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70% of US Naval combatants have been built by Huntington Ingalls Industries and the company’s Ingalls Shipbuilding division in Pascagoula, Mississippi uses ShipConstructor software. At one time, Ingalls Shipbuilding, a division of Huntington Ingalls Industries, did most of its modeling in CATIA but has now transitioned to ShipConstructor due to ShipConstructor’s unparalleled production oriented output that is specifically geared toward the needs of the marine construction industry. ShipConstructor’s AutoCAD foundation has also helped Ingalls find and train workers quickly since AutoCAD is the world’s most widely used CAD program. The usefulness of ShipConstructor was proven on Ingalls’ construction of the US Coast Guard’s Legend Class National Security Cutters. With a 4300 ton displacement, these cutters are the largest in the history of the Coast Guard but the Engineering Department completed the first vessel, USCGC Bertholf, on time and on budget. ShipConstructor’s quality control features such as interference checking and integration with Autodesk Navisworks were key contributors to this success. Ingalls has completed three similar cutters so far with an additional five more planned. Buoyed by the success of this project, the company has even proposed the design for the Royal Australian Navy. Another program on which Ingalls is using ShipConstructor is the engineering for the DDG-51 (Arleigh Burke Class) Restart. The first of these 9,217 ton displacement Aegis guided missile destroyers, the USS John Finn (DDG-113), started fabrication in September, 2012. Most impressive of all is the fact that Ingalls is also using ShipConstructor to build a series of big deck amphibious assault ships. The first of these warships, the USS America (LHA-6) is being christened in October 2012. This 844 foot long, 45,000 ton displacement vessel will carry a complement of F-35 fighters and was specifically designed to take into account lessons learned by the US Marines and US Navy during recent combat.
Support Vessels for offshore wind farms may be required to travel long distances and forced to withstand high seas. There is also a growing expectation in the market for enhanced crew comfort and more refined design. This has led luxury yacht builder Vripack to move into this growing market. Utilizing ShipConstructor’s CAD/CAM application, Vripack performed the engineering for the WindCat 101, a 27m high speed catamaran, specifically designed for transportation of crew and supplies to and from offshore wind farms as well as oil/gas installations.

The WindCat 101 has been designed according to the strictest rules available, the DNV and IMO HSC2000 passenger codes. Therefore, a lot of attention was given to safety and also to ensuring that this workboat is extremely comfortable in open seas, all while still being a head turning yet practical vessel.

The fact that companies such as Vripack are changing and diversifying into new areas is a trend that has caught the eye of SSI’s Chief Technology Officer Denis Morais. He says, “Companies want to be able to adapt quickly to changing market realities. They want to be able to scale up or down, or to go in different directions and pursue new opportunities. At SSI, we think it is important that scalability and flexibility be part of our core value proposition so we design these values right into our software and offer differing licensing and modular pricing models to maximize options for our clients. Whenever a company wants to do something different, we believe that our software should never be a barrier but instead should help empower the change that is desired.”

You probably already know that an annual Subscription to ShipConstructor software provides you with technical support, patches, upgrades to the latest version of the software and access to the Subscription Advantage Pack. But what some clients are not fully aware of are all the significant benefits that the Subscription Advantage Pack provides. The Subscription Advantage Pack program allows active subscribers to improve productivity and competitiveness by gaining exclusive access to new features and functionalities before they are released to the general public. It also gives access to productivity enhancing tools that may never become part of the core software package. This enables subscribers to help influence the development of ShipConstructor software and provides competitive advantages by enabling subscribers to stay on the leading edge of the industry.

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Example: Part View
Released as part of the Subscription Advantage Pack for ShipConstructor 2011 R2 and now promoted into the regular release for ShipConstructor 2013, this feature allows ShipConstructor parts external to the current drawing to be viewed inside drawings but only pertinent parts are included rather than an entire MLink.

Example: MarineDrafting
Part of the Subscription Advantage Pack for ShipConstructor 2013, MarineDrafting allows standard 2D drawings in DWG format to be automatically generated from the ShipConstructor 3D model according to specific class rules and shipyard standards while remaining linked to the 3D model as changes occur.
Associative DWG technology is one of ShipConstructor’s main differentiators. ShipConstructor is built on the combination of an AutoCAD foundation and the open architecture Microsoft SQL Server® database. The benefits of this combination are that the industry standard AutoCAD DWG is ShipConstructor’s native format for modeling and production documentation which is then coupled with a powerful relational database backend, thereby allowing for dynamic and updateable knowledge management within the modeling and production phases of a project.

The result is increased flexibility due to the ShipConstructor database enabling workflow and industry specific knowledge to be represented in associative DWGs which can then be detailed using the industry leading AutoCAD drafting capabilities. Furthermore, the geometry representing the real world parts and the Bills of Materials which collect those parts are automatically created and linked while a user is first creating the ShipConstructor 3D CAD model.

The end result is that this allows DWG based production drawings to be automatically updated when changes are made in the ShipConstructor 3D CAD model. Associative DWG technology therefore meets the needs of the shipbuilding industry in a way that no other solution can because change is a constant, even in the most tightly controlled shipbuilding environments.

Associative DWG helps organizations manage change better because it links aspects of Engineering and Production that are frequently disconnected. For instance, most shipbuilders using non-ShipConstructor engineering applications have a large number of draftspeople using AutoCAD to create drawings in isolation from other users or to perform the final detailing of drawings that were created in the engineering software. This means that even when the original software has, like ShipConstructor, associativity between the product model and production documentation, the link is almost always severed at some point due to the requirement to take these drawings to AutoCAD for detailing. ShipConstructor’s Associative DWG technology therefore results in a distinct competitive advantage and significant time savings to organizations implementing solutions based on ShipConstructor.

ShipConstructor’s unique Associative DWG technology has been enhanced in ShipConstructor 2013 to even further empower change management. A BOM (Bill of Materials) Revision History can now be included in DWG based production drawings which will save shipyards hundreds of hours of work.

Prior versions of ShipConstructor allowed the drawings to be updated when the 3D product model changed. However, if other departments such as Production or Purchasing had already taken action based on the previously issued drawings, someone would have to visually compare both drawings to determine what in the BOM had changed. This could be done using native AutoCAD capability but it was a painstaking and laborious process. With ShipConstructor 2013, when a drawing is updated, items that no longer exist in the drawing are struck through in the Bill of Materials in the production drawing. The corresponding row number is also struck through and subsequent annotations in the drawing will not reuse that row number. Additionally, new items are always appended to the bottom of the BOM, ensuring that items that existed prior to the update maintain the same row number and drawing annotation. Correspondingly, updated parts will indicate that there has been a revision performed on the BOM row representing that part. This combination of capabilities ensures that the BOM information in a drawing received prior to a new revision being released is consistent from revision to revision, and everything required to determine what has changed exists in the new drawing.
The ability to reuse design data in this way addresses a variety of cost-cutting requirements identified by shipbuilders. For example, parallel testing of multiple possible designs is a common requirement of naval projects. When the Navy requires a shipyard to test the implications of incorporating different weapon systems into a vessel’s design, WorkShare Design will provide a snapshot for each design variation authorized by the Navy. Each variation can be engineered in parallel as required and then merged, using WorkShare Design, into the continuously evolving overall design in order to assess the impact on the whole project. When the final decision was made by the Navy, the approved variation would be merged into the baseline project and the other variations could be archived for future use.

A similar advantage would result when modeling follow ships because these also require parallel engineering on copied design data. In a follow ship scenario, engineering teams have to start modeling the second ship in a series even before the work on the first ship has been completed. WorkShare Design reduces engineering time by allowing them to copy and reuse the design of the first ship for use on the sister vessel. As time passes, more of the first vessel will be modeled and other changes may be made to the original design. The engineering team for the second vessel can then choose to incorporate those changes into the design of the follow ship by using the WorkShare Design product. Another efficiency promoting utilization of this product is the ability to reuse design data when modeling blocks (or any smaller units) that repeat. Additionally, WorkShare Design is a useful tool for recovering from human errors because it allows the creation of duplicate copies of sections of a project that can be synced back if later needed.

Subscription Advantage Pack customers will get early access to an exciting new product: WorkShare Design. WorkShare Design allows users of ShipConstructor’s CAD/CAM application to intelligently capture, reuse, change and then sync back portions of a design along with the associated production documentation. This has numerous practical applications including increased capabilities when working with follow ships, design tests, recovery from errors and for general reuse of design data to increase efficiency.

Engineers can select and then reuse various portions of a design complete with production documentation such as assembly drawings, arrangement drawings and isometrics while preserving all the associated linkages to other aspects of the ShipConstructor Marine Information Model (MIM) including stock and catalog information. Any modifications to the copies can then be synced back into the original design with all the complex relationships intelligently updated.

“WorkShare Design utilizes what we call ‘intelligent capturing,’” says Denis Morais, Chief Technology Officer for SSI. “WorkShare Design is intelligent in that it preserves the existing relationships of all parts selected. It involves more than just copying and pasting simple geometry.”
LATIN AMERICAN SUCCESS

Largest Argentinian Shipyard Chooses ShipConstructor

The largest shipyard in Argentina, Tandanor S.A.C.I y N., has now adopted the Autodesk based ShipConstructor CAD/CAM application from SSI. Tandanor performs ship repairs as well as new construction such as a series of offshore patrol ships for the Argentinian Navy. ShipConstructor will therefore be useful for a variety of its projects.

This recent purchase is part of a growing trend. ShipConstructor is already the dominant CAD/CAM software tool for shipbuilding in Brazil and now, under the leadership of SSI’s local representative Michael Palacio, Spanish Latin America’s marine industry is adopting ShipConstructor as well.

As a longtime veteran of selling software for initial design (Maxsurf) in this market, Palacio has correctly noted that the region has an opportunity to develop a thriving shipbuilding industry but that there is a need for more trained workers in the marine engineering field.

Fortunately, due to its familiar AutoCAD foundation, ShipConstructor is ideal for emerging markets so workers can easily be trained. In the last three years, the majority of universities in Spanish Latin America have adopted ShipConstructor as part of their programs to provide shipyards with a supply of skilled workers. Palacio and his partner, Maximilano Roth have been an important component of this success. Their support and expertise has also been an important component to being the CAD/CAM application of choice. In fact, Roth is as an example of how quickly users can become proficient. Over the last three years, he has become part of ShipConstructor’s elite Super User community and in turn, now trains and shares his experience with new and existing users who can become proficient in the application after only a few weeks.

SEASPN

Rebuilding the Canadian Fleet

Seaspan (Vancouver and Victoria Shipyards) will be using ShipConstructor CAD/CAM software on the non-combat portion of Canada’s Federal Fleet Renewal (FFR) contract.

Under the original award, Seaspan will be building seven vessels for the Royal Canadian Navy and Canadian Coast Guard. Those vessels include two Joint Support Ships, one Polar Icebreaker, three Offshore Fisheries Science vessels and one Offshore Oceanographic Science Vessel.

The use of ShipConstructor is natural for rebuilding the Canadian fleet since it emulates the practice of Canada’s closest ally. The overwhelming majority of US Navy and Coast Guard vessels planned for construction are being detail designed and 3D modeled in the ShipConstructor application, making ShipConstructor the de facto standard for North America.

The demanding schedule for Seaspan means that a solution will have to be implemented quickly and it will be easier to find a significant group of experienced ShipConstructor users than it would be to find people with knowledge of different software. ShipConstructor has the added advantage of being based on AutoCAD so if new users have industry knowledge and basic AutoCAD skills, they can be trained to use ShipConstructor in only a few weeks. An additional advantage is that ShipConstructor Software Inc. has a partnership with Seaspan’s ERP software supplier, IFS, which will help ensure the continuity between design and engineering processes that are so essential to efficient shipbuilding processes.
Empowered Engineering

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