

IHB ShipDesign Increases Efficiency to Build Ballast Water Treatment Systems (BWTS) Retrofit Business with AVEVA E3D and Laser Scanning

IHB ShipDesign AD
www.ihbshipdesign.com

INDUSTRY
Shipbuilding

Goals

- To increase efficiency.
- To become more competitive in the industry.
- To offer customers better services.

Challenges

- The existing drawings or CAD models of vessels requiring retrofit were unreliable.
- BWTS retrofit demands were competitive.
- Design took a long time, and they were losing customers to competitors.

AVEVA Solution

- Marine Suite
- Everything3D (AVEVA E3D)
- 3D Laser Scanning Solutions

Results

- Overall design time was reduced by up to 20%.
- AVEVA set-up took only 2 months.
- Accurate survey data lessens need for rework.
- Decreased commercial risk.

Varna, Bulgaria – IHB ShipDesign is a successful Bulgarian design company, a member of Industrial Holding Bulgaria (IHB), and has been instrumental in delivering several retrofit projects since 2014. Its specialisations include cruise-ship hull design, an area in which it has provided design support services for STX France Solutions.

The company's predecessor, Vik-Sandvik-IHB Design, was formed in 2007 as a joint venture between Vik-Sandvik (one of the largest independent ship design groups in the world at that time) and Bulyard, the largest shipyard in Bulgaria. Its core business consists of high-quality naval and marine design, engineering and consultancy. It offers flexible and adaptive solutions that satisfy ship owners' needs and demands, as well as shipyard requirements and production facilities.

IHB also provides detail design for piping, electrical, HVAC and steel outfitting and is in marine retrofit projects. However, IHB is becoming increasingly involved on a global scale, particularly as a result of the IMO Ballast Water Management Convention, where all ships will be required to manage their ballast water by either exchanging or treating it using an approved system. This will lead to exceptional demand for Ballast Water Treatment Systems (BWTS) retrofits across the global marine community.

Customer base expansion requires all-around growth

With a rapidly expanding potential customer base, the IHB team undertook a re-evaluation of its existing capabilities. The company was already using AVEVA Marine – specifically AVEVA Outfitting, for the complex design requirements of its RoPax projects. They were also using point-cloud methodologies in a standard CAD system. IHB felt a pressing need to augment their design approach to shorten the preparation timelines, which can be long and drawn out in even the most basic refit. Effectively, IHB was on the hunt for an added efficiency ingredient.

The challenge of outdated information

At the start of any retrofit project, the designer is nearly always tasked with recreating history because drawings or CAD models have either become inaccurate over time (as changes, repairs, improvements and additions have been made) or are simply no longer available.

For each retrofit project, IHB needs to create a new baseline to ensure that the project moves forward on robust foundations. This is a sensitive issue in the installation of on-board BWTS retrofits, given the diversity of requirements from different owners with varying ship designs. Custom-made solutions need to incorporate modular skid processes, container installations and other adaptations.

“The big problem for us, is making sure we have the capabilities to accept a growing number of projects and deliver service excellence on each one, without compromising the owners' schedules.”

Boyko Georgiev,
CEO, IHB ShipDesign AD

Success is in the detail

A retrofit often takes longer than customers anticipate, even though they understand the need to establish a detailed view of the ship's structure. It's a competitive world, becoming more so with the IMO's BWM Convention. Time added to the project completion is time when the ship is not at sea, earning money.

Mr. Georgiev outlined that previous practice at IHB would involve three designers from different disciplines working for a period of up to four months. Before starting a retrofit, they would have to make a 3D model which would include a finite level of detail, often gleaned through a physical survey, including existing decks and bulkheads, equipment, piping and electrical systems.

As the physical asset – the ship – has invariably changed over time, a 'new version of the truth' is essential. The challenge was to map out this detail in a far less laborious way than IHB had become accustomed to.

With the accelerating rate of new project acquisition, the existing approach was neither scalable nor efficient. IHB ran the risk of simply missing new customer opportunities. As the queue for its services began to lengthen, IHB realised that owners with a pressing retrofit requirement had the option of simply going elsewhere.

Solutions: revitalised retrofit design strategy drives business

IHB asked AVEVA how it could streamline the early stages of retrofit design. It needed a solution quickly since, with each day that passed, another business opportunity could be missed. It was a question of efficiently and quickly capturing detail to ensure that a ship's structure was faithfully reproduced and understood.

This not only delivered an automated process, but also gave all stakeholders the confidence to proceed, while giving contractors the control that only a detailed model could offer. AVEVA proposed upgrading IHB to AVEVA E3D, a natural next step for IHB, given its familiarity with AVEVA Outfitting.

Capture everything

AVEVA E3D delivered a major change in the IHB team's capabilities. Before its introduction, IHB designers were using separate systems for new design and for retrofitting. Now, all of this work can be carried out using

AVEVA E3D, taking advantage of established standards and component catalogues, as well as administrative- and user-knowledge.

Advanced LFM technology built into AVEVA E3D enables the use of datasets of virtually unlimited size. It gives IHB designers the capability to capture the 'as-is' vessel for direct transfer into the 3D environment. IHB has found laser scanning to be a fast and reliable method of digitising existing routing and structure on board with complete accuracy. The company now has the technology to handle all potential customer requirements, particularly since the modelling time for a typical retrofit project has been reduced by 15–20%.

Higher quality, lower costs, shorter timescales

"Our designers have access to an intelligent model for creation of installation drawings and accurate parts lists. Adding in fresh data and keeping it up-to-date is now easy. Most importantly, our engineers can work concurrently on the same project using accurate laser scan data, delivering quality, cost and timescale benefits."

Boyko Georgiev,
CEO, IHB ShipDesign AD

The time between IHB's initial enquiry to AVEVA and the start of the first project using AVEVA E3D and laser scanning was less than two months, including training, familiarisation and the POC test project, and they are benefitting from the decision every day.

About AVEVA

AVEVA is a global leader in engineering and industrial software driving digital transformation across the entire asset and operational life cycle of capital-intensive industries. The company's engineering, planning and operations, asset performance, and monitoring and control solutions deliver proven results to over 16,000 customers across the globe. Its customers are supported by the largest industrial software ecosystem, including 4,200 partners and 5,700 certified developers. AVEVA is headquartered in Cambridge, UK, with over 4,400 employees at 80 locations in over 40 countries.

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