42Q

SMART CONNECTED
MANUFACTURING
A Sanmina Division

Case Study

Robotics Manufacturing Digitized in One Month: Enhanced Traceability and Real-Time Visibility with 42Q.

In early 2025, Neuromeka, a leading robotics company, aimed to implement a Manufacturing Execution System (MES) to enhance visibility and control over the production of its flagship product line, Indy 7. The critical objective was to digitize manufacturing data, track assembly and quality status in real-time, and provide a unified data source for decision-making. Neuromeka had been relying on manual processes, which hindered efficiency and traceability. By deploying the 42Q MES solution on AWS cloud infrastructure in February 2025, Neuromeka successfully overcame these challenges and streamlined its manufacturing operations.

The Goal: Streamlining Production and Enhancing Traceability

Digitally transform and aim for comprehensive product tracking for the Indy 7 production line in just one month! Neuromeka aimed for a rapid and effective implementation of the 42Q Manufacturing Execution System (MES) to streamline operations, enhance data visibility, and ensure product quality. They needed to digitize their processes and establish a single source of truth for all stakeholders in a short timeframe.

Challenge: Overcoming Operational Inefficiencies and Data Management Hurdles

Disconnected workflows and manual data entry threatened to delay efficient production tracking. Neuromeka relied on manual recording of manufacturing data, which led to slow traceability and potential data inaccuracies. The lack of integration between work instructions and execution steps increased the risk of process deviations. To successfully digitize operations, achieve real-time visibility, and establish a single source of truth for data-driven decision-making, a modern MES solution needed to be implemented quickly. However, existing processes and systems hindered efficient tracking, risking delays and affecting overall productivity. Furthermore, with a diverse workforce, ensuring clear communication and accessibility of the MES for all employees was a key consideration.

Why 42Q?: Enabling Digital Transformation and Real-Time Data Visibility

Neuromeka selected 42Q for its scalable cloud infrastructure, real-time data capture features, comprehensive reporting tools, and support for multiple languages, including Korean. Its robust cloud-based MES capabilities, powered by seamless AWS integration, ensure real-time data visibility and enhanced traceability. This provided the agility and flexibility needed to quickly digitize their operations and establish a single source of truth for all stakeholders.

Approach:

- Strategic Implementation Team: A dedicated team was assembled to oversee the seamless integration of 42Q MES into Neuromeka's Indy 7 production line, ensuring alignment with key project objectives of data visibility and traceability.

- Real-time Data Capture via Production Workbench: The Production Workbench module was deployed to capture real-time data directly from operators, including work status, inspection outcomes, and detailed defect information, all securely stored within the AWS environment. The intuitive interface allowed operators to input data in their preferred language, enhancing accuracy and adoption.

- Enhanced Traceability with Label Engine: The Label Engine, equipped with barcode scanning, was implemented for precise serial and lot-level tracking of components and finished assemblies, providing robust product traceability throughout the production lifecycle.

- Integrated Work Instructions for Execution Efficiency: Work instructions were integrated directly into the MES, granting operators immediate access to relevant documentation at each step, thereby reducing process deviations and enhancing execution efficiency. The availability of work instructions in Korean proved particularly useful for a segment of the workforce, ensuring clarity and minimizing errors.

- Cloud-Based Scalability and Security with AWS: 42Q MES was hosted on the AWS cloud infrastructure, ensuring scalability to support future growth, reliability for continuous operation, and robust data security, while facilitating real-time visibility and comprehensive reporting.

The Results:

- Comprehensive traceability was achieved for all units and subassemblies across the entire production lifecycle.

- Manual data entry was significantly reduced, leading to faster and more accurate record-keeping processes. The ability for employees to use their preferred language within the system contributed to higher data accuracy and user satisfaction.

- Responsiveness to quality issues improved with faster response times due to real-time visibility.

- Executive reporting was streamlined through automated generation of key performance indicators.

- The availability of the system in Korean facilitated smoother adoption and more effective utilization by Korean-speaking employees, contributing to overall productivity gains.

- Daily production oversight was enhanced with an intuitive and real-time live dashboard interface.