



STX FRANCE, FRANCE

Key Facts

Company: STX France

Website: www.stxeurope.com

Industry: Shipbuilding

Country: France

Products Used:

- Intergraph Smart® Yard
- Intergraph Smart 3D

Key Benefits:

- Better quality design and detailed design
- Integration of project deliverables in the different phases of the project lifecycle
- Reduce lead time (modifications) and check-off
- Improved efficiency and coordination between different disciplines

STX FRANCE STRUCTURAL FIELD COOPERATION TO ENHANCE INTERGRAPH SMART® 3D

The new and improved features place the tool as the most advanced and efficient 3D design tool for the whole project lifecycle

Owned at 66.6% by STX Europe – itself a 100%-owned subsidiary of the Korean STX Business Group – and at 33.3% by the French state, STX France SA is a designer and builder of high added-value ships. Two shipyards are part of STX France, one located in Saint-Nazaire with 2,100 people, and the other one in Lorient with 110 people.

IDENTIFYING GOALS

The engineering and shipbuilding expertise of the STX France shipyard has been internationally renowned for 150 years on the complex ship market (passenger ships from 30,000 to 160,000 UMS navy ships). The company has in-house expertise in naval architecture and engineering, mastering the entire value chain, from design to fabrication, integration, and services. The scope of building one of these ships is huge. For an OverPhamax cruise ship (1,650 passenger cabins), 1 million design hours are needed, which takes 20 months. It requires 250,000 steel parts and 30,000 tons of steel (four times the weight of the Eiffel Tower). Manufacturing and assembly takes 15 months, for a final weight of 55,000 tons.

STX France has been using CAD systems for more than 25 years, but it required an integrated system to tackle all phases of construction, from basic and detailed design, to industrialization, panel cutting, and panel pre-outfitting. A more integrated system addressing the whole project lifecycle would increase efficiency, reduce errors, and speed up the project, enabling STX France to be more competitive in a global market where Asia Pacific shipyards are leading the way in new orders.

“The tools we used have reached their maximum capacity,” explained Paul Lemoine, Hull CAD Expert at STX France. A new integrated system would provide STX with the opportunity to work in a multi-discipline environment, reinforce transversal integration (steel hull/piping/electricity/accommodation/HVC), and would add value to different tasks by the integration of rules and by reducing time-consuming post-control activities. After benchmark research, STX France chose Intergraph Smart® Yard, and particularly Intergraph Smart 3D as its design tool for the future.



OVERCOMING CHALLENGES

Once the tool was chosen, there was a realization that some co-development needed to happen to ensure the solution could be competitive in the shipbuilding sector for many years to come. The work focused on improving the catalog, hull structure, process optimization, and accommodation.

To ensure the product achieved the added value sought by the customer, Hexagon PPM and STX worked together to create complex plate geometry, member positioning, parametric objects creation and plane by three-point features, among other developments. The co-development team also worked on assembly shrinkage, 2D Sketcher, and item split system and integration with topology. Other features subject to development included assembly bounding box optimization, draft drawing, geometry for offline programming tools, grids, panel line geometry, plate jig, and templates, POSNO and naming rules, plus split profiles by openings or temporary openings features were also included.

“After these efforts, we trust Smart 3D to efficiently design high added-value vessels. We are confident that this collaboration has provided us with the most innovative and efficient solution for our core business,” said Mr. Joseph-Marie Pineau, Head of the Hull Engineering Division.

REALIZING RESULTS

Based on Hexagon’s “State of the Art” technology, the two companies assigned dedicated teams to ensure that developments were well on track. These developments, which were tested and also verified by end users, included:

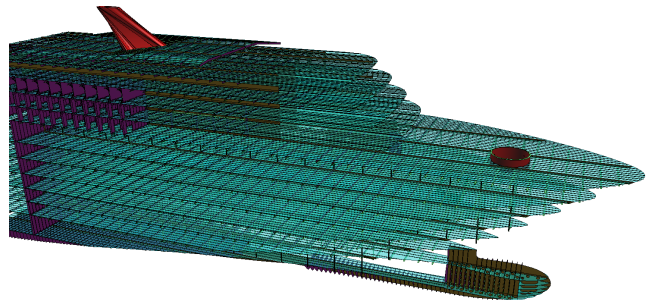
- Parametric objects: Where holes are created using S2D sketcher, with few constraints, the goal was to create holes with constraints on structural objects, which were created directly on the 3D mockup.
- Light detailing: Before changes were introduced, users had to detail all connected objects, including unnecessary parts, via Detailing Task. The goal was to detail objects in structural requirements to achieve integration and a better classification.

- Complex plate geometry: Initially, most of the boundary description was based on S2D description. The goal was to improve the use of Advanced Plate System (APS) and topology in the 2D sketcher. In addition, specific surfaces were imported via dedicated software.
- Member positioning: Initially, the final position of an object was not linked with the structural objects, which was problematic in case of introducing changes in the design. The goal was to improve the feature flexibility to accurately place objects with geometrical constraints on structural objects.
- Split root systems: Initially, the object description was attached to few root systems. The goal was to enable concurrent design and reduce the number of objects per system.

These improvements have enabled STX to reach the level of confidence required to manage a unique CAD model (including all businesses), from Basic Design to Manufacturing.

MOVING FORWARD

STX will now focus on the development of STX interfaces with automated production lines to optimize processes and streamline benefits. After a final certification, STX will launch an integration phase, which will deal with the interface to manufacturing tools, such as Nesting, Offline Programming tools, and ERP. In addition, the company will work on Smart 3D customization to address STX design efficiency and to improve the design to production cost rate.



ABOUT HEXAGON

Hexagon is a global leader in sensor, software and autonomous solutions. We are putting data to work to boost efficiency, productivity, and quality across industrial, manufacturing, infrastructure, safety, and mobility applications.

Our technologies are shaping urban and production ecosystems to become increasingly connected and autonomous — ensuring a scalable, sustainable future.

Hexagon's PPM division empowers its clients to transform unstructured information into a smart digital asset to visualize, build and manage structures and facilities of all complexities, ensuring safe and efficient operation throughout the entire lifecycle.

Hexagon (Nasdaq Stockholm: HEXA B) has approximately 20,000 employees in 50 countries and net sales of approximately 3.8bn EUR. Learn more at hexagon.com and follow us @HexagonAB.