

# SORJ

SHIP AND OFFSHORE REPAIR JOURNAL



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**New Mega yard opens in Singapore**  
**More OSV activity in the Arabian Gulf**  
**Over 55 FPSOs are required – SBM**



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## Paints/Anti-Foulings/Anti-Corrosion

when bidding for eco-ship projects. The solution provides an opportunity to both optimise initial performance as well as lifetime performance. The solution thereby serves the long term interests of the designers, yards, owners, operators and the environment," says Geir Boe, Vice President Jotun Marine Coatings.

The foundation of the HPS Newbuilding solution is SeaQuantum X200, Jotun's top of the line antifouling with documented low friction properties, designed to maximise initial and lifetime performance. In addition comes three upgrade components with reliable guarantees.

Roughness of the hull has a major impact at speed trial. The first component of the HPS Newbuilding Solution is a Smooth Application Package that combines comprehensive technical service with an optimised anticorrosive system. Jotun measures average roughness on the underwater hull surface and offers a money-back guarantee as a part of its Smooth Application Package.

Keeping the hull slime and fouling free through the outfitting period is a challenge. Jotun's second component is an Outfitting Protection Package which includes a final coat of the newly developed SeaQuantum X200-S which has superior resistance to slime and fouling. Any fouling incurred over the docking may have a major impact on the attained EEDI. With the Outfitting Protection Package Jotun guarantees a clean hull at speed trial. Yards will then avoid costly re-dock or under water hull cleaning which is time consuming and may increase hull roughness.

The third and last component is a 60 month high performance guarantee with cash back if average speed loss exceeds 1,50% over 60 months which may be transferred from the yard to the owner. This equals a 15% improvement in propulsion efficiency over 60 months compared to market average performance. This component gives the yards an opportunity to differentiate themselves by extending from a typical 12 month standard guarantee to a 60 month high performance cash back guarantee.

By analysing a series of accurate measurements from the ship in voyage, Jotun determines the condition on the underwater hull and its effect on fuel consumption using the Jotun Hull Performance Measurement Method.

## Ecospeed for research vessel

Earlier this year the underwater hull of the newbuild research vessel MYA II was given a lasting Ecospeed protection. The application



The research vessel MYA II

was carried out at the Fassmer shipyard in Berne, Germany, where the vessel was launched on 12 August.

The vessel was handed over to the coastal researchers at the Alfred Wegener Institute (AWI), Helmholtz Centre for Polar and Marine Research at the Wadden Sea Station on the island of Sylt, Germany. In a brief speech, AWI director Prof. Dr. Karin Lochte emphasised the importance of the ship for research into the

"We placed great value on environmentally friendly technology when building the MYA II"

**DR. KARIN LOCHTE**

Wadden Sea, which is a world heritage site. She also referred to the benefits for young scientists who, in future, will use the MYA II as a marine research platform on the doorstep. "Whilst this is our smallest research vessel, it is extremely modern and ideally equipped for coastal research", said Prof. Dr. Karin Lochte. She is impressed by the modern technology on board which is reminiscent of the equipment on large research vessels.

The head of AWI logistics, Dr. Uwe Nixdorf, underlined the positive co-operation with the shipyard and suppliers which, bearing in mind the demanding requests of scientists, was impressive. The order to build a research

ship around 20 m in length for up to twelve researchers was supplemented by wishes such as: shallow draught, possibility of falling dry in the mud flats, various winches, plumb lines, measuring instruments, a crane and a speed of ten knots. After all, the new ship ought to be able to outperform its predecessor, the now 35 year-old MYA.

The interaction of flora and fauna in the food web is one of the biological key issues examined at the AWI Wadden Sea Station. Scientists are now able to investigate the demands of individual species and their interaction without a need for intervention in the ecosystem. This provides them with the basis for a responsible use of the Wadden Sea, which is a UNESCO world heritage site.

MYA II was also awarded the "Blue Angel" eco label for its environmentally friendly design. "We placed great value on environmentally friendly technology when building the MYA II in order to minimise disturbance to the Wadden Sea caused by research activities," says Prof. Dr. Karin Lochte. The new ship has a particulate filter as well as a waste gas purification system, which removes nitrogen oxide (NOx) from engine exhaust fumes. As a result, the NOx emissions of the MYA II are around 85% below the current limit.

Meanwhile, in September the rudders of six container ships were coated at shipyards in China and the United Kingdom with Ecoshield, the new special rudder coating. The vessels belong to different owners, both returning customers and new ones. More and more shipowners, operators and technical superintendents are finding that Ecoshield is the ultimate solution when it comes to protecting a rudder from cavitation damage.

Cavitation erosion damage had appeared on the rudders of these vessels. The owners therefore decided to use Ecoshield because this will prevent similar damage from occurring



## Paints/Anti-Foulings/Anti-Corrosion

again. The coating provides the rudder with an impenetrable protective layer. At the same time its toughness and flexibility enables absorption of the forces that are produced by cavitation. This prevents the damage normally caused by this phenomenon. Without proper protection against cavitation and the resulting erosion and corrosion damage, the financial consequences can be severe.

Ecoshield is guaranteed for ten years. With an Ecoshield application no repaint will be needed during drydocking. At most, minor touch-ups will be required. Planning the maintenance of the vessel's stern area therefore becomes much easier. The smoothness attained by the coating also provides optimum hydrodynamic conditions. This allows rudders to operate at maximum efficiency. The ship's performance therefore remains stable and the owner's investment is secured.

Ecoshield is also ideally suited for other areas prone to cavitation erosion or other damage, such as propeller nozzles, thruster tunnels, the bulbous bow or stabiliser fins. For this reason several of the container vessels had Ecoshield applied to their thruster tunnels. Thanks to the Ecoshield application, these areas will be safeguarded together with the rudders for the remainder of the vessels' service life.

### Belzona's cold curing system

Belzona's high performance cold curing system has already been used to bond a multitude of substrates in various industries and has been perfected for offshore deck renovation applications. Deck maintenance is a major issue faced by asset shipowners and operators. Corrosion of the deck can lead to significant loss of wall thickness. With time, this will reduce the load bearing capability of the deck and the typical consequence would be to limit the access to or reduce capacity of the corroded deck. In the case of a lay down deck area where containers are loaded/ offloaded, it would mean that the laydown area's capability will be reduced, limiting its use and potentially affecting the platform operation.

Apart from replacement, welding used to be the only alternative. Welding in turn presents obvious challenges in terms of safety, heat stressing and load transmission. Additionally, if the passive fire protection was installed on the underside, welding is not a viable option.

Oil and Gas companies have been choosing to avoid hot work to ensure the risks are minimised and opt for cold curing technologies,

where they require a proven solution that will eliminate the problem for the long term.

Belzona has pioneered high performance cold bonding technology and in 2004, it was applied to a badly deteriorated deck on a North Sea platform. The deck had become weakened through daily operation and weather. The original 8 mm steel deck was corroded through in many locations and welding was not an option due to the installed under-deck passive fire protection.

The following application procedure was developed, specified and applied by a competent team, who received comprehensive Belzona training as standard. Steel plates, drilled to accept jacking bolts and injection ports, were prepared and positioned onto the grit-blasted deck. The jacking bolts were used to obtain accurate levels. The sides of the plates were dammed using an epoxy paste. A fluid grade epoxy was then injected into the void using an airless pump to seal and bond the reinforcement plate to the deck achieving full contact.

Independent testing showed that the Belzona bonding method in this case was equivalent in strength to a welded plate. Good resistance to impact loading was achieved and considered by the independent engineering designers to be "robust enough to withstand the rigours of the laydown area operations".

Daily operations were not interrupted and the passive fire protection in the machinery space below was not affected. This work has been inspected annually and now, almost 10 years on, is still in perfect condition.

### Cathelco anti-fouling system for Russia

Cathelco are supplying seawater pipework anti-fouling systems for six frigates which are being

built for the Russian Navy's Black Sea Fleet by the Yantar Shipyard in Kaliningrad. The keel of the first warship, the *Admiral Grigorovich*, was laid down in 2010 and delivery of all of the vessels is scheduled between 2014 and 2016.

The Project 11356 frigates are designed for anti-surface and anti-submarine warfare. Each of the vessels has a displacement of 4,000 tons, a speed of up to 30 knots and a crew of 193. "We have been supplying equipment to the Russian Navy since the 1990s but this is the largest order that we have received for pipework anti-fouling systems for a series of warships", said Justin Salisbury, managing director of Cathelco Ltd.

The orders have been won through Marine Bridge & Navigation Systems, Cathelco's well-established Russian agent based in St Petersburg. The Cathelco anti-fouling systems will protect the seawater pipework systems on the vessels against blockages caused by barnacles and mussels. Because the warships have cupro-nickel pipework, pairs of copper and ferrous anodes will be installed in a total of eight seachests on each ship. The anodes are supplied with an electric current from control panels. In operation, the copper anodes produce ions which create an environment where barnacles and mussels do not settle or breed.

At the same time, the ferrous anodes produce ions which create a protective oxide layer on the internal surfaces of pipes to suppress corrosion.

Cathelco are world leading manufacturers of seawater pipework anti-fouling systems with a record of over 30,000 installations over a period of more than 50 years. This includes the supply of systems for over 40 navies around the world. "The effectiveness of the system has been proved on numerous types of naval vessels from submarines, fast patrol craft and frigates to the new *Queen Elizabeth* Class aircraft carriers which are currently under construction for the Royal Navy", Mr Salisbury explained. **SORJ**

The *Queen Elizabeth* aircraft carrier

