

SMART FACTORY ASSEMBLY USE CASE

Improve Quality

Consistent product quality is the foundation of customer satisfaction and long-term success in manufacturing. Yet quality issues often arise from unclear instructions, manual errors, or lack of process control – especially in complex or manual assembly environments.

ELAM Solutions helps manufacturers raise quality standards by guiding operators with step-by-step instructions, validating each critical process step, and capturing quality data in real time. From intelligent fastening and visual inspections to digital checklists and traceable workflows, ELAM ensures that every product is built right the first time.

CUSTOMER

- **Founded:** 1950
- **Employees:** Approximately 800 in Switzerland.
- **Products:** Designs and manufactures armored wheeled vehicles.

INITIAL SITUATION / CHALLENGE

Before implementing Smart Factory Assembly solutions, the customer relied heavily on **paper-based processes** in their production and quality assurance workflows. For every quality-relevant assembly step, workers were required to **manually sign off** in physical folders to confirm completion and compliance. Additionally, **all quality documentation was filled out by hand**, creating significant administrative effort. This approach led to several key challenges:

High time consumption for both assembly workers and quality personnel:

- **Risk of incomplete or illegible documentation.**
- **Limited traceability and efficiency** in audit and review processes.
- **Delays due to printing, distributing, and archiving physical documents.**

The manual nature of the process was not only labour-intensive but also limited the ability to scale or improve transparency in production.



PROJECT GOALS

The primary objective was to **eliminate the paper-based quality reporting system** – internally known as the “red folder” – from the assembly area.

To achieve this, the company set the following goals:

- Digitally capture all quality-relevant information directly at the workstation.
- Ensure traceability and compliance without relying on physical documentation.
- Reduce administrative workload for both assembly workers and quality personnel.
- Streamline documentation and audit readiness through structured digital workflows.

The goal was not only to modernize quality control but also to increase overall process transparency and efficiency in a high-reliability manufacturing environment.

SOLUTION

To digitalize the quality assurance and eliminate paper-based processes, the customer equipped **all 26 assembly workstations** with modern **tablet-based ELAM Solutions**. These tablets serve as the central interface for all production-relevant information and user interactions.

Key components of the solution include:

- **Tablets at each workstation** displaying real-time assembly progress, part lists, and technical drawings sourced directly from the ERP system.
- **Digital checklists and user identification** fully managed by ELAM, replacing manual signatures and paper documentation.
- **Integration of test equipment** such as **brake test** and **track test devices**, with test results automatically captured and logged via ELAM.
- **Tablet-integrated scanning functionality** for easy barcode scanning during assembly and documentation.
- **Printer integration** to generate chassis serial number labels and other required physical outputs when needed.

This comprehensive solution ensures end-to-end digital control of the assembly and quality processes, improving traceability, reducing manual effort, and enabling real-time feedback and process monitoring.

IMPLEMENTATION

The implementation of ELAM was **fast and straightforward**, thanks to the plug-and-play nature of the system. The only setup requirement was to connect the tablets at each of the 26 workstations – once connected, ELAM was ready to operate and display production-relevant data.

Key implementation aspects included:

- **Quick rollout** across all workstations with minimal disruption to ongoing production.

- **ERP integration** handled in collaboration with the internal SAP specialists to ensure seamless data exchange (e.g., part lists, assembly status).
- A unique challenge arose at the **final test-drive station**, where assembly feedback needed to be captured **while the vehicle was moving**. This was resolved by equipping the tablet with a **SIM card**, allowing real-time data transmission to ELAM even during mobile testing operations.

Overall, the implementation was highly efficient and well-received by the project team, enabling the customer to achieve a rapid transition to digital quality documentation.

RESULTS / BENEFITS

The introduction of ELAM Solutions and tablet-based workstations delivered measurable improvements in both efficiency and quality:

- 15 minutes saved per vehicle by eliminating the time previously spent on printing, filling out, and managing paper-based quality documentation.
- 20% reduction in rework rate at the dedicated rework stations, thanks to real-time data capture, clearer documentation, and improved process transparency.
- All quality data now stored digitally, eliminating the need for archiving large volumes of physical folders in the cellar and freeing up valuable storage space.
- Increased data accuracy and traceability, ensuring compliance and easier audit readiness without manual paperwork.
- Improved user experience for assembly workers and quality teams, with intuitive digital workflows replacing tedious manual steps.

These results underline the value of a fully digital quality process – enabling time savings, reducing errors, space savings, and supporting a culture of continuous improvement in a high-precision manufacturing environment.



ELAM helps us to have a fully digital workflow which leads to 80% less rework rate. The always up to date documentation on the workstations also allow us to make quick changes in the product variant with low training effort for the worker in the line.

Production Planning