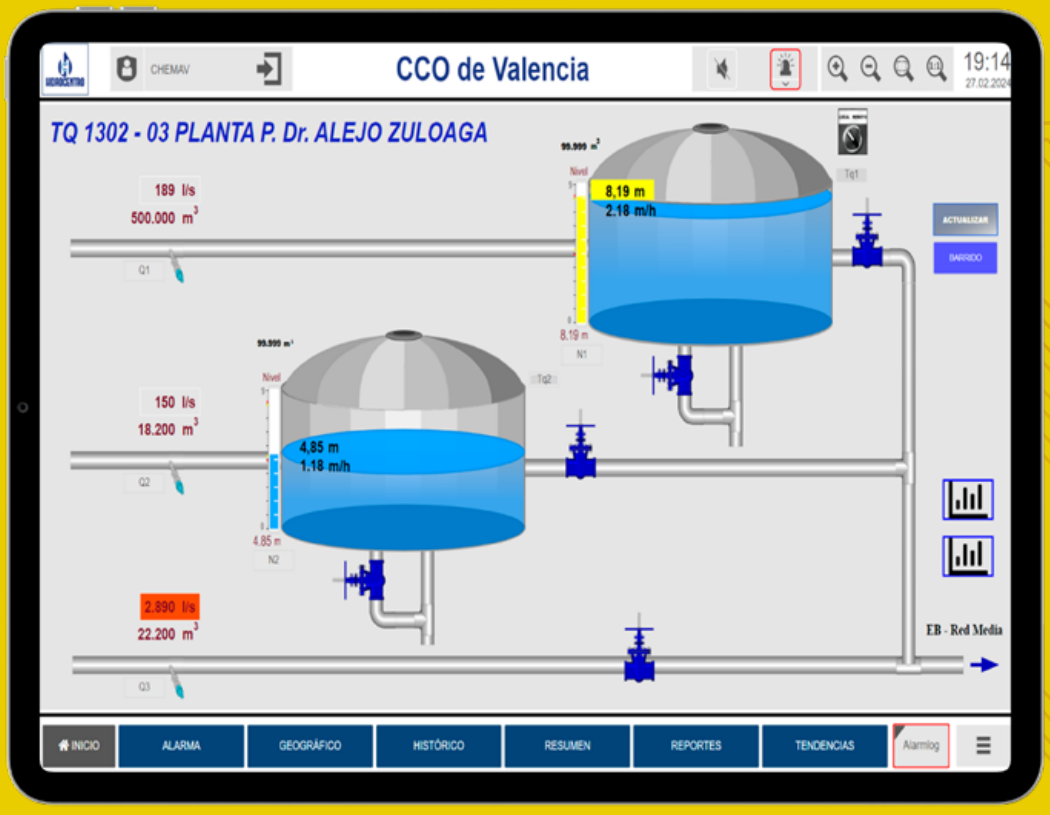


- Pumping Station. It completes the pumping line between the states of Aragua and Carabobo.



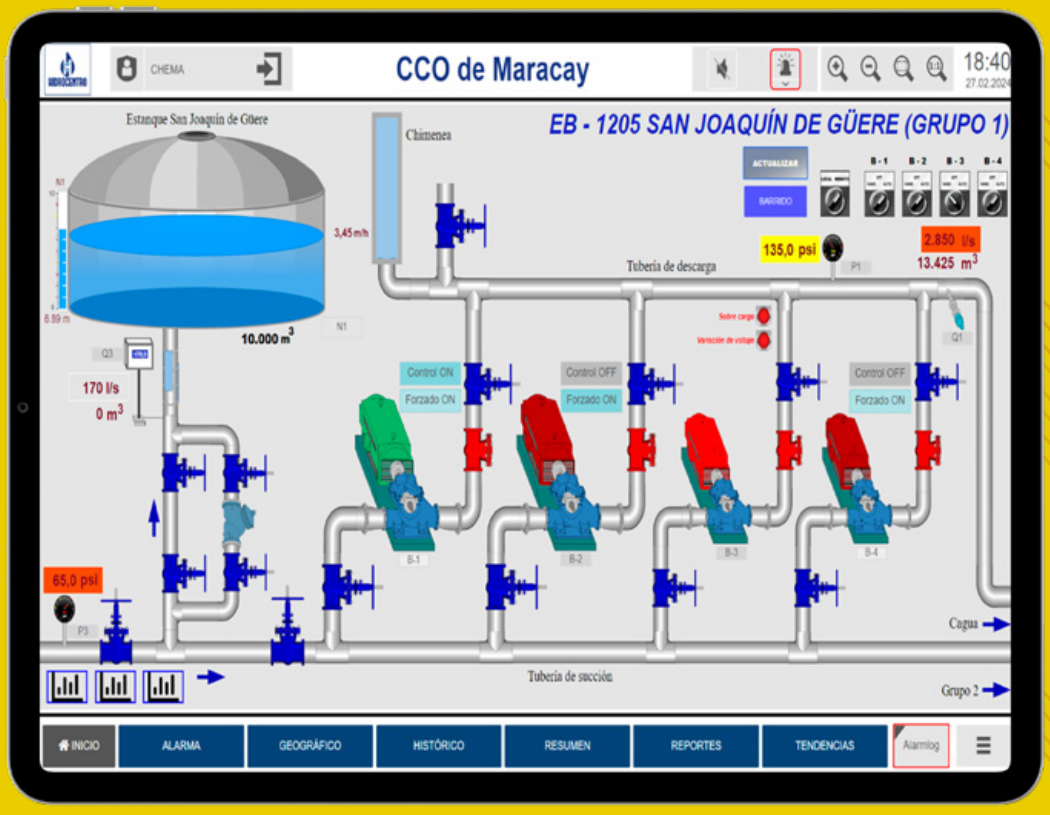


Storage Water Treatment Plant. Battle of Carabobo.

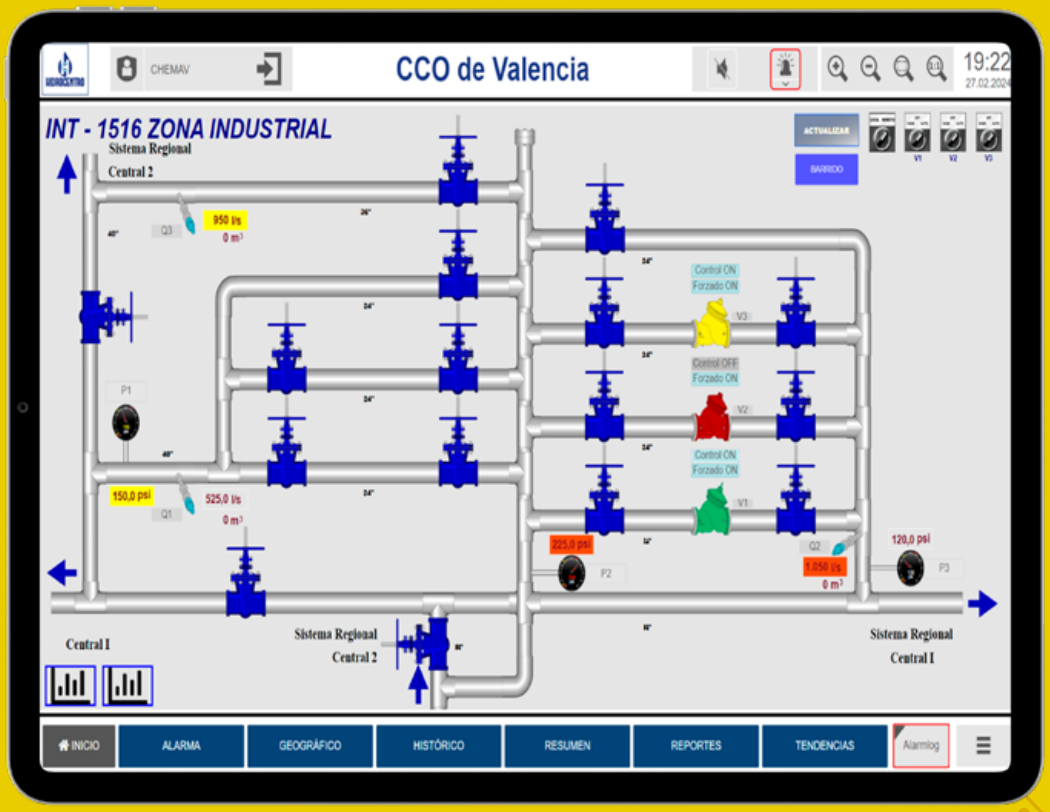


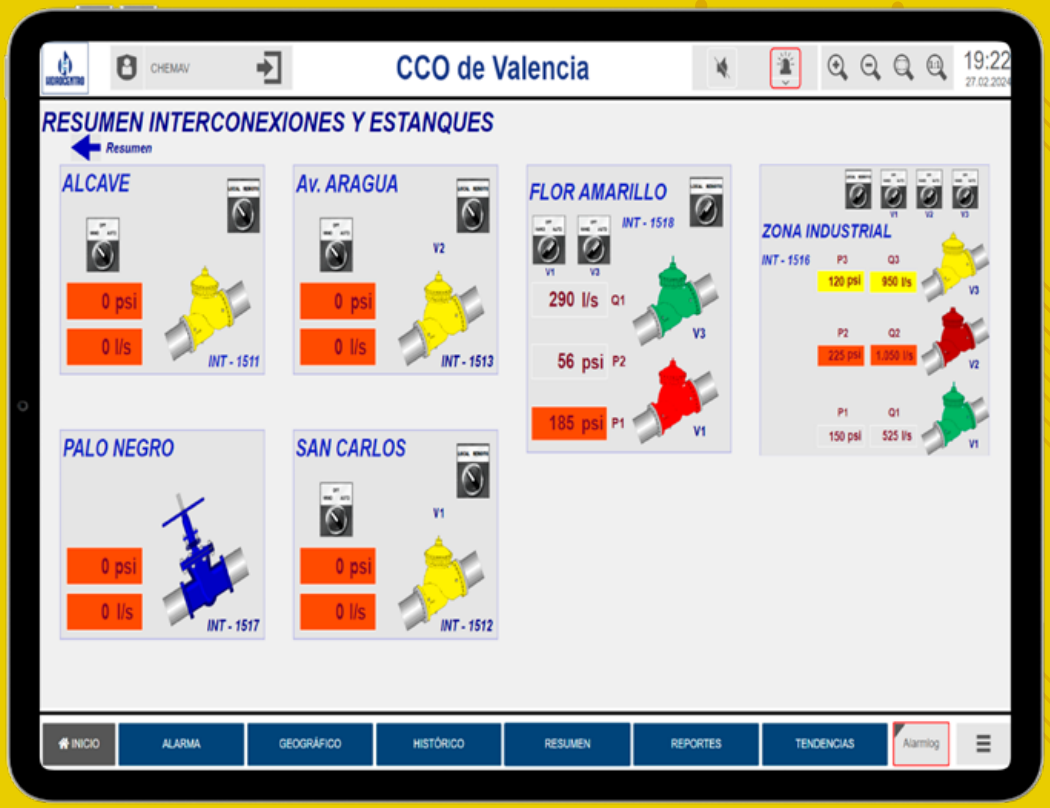
Geographical Map of Tanks.

Pumping Station. Aragua Zone.



Valve Arrangement. Interconnection.





atvise® SCADA

SCADA SOFTWARE FOR INDUSTRY 4.0

The first HMI SCADA software built on Industry 4.0 fundamental basis: Pure Web Technology and OPC UA.

FREE DOWNLOAD atvise® SCADA

Highest Security

Responsive Design

Pure Web Technology

OPC UA

Multiplatform

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