SENSIA
Rockwell Automation + SLB

+ CASE STUDY

LNG Retail Station Monitoring across Europe with Avalon: A Comprehensive IIoT Solution

Avalon Enables Data-Driven Operations Across LNG Retail Stations in Netherlands, Belgium, Germany, France, Austria, Slovakia, Poland, and the Czech Republic.

Key highlights

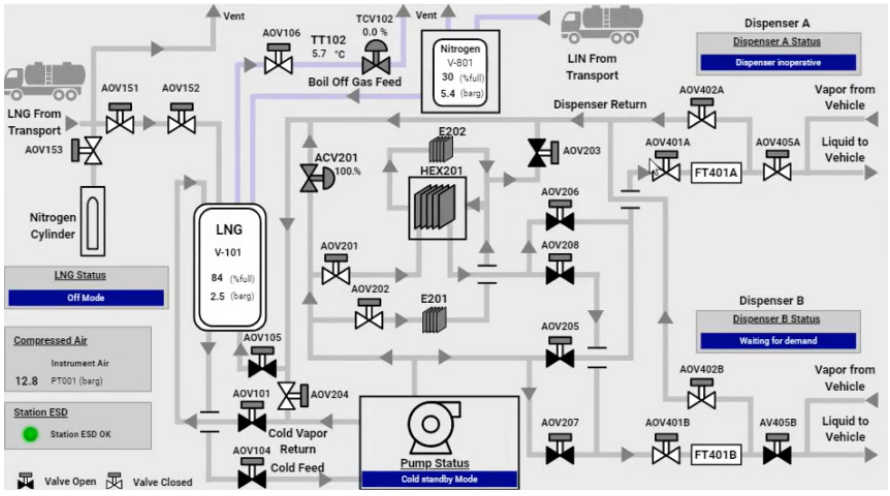
+ Seamless Expansion Across Europe – Enabled real-time monitoring for 80+ LNG retail stations across Germany, Austria, Slovakia, Poland, and the Czech Republic.
+ Enhanced KPI Tracking – Provided visibility into critical metrics like sales volume, LNG sold, LIN consumption, and transaction counts.
+ Real-Time Operational Insights – Management can now oversee the entire network from a single platform, ensuring better decision-making.
+ Rapid Station Integration – New stations can be brought online within hours instead of days, ensuring hassle-free scalability.
+ Proactive Maintenance & Downtime Reduction – Timely alerts help maintenance teams respond faster, minimizing unplanned disruptions.
+ Optimized Resource Utilization – Improved LIN consumption tracking and sales data accuracy lead to better efficiency and cost savings.

Avalon, Sensia's comprehensive IIoT platform, has transformed how an LNG retail network operates across eight European countries. This solution gives executives and operators a clear view of all their stations through multiple dashboards within a single platform. It tracks important business metrics like daily sales and resource use, turning separate systems into one connected network. Avalon provides real-time insights, sends maintenance alerts, and makes adding new stations easy. The results are impressive: a 15% increase in efficiency, fewer costly disruptions, better resource use, and a strong foundation for future growth

Challenge

The operator faced several challenges as they rapidly expanded their LNG retail stations across Europe. With a large number of stations in Germany and recent additions in Austria, Slovakia, Poland, and the Czech Republic, the growing geographic footprint created a need for centralized monitoring. However, the existing infrastructure at these stations was isolated, relying on local HMIs (Human-Machine Interfaces) and control PLCs (Programmable Logic Controllers), making real-time data access and remote oversight difficult.

In addition, the operator sought a way to effectively track critical Key Performance Indicators (KPIs) such as total sales volume, the amount of LNG sold, liquid nitrogen (LIN) consumption for cooling, and transaction counts—the number of individual lorries filling up. Without a streamlined system for data collection and reporting, managing this vast amount of information posed significant operational challenges. The isolated nature of the infrastructure also made it difficult to respond to maintenance needs in a timely manner, leaving operations vulnerable to unexpected downtime and inefficiencies.



Solution

To address these challenges, Sensia's Avalon IIoT platform was implemented as a comprehensive solution for remote monitoring and data integration across the operator's network of LNG retail stations. Avalon enabled the seamless collection of data from the local HMIs and control PLCs, bringing this information into a centralized cloud-based platform. This provided visibility into the stations, even though they were operating on isolated networks.

The platform captures over 1,200 data tags at each station, ranging from operational parameters to alarm notifications. This vast amount of data was integrated into a relational database, with SQL reporting services being used to produce regular reports. This allowed the operator to monitor KPIs in real-time, including the sales volume, LNG sold, LIN usage, and transaction counts. By calculating changes in the liquid nitrogen tank levels, Avalon also enabled precise tracking of LIN consumption, which has become a key metric for operational efficiency. The maintenance team now receives email alerts triggered by Avalon's alarm system, allowing them to respond swiftly to any issues detected at the sites and minimizing downtime.

Results

Through the deployment of Avalon, the operator has seen significant improvements in the management and oversight of their LNG retail stations. The platform's ability to track KPIs has provided the operator with greater insight into their sales performance and resource utilization, enabling them to make data-driven decisions. With a real-time view of LIN usage, they have been able to optimize cooling processes and better manage their resources, leading to cost savings and improved sustainability.

Additionally, the ability to capture data from previously inaccessible local HMIs and control systems has led 15% improvement in overall operational efficiency. Predictive analytics based on the data collected by Avalon have enabled a reduction in unplanned maintenance, as the maintenance team can now proactively address issues before they lead to larger disruptions. Avalon's scalability has also been demonstrated as new stations in Austria and Slovakia were seamlessly integrated into the system, illustrating its capability to grow alongside the operator's expanding network.

By providing a centralized platform for monitoring and data collection, Avalon has transformed the operator's approach to managing their LNG retail stations, delivering substantial operational improvements and setting the stage for future growth.