



SCADA Systems for the Manufacturing Sector: Implementation of a Production Efficiency Metrics Monitoring System

Design of a Monitoring System for Oil and Butter Manufacturing Processes, Based on the **OEE** Standard with **atvise**.

CLIENT



Project

After acquiring a new production line, the engineers at La Corona identified an opportunity to enhance the manufacturing process through the implementation of a manufacturing metrics monitoring system based on the **OEE (Overall Equipment Effectiveness)** standard.

Solution

The **atvise® SCADA** system proved to be the perfect solution for La Corona's specific monitoring needs. Thanks to its ability to extract data from existing PLCs, process it, and generate fully customized OEE charts, the production team was able to identify areas for improvement more accurately and focus on enhancing plant performance.

Client & Partner



With over 102 years of experience, **Fábrica de Jabones La Corona** is a leading company in the production and distribution of products such as edible oil, liquid detergent, fabric softener, chlorine, and glycerin. Their production plant is divided into four areas: oils and fats, detergent, soaps, and liquids, all known for the quality of their products, which are among the best in the Mexican market.

Objectives

- Obtain **reliable data** from the oil and butter manufacturing area.
- **Implement a monitoring system** based on the OEE standard with the collected data.
- **Design reusable graphical objects** for use in other production lines.
- **Identify areas for improvement** to increase production and reduce costs.
- Improve **traceability and coordination** between the logistics and production departments.

Challenges

- Difficulty in integrating the new production line due to a lack of technical documentation.
- Need to adapt the previously developed engineering on the acquired line to La Corona's internal methodologies.
- Implementation of a centralized tool for data historization, graphics, acquisition, and monitoring.
- Requirement to acquire new knowledge to implement the first OEE system in the company.
- Integration of the **new OEE application** with existing systems.
- Necessity to train the staff in using the new OEE system.



Results

- Significant increase in the production efficiency of the oil and butter production area.
- Improved traceability between the logistics and production departments, optimizing inventory management.
- The implemented OEE charts facilitated the identification of areas for production improvement, followed by specific corrective and preventive actions.
- The project demonstrated the company's ability to adopt new technologies and methodologies, enhancing its positioning in the market.

Background

After the acquisition of an oil and butter manufacturing plant in Querétaro, Mexico, La Corona initiated a project to upgrade the existing monitoring system, along with the addition of a new production line.

The starting point for this upgrade project was the direct data acquisition from PLCs, as the existing plant's monitoring system was not reusable.

La Corona sought a solution to display all efficiency indicators on a single screen. Additionally, they aimed to implement manufacturing metrics based on the OEE standard. The chosen solution was atvise® SCADA.

The project leaders decided to follow very specific graphic design standards and focused on making the application replicable for other production lines and internal areas.

"Initially, a demonstration of an OEE system based on atvise® was conducted. Thanks to the success achieved, the system has been continuously improving and evolving over time, to the extent that its implementation in other production areas is now being planned."

– Omar Ferretiz, Automation Manager at La Corona

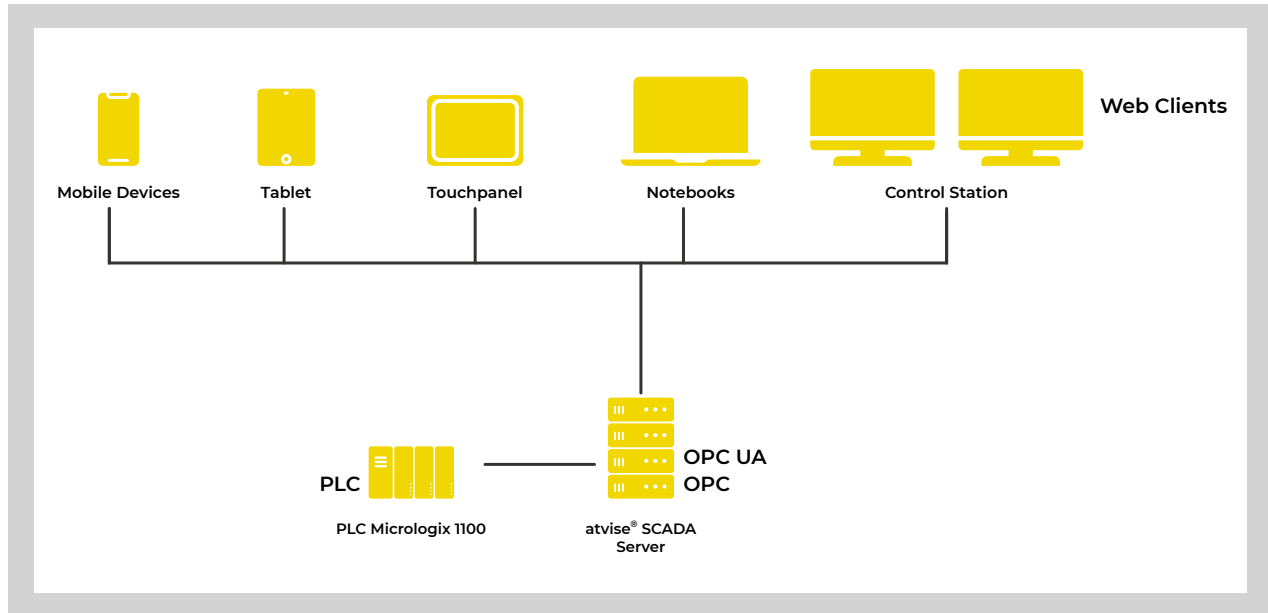
Solution

A strategy in collaboration with Vester Business was developed, consisting of the following steps:

- 1 Conduct a comprehensive analysis of the existing PLCs and the variables they control.
- 2 Identify specific variables related to OEE for measurement and monitoring.
- 3 Modify the existing PLCs to align with La Corona's production measures.
- 4 Transfer data from the PLCs to SCADA using an OPC UA communication gateway.
- 5 Process and adapt the data for subsequent historization, charting, and visualization.
- 6 Develop a dashboard with production efficiency indicators based on the OEE methodology.
- 7 Implement the OEE visualization application in the production process.
- 8 Train the relevant departments to ensure the correct use of the application and maximize its benefits.

Omar Ferretiz, La Corona's Automation Manager, emphasizes "the crucial support we have received from Vester from the beginning of the project implementation to the present day. This support has enabled us to ensure the project's continuity."

Considering the technical requirements of the project, an architecture was proposed that included **Rockwell Automation** PLC controllers and the monitoring software **atvise® SCADA**.

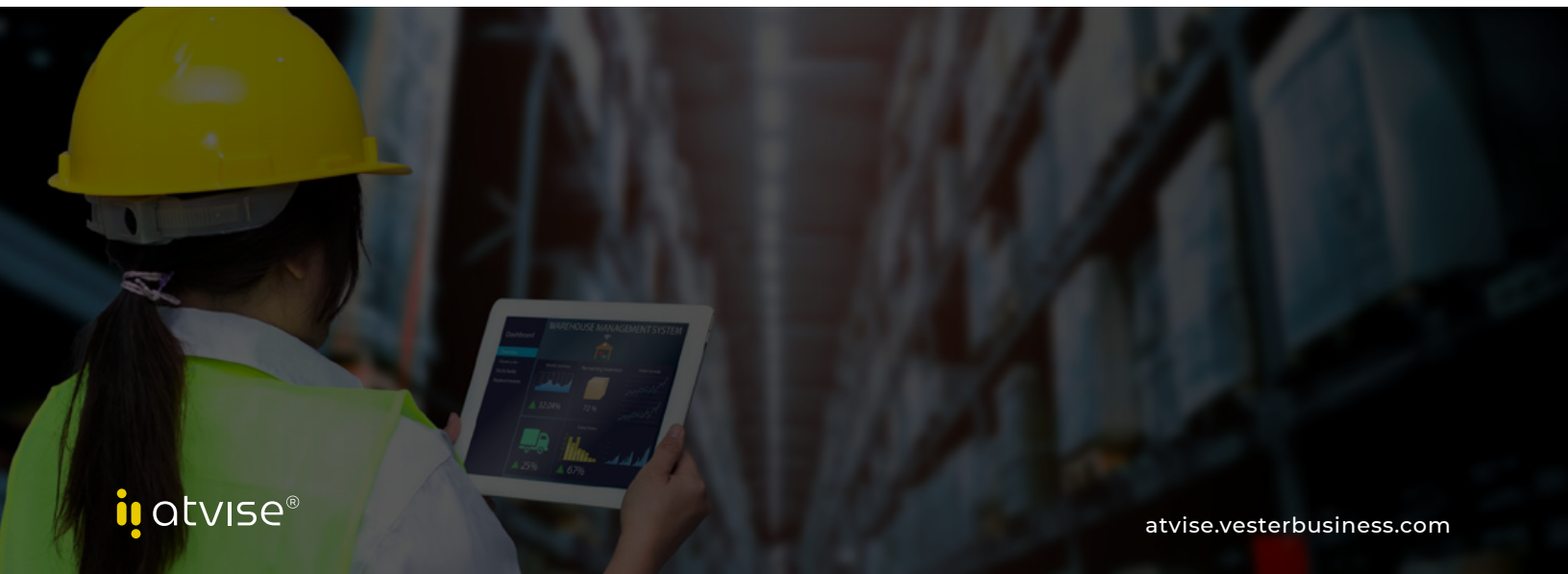


Implemented architecture diagram

The **Rockwell Automation MicroLogix 1100 PLC** series allows for real-time data provision via the Ethernet IP protocol. This data was available in the FactoryTalk Linx software, also from Rockwell, which serves as an OPC UA Gateway.

Thanks to the choice of **atvise®**, the integration of PLC data into the SCADA system was quick, direct, and stable, with no need for manual addressing of variables. This was due to the browsing functionality of OPC UA and **atvise®'s** mirroring feature.

The user interface implemented with **atvise® SCADA** meets the specific needs of this oil and butter manufacturing area by accurately and efficiently fulfilling the OEE monitoring requirements.



Less than three months after implementation, the following operational benefits have been achieved, among others:

- Users can view OEE charts from any terminal with a web browser and a connection to the server.
- The specialized web graphics library Highcharts allowed for the development of a customized dashboard for this manufacturing area. This helped display critical elements for OEE analysis clearly.
- Ease of connectivity with SQL databases, enabling integration with existing computer systems.
- Direct integration capability with ERP systems like SAP.
- Scalability of the solution to other manufacturing areas, thanks to **atvise®**'s vertical object-oriented engineering.

Thanks to these positive results, the implementation of OEE in the rest of La Corona's manufacturing areas has already been approved, with the aim of improving the overall production of the company.

After implementing the OEE indicator charts with atvise®, and thanks to its ability to share them with the IT department, La Corona finally began making data-driven decisions through a top-notch graphical interface."

– **Omar Ferretiz**, Automation Manager at La Corona."



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