

Mahou San Miguel Turns Industrial Data into a Strategic Asset with N3uron

[Mahou San Miguel](#) is one of Spain's leading beverage companies and a benchmark in the Spanish beer market, with a portfolio that includes some of the country's most recognized beer and beverage brands.

The group operates a large industrial footprint, with nine beer production plants in Spain (Alovera, Burgos, Granada, Málaga, Córdoba, Lleida, Candelaria, Bilbao and Real Madrid's Santiago Bernabéu), four water springs (Solán de Cabras, Fuente del Arca, Sierrras de Jaén and Aguas de la Orotava) and three production centers in the United States, two in Michigan and one in Colorado.

Across this production network, Mahou San Miguel manages a complex industrial landscape that includes brewing processes, packaging lines, utilities, energy systems, quality processes, industrial services, MES applications, SCADA/HMI systems, databases, dashboards, reporting tools, and external data consumers.

For a manufacturing group of this scale, plant-floor data is no longer just a byproduct of automation systems. It is a strategic asset. The ability to access, contextualize, historize, visualize, and reliably distribute that data is essential to improving operations, supporting decision-making, and accelerating industrial digitalization.

N3uron helps turn that strategy into a common industrial data layer, enabling Mahou San Miguel to standardize OT/IT data management across production sites, accelerate digitalization use cases, and make plant-floor data easier to access, contextualize, and reuse across the organization.

At Mahou San Miguel's Alovera brewery in Spain, Jorge Guerra Porras, Head of Operational Technology at Alovera, leads a team of six people responsible for the site's industrial technology. His team works at



the intersection of automation, infrastructure, industrial digitalization, and continuous improvement, helping connect plant-floor systems with the initiatives that depend on operational data.

That is the context in which Mahou San Miguel began working with N3uron.

"We initially started working with N3uron to solve a specific communication need between systems, but we quickly realized its potential to go much further and support a broader industrial data architecture," explains Jorge Guerra Porras, Head of Operational Technology at Alovera.

Following the success of the initial deployment and the positive experience gained, N3uron became a key layer in Mahou San Miguel's industrial digitalization strategy.

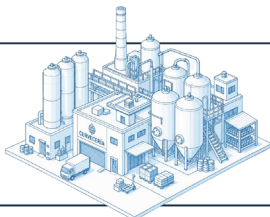
This evolution is now reflected in a distributed deployment across eight production sites, with one local N3uron node at each site and a central node for data consolidation. With each local node managing up to around 30,000 tags, Mahou San Miguel has a scalable foundation for collecting, processing, historizing, visualizing, and distributing industrial data across its production network.

Deployment Scope

N3uron

8

Production Sites



8

Local Nodes



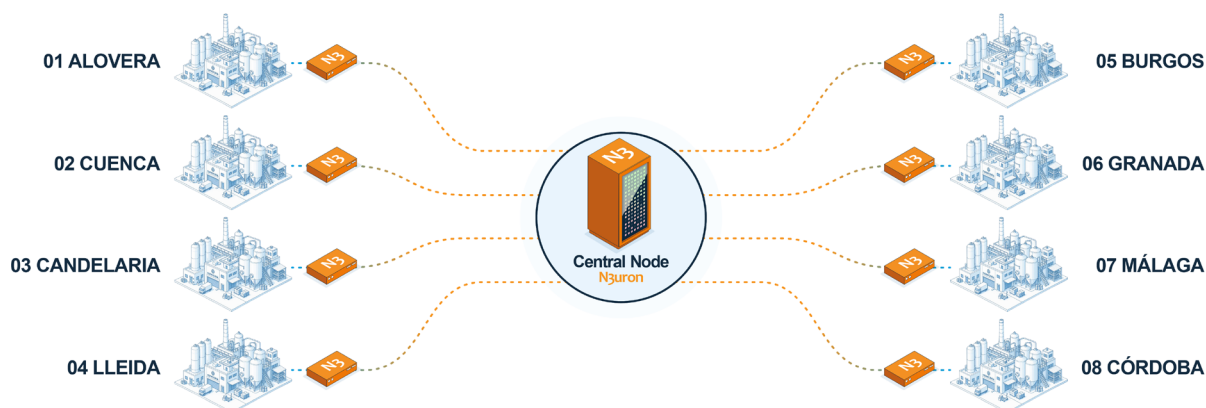
1

Central Node



30K

Tags per Node



SPAIN + U.S. OPERATIONS
Multi-site footprint across two countries



aws



CENTRALIZED VISIBILITY
Scalable, secure industrial data platform for real-time insights and long-term value

The Challenge: Making Industrial Data Usable Across a Multi-Site Organization

Industrial complexity rarely appears overnight. It builds gradually, site by site, line by line, system by system.

Each factory may have its own equipment, control systems, communication protocols, databases, dashboards, applications, and operational requirements. Over time, more teams need access to the same information: production, maintenance, operational technology, analytics, digitalization, reporting, MES, ERP, suppliers, and business decision-makers.

Without a common data foundation, every new requirement can become another point-to-point integration. The data exists, but accessing it, correlating it, historizing it, and making it available across the organization becomes increasingly difficult.

For Mahou San Miguel, the challenge was to integrate

multiple factories, industrial protocols, operational systems, and data consumers without creating a fragmented integration landscape or increasing the maintenance burden on its OT teams.

The company needed a scalable way to connect PLCs, SCADA/HMI systems, control systems, gateways, industrial PCs, monitoring equipment, databases, plant equipment, MES platforms, ERP systems, visualization tools, and reporting applications. It also needed to improve data access, operational diagnostics, alarms, event monitoring, and historical analysis across sites.

The challenge was not simply to collect more data. It was to make plant-floor information reliable, structured, and available to the teams and systems that create value from it.

"N3uron enables us to provide real-time and historical data to MES and ERP platforms, ensuring seamless connectivity between Operational Technology and business systems," adds Jorge Guerra Porras.

Why Mahou San Miguel Chose N3uron

Mahou San Miguel's decision to adopt N3uron was driven by both immediate operational needs and long-term strategic considerations.

The company needed a platform that could simplify connectivity across heterogeneous systems while remaining flexible enough to adapt to different factory setups and evolving use cases. Instead of continuing to build one-off integrations or depending on rigid architectures, Mahou San Miguel sought a consistent, reusable foundation for industrial data management.

N3uron stood out because it offered the right balance between flexibility and standardization.

Its modular architecture allowed the team to deploy only the capabilities required for each project while maintaining a common technological layer across sites. Its web-based configuration interface and broad protocol support reduced the learning curve for the internal OT team, enabling faster implementation cycles and greater autonomy to develop and maintain integrations without heavy external dependency.

Compared with more traditional industrial solutions, N3uron gave Mahou San Miguel a more flexible and scalable foundation for multi-site industrial data management, one that could evolve with new requirements instead of forcing the team into a rigid architecture.

"We selected N3uron for its flexibility, modular architecture, and ease of integration, which enabled fast deployment across different industrial systems. Its modern technology stack, strong API support, continuous feature development, and competitive cost model made it a scalable and future-ready solution," notes Jorge Guerra Porras.

For Mahou San Miguel, the decision was not about solving a single technical challenge. It was about establishing a scalable Industrial DataOps foundation designed to support multiple digitalization initiatives over time, reduce complexity, and accelerate execution across the organization.

Solving Pain Points: A Common Industrial Data Layer

N3uron has become a strategic Industrial DataOps platform for Mahou San Miguel, turning fragmented plant-floor data into a structured and reusable asset across its production network.

The platform collects data from heterogeneous OT systems, contextualizes and historizes it, makes it available through visualization and reporting tools, and distributes it to the teams, applications, and systems that need it.

Instead of requiring each application, dashboard, supplier, or internal team to connect directly to underlying control systems or local data sources, N3uron centralizes data flows and makes the relevant information available through standard interfaces.

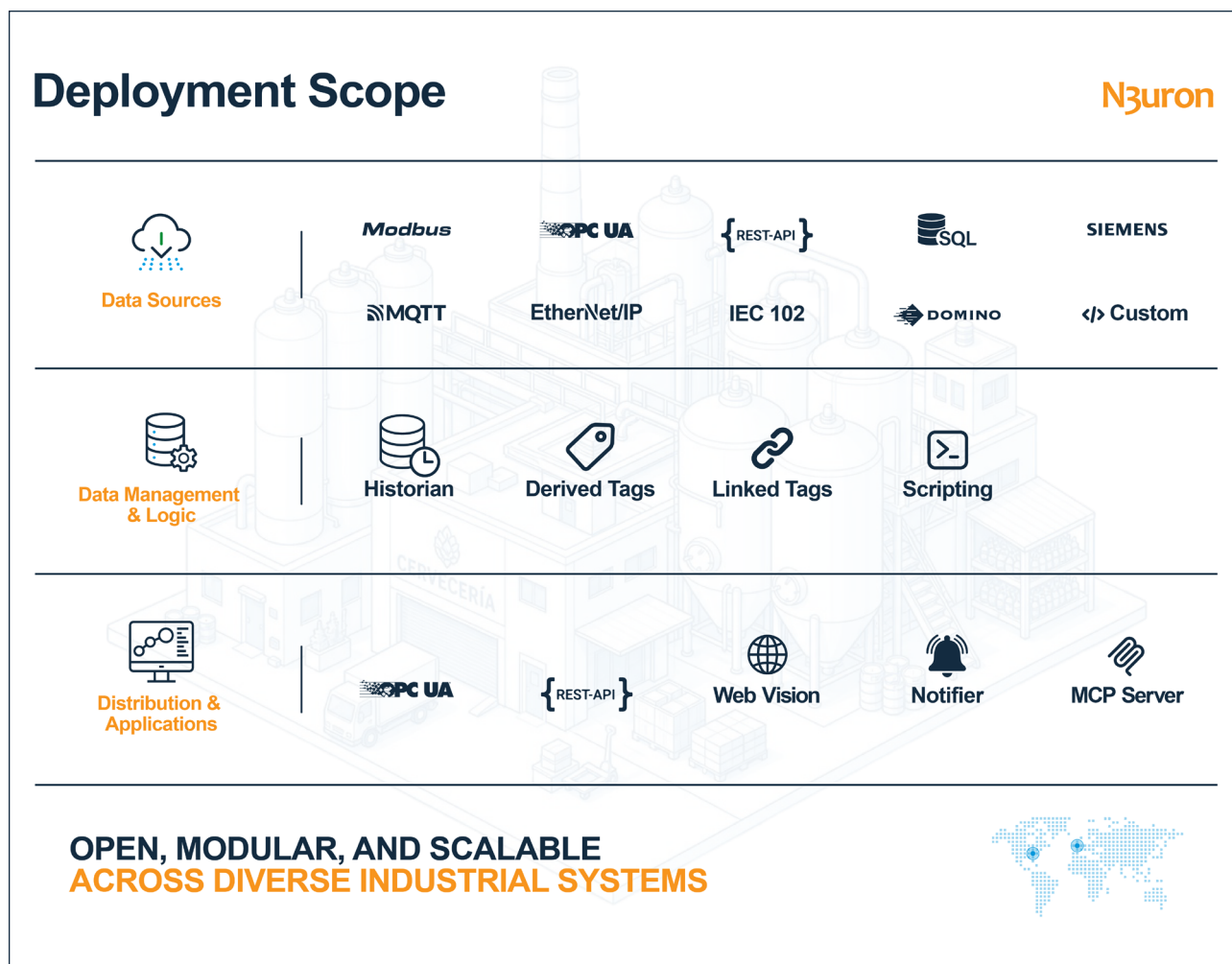
This approach also makes industrial data easier to access and reuse across the organization. Production, maintenance, analytics, digitalization, and reporting teams can work with consistent, contextualized information without depending on direct access to control systems or ad hoc data extractions.

The result is both technical and organizational. Technically, N3uron reduces integration complexity by centralizing data acquisition, historization, visualization, and distribution. Organizationally, it allows more teams to use operational data in their daily work, accelerating diagnostics, improving internal service, and supporting faster decision-making.

Architecture: Scalable by Design

The N3uron deployment currently spans eight production sites, with one local N3uron node at each site and one central node for data consolidation. Each local node manages up to around 30,000 tags, providing Mahou San Miguel with a scalable foundation for industrial data management across its production network.

The architecture connects a wide variety of industrial assets, control systems, applications, and data consumers, bringing them together into a unified and manageable data architecture. It supports production, OT, maintenance, analytics, and digitalization



teams, while also enabling structured reporting, decision-making dashboards, and controlled data sharing with external partners.

To support these requirements, Mahou San Miguel uses a broad set of N3uron modules and capabilities, including [Historian](#), Derived Tags, Linked Tags, OPC UA Client, OPC UA Server, Modbus Client, REST API Server, REST API Client, SQL Client, Siemens Client, MQTT, TCP Client, Mettler, Scripting, WebUI, [Web Vision](#), Notifier, and [MCP Server](#).

Additional capabilities are used in specific factories and use cases, including IEC 102 for reading energy meters, Domino Client for monitoring labeling systems on bottling lines, Custom Client for integrating proprietary truck-scale protocols, and EtherNet/IP Client for communicating with Allen-Bradley PLCs.

N3uron is also used as an OPC UA Server to share data with third parties through standard interfaces,

helping Mahou San Miguel expose industrial data in a controlled and reusable way.

By building new use cases on top of a shared Industrial DataOps layer, Mahou San Miguel avoids duplicating integration logic for every new requirement. This makes the architecture easier to scale, easier to maintain, and better suited to a multi-site industrial organization.

“The most valuable aspect is the ability to centralize heterogeneous data sources under a single platform, reducing the time needed to correlate events across different production systems,” highlights Jorge Guerra Porras.

From Data Access to Operational Impact

The value of N3uron at Mahou San Miguel does not come from a single isolated use case. It comes from the ability to support many different initiatives on top of the same data foundation.

One of the most relevant areas is the monitoring of energy and industrial utilities. Mahou San Miguel uses N3uron to read electrical meters via IEC 102 and Modbus and to integrate gas meter data through the REST API Client module. In several plants, N3uron HMI is also used to monitor key utility variables, including process water, compressed air, natural gas, wastewater treatment, CO2, and electricity consumption.

This provides the visibility needed to understand consumption patterns, identify inefficiencies, and support operational efficiency and sustainability initiatives.

N3uron also plays a central role in MES integration. Acting as middleware between plant systems and MES platforms, it enables data exchange with SIMATIC IT via OPC UA and with an internal MES through SQL. The architecture is deployed across all factories and manages data acquisition from packaging line equipment, including fillers, sorters, palletizers, depalletizers, pallet wrappers, case packers, labelers, inspectors, washers, and pasteurizers.

A second area of impact is plant-floor visualization and operational control. In packaging lines, N3uron is used as a line-level HMI, in some cases replacing discontinued touch panels. Operators rely on N3uron interfaces to monitor machines, select beer types, manage product changeovers, and control filling programs.

Beyond line-level HMI, N3uron also provides visibility into manufacturing parameters across raw materials, brewing, cellars, filtration, pre-filling, auxiliary services, pasteurization, tank status, inspection systems, analytical process variables, environmental conditions, and occupational risk indicators.

Other use cases are highly specific to plant operations, including monitoring pre-filling tanks, residual tanks, UT tanks, and silos; generating PDF reports for inspection systems; reading packaging work orders through Scripting; displaying pasteurizer parameters, temperatures, setpoints, and pasteurization units; and monitoring chemical product reception and distribution processes, such as caustic soda and phosphorus in the Lleida factory.

Across its factories, Mahou San Miguel has also implemented alarm notification systems that send email and SMS alerts. The Burgos plant also uses N3uron for OEE monitoring by work shift, comparing machine

performance against theoretical speed and automatically generating and distributing reports by email.

Taken together, these use cases show how Mahou San Miguel leverages N3uron not as a standalone tool, but as a shared Industrial DataOps platform that supports local operational needs, central monitoring, MES integration, analytics, reporting, and broader digitalization objectives.

Consolidating Industrial Data with AWS and TimescaleDB

As the architecture evolved, Mahou San Miguel also began deploying its centralized data consolidation layer on AWS, with N3uron's [Historian](#) storing data in TimescaleDB. This setup enables visualization and control of all factories from a single platform.

This architecture provides a scalable foundation for centralized operational visibility, historical analysis, and future expansion across the organization.

The project also reflects a broader evolution in Mahou San Miguel's technology stack. New deployments are being built on Linux, and [historian](#) configurations at each plant are being migrated to Timescale. This marks a transition from a more traditional Windows and SQL Server-based approach toward Linux, PostgreSQL, and Timescale.

For Mahou San Miguel, this evolution supports a more open, scalable, and future-ready architecture. N3uron fits naturally into this direction because it can bridge OT systems with modern IT infrastructure while remaining modular, lightweight, and adaptable to different deployment models.

Results and Business Impact

Mahou San Miguel has been working with N3uron for several years, with the strongest adoption taking place over the last two years as the platform became one of its core industrial digitalization solutions.

N3uron has reduced the friction traditionally associated with industrial data integration. By simplifying con-

Key Outcomes

N3uron



Reduced
integration times



Faster deployment
of new solutions



Improved availability
of industrial data



Greater autonomy
for the OT team



Enhanced
visualization through
Grafana and HMI



Higher standardization,
cost saving,
and user satisfaction

**A MORE AGILE , SCALABLE, AND
MAINTAINABLE INDUSTRIAL DATA ARCHITECTURE**



“N3uron enabled us to reduce integration times, simplify complex architectures, and centralize OT data management. It improved maintainability, standardized deployments across factories, and facilitated secure access to industrial data while reducing dependence on proprietary solutions.”

— Jorge Guerra Porras,
Head of Operational Technology at Alovera

nectivity and standardizing data access, the OT team can respond more quickly to new requirements from users across plants and departments.

It has also improved data availability and made the OT team more self-sufficient. Integrations that previously depended on manual extraction, direct PLC-level access, or ad hoc workarounds can now be developed, maintained, and scaled more efficiently from a common platform.

At the same time, N3uron has enhanced visualization and data exploitation through Grafana, HMI screens, reports, and analytics tools. Information that once required specialist access can now be explored and understood more easily by operations teams and non-technical users.

The project has also increased technological standardization. By using N3uron as a common industrial data layer across factories, Mahou San Miguel can reduce fragmentation, improve maintainability, and avoid building a different architecture for every new use case. The cumulative effect is a more agile, scalable, and maintainable industrial data architecture, with better access to information for decision-making, faster diagnostics, clearer visibility into production KPIs, greater flexibility to evolve over time, cost savings, and higher user satisfaction.

“N3uron enabled us to reduce integration times, simplify complex architectures, and centralize OT data man-

agement. It improved maintainability, standardized deployments across factories, and facilitated secure access to industrial data while reducing dependence on proprietary solutions,” explains Jorge Guerra Porras.

For Mahou San Miguel, this has translated into more than technical simplification. By reducing integration friction and making operational data easier to access, N3uron has helped the company accelerate new use cases, improve internal service, and give teams better information for day-to-day decisions.

Rather than delivering value through a single isolated function, N3uron has enabled Mahou San Miguel to identify and implement high-value industrial use cases. The platform has supported operational improvements and optimization initiatives across several areas, from energy monitoring and MES integration to plant-floor visualization, reporting, diagnostics, and industrial analytics.

“Beyond the technical improvements, N3uron has helped us respond faster to internal needs, improve access to information for decision-making, and increase user satisfaction across the organization,” concludes Jorge Guerra Porras.

Looking Ahead: Scaling the Industrial Data Layer

Mahou San Miguel plans to continue scaling N3uron across additional production sites, increasing OT/IT integrations, enhancing industrial analytics and monitoring capabilities, and exploring new use cases focused on efficiency, sustainability, and automation.

As the platform continues to support more use cases, its value will increasingly come from the consistency it brings to data management across factories. What started as a way to solve specific communication challenges has evolved into a common industrial layer that can support plant-level needs, centralized monitoring, MES integration, analytics, and new data-driven operational use cases.

This digital foundation also makes it easier for Mahou San Miguel to apply AI-enabled workflows to reliable, contextualized industrial data. [MCP Server](#) provides a

controlled way for AI agents to interact with operational data, helping teams interpret alarms faster, improve troubleshooting, automate queries, identify issues earlier, and make better operational decisions.

For Mahou San Miguel, long-term product evolution is especially important because N3uron is not being used as a one-off integration tool, but as a core technology layer within its industrial data architecture. As new requirements appear across factories, the platform's ability to evolve with real operational needs becomes part of its strategic value.

“One unexpected benefit has been the speed at which N3uron evolves as an industrial solution, both in deploying new functionalities such as MCP and in implementing improvements or fixing bugs reported through incidents. The team is highly focused on customer service, actively incorporating client feedback into their roadmap,” says Jorge Guerra Porras.

This reinforces Mahou San Miguel's confidence in N3uron as the company continues to expand its industrial data layer across sites and use cases.

“Our future plans for N3uron include scaling the solution across additional production sites, increasing OT-IT integrations, and enhancing industrial analytics and monitoring capabilities. We also aim to explore new use cases focused on efficiency, sustainability, and automation, while continuing to evolve the industrial data layer and integrating [MCP Server](#) to enable AI agents to interact with operational data,” adds Jorge Guerra Porras.

By consolidating operational data from multiple systems, factories, and use cases, N3uron has become a strategic technology enabler for Mahou San Miguel's industrial digital transformation, helping the company standardize data access, accelerate deployments, improve operational visibility, and build the foundation for a scalable Industrial DataOps platform across its production network.