

In pursuit of energy savings

By Doug Woodyard

An era of rising bunker and overall operating costs and tightening environmental controls has seen cruise ship operators vigorously pursue fuel-saving and emissions-cutting measures. Energy saving was highlighted by Royal Caribbean executive vice president Harri Kulovaara in the group's new Solstice-class tonnage, whose design and specification reportedly achieved a 25% greater energy efficiency per guest than any previous Celebrity Cruises' ship.

Contributing to the enhanced economy are a ducktail aft hull design and a silicone-based low friction foul release coating, the latter measure alone reportedly yielding a 4-6% improvement in fuel efficiency. A 25-30% reduction in energy consumption for air conditioning is secured using fan coils, energy recovery, a variable-flow chilled water system, window tinting and better insulation. Air conditioning in the cabins is also designed to switch off automatically when the balcony door is opened.

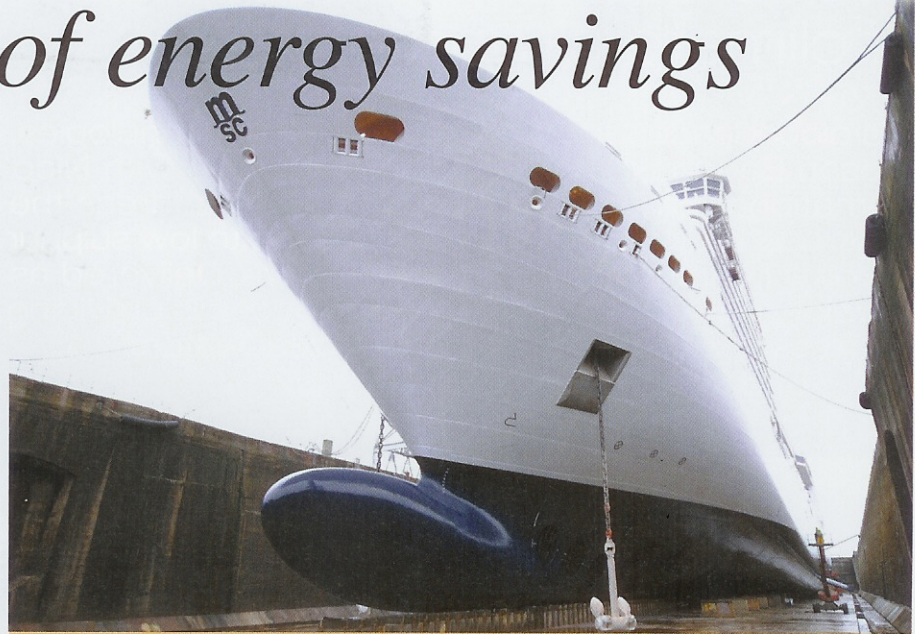
Lighting is cited as another area of energy saving, LEDs having replaced halogen, and dimming systems installed: these and other innovations resulted in a drop of over 40% in illumination-related consumption.

Another innovation is the use of solar power, said to be a first in cruising, with 500sq mtr of photo-voltaic panels and foils feeding electricity into the main grid. The installation is relatively modest – sufficient to power 7,000 LED lights or 12 passenger elevators – but continuing advances in solar technology will be more widely exploited.

Fuel saving was sought by Norwegian Cruise Line in adopting Eniram's Dynamic Trimming Assistant (DTA) across its fleet, following full-scale pilot deployment of the Finnish system on Norwegian Jewel.

'Increasing fuel prices are a pressing issue to everyone in the maritime industry,' says Niklas Peterstam, NCL captain and vice president/nautical operations. 'We are always looking for opportunities and technologies to help optimise our use of fuel.'

Eniram DTA is designed to assist officers in optimising trim at all times, thereby minimising water



Cruise ship operators are exploiting new generation biocide-free foul-release coatings, such as International Paint's Interleek 900 (shown in blue)

resistance, cutting fuel consumption and reducing emissions. The system continuously collects and displays real-time data on vessel attitude, allowing timely action in changing conditions. The key metrics are presented in graphic form to facilitate swift and informed decision making.

Celebrity Solstice also benefits from the NAPA Power system for enhancing fuel performance. Fuel savings of 4-5% can be realised, according to Finland's NAPA group, by creating a detailed plan for executing the voyage most effectively. The system is based on an accurate model of the ship's power plant and propulsion system. An optimum speed is calculated for each leg of the route in the prevailing and forecast environmental conditions.

New generation foul-release coating systems for underwater hulls promise significant reductions in fuel consumption and emissions, savings over conventional hull antifoulings typically

lying in the 6-9% range. International Paint offers the fluoropolymer-based Interleek 900 series; Hempel exploits hydrogel silicone technology in its Hempassil X3 product; and SigmaGlide 990 represents Sigma Coatings' latest biocide-free fouling technology.

A dominant share of the cruise ship market has been earned by ABB Marine's pioneering Azipod podded propulsor since a debut installation on Carnival's Elation in early 1998.

A comprehensive Rethink the Azipod R&D programme to develop a completely new generation, initiated by ABB Marine in 2006, sought improvements in efficiency, safety, maintainability, reliability, production, the human interface, life-cycle cost and environmental performance.

Among a number of external and internal modifications, the resulting new Azipod XO series benefits from: a modified pod hull design with more internal space to allow the maintenance of key components without drydocking the ship; the refined external design also improves hydrodynamic efficiency and reduces steering torque; fully electric steering with motors controlled by variable speed drives, and inside a new sealing system for the propeller shaft to prevent seawater leakage into the pod and an interspace concept facilitating seal maintenance without drydocking. ●

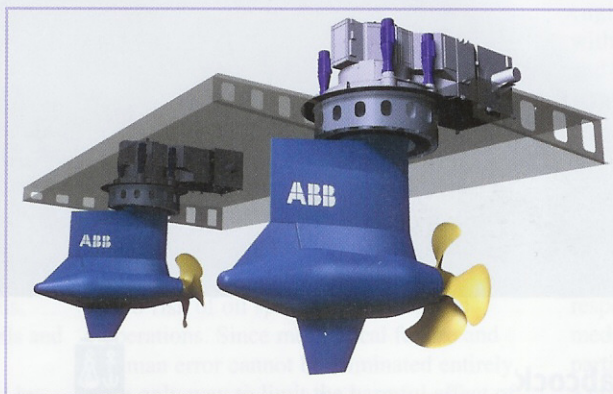


ABB AziPod XO – modifications made