

CASE STUDY: ADVANCED PLANT SIMULATION FOR SHIPBUILDING



About the Customer

The customer is an American manufacturer and industry-leading shipbuilder of commercial vessels. The customer also has an ongoing agreement to produce combat ships for the U.S. government's defense fleet. Internationally recognized for their innovative and highly efficient subassembly and assembly-line manufacturing techniques, the customer is known to build some of the most technologically advanced vessels on the planet.

Project Summary

Engineering's Industries eXcellence team delivered a project leveraging manufacturing plant simulation to help the customer virtually model and evaluate the layout and activities of their shipyard in order to increase foresight and efficiency in their complex shipbuilding assembly and production processes.

Project Activities

- » Designed and created a plant simulation model of the customer's entire shipyard and manufacturing process leveraging Siemens Tecnomatix Plant Simulation software
- » Executed an in-depth analysis of the designed model and simulation results to help the customer identify process improvements and bottlenecks
- » Delivered a final presentation and report to customer stakeholders detailing the project and including a demonstration of the designed model
- » Provided training documentation and onsite training for the customer's software end users

Business Drivers

- » Improved assembly build efficiency
- » Improved order promising and prediction of module completion dates
- » Insight into inefficiencies in product storage and idle times
- » Improved allocation of workforce and resources to ensure on-time completion dates
- » Enabled forecasting of both known and unknown delays against product delivery schedule

More About The Project

Before our Industries eXcellence team of experts began working with the customer, the leading shipbuilder was looking to address a number of areas for improvement in their shipyard and manufacturing processes:

- » **The customer's entire ship pre-assembly and construction process was based off a pre-determined hull launch date. Flexibility for when to start fabrication of a ship was limited due to this constraint. Any sort of delays (known and unknown) during hull production caused costly issues downstream in the process.**
- » **The flow of physical ship modules within the shipyard varied widely and depended on a number of continuously changing factors, such as workstation availability and storage constraints. Managing these workflows was critical to maintain continuous construction of the modules as well as to keep costs under control.**
- » **Allocation of human resources was a major concern at the shipyard. Accurately scheduling workers on a daily basis proved difficult because the quantity of workers needed per module varied by hour, day and even week, as did what could be executed on specific modules at specific phases of construction.**

At the time that we began working with the customer, it took the shipyard approximately 2 years to launch a hull. Because the enterprise based the manufacturing and construction dates for each ship by the hull launch date, it was critical for the customer to be able to evaluate how delays in one part of the process would affect processes downstream. How could they understand whether or not a delay would impact a promised production deadline?

Thanks to our established expertise in manufacturing simulation technologies, the customer partnered with Engineering to help leverage plant simulation tools in order to better understand and improve the efficiency of their shipyard and assembly build process. Our Industries eXcellence experts spent over 2 months gathering data and information covering all of the structures and processes within the complex shipyard. Our team then used Siemens Tecnomatix Plant Simulation software and the data gathered to design and build a complete simulation model of the customer's shipyard, including their entire manufacturing process and workflow.

Engineering's Advantage

In the short-term, the simulation model delivered to the customer by Engineering provided a virtual environment in which the customer could study their current ship assembly process in order to understand if they would or would not meet their scheduled launch dates. If not, the model also enabled the customer to run "what if" scenarios to identify and evaluate changes which they could then implement in their shipyard in order to improve processes and meet production deadlines. Most importantly, the simulation model for the shipyard is a flexible, living and risk-free digital tool that the customer can augment, modify and leverage in the years to come. As a result of this project, the customer will be able to drive continuous improvements in their shipbuilding processes and products and continue to protect the industry-leading name they have built in the last 100 years.

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

ENGINEERING Industries eXcellence

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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