

Product Model Data and Lifecycle Management with ShipConstructor

Shipyards and designers worldwide are increasingly turning to ShipConstructor to achieve new levels of efficiency. ShipConstructor is the well-known 3D product modeling and product data management (PDM) system for the design and fabrication of ships and offshore structures that has been chosen as the standard by US 2nd tier shipyards. Unlike traditional shipbuilding systems, ShipConstructor works within AutoCAD, making it easy to use as well as flexible and affordable for large yards and small operations alike.

ShipConstructor is currently being used on the US Navy's Littoral Combat Ship, the US Coast Guard's Deepwater Project, and a wide range of other construction, conversion and repair projects. Well-known names like Northrop Grumman Ship Systems, Gibbs & Cox, and Dubai Drydocks are among the more than 150 yards and designers worldwide who rely on ShipConstructor. By using ShipConstructor, they are able to produce higher quality ships, in less time, and at a lower cost.

The benefits of using ShipConstructor extend far beyond engineering. ShipConstructor is an integral part of a company-wide approach to increasing efficiency by simplifying and automating activities, improving communication and collaboration, and integrating disparate systems.

ShipConstructor simplifies and automates many otherwise time-consuming activities. Not only is initial input fast, but it is easy to make updates later when changes are made to the design. For example, ShipConstructor includes sophisticated tools for automatically performing nesting, adding penetrations, calculating weights, CGs, and BOMs, checking interferences, creating NC-code, and generating annotated production drawings and reports. The fact that all information is stored in a central database also means that defining standards and libraries is done in a single place, making subsequent global updates very easy. All the while, the approval process functions ensure that only pre-designated people are allowed to make changes and that those changes are approved by a different party before being implemented.

ShipConstructor enhances communication and collaboration between individuals, departments, customers, and suppliers, making it easier for them to work together. Engineering departments can work concurrently on a single 3D product model, shortening the overall engineering process. Production can access model data at any time for clarification. This can easily reduce the number of calls from production to engineering by seventy percent, and can also allow production to propose changes earlier in the engineering process. Furthermore, management can access model data to monitor progress and generate reports for project management, purchasing, sales and marketing. Finally, 3D fly-throughs let clients visualize the final product and adjust the design before production even begins.

ShipConstructor is fully integrated within AutoCAD. This provides a familiar environment for AutoCAD drafters who typically require only one week of training to become productive with a specific module of ShipConstructor. Recruiting drafters for ShipConstructor can therefore be done from the large pool of available AutoCAD drafters. Integration within AutoCAD also means that all AutoCAD features are available to ShipConstructor users, providing maximum flexibility, as well as further opportunities for customization and automation via AutoCAD's built-in programming languages.

Product Lifecycle Management

ShipConstructor is easily integrated with other systems. ShipConstructor's product model database can be directly tied to purchasing and Enterprise Resource Planning (ERP) databases, eliminating manual data entry and delays. Similarly, it can be tied to scheduling databases to define need-by dates for parts and assemblies. The digital 3D model can also become part of the physical product, functioning as an as-built drawing that can be updated with modifications made after initial construction. Owners can even link the ShipConstructor 3D product model to product lifecycle management (PLM) data, thus lowering the overall costs of ownership.

The latest update of the current ShipConstructor2005 version introduces more time-saving features for creating accuracy control marks and for automatic straking.

Precise Fabrication with Accuracy Control Marks

Small inaccuracies easily add up to significant deviations during multiple steps of assembly. Precise fabrication is a means of reducing rework, delays, and waste. Accuracy Control Marks are used for two tasks: aligning stiffeners with high accuracy on plates as well as the accurate joining of plates for welding.

For aligning stiffeners, a mark is made on the plate and on the stiffener so they can be easily aligned during assembly. ShipConstructor scribes accuracy control marks onto plates during NC-cutting. For stiffeners, ShipConstructor automatically generates stiffener plots with dimensioned locations of the accuracy control marks, or the data can be fed directly to an automated stiffener cutting system.

For joining plates, a line is made on each of two plates to be welded together such that the line runs parallel to the plate's edge and is offset a certain distance from the edge. Before welding, yard workers measure the distance between these lines at various points to ensure perfect alignment. Without these lines it can be difficult to maintain the correct spacing between plates, especially for plates with beveled edges and weld gaps. As usual, ShipConstructor's product model database automatically provides a list of shipyard standards based on plate thickness and weld type to ensure that the project standard is followed by all designers. These standards, loaded into the project database by production managers, are an effective way of transferring knowledge to less-experienced users.

Accuracy control marks were developed in close collaboration with Japanese ShipConstructor customers. Japanese companies are known worldwide for their Continuous Improvement – approach to their day-to-day tasks and ShipConstructor has become part of it. Previously, Japanese shipyards created the accuracy control marks manually within AutoCAD, a time-consuming process. Now, they can easily create these marks in a few seconds. Not only does this feature accelerate Japanese customers' existing workflow, it also makes these Japanese best practices available to ShipConstructor customers worldwide.

Saving Time with Automatic Straking

Automatic straking is a way of automatically dividing predefined areas, such as decks and bulkheads, into planks based on the parameters of available stock, then generating a BOM automatically. Previously, straking had to be done manually, so an automatic method of straking represents a significant saving of time. Automatic straking also works with state-of-the-art prefabricated aluminum extrusions and sandwich panels, which are increasingly being used.

ShipConstructor's features will be demonstrated at the Offshore Technology Conference in Houston in May as well as other shows worldwide. Please visit www.ShipConstructor.com for more information.

About ShipConstructor

ShipConstructor is created by Albacore Research Ltd. (ARL), a company focused on increasing the efficiency of ship production for the past fifteen years. The current version, ShipConstructor2005, provides functions for curved plates, structure, pipe, penetrations, HVAC, equipment, and NC-processing and also generates sophisticated production documentation, including assembly drawings, pipe spools, and production reports.