Tanker gains capacity and security

Two independent propulsion lines ensure redundancy

The first example of an advanced products tanker design developed by Rolls-Royce has been ordered, offering commercial and safety benefits from its twin azimuth thrusters with pulling propellers

Under development over the past three years, the NVC-Design 604PT products tanker concept combines greater tank capacity than a conventional single-screw tanker with the security of propulsion system redundancy and a high level of manoeuvrability. The ship's diesel-mechanical propulsion system is based on twin Ulstein Aquamaster Azipull azimuth thrusters with pulling propellers.

Bergen Tankers AS will have the 4,200 dwt vessel built by RMK Marine Shipyard in Turkey, with delivery scheduled for September 2005. Rolls-Royce is to deliver the design and the Azipull thrusters, but additional Rolls-Royce equipment may be specified. The vessel will operate along the Norwegian coast on long-term charter to an oil major.

Since the azimuth thruster system allows the engine room bulkhead to be moved further aft, cargo volume is increased by 5-7 per cent. This provides a short payback time on the slightly increased construction cost compared with a basic single-screw ship.

By using two independent propulsion lines comprising thruster, shaft generator and main engine, a high level of redundancy is achieved.

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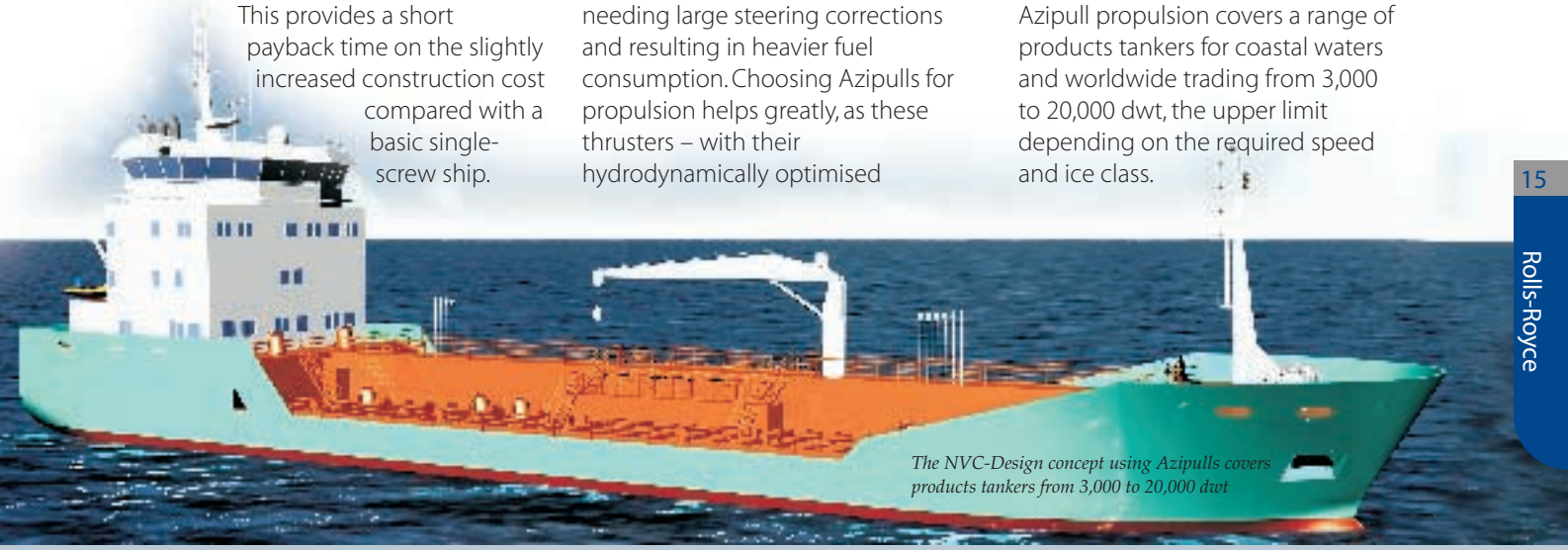
It also means that maintenance work can be carried out on one engine when the vessel is working cargo in port, since the other unit, assisted by the tunnel bow thruster, is immediately available to take the vessel to safety should an emergency arise at the terminal.

Hulls with length-to-beam ratios desirable for low first-cost and high earning capacity in the past tended to have poor course stability when propelled by azimuth thrusters, needing large steering corrections and resulting in heavier fuel consumption. Choosing Azipulls for propulsion helps greatly, as these thrusters – with their hydrodynamically optimised underwater units – provide substantial rudder area. Even so, a major programme of computational design and model testing was undertaken to ensure that the result would be a tanker with good course stability.

Each independent propulsion system comprises a main engine of about 1,400kW driving an AZP85 Azipull thruster equipped with a CP propeller, with a 1,000kW generator interposed in the shaft between engine and thruster. The simple mechanical layout offers flexibility and lower losses than diesel-electric, while the system is less demanding to operate.

In port, one engine can be shut down. The other is declutched from its thruster and drives its generator, supplying power for the hydraulic deepwell cargo pump powerpacks and the vessel's hotel load.

Cargo hold volume is 5,200m^3, split between 10 tanks, each with its own cargo pump. These lie within the double hull which has a length of almost 90m and a moulded breadth of 16.5m; the summer draft is 6.0m, and the service speed 13.3 knots. This NVC-Design concept using Azipull propulsion covers a range of products tankers for coastal waters and worldwide trading from 3,000 to 20,000 dwt, the upper limit depending on the required speed and ice class.



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