

CASE STUDY: REALIZING THE DIGITAL FACTORY FOR DEFENSE SUPPLIER



About the Customer

The customer is an American manufacturer and innovator. By the end of World War II, they were the largest aircraft manufacturer in the U.S. Since then, they have moved away from assembly of finished aircraft, becoming a specialized component manufacturer for aerospace and defense. They have been the supplier of pumps, valves and nuclear propulsion systems for every submarine and aircraft carrier ever commissioned by the U.S. Navy. In 2018, they won a huge contract to produce the main propulsion steam turbines for the new Ford aircraft carrier class.

Project Summary

The customer had the vision to create a Digital Factory, and Engineering was brought in as their strategic partner to help navigate this transformation. Our Industries eXcellence team defined and delivered a technology roadmap and for their future factory, then implemented the solutions they needed to optimize processes and achieve true paperless manufacturing.

Project Activities

- » Led an Industry 4.0 assessment to identify gaps, define priorities and deliver a solution maturity roadmap and implementation plan for their Digital Factory.
- » Deployed Siemens Teamcenter Manufacturing to consolidate and manage all product design, engineering and manufacturing data in a single system.
- » Executed challenging legacy data migration to ensure customer did not lose 80 years of history in new system.
- » Implemented and integrated digital tools for Direct Numerical Control (DNC) and Electronic Work Instructions (EWI) to fully automate processes when sharing information with operators and machines on the factory floor.

Business Drivers

- » Enable powerful, accessible, reliable and flexible systems
- » Minimize investment to achieve transformation
- » Create one clear master data source
- » Enable closed-loop manufacturing information feedback to upstream processes as well as downstream
- » Optimize use of legacy information
- » Transition to 100% digital solutions for factory processes

More About The Project

Because they are tasked to produce some of the most advanced and complex products on the market for their customers, including the U.S. government, the customer has always been committed to the continuous improvement of their processes and methodologies. In the last few years, in order to take advantage of the opportunities digitalization had to offer, the customer launched an exciting initiative aimed at modernizing their manufacturing processes in order to make the highest quality parts in the most efficient way. The customer had the vision to create a Digital Factory, and Engineering was brought onboard to guide them through this monumental transformation.

» Industry 4.0 Assessment & Roadmap

We first led an in-depth assessment across their existing processes, systems and business groups, defining and delivering a detailed Industry 4.0 solution roadmap to guide their journey towards achieving their vision. Now that the customer had a plan, it was time to start implementing it.

» A Single Source of Truth for Manufacturing Data

The first goal for the Digital Factory was the centralization and standardization of their manufacturing data, which was scattered across a number of different systems. To achieve this, we leveraged Siemens Teamcenter Manufacturing to deliver a powerful and secure information management system that would be the single point of truth for all the data needed to produce their products. This solution also automated and facilitated revision control and change management between engineering, planning and the factory floor.

» Legacy Data Migration

The deployment of Teamcenter was coupled with a challenging data migration effort, ensuring that the customer would not lose over 80 years of legacy data in their new system.

» Direct Numerical Control in the Digital Factory

The next goal for the Digital Factory was the elimination of paper and the optimization of execution on the manufacturing floor. We implemented two new systems, both integrated with the central Teamcenter repository, in order to completely automate the sharing of information with machines and workers in the plant. Shop Floor Connect (SFC) for Teamcenter provided the customer with a Direct Numerical Control (DNC) solution that enabled their operators to access and run the right production programs directly from machine interfaces on the manufacturing floor.

» Electronic Work Instructions in the Digital Factory

The second tool implemented was Electronic Work Instructions (EWI). EWI enabled the customer to automatically pull the latest information from Teamcenter, generate digital work instructions and share them directly with the execution teams in the Digital Factory. Work instructions could be enhanced with interactive 3D models, videos, images and other resources to further support and improve the performance of their factory workforce. Now, instead of fat binders being passed around, operators can access all the information they need to execute their tasks quickly and correctly on computers or tablets via a user-friendly interface.





Engineering's Advantage

By working closely with the customer's stakeholders at each phase, tackling inefficiencies from every angle and creating a seamless integration between all manufacturing systems, Engineering helped the customer take a giant leap towards achieving true paperless manufacturing. With their new Digital Factory running, the customer can now confidently continue to innovate and produce the most advanced and reliable products for their leading customers. With over 10 years of experience implementing Industry 4.0 solutions for manufacturers, Engineering's Industries eXcellence Global team has established a depth of expertise and understanding of industry-specific challenges, standards and solutions that Aerospace, Space & Defense customers could not find at any other company in the world.

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

The Customer Speaks

"I was impressed with the organization and technical expertise that Engineering brought to both our Teamcenter Manufacturing and Data Migration projects. Both teams were appropriately staffed and operated efficiently - from my perspective there appeared to be very little wasted effort. The projects were completed on time, on scope and on budget, which has enabled our business to make a significant step in system functionality."

*- James Kurasch
Digital Transformation Manager*

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.

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