APPLYING 3D MODELS FOR CLASS APPROVAL

OVERVIEW

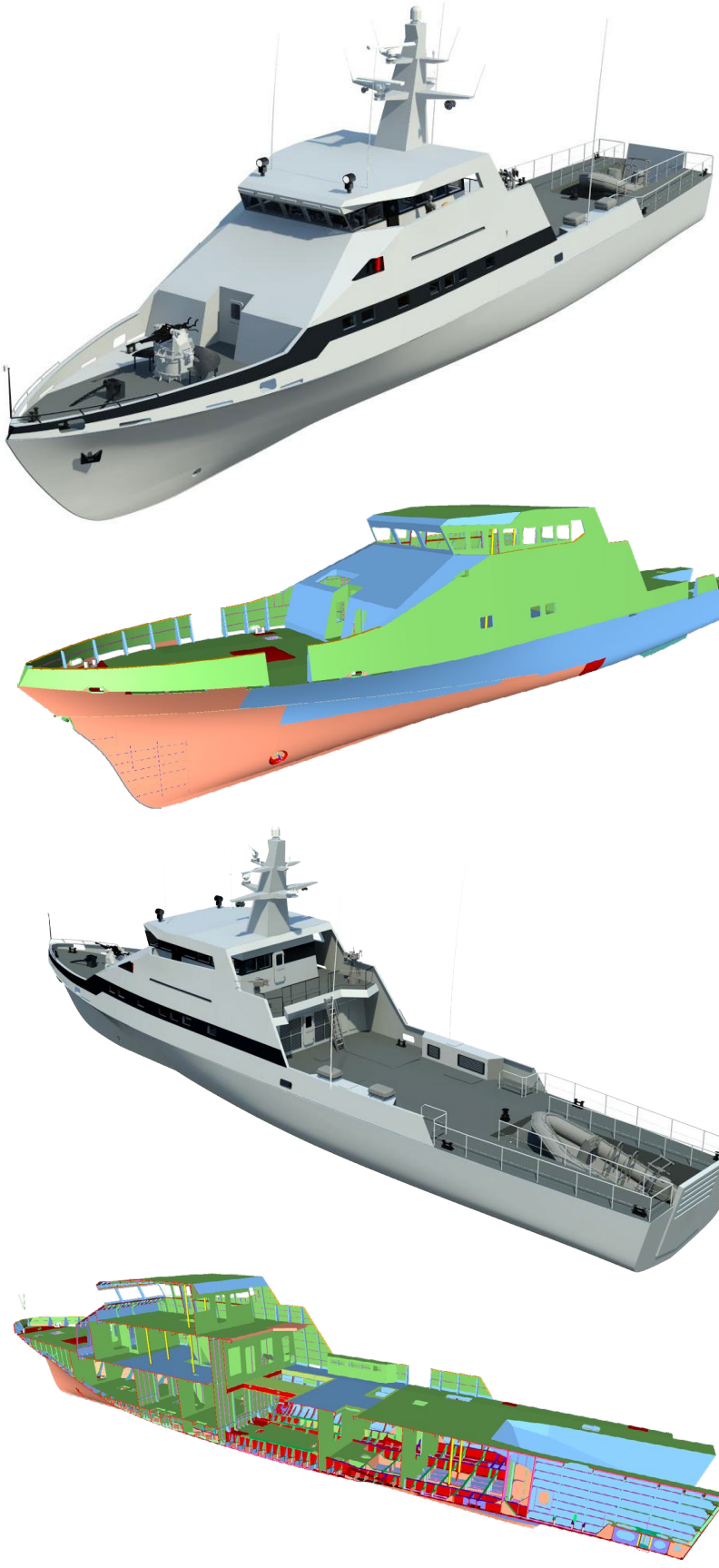
Israel Shipyards Ltd. (ISL) was seeking to apply new tools and technology to improve the class design review process by using 3D models instead of traditional 2D drawings on its 45-meter multi-mission offshore patrol vessel (OPV). ISL turned to ABS to help streamline the approval workflow process for class to help improve efficiency and advance safety.

CHALLENGES

Traditional class review requires a client to submit vessel drawings that are reviewed and evaluated from a safety and class-compliance perspective. In modern computer aided-design (CAD) and 3D models, the data for communicating design intent is managed digitally. Even so, 2D drawings are still produced to communicate to certain stakeholders: construction trades and class. As shipyards become more digitally-focused, 2D drawings and other paper documentation is no longer created for ship construction, and thus created only for class. ISL wanted to reduce the total number of 2D drawings produced and paper-based documentation for class review, and replace those documents with the original CAD design model. Every 2D drawing that was produced for class review takes anywhere from 20 to 40 hours to draft and a typical vessel the size of an OPV usually needs twenty 2D structural drawings created. The amount of time and people that it was taking to produce these documents was costly and they wanted a more efficient and streamlined process.

SOLUTION

ISL decided that collaborating with ABS on a pioneering 3D Model project had potential to save time and resources while still meeting all Class requirements. A kickoff meeting was held at the start to lay the groundwork for how the design review would be conducted. ISL's modeling software and modeling practices were discussed and the process began by understanding how ISL currently developed 3D models and how required details can be submitted to ABS. During the kickoff meeting, ABS and ISL discussed how the model should be layered, sectioned, or otherwise annotated to allow ABS and other stakeholders to practically navigate through the model. The two teams recognized the enormous potential for data exchange between class, shipbuilders, and ship designers and the synergies that can come throughout the design and construction process.



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> **"Ultimately, we were able to save a significant amount of engineering hours by working closely with ABS and discovered new opportunities to better align with ABS, making future projects even more efficient."**
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> NIR ALMANY
> HULL DESIGN TEAM MANAGER, ISRAEL SHIPYARDS

RESULTS

The new 45-meter OPV is an ISL novel design of a multi-mission platform, intended for a wide range of Naval, homeland security, and civilian activities. The design incorporated several key elements to enhance the platforms' performances, such as a slipway for a fast 7-meter rigid inflatable boat for interdiction and rescue missions, a large flush deck area with the capability of carrying multi-mission payloads, a spacious 360 degrees bridge, and other features. The design is based on ABS *Rules for Building and Classing High-Speed Craft* and incorporates an innovative approach for the plan approval of the 3D vessel model without the need for traditional 2D class Drawings. From a safety perspective, 3D models offer an improved view and representation of a design which can help identify problematic arrangements early on.

"Ultimately, we were able to save a significant amount of engineering hours by working closely with ABS and discovered new opportunities to better align with ABS, making future projects even more efficient," said Israel Shipyards Hull Design Team Manager, Nir Almany.

"Reviewing models where the data resides, in its native 3D digital format, offers class a lower risk review and likewise can be much more intuitive for the ABS Engineer to understand the design than traditional 2D drawings and paper documentation. Developing the right exchange and review process with partners like Israel Shipyards will help the process become more efficient while maintaining our focus on safety and adherence to class rules. This is an important part of our digital future." Said ABS Senior Vice President for Global Engineering and Technology, Patrick Ryan.

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