Computer games show the way in imaging technology

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DESIGNERS are taking a leaf out of the computer gaming book to speed up the early stages of shipbuilding projects, writes Hugh O'Mahony.

3D CAD is increasingly used for sightline studies and other design optimisations in shipbuilding, but the still images predominantly used require review. This can be a lengthy process because naval architects need to modify designs, create new images, and set up a further review meeting with the other parties for every change.

VSTEP, the virtual safety and training education platform, is a new concept from a Dutch company of the same name looking to take advantage of the rapid improvements in the graphics offered by computer game technology, developing an interactive 3D software to accelerate the shipbuilding conceptualising process.

It enables designers and operators to review a vessel's design jointly, so that alternative solutions can be examined on the spot. The package creates virtual models of new vessels and allows architects to walk through their designs in real-time using a joystick. It can be used to test new bridge layouts, console designs, sightlines, equipment positioning and structural designs. Views can be adjusted for standing (usually 1.72 m) or sitting (1.52 m) eye levels using an on-screen slider.

Most visualisations can be developed in three to six weeks. The cost depends on the size and complexity of the projects, but starts from E 12,500 ($13,492).

Pilot partners using the system included Merwede Shipyards, Royal Boskalis Westminster and Studio Yacht.

Royal Boskalis Westminster used the approach in the development of two new 15,850 cu m dredgers, jointly designed by Boskalis, Merwede Shipyards and Studio Yacht, where it led to a new configuration in the navigation and dredging consoles.

Standing behind the steering wheel, the helmsman must be able to see the full horizon, the sea around the ship, the bow, and all important equipment on deck. He also needs to see the dredge pipe operator seated below the main navigational consoles, his console screens, and the dredging equipment he operates.

By simulating an eye-level walk-through of the virtual wheelhouse during two review sessions, the console designs were reviewed, modified, re-designed and approved.

The consoles were made smaller, and were shifted further forward. The position of the dredge pipe operator was made higher, using an extra block, and shifted forward. The initial console arrangement of three screens side by side was changed into a triangular arrangement, offering the operator a better view of the winch and piping. The window panels were also redesigned to provide the helmsman with a better view of the horizon.

Bas Sonneveld, leading naval architect of Studio Yacht, said: "VSTEP's technology has saved us weeks of design time and has resulted in a much better design."

VSTEP has recently applied the technology to other sightline projects, including optimising the wheelhouse design of a high-speed naval patrol vessel to simulate operations in rough sea conditions, and a sightline study to simulate the docking procedures of a passenger ferry.