FEATURE STORY

Albion's Ballast Water Treatment System **Turnkey Solution**

The countdown is on for ships to install ballast water management systems (BWMSs) to reduce their environmental impact. The International Maritime Organization (IMO) has set a deadline of September 8, 2024 for ships to comply with performance standards to protect local ecosystems from invasive species carried in ships' ballast water.

Albion Marine's green retrofit program is helping ship owners meet the IMO deadline. With offices in Canada, India, China and Singapore, the company is applying their engineering expertise to install the most suitable ballast water treatment systems (BWTS) for each vessel.

"The peak installation period for ballast water treatment systems is happening now," says Sergiy Yakovenko, Director of Albion Marine Solutions. "Thousands of vessels around the world need to be retrofitted with ballast water treatment systems."

Delivering a Turnkey Experience

With increasing growth in BWTS orders and heightened environmental regulations, Albion Marine saw this as an opportunity to acquire more powerful design software. The company partnered with InnovMarine and identified SSI ShipConstructor as the best engineering software for designing complex piping systems. ShipConstructor's user-friendly interface allows multiple people to work on a project and its spec-driven parametric catalog of pipe stocks and standards, allows for highly accurate 3D models to be rapidly developed.

Just as Albion Marine was making the decision to adopt ShipConstructor, a prominent fleet owner engaged the company to undertake the design and installation of a BWTS for one of its tankers. Despite the global pandemic, "Our goal was to deliver an unmatched turnkey experience," Yakovenko recalls.

Fast Implementation, Company-Wide

InnovMarine worked with Albion Marine to ensure ShipConstructor's capabilities were incrementally upgraded to support their BWTS retrofit process – a process that starts with an onsite survey and 3D laser scanning. After which, a BWT system is selected and the Albion Marine team moves into the design, engineering, production, installation and commissioning phases.

In addition to having InnovMarine walk them through the software installation process, Albion Marine wanted to get their designers up and running as fast as possible. "Because ShipConstructor is based on AutoCAD products already familiar to designers and engineers, it was the ideal solution," says Pierre-Charles Drapeau, President of InnovMarine.

Knowing Albion Marine's experienced team members were working remotely, across multiple time zones, InnovMarine set up company-wide access to ShipContructor's online training platform. "Having full access to click-through online training courses is crucial, especially during the initial stages," says Yakovenko.

Powerful and Accurate Modelling

With software training complete, Albion Marine's site survey team headed to Portugal to board the 228m tanker. They had evaluated the ship's existing ballast piping diagrams and were ready to use laser scanners to produce accurate 3D models of where the new BWTS would be installed. "Our laser-scanned point clouds were easily imported into ShipConstructor to guide our 3D design work," says D. Karthikeyan, Engineering Manager at Albion Marine.

Because the modeling of the BWTS is done in the same dynamic environment as the project, ShipConstructor reduces errors by automatically routing piping through the wing tanks and alongside existing systems. "ShipConstructor enables us to work in the 3D scan point cloud environment to precisely finalise the position of the structural, piping, and electrical fittings on the 3D model," Karthikeyan continues.

Moving Quickly to Detailed Engineering

Albion Marine quickly moved from the concept design phase to the detailed engineering phase.

> **"The 3D model greatly shortened project timelines,"**
>
> - D. Karthikeyan, Engineering Manager at Albion Marine

By combining the laser scan measurements with the model structures in ShipConstructor's library catalogue, Albion Marine created a clash-free model for the new BWTS.

"The 3D model greatly shortened project timelines," says Karthikeyan. Production information, such as material take-offs (MTOs), were easily extracted from ShipConstructor and used to estimate the logistics and cost of fabrication.

Minimize Rework

"ShipConstructor models are ideal for submitting drawings for classification approval or showing the customer what the deck or engine room will look like after the BWT system is installed," says Yakovenko.

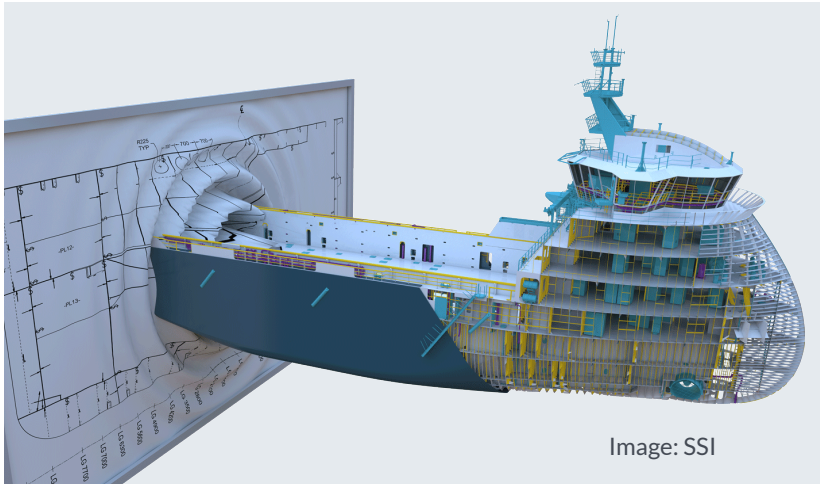

Image: SSI

"Any changes are easily made in this stage, if required, and this minimizes rework or surprises on site," Karthikeyan explains.

Armed with a complete production package, including the design and detailed material specifications, Albion Marine installed the BWTS equipment inside two deckhouses on top of the upper deck. Their experienced riding crew of electricians, mechanics, pipefitters, and technicians efficiently carried out the retrofit as part of the tanker's routine dry-dock schedule without any interruption to the ship's commercial activities.

During the final commissioning, Albion Marine partnered with the BWTS maker. Together, they successfully demonstrated to the owner and class society that the ballast water treatment system was in full compliance with the new regulations.

"We planned to design and install the most suitable BWTS system, using the most advanced technologies and InnovMarine has helped us do just that," says Yakovenko.