

CASE STUDY: CHALLENGES & SOLUTIONS FOR AEROSPACE LEADER



About the Customer

The customer is one of the most recognized names in Aerospace & Defense. The American multinational corporation designs, manufactures, and sells airplanes, rotorcraft, rockets, satellites, and missiles worldwide.

Project Summary

Engineering Industries eXcellence's experts worked with Siemens and the customer to provide the critical Manufacturing Execution System (MES) technical expertise and skills required to support the heavy automation of their complex fuselage build process in a highly integrated and data-rich environment.

Project Activities

- » Supporting the complex design and implementation of the integration between Siemens Opcenter Execution (SIMATIC IT) MES and PLC-driven automation systems
- » Developing a custom web portal to reduce overhead related to MES system use and increase overall levels of data transparency
- » Leading full system integration testing between MES software and automation systems
- » Providing extensive, on-site system support, user training and documentation for the new IT infrastructure

Business Drivers

- » Reduce time-to-market
- » Reduce potential for costly rework
- » Reduce costs related to production
- » Improve employee health by automating repetitive, strenuous tasks
- » Improve data collection capability
- » Improve insight into existing production process
- » Reduce dependency on human operators
- » Ensure government compliance and quality standards

More About The Project

Brought in as one of the leading practices for Manufacturing Execution Systems (MES) in the world, Engineering joined a world-class team of experts to help the customer transform and digitalize the highly complex manufacturing process of their aerospace fuselages. The customer's need can be broken down into 5 distinct goals: First, to reduce the amount of physical strain on employees by automating repetitive, physically stressful tasks. Second, to increase process efficiency. Third, to minimize rework, inventory, time-to-market, and as a result production costs. Fourth, to gain manufacturing intelligence into the new process, including machine efficiency and Overall Equipment Effectiveness (OEE). Finally, to automate tracking and tracing of every action within the process, with all data recorded, stored, and available for viewing in an understandable manner.

Based on an implementation of a Siemens Opcenter Execution (SIMATIC IT) MES, the fully integrated solution our team delivered to the aerospace leader consisted of a huge number of moving parts:

- A customized user-facing web portal that sits on top of the MES. This web portal is the way in which users interact with the entire system. From here, users can create orders, send work instructions to individual pieces of equipment, view data returned during work executions, etc.
- When a user creates an order, the MES translates the order parameters into a form easily understood by the various pieces of equipment involved in the process. This translation is then passed to the Plant Coordinator, a Siemens PLC that acts as the "communication brain" of the entire process.

- The Plant Coordinator passes the instructions on to the PLC that controls the individual piece of equipment needed to execute the action. Eventually, the equipment receives the instruction and starts to perform the work specified.

While this seems like a fairly simple workflow, you must consider that in many cases, multiple instructions are being passed around at any given time. This IT ecosystem must keep track of what is happening within the process at all times to ensure that there are no crashes or other detrimental effects to performing work instructions. This involves a detailed understanding of where equipment currently is, what it might look like if a work instruction is executed, and how all of this fits into the overall process.

Engineering's Advantage

Why was Engineering chosen as the best partner and system integrator to support this global aerospace leader's ambitious digital initiative? Our consultants have a unique skillset that brings together the power of Opcenter Execution (SIMATIC IT) with the simplicity and usability of web-based programming, which allowed us to produce a system that is both able to perform complex logic and make it as simple as possible for the end user. Thanks to our global capabilities and resources, we also had the flexibility to have consultants on-site for implementation and testing purposes. Thanks to the solution delivered by our team, the customer is now one exciting step closer to lights-out manufacturing - a seamlessly automated and fully transparent manufacturing process from beginning to end.

Would you like to learn more about this customer case study? Contact us at info@engusa.com.

ENGINEERING Industries eXcellence Global

Industries eXcellence is a division of the Engineering Group, a global software maker, system integrator and provider of innovative technology solutions and services. Our division specializes in the digital transformation of the manufacturing and transportation sectors. We design, build and implement solutions that drive process automation, operational efficiency, supply chain optimization and intelligent data analytics for leading industrial enterprises worldwide.

CONTACT

 Engineering USA
55 W Monroe Street
Suite 2575
Chicago, IL 60603

 +1 630.625.0045

 info@engusa.com

www.engusa.com