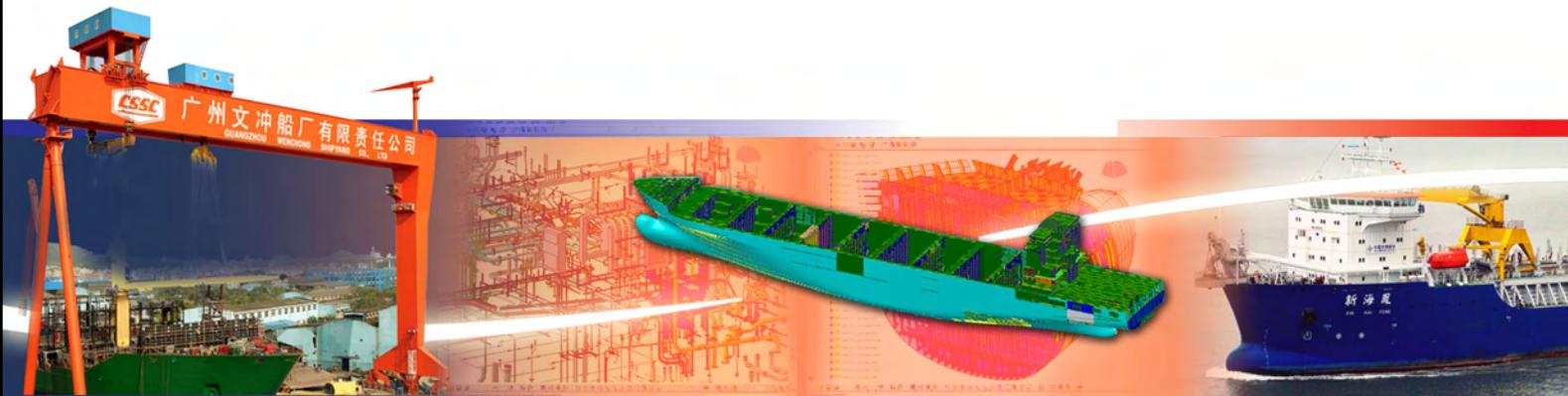


# Guangzhou Wenchong Shipyard

Enhancing productivity and quality with CATIA and ENOVIA



## Overview

### ■ Challenge

*Guangzhou Wenchong Shipyard wanted to improve efficiency of its design and production processes and triumph in the competitive shipbuilding market.*

### ■ Solution

*The company selected CATIA and ENOVIA VPLM for its 3D collaborative design and lifecycle management capabilities.*

### ■ Benefits

*Guangzhou Wenchong shipyard has improved design efficiency and accuracy by 15% and reduced the number of change order requests by 50%.*



*"With CATIA, we've reduced piping system design from five months to three to four months. We've also improved efficiency and accuracy by 15%, reduced change order requests by 50%, and increased our competitiveness on the market."*

Lin Hongshan  
Vice-General Engineer, GWS



### Leading shipyard in souther China

Guangzhou Wenchong Shipyard Co. Ltd., (GWS), part of the China State Shipbuilding Corporation, is a state-owned company based in southern China with 2200 employees. GWS specializes in the production of full container ship series, dredger series, oil tankers, and multi-purpose cargo ships.

One of the challenges facing Chinese shipbuilders such as GWS is the increase in raw material and energy prices from the beginning of a project to the moment it is completed. Chinese shipbuilders also face stiff competition from Asian competitors in Korea and Japan.

To meet these challenges, China's shipyards recognized the need to turn to advanced product lifecycle management (PLM) solutions to streamline engineering-to-production processes. Consequently, GWS turned to Dassault Systèmes (DS) to help it transform its development

processes with the latest in 3D design, process management, and manufacturing technologies.

### Enhance efficiency and reduce costs

DS PLM solutions provide a collaborative work environment where GWS engineers can efficiently design a ship's plates, structural systems, and connections. The company has shifted from a 2D design approach to one based on 3D. "DS PLM has enabled us to optimize our production process, leading to shorter development lifecycles for our ships. This is the value we bring to our customers," said Lin Hongshan, Vice-General Engineer, GWS.

GWS increasingly produces ships, such as dredgers, for the Chinese domestic market. Dredgers are usually ordered in small quantity, sometimes just one ship at a time, which requires lead times as short as three to four months. This presents a serious challenge to GWS' design and production teams.



GWS chose CATIA's ship design modules to streamline its design processes and meet specific shipbuilding requirements from initial concept to detail design. For example, CATIA provides a set of tools that enable structural designers to efficiently complete their preliminary draft before proceeding to detailed design. Engineers can then complete the design of the ship's heavy structures with realistic plating and stiffening elements. CATIA also provides industry-specific features to create hull-structure detailed parts. The full integration between CATIA modules enables GWS to easily retrieve design block information to perform detailed design of the structure.

"In the past, we spent RMB300k (€30k) to create a mockup so that the client could visualize our design," said Hongshan. "But now with 3D digital mock-ups, clients can pre-visualize our design virtually, which eliminates the need for physical mockups. For engineers, managers and customers to see a digital model and lifecycle simulation of a ship before production begins is not only an unforgettable experience but essential to eliminating misunderstandings and errors."

In addition to hull structure design, GWS uses CATIA to design ship fluid systems, thanks to an array of dedicated tools for piping and HVAC design. For instance, CATIA has specific functions for 2D-diagrams that provide specifications for

both piping and HVAC routing. Users can define connections across disciplines, and these connections can be analyzed and tracked within the PLM environment. "With CATIA we have reduced piping system design from five months to three to four months," said Lin Hongshan. "We have also improved efficiency and accuracy by 15%, reduced change order requests by 50% and increased our competitiveness on the market," said Hongshan.

#### **ENOVIA enhances collaboration and streamlines workflow**

The shipbuilding industry differs from other manufacturing industries in that projects require specialized technology and can involve hundreds of designers collaborating together. "With data increasing almost exponentially, it has been a baffling problem for us to manage product BOMs and design data," said Hongshan. "To improve this situation, we implemented ENOVIA VPLM to manage all our data on two of our new ships. We also use ENOVIA to manage the design data for the 2800TEU container ships and large sized druggers."

With ENOVIA VPLM, GWS is now able to create a master bill of materials (BOM) for each ship under construction. The master BOM is then broken down into 'Project BOMs' that detail all the parts for a particular project so that data can be securely accessed in real-time. In contrast to

practices commonly used within a traditional PDM system, in-work product structures, digital mockups and engineering BOMs are directly accessible in the ENOVIA database to construction planners or customers before a design release, providing valuable insights into on-going project development and giving construction planning a head start.

"Although this is just the beginning, we have noticed improvements since we started using ENOVIA. This encouraging news confirms that we are moving in the right direction and we will continue to expand the use of ENOVIA in the future," said Hongshan.

**"For engineers, managers, and customers to see a digital model and lifecycle simulation of a ship before production begins is not only an unforgettable experience, but essential to eliminating misunderstandings and errors."**

**Lin Hongshan**  
Vice-General Engineer, GWS



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