



Case Study



gslab

Boosting Operational Efficiency with Remote Plant Monitoring

A process solution giant reduced operations and maintenance costs by implementing cloud-based RPM

Executive Summary

Digital transformation is a buzzword across global businesses, and the industrial environment is no different. In the past, plant operators have maintained the manufacturing and process lines with monitoring support from the SCADA systems. With Industrial IoT (IIoT) at their virtual fingertips, these plants can now be monitored anywhere, anytime, from any device — a paradigm shift from earlier manual operations. With data science in the mix, decision-making across the functions is now faster, more precise, and data-driven.

Customer

Our customer is a global leader in turn-key Engineering Procurement and Construction (EPC) projects for their international customers and also provide operational consulting and maintenance for industrial plants. Earlier, their subject matter and service experts have traveled to plants in different parts of the world on consulting assignments or to tackle operational issues. First, they would spend a few days analyzing the data, and then decide on the course of action, which added to delays and rising costs and lowered the possibility of first-time fixes.

Additionally, the challenge of operations-related data was twofold: the data was not always authentic and hence unreliable, neither was it available instantly. As a result, plant owners and operations experts had to trade off timeliness with authenticity.

Our customer partnered with GS Lab for a solution that would enable them to remotely monitor the process plants across the globe and help eliminate this trade-off, making authentic data available in real-time. Eventually, this would help cut costs on maintenance and improve the plant's overall efficiency.

Key aspects of this project.

Decoding customer requirements and challenges

With the introduction of emerging technologies like IoT and cloud, this would be a first-of-its-kind digitalization project for our customer. However, with machinery and operations in more than 100+ client plants across the world, implementation across all branches had their own set of challenges. Mapping each plant's varied configuration was a long and tedious process, and different parameters needed to be monitored. Besides this, the customer wanted the first targeted implementation to go live at the earliest. As soon as this was done, this solution would be used to collect data for predictive capabilities to be added in the next phase.

GS Lab's Solution

GS Lab's experts collaborated with the customer's teams to deep dive into the challenges, understand the existing processes and set the expectations, while probing to uncover vital information such as:

- Plant types
- Various processes at the plants
- The parameter limits of each process
- The best practices at plants

GS Lab's manufacturing experts and technical architects designed the system and then conducted various technical sessions with the customer's teams to explain the design, key features, sensor specifications and best practices.

ENWAT - Real-Time Asset Monitoring for Operational Efficiency

ENWAT is a real-time, IoT-enabled remote asset monitoring and management platform designed for various use cases across manufacturing, process industry, and utilities. This helps businesses optimize their asset utilization and avoid monetary losses. With intuitive UI and data visualizations, it helps uncover hidden, meaningful data patterns, which would otherwise be difficult to find. As a result, it enables businesses to focus on more important aspects and make informed decisions to stay ahead in the game.

Key features of the platform

Easy integration: It integrates with various off-the-shelf digital sensors, meters, industrial equipment and OT gateways so that the existing setup can be reused.

Inbuilt intelligence : This can detect anomalies and make predictions, allowing personnel to learn and control assets, and make strategic decisions aligned with the business.

Operational efficiency : It creates schedules, tracks the progress, controls and manages defaults, thereby building accountability.

Compliance management: ENWAT sets rules according to the operational standards, and is alerted when they're violated. This paves the way for seamless audits and compliance reporting with built-in templates.

Monitor on the go: This comes with web and mobile applications for anytime, anywhere access.

Asset health monitoring: It monitors assets' health through real-time location tracking, asset availability, and utilization reports.

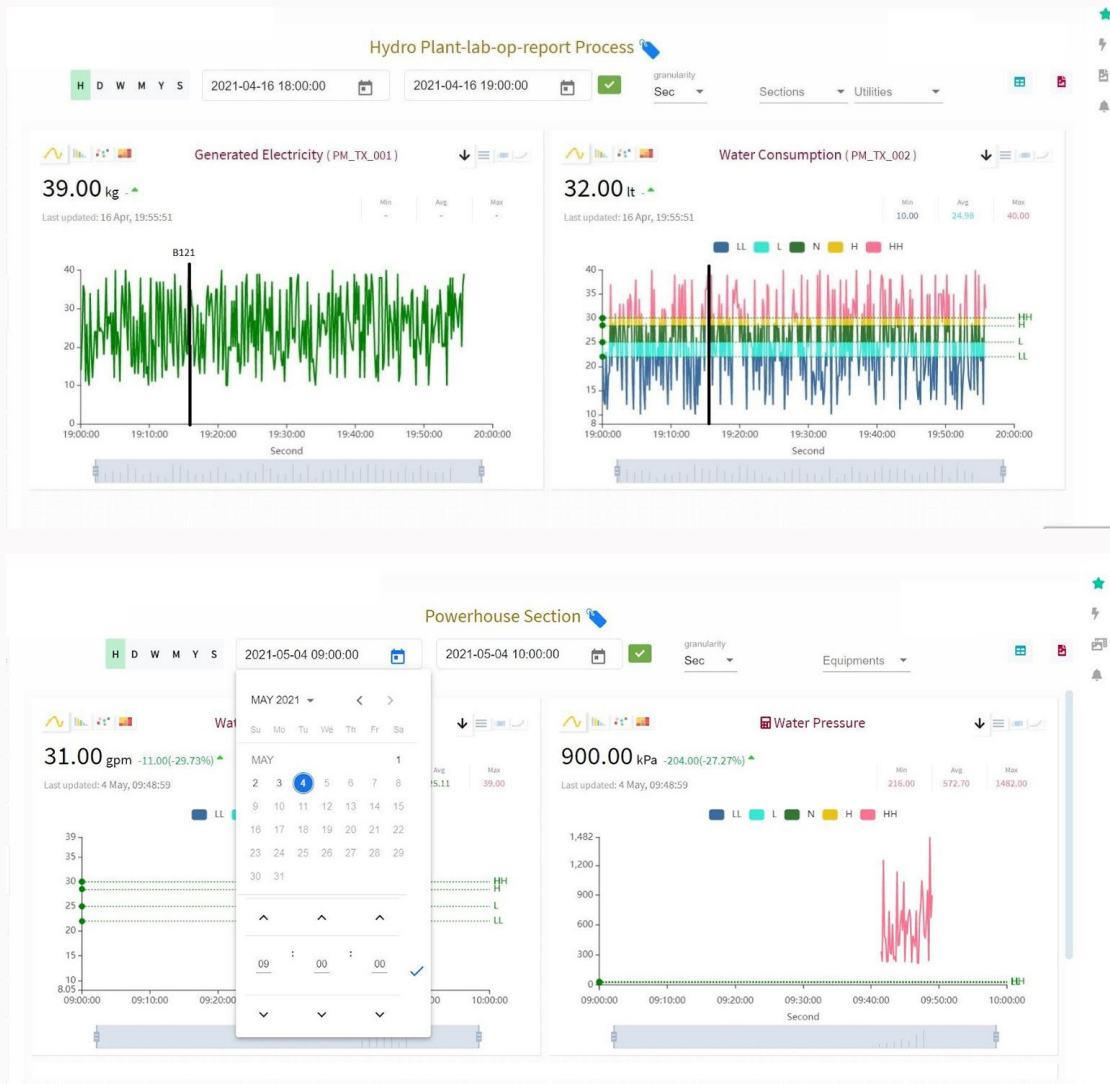
A Scalable and Customizable Architecture

GS Lab designed an architecture in which the core platform could be customized to newer plant configurations with minimal efforts. This also allowed easy onboarding of new plants.

A Deep dive into the Solution

Implementing this involved multiple steps:

1. IoTization of the plants
2. Gateway communication with ENWAT
3. Configuration of ENWAT display
4. Web and mobile application development that involved
 - a. Intuitive user interface with key charts, parameter trends and a multi-level drill-down view such as factory, section, subsection, and equipment for every plant
 - b. Role-based access control
 - c. Downloadable reports and analytics for presenting quick findings new plants.



A Winsome Web application

We developed a completely customized and feature-rich web application with more than 1,500 screens using NodeJS for the backend and Angular for the frontend. The intelligent sensors installed at the plants captured the accurate data and sent it to the application. In addition to this, the web application had role-based access, allowing engineers, on-site staff, and our customer's staff to log in securely and monitor the factory processes like parameters and deviations.

The application's user experience was simple — it displayed key charts and parameter trends, with a multi-level drill-down view concerning factory, section, subsection, and equipment. In addition, the users could view the analytics and download reports to gain insights. Now, our customer's personnel could monitor multiple plants and perform plant-to-plant comparisons at one go. Moreover, the reports were designed to be at the right level of abstraction depending on the intended audience — from plant operations experts to senior management and executives.

Real-time Alerts for Seamless Connectivity and Actions

In case of process parameter deviations, immediate email/SMS alerts can be sent to the designated personnel to take corrective actions. With remote and timely monitoring, the engineers could conduct all essential investigations from the central location and provide a faster solution. Using the web application, several alerts can be configured and sent to the mapped phone numbers to ensure the customer's various teams improve uptime and run the plan at optimum efficiency.

Delivering Operational Excellence and Seamless Scalability

With GS Lab's cloud-based solution, the customer's plants can be easily monitored from a central location. In fact, onboarding a new plant can be done quickly with a simple configuration. The real-time and accurate data availability and alerts ensures that any issue or variance at the plants get the right attention at the right time.

Now, consultants can study the plant parameters before leaving for the site visit, even before they start a consulting project. Knowing issues ahead of time helps identify the right service engineer with the right skills who can travel with the correct information and parts. This also goes a long way in improving the first-time fix percentage.

Our customer can now offer maintenance-as-a-service, allowing them to expand their business and add a new business service to their spectrum of offerings.

Great Software Laboratory (GS Lab) has been the technology partner of choice to 150+ organizations across North America, Europe and Asia-Pacific for over 18 years. Leveraging our expertise in 130+ tools & technologies, we have created 350+ 'first-of-its-kind' solutions to real-world problems. Our 'Beyond code' philosophy ensures that we not only push boundaries of existing technologies but also try out newer problem solving approaches to keep our customers one step ahead of their competitors. Our global team of 1600+ employees is adept at creating 'real value' at each stage of the customer growth journey, right from proof-of-concepts to completely scaled up products. For more information about our solutions & offerings, please visit www.gslab.com

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