



M/V SUSITNA

THE SHIP THAT TRANSFORMS
PAGE 2

Image Courtesy of Guido Perla & Associates Ltd.

IN THIS ISSUE:

PAGE 4 **Austal Launches JHSV-I USNS Spearhead**

PAGE 5 **Integrating with ERP**

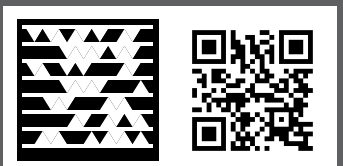
PAGE 6 **Adopting Cutting Edge Technologies**

PAGE 7 **Watching its weight: Chicago Fireboat**

PAGE 8 **ShipConstructor 2012**

PAGE 8 **ShipConstructor helps improve Ingalls efficiency**

To download a PDF of this document, scan the barcode with your mobile device



or visit
www.shipconstructor.com

M/V SUSITNA

THE SHIP THAT TRANSFORMS



Images courtesy of Guido Perla & Associates Ltd. and Alaska Ship & Drydock

A deep draft is necessary for seakeeping in strong waves. A shallow draft is necessary for unloading vehicles on a beach. Why compromise? Why not have both?

That's what the US Navy and Marine Corps wanted and that's what they received with this experimental variable draft Expeditionary vessel (E-Craft), detail designed by Guido Perla & Associates Inc. The venerable naval architecture and marine engineering firm used ShipConstructor CAD/CAM software in creating the Production Design for this innovative vessel.

The Mat-Su Borough in Alaska also became involved in the project because they needed a ferry that could land at both established docks and at remote beaches on Knik Arm and Cook Inlet. They also decided to throw in another level of complexity. They wanted the ship to be an icebreaker too.

The E-Craft is one of the most complex surface vessels ever built. At first, Guido Perla himself was hesitant when told about the project by shipbuilder, Alaska Ship & Drydock.

"It was a challenge because this had never been done before," he said. "It was a challenge to keep the vessel within the estimated weight that it could have. You have regulations for a passenger vessel, you have classification requirements, and you have strain requirements for the structure for ice-breaking. You have to understand that this is the first-ever twin-hull SWATH that is an ice-breaker. Nobody has done that before. That was a very pioneering thing. We had to stretch everything because there was no record.

“... it was a challenge because this had never been done before,”

“We had to work very closely with the American Bureau of Shipping because they didn’t have anything applicable for a vessel like this,” Perla continued. “And any other classification didn’t have anything applicable.”

When operating in deep draft mode, the middle section, which is made from aluminum, sits high above the water, flush with the passenger compartments on both sides of the vessel. At this point, it’s essentially a deck suspended between the two hulls.

But when a pair of 50-hp electric motors energize the hydraulic system, the center deck section can be lowered 21 feet. As the deck is pushed into the water, it becomes a hull with significant flotation. At the bottom of its travel, the twin hulls on each side have been pushed up from a draft of about twelve feet to only four foot six. You then drive the ship’s nose onto the beach, the bow door opens and tanks or trucks can roll off.

The Mat-Su Borough has christened their new ferry, the Susitna and SSI is proud to be associated with this innovative project. “ShipConstructor prides itself on the power and usability of its shipbuilding-specific CAD application, especially when it comes to structural modeling,” said SSI CEO Darren Larkins. “The complexity of the Susitna E-Craft demonstrates that our software can handle even the most demanding projects.”





AUSTAL USA LAUNCHES JHSV-I USNS SPEARHEAD

Once again, Austal USA has recently christened a vessel detail designed with ShipConstructor Software. The USNS Spearhead, the first of 10 US Navy Joint High Speed Vessels (JHSV) designed for rapid intra-theater transport of troops and military equipment, was christened on Saturday September 17, 2011.

Work on JHSV 2 and 3 is now underway and Austal is currently preparing to launch a second Independence-variant 127-metre Littoral Combat Ship (LCS) class vessel for the US Navy. As Congressman Jo Bonner notes, “Austal...is becoming synonymous with high speed defense on the water.”

All of these fast warships are being 3D modeled in the Autodesk based ShipConstructor CAD/CAM application. ShipConstructor contains features for work sharing and collaboration amongst distributed sites that have helped Austal coordinate modeling with its office in Australia. Austal has also worked with SSI to integrate data from ShipConstructor’s CAD program with Austal’s ERP system to promote greater efficiencies in material management. (See article on the next page.)

The JHSV is an impressive vessel. It will be capable of transporting personnel, equipment and supplies over operational distances in support of maneuver and sustainment operations. It will transport Army and Marine Corps company-sized units with their vehicles and be capable of reconfiguring to transport an entire infantry battalion. It has a flight deck capable of handling the CH-53E, the largest and heaviest helicopter in the American military, and an off-load ramp capable of allowing M1A2 Abrams to quickly drive off the vessel.

ShipConstructor Software Inc. is proud to be associated with yet another successful Austal project. “The level of excellence and attention to detail demonstrated by Austal in everything it does is inspirational”, says ShipConstructor Sales & Marketing Manager, Michael Viala.

INTEGRATING SHIPCONSTRUCTOR WITH ERP

ShipConstructor Software Inc. (SSI) has determined the best way to integrate CAD data with ERP systems. The key is to understand shipyards' processes.

CAD systems are a key “source of food” for ERP systems and there is a direct link between the success of an ERP system and how well it is fed the information it requires to do its job. Unfortunately, too often the process of feeding ERP is handled via manual data entry which is time consuming, frustrating and prone to error. On the other hand, even with an automatic or semi-automatic method for transferring data, the transmission is often done poorly because the right data is not transferred in the right fashion in the right level of detail.

SSI realized that the only way to correctly integrate the ShipConstructor CAD system with various ERP programs was to gain a thorough understanding of various shipyards' business processes to see exactly how the data from both systems needed to be handled.

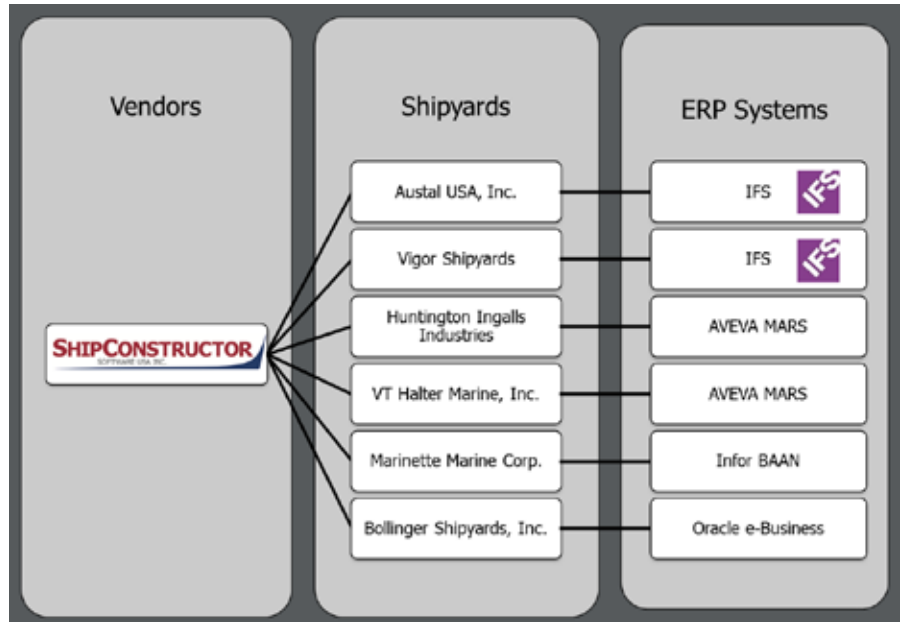
Utilizing a sophisticated IDEF0 function modeling methodology, SSI USA led the effort to analyze the operations of six American shipyards that built vessels of varying sizes for both commercial and naval purposes and who used various different ERP systems.

The shipyards involved were: Austal USA, Inc., Vigor Shipyards, Huntington Ingalls Industries, VT Halter Marine, Inc., Marinette Marine Corp, and Bollinger Shipyards, Inc.

The ERP systems involved included: IFS, AVEVA MARS, InforBAAN and Oracle e-Business.

After a detailed analysis, SSI created a data alignment map for each ERP system, a neutral schema and special tools to easily transfer the data between both systems.

As a result of this integration project, shipyards have noticed immediate improvements including a reduction in scheduling delays, increased throughput due to improved JIT (Just-In-Time) material handling and multiple business improvements that became apparent during the IDEF0 process mapping exercise. ShipConstructor's strategy for process modeling is applicable to not just ERP, but to integration projects involving other applications as well.



Integrating ShipConstructor with ERP helps manage materials for production.

ADOPTING CUTTING EDGE TECHNIQUES

ShipConstructor Software Inc. (SSI) is helping shipbuilders adopt cutting edge technologies and techniques from the aerospace, automotive and plant industries.

Laser scanning has long been standard in the plant industry for measurement and quality control and ShipConstructor customer Signal International is using this technique to regularly laser scan as-built models. Laser scanners have recently been reduced in price to as low as \$30,000 USD and software such as Autodesk based ShipConstructor is able to leverage AutoCAD's increasing sophistication at handling point clouds derived from laser scans.

Shopfloor 3D is another innovative practice that SSI is excited to see being copied from the Japanese automotive industry. As shown in the accompanying picture from a Japanese textbook, 3D is being used on the shop floor by workers who use terminals to view a 3D model with assembly instructions and information on material properties. ShipConstructor client Royal Huisman, the luxury yacht builder from Holland, has incorporated a similar practice at its shipyard. Production staff view and fly through 3D Navisworks models that are easily output from ShipConstructor to assist them in fabrication.

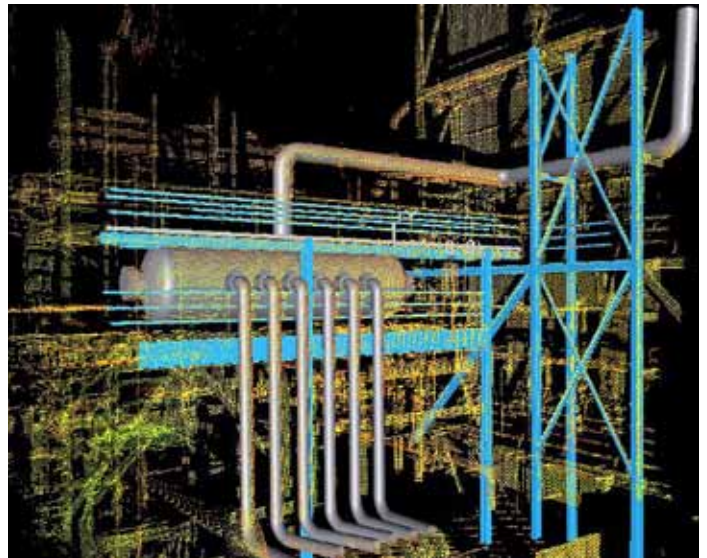
SSI helps shipbuilders adopt various cutting edge technologies because it is a scalable software solution. A scalable solution is cost-effective and allows companies time to change technology and processes in a step by step fashion. For instance, ShipConstructor has unparalleled two dimensional production output but also has been an innovator in stressing the usage of 3D.

SSI also supports innovation by leveraging the CAD industry standard Autodesk Corporation's massive R&D budget which dwarfs the annual revenue of even leading shipbuilding and offshore CAD vendors such as AVEVA. SSI is working in conjunction with the R&D team at Autodesk as they work on various projects to harness the power of parallel processing and cloud computing etc. to further advance the power and capabilities of CAD applications. These advances will ultimately drive down costs and increase the productivity of shipbuilding.



Workers do assembly using a 3D model as a guide.

Photo from: "Improving Lean Manufacturing Through 3D Data," by Hiroshi Toriya



Pipe model superimposed into a point cloud

WATCHING ITS WEIGHT: THE CHICAGO FIREBOAT



Long-time ShipConstructor Software Inc. (SSI) customer, Robert Allan Ltd., used the Autodesk based ShipConstructor CAD/CAM application to model the latest of its innovative fireboats. The Christopher Wheatley, a new Ranger 2700 Class fireboat was recently delivered to the Chicago Fire Department.

The new fireboat will be used to respond to firefighting, rescue, hazmat decontamination, dive support operations, and other waterway related issues.

It had to be fast, be able to break ice, had to get under Chicago bridges and needed a 7'6" draft. The combination of a very shallow operating draft and an equally limiting air draft presented a significant design challenge, especially regarding weight estimation: if the vessel was too heavy it would scrape the bottom of the shallow river; if it was too light it would hit the numerous low bridges that grace the Chicago River.

ShipConstructor's automatic weight and CG calculation provided the most up-to-date and accurate information during the detail design process. Continuous access and knowledge of weight and CG allowed Robert Allen to optimize design as well as generate an accurate final result.

The ability to calculate up to date weight and center of gravity during any stage of project development and the ability to run reports for a section or an entire ship is an advantage of ShipConstructor over plain AutoCAD. ShipConstructor is an Autodesk based application specifically designed for shipbuilding.



SHIPCONSTRUCTOR 2012 RELEASED

ShipConstructor Software Inc. (SSI) has released a new version of its AutoCAD based CAD/CAM software.

ShipConstructor 2012 enables users to work in the most advanced CAD environment by adding AutoCAD 2012 compatibility. AutoCAD 2010 and 2011 are still supported but the latest version of ShipConstructor empowers users to take advantage of several new tools and improvements such as enhanced surface modeling, enhanced point cloud support for laser scanning, direct access to AutoCAD WS, and in-application access to AutoDesk Exchange.

The speed of ShipConstructor has been increased yet again. The load times for distributed system model drawings have been reduced by up to 10% and the load time for viewing distributed system part property data has been cut in half. Several new features and tweaks to the interface also enable increased productivity.

“No other shipbuilding CAD/CAM application is enhanced as frequently as ShipConstructor,” said SSI CEO Darren Larkins. “No other shipbuilding software is as easy to learn and use.”

ShipConstructor 2012 New Features

- AutoCAD 2012 Support - Support for the latest version of AutoCAD tools for enhanced 3D design, model documentation and collaboration.
- Enhanced Offset Construction Lines - Addition of geometrical constraints to individual offset construction lines without losing parametric associativity with source geometry.
- Enhanced Endcuts - Reduced number of endcut definitions required to populate a catalog with industry standard endcuts.
- One-Step Package and Deploy Project - Quickly create isolated versions of the entire ShipConstructor project for archiving or transferring.
- Side-by-side Installation - Side-by-side installation with ShipConstructor 2008, 2009, and 2011 is now supported.
- Increased Speed - Load times of distributed system drawings have been significantly reduced.

SHIPCONSTRUCTOR HELPS IMPROVES INGALLS' EFFICIENCY

Ingalls Shipbuilding, the largest supplier of US surface combatants, has started fabricating its fourth Legend-Class National Security Cutter detail designed using ShipConstructor software. The company has become increasingly efficient during the production of this vessel series.

In mid-August, the third vessel in this class, Stratton, underwent sea trials and passed with flying colors.

“This successful sea trial is a positive reflection of the efficiencies established during the construction and testing of this ship,” said Mike Duthu, Ingalls' Program Manager.

The shipbuilder reduced the construction schedule compared to the previous vessel in the series and improved labor costs by reducing man-hours.

ShipConstructor's Autodesk-based CAD/CAM software helped enable these efficiencies due to its innovative change management technology.

As the shipbuilder gained experience during production of multi-series vessels, they discovered more efficient ways to do things and those improvements had to be reflected in the 3D model and all the associated production drawings. Fortunately, ShipConstructor allows this process to happen seamlessly.

ShipConstructor Software Inc. is continually improving its flagship software's change management engine which uses what it calls “Associative DWG” technology to link all the drawings together via a Microsoft SQL Server Relational Database. The result of the technology is that a change made in one area of the model is reflected in other views and associated production drawings can be updated semi-automatically.



Image courtesy of United States Coast Guard