



Scorpion SeaFarer shape design



Scorpion SeaFarer model



Scorpion SeaFarer model, navigation deck

Planatech Reduces Overall Production Time thanks to PLM



Angelos Protopsaltis
Technical Director Planatech

Planatech uses CATIA, including CATIA Analysis and CATIA for composites solutions, to improve its boat development process. Thanks to virtual testing, Planatech eliminated the need for physical prototypes, which helped improve the reliability of designs while promoting innovation and reducing production time by 30%.

END-TO-END PROCESS COVERAGE

Planatech chose CATIA because it supports product engineering – from initial specification to product-in-service – in a fully integrated manner. Planatech's development process begins with the design of the ribs of a boat using CATIA's advanced surface capabilities. The rib design is then used to design the entire product assembly in 3D.

A RIB is comprised of a solid hull and an inflatable tube at the gunwale that enables the vessel to maintain buoyancy if a large quantity of water is shipped aboard. The inflated tube is created from several plastic sheets that are tied together and that are cut after having been unfolded using CATIA's unfolding surface capabilities. Planatech uses CATIA Composite Design and a composite materials library for the preliminary design of a RIB as well as for the design of a boat's hull.

Designers use the capabilities of CATIA Analysis to perform virtual tests of structural integrity and deformation. "With CATIA, we have an integrated all-in-one solution," explains Angelos Protopsaltis, technical director, Planatech. "We don't need to change systems or convert data." Designers

also use CATIA's ergonomic analysis capabilities to study the way a human being sits and moves inside the boat. After final acceptance of the boat's design, they design the tooling as well as generate the numerical control (NC) codes that drive routers, or NC machines that are used to cut materials like wood and polyester for boat parts and molds.

AN IMPORTANT ALLY FOR ACCURACY

CATIA Analysis is used during the design phase to give designers a realistic view of the stresses a part will endure under actual operating conditions. "Since we use composite materials for the construction of our fast power boats, material deformation, failure and fatigue are highly affected by design factors such as shape, dimensions of unstiffened areas, and curvature," said Angelos Protopsaltis. "This is why we must pay special attention to add-on equipment such as fuel tanks that are attached to the boat. Using CATIA Analysis, we perform dynamic load studies on the entire structure to see how and where the boat experiences stress caused by these extra loads, which in turn helps us design the most appropriate way to fasten the tanks to the boat."

Planatech engineers also perform detailed virtual tests in areas of the boat that relate to crew safety, for example, the transom (stern section of a boat's hull) for outboard engines or internal bases for in/outboard engines. "Thanks to CATIA Analysis, we no longer need to create detailed prototypes since we can perform accurate stress tests virtually," said Angelos Protopsaltis. "We can implement innovative design ideas faster and reduce overall production time by 30%."

TIME SAVED ON SCORPION IOM RIB

Planatech designed a new Scorpion 10 meter RIB with CATIA and benefited from the fact that it was able to assemble all the parts in various configurations and present the different options to customers. It also designed and machined all the plugs that are used to form the shape and profile

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of the required mold. CATIA Analysis was used to define the construction sequence, thus optimizing the quality of the final product. "We were able to do away with our old development procedures, which were solely based on an engineers' know-how, and thereby accelerated the development process of the Scorpion by 25%."

Planatech is considering implementing ENOVIA SmarTeam to manage its designs and associated

information. They would link ENOVIA SmarTeam, which will be used to manage the design, testing, and manufacturing of each RIB, with its ERP system. Planatech will redesign and improve its older hull designs by copying them using a laser machine and importing these designs in CATIA using CATIA's rapid prototyping solutions.]

For more information:
www.planatech.gr

More about Planatech

Since 2007, Planatech represents Italian and American boat makers, Sciallino and Back Cove Yachts, respectively, in Greece. These two companies combine advanced technology and traditional methods in the construction of their yachts. In addition to designing and manufacturing inflatable boats under its own label, Planatech collaborates with some of the world's most prestigious names in boat design such as Britain's Scorpion Ribs and the Italian Asso.

