



OPTNAV

OPTIMISING VESSEL HYDRODYNAMICS TO IMPROVE PERFORMANCE AND REDUCE ENERGY CONSUMPTION

Greater collective awareness of environmental issues and the continued high price of fossil fuels have had a marked impact on the maritime sector. These factors now considerably influence the selection criteria applied by clients and ship-owners seeking clean and efficient ships. Naval architects and shipyards now have to employ numerical simulation and automated systems to optimise hull design. Significant improvements in performance are obtained by numerically optimising the shape of hulls and appendages and the interaction between hull and propeller.

The object of the OPTNAV project was to develop tools and methods for optimising the hydrodynamic performance of ship hulls, which could be used on any type of vessel. In the course of the OPTNAV project, a system for parametric modelling of hulls, appendages and propellers was developed using Rhino3D CAD software, along with an innovative code enabling the performance of dozens of different designs to be assessed in just a few hours.

The optimisation service now offered by HydrOcean can thus improve a ship's performance in a matter of weeks by adapting its design to the required operational profile. As optimisation consultants, HydrOcean will, in particular, be able to significantly increase the company's turnover in the shipbuilding and design sector. The OPTNAV project has boosted the company's R&D with the creation of 3 jobs during the project and the prospect of 10 engineers being employed in the next 3 years.

In the course of the project, STX acquired the skills and tools to deliver its customers optimised ships and to develop its "green ship" image, securing it a role in fulfilling orders for new ships and thereby creating/retaining 1 500 jobs over the next 2 to 3 years.

The project was the subject of 3 scientific publications and technology seminars at an international level in partnership with Bureau Veritas in Asia and Latin America. HydrOcean is currently working with Bureau Veritas on marketing energy optimisation services internationally for the shipbuilding and refit markets.

The project partners are due to submit a follow-up to the project by incorporating ocean swell into the optimisation process and by optimising static stability to identify a ship's ideal course in relation to operational and environmental conditions.

The OPTNAV project was officially recognised by the clusters Pôle Mer Bretagne and Pôle EMC2.

Partners

Companies

HydrOcean, Nantes [Project Developer]
Bureau Veritas, Nantes
Bureau Veritas, Paris
Sirehna, Nantes
STX France, Saint Nazaire

Research center

École Centrale de Nantes (ECN),
Laboratoire de Mécanique des Fluides,
Nantes

Funders

- Fonds Unique Interministériel
- Conseil régional des Pays de la Loire

Labelisation

21/11/2008

Overall budget

1 609 K€