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Arleigh Burke Class Guided Missile Destroyer. Image courtesy US Navy.

ShipConstructor software is increasingly being used for naval projects and this has helped the company stay strong in the current economic climate.

During the last year one of the most closely followed news stories has been the competition between the General Dynamics and Lockheed Martin teams over the contract to build the rest of the US Navy's fleet of 55 Littoral Combat ships. While the competing designs are quite different they have something in common; they were both modeled using ShipConstructor.

ShipConstructor's usage on both projects should come as no surprise since the vast majority of the US Navy's future fleet will be modeled with ShipConstructor software.

For instance, Northrop Grumman has recently purchased a significant number of ShipConstructor licenses for the complete detail design of the DDG-113, 114, and 115 Arleigh Burke Class Guided Missile Destroyers.

Northrop Grumman has already used ShipConstructor on various other US Naval projects such as on the DDG-1000 Zumwalt Class Destroyer and the LHA-6 Amphibious Assault Vessel.

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Oil Rigs Delivered In Record Time

Only 13 months after initiating training on ShipConstructor CAD/CAM software, Lamprell Energy launched the LT-116E Jack-Up Rig. The entire project was completed in only 18 months.

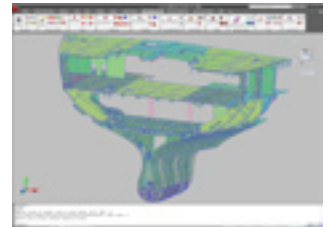


Other shipyards have achieved large gains in productivity as well. This is noteworthy in the current economic climate due to constant pressure to reduce costs.

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Best-of-Breed-Software

A best-of-breed approach to shipbuilding software maximizes effectiveness according to a white paper released at the ICCAS (International Conference on Computer Applications in Shipbuilding) held in Shanghai.

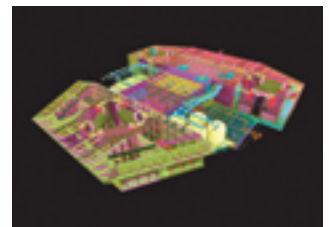


The paper's author, Darren Larkins, Chief Technology Officer for ShipConstructor Software Inc., cogently argues it is unlikely any single piece of software encompassing all aspects of marine design and production could ever be best in each area.

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Complex Jack-Up Rig Construction

ShipConstructor software was used for the 3D modeling of one of the world's most complex oil rigs.



Drydocks World – Southeast Asia Pte. Limited (DDW-SEA) used ShipConstructor on Jack-Up Drilling Rig Hull L202 PERRO NEGRO 6 which was delivered to Saipem (Portugal) Comercio Maritimo Sociedade Unipessoal LDA.

The rig is based on a GustoMSC design for a leg fixation, leg jacking and cantilever x-y skidding jack-up. The detailed CAD/CAM work was done in ShipConstructor based on the basic design plans and system diagrams from GustoMSC.

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Defense Projects

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Austal has used ShipConstructor for the LCS-2 and is also using it for the US Navy's Joint High Speed Vessel. Meanwhile, Marinette Marine (a Fincantieri company) has used ShipConstructor for the LCS-1 and the Improved Navy Lighterage System (INLS).

ShipConstructor is being used on Coast Guard vessels as well—everything from Sentinel Class fast response cutters and 87' patrol boats for the Republic of Yemen to the largest cutters in US Coast Guard History—the 418' Legend Class Bertholf & Waeshe.

Over the last few years ShipConstructor has increasingly been involved with Navy-related programs to advance shipbuilding productivity. ShipConstructor provided advice to the Canadian government regarding the best way to proceed with its proposed \$40 billion fleet renewal plan. ShipConstructor and its affiliate, Navware Canada Inc., also organized a Canadian conference regarding modern shipbuilding best practices attended by officials from government and industry.

Overseas, ShipConstructor was the sole CAD/CAM vendor invited to speak at the Offshore Patrol Vessel Conference in Lorient France.

ShipConstructor also plays an increasingly active role in the United States Navy-funded National Shipbuilding Research Program (NSRP). Patrick Roberts, Director of Operations for ShipConstructor USA was recently reelected Vice President for the Business Process Technologies Panel and other staff members such as Deputy CEO Darren Larkins have also been involved in numerous NSRP projects which have allowed ShipConstructor's development team to closely understand the unique challenges regarding naval ship construction.

ShipConstructor NSRP Projects over \$1 million USD:

- Large Scale Computer Simulation Modeling System
- Practical Applications for Design for Producability
- Smart "As-Built" Models
- Shipyard Design Tool Enhancement I,II & III
- Modern Shipbuilding Design Courses
- Enabling Shipbuilding Interoperability (ISE-6)



Austal's bid-winning concept for the Joint High Speed Vessel. Image courtesy US Navy.



Sentinel Class Cutters being built by Bollinger. Image courtesy US Coast Guard.



Legend Class National Security Cutter USCGC Bertholf. Image courtesy US Coast Guard.

ShipConstructor Enhances Presence in Italy

ShipConstructor Software Inc. (SSI) has enhanced its presence in Italy with the addition of an Italian-language certified Distributed Systems instructor, Giuseppe Fanello of inNave SRL (www.innave.it).

Mr. Fanello is now certified to train Italian-language clients on the use of ShipConstructor Distributed Systems modules: Pipe, HVAC and Equipment. He is also certified to provide training for modules: Hull/ShipCAM, Structure, Penetrations, ProductHierarchy, Weld, ManualNest, Automatic Nest, Profile Nest, Report, NC-Pyros and Flythrough.

Stefano Camattini of Tekno Consulting, (www.teknoconsulting.com) and Luca Rossi of Naos Ship & Boat Design also provide Italian-language training on several ShipConstructor modules.



"Italy has a proud shipbuilding tradition," says Michael Viala, ShipConstructor's Sales & Marketing Manager. "With the addition of Giuseppe Fanello we are better able to provide high quality service to our Italian-language customers."

Canadian Shipbuilding Industry Renewal

In the wake of the Canadian Navy's proposed \$40 billion fleet renewal plan, ShipConstructor has played an advisory role to both government and industry. In November 2009, ShipConstructor Software Inc. together with its affiliate, Navware Canada Inc., initiated the organization of the inaugural Canadian Conference on Modern Shipbuilding which brought the industry together. ShipConstructor drew on its global network of contacts to bring in expert speakers for the conference, then, after hearing their presentations, attendees discussed plans for a national R&D program, a human resources strategy, potential niche markets, innovation, education & training, and long-term government investment.

During the conference, ShipConstructor's Deputy CEO Darren Larkins shared the advice he had previously officially submitted to the Canadian Government. He argued that standardization on a common technology platform is a key component for creating a sustainable industry. Standardization based on the effective use of information technology would reduce the time needed for training and enhance collaboration. It would also lower costs of vessels by maintaining the connection between the information required for production and In Service Support (ISS). Larkins concluded by



Canadian Navy Frigate

noting that ShipConstructor was well positioned to help implement a common technology platform.

"We have developed a college-level shipbuilding curriculum," he said. "We have created an on-line collaboration portal for suppliers to share common parts. Our US subsidiary plays a key role in the US National Shipbuilding Research Program and we have helped some of the world's most innovative shipyards implement productivity enhancements."

Oil Rigs Delivered In Record Time

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In a paper delivered at the International Conference on Computer Applications in Shipbuilding (ICCAS) held in Shanghai, ShipConstructor's representative for China, Dr. Oskar Lee, explained how the shipyards he studied have managed to achieve impressive results.

According to his analysis, the most successful shipyards link the geometry and associated material data from 3D models to databases such as ERP systems so that information can accurately be shared and utilized by various departments to plan efficient production. In this manner, critical path issues are identified and resources effectively deployed.

His research also indicates that effective change management is important due to frequent modifications requested by owners and classification societies. To accommodate these changes, Dr. Lee observed that the most successful yards in his study utilize complete models consisting of geometric and attribute information. Each model was not merely a drawing or a series of drawings. Rather, the model was contained within a database from which drawings, machine cutting code and other information could automatically be derived and shared amongst various departments. This dramatically simplified the ability to accurately make changes, thus increasing productivity.

All of the shipyards in Dr. Lee's study used ShipConstructor software during the detail design process. Because ShipConstructor uses a data-rich 3D model capable of linking to other databases, the use of ShipConstructor was a key reason for the shipyards' high productivity in oil rig fabrication.



LT-116E Jack-Up Rig, Offshore Freedom



CJ46-X100D Jack-Up Rig, PERRO NEGRO 6. Photo courtesy Drydocks World.

Complex Jack-Up Rig Construction

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DDW-SEA shared the ShipConstructor Marine Information Model (MIM) across several disciplines to facilitate collaboration amongst various teams. The design and development involved staff in China, Holland, Indonesia, Norway, Thailand and Singapore.

"ShipConstructor has long been associated with the detail design of ships but has seen recent success in the offshore market with several high profile jack-up rig, semi-submersible and liftboat projects," says ShipConstructor's Deputy CEO Darren Larkins. "Our successes in shipbuilding can largely be attributed to our strengths in hull and structure modeling but due to our continued investment in distributed systems, we are now recognized as a complete package that can tackle even the most complex offshore projects."

PERRO NEGRO 6 is a new generation MSC CJ46-X100D Jack-Up Drilling Rig, equipped for high pressure, high temperature (HPHT) drilling environments, with the capability of operating at 350 ft water depth and 30,000 ft drilling depth. The design features a large VDL, extended deck space and 70 ft and 20 ft X-Y cantilever with an automated pipe racking system. The PERRO NEGRO 6 was built at the Drydocks World-Graha yard on Batam Island, Indonesia.

Best-of-Breed-Software

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Larkins begins his analysis by grouping the various types of shipbuilding software into what he calls an Integrated Shipbuilding Environment or "ISE".

He writes that with, "initial design, schematics, equipment design, visualization, clash detection, pipe flow analysis, and FEA, extensive specialized knowledge is required. As a result, companies who develop specialized products in these areas often create better products than what is available 'in-the-box' with a traditional ISE."

Logically then, to maximize shipbuilding effectiveness, the solution is to tie together various "best-of-breed" pieces of software. This necessitates the development of an accessible data architecture which can be facilitated via industry-standard relational databases for data storage, the use of the Microsoft .NET framework, the use of industry standard formats for data exchange and the development of Application Programmer Interfaces (APIs).

Increasingly, the shipbuilding industry is demanding that software incorporate all of these aspects allowing compatibility with various best-of-breed programs. Larkins says ShipConstructor is committed to supporting an open architecture to meet this industry-driven demand.

There are numerous industry examples of successfully adopting the best-of-breed approach with a prominent case being Austal Ships, the world's leading designer and manufacturer of high speed vessels.



Austal's newest Trimaran ferry. Image courtesy Austal.

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