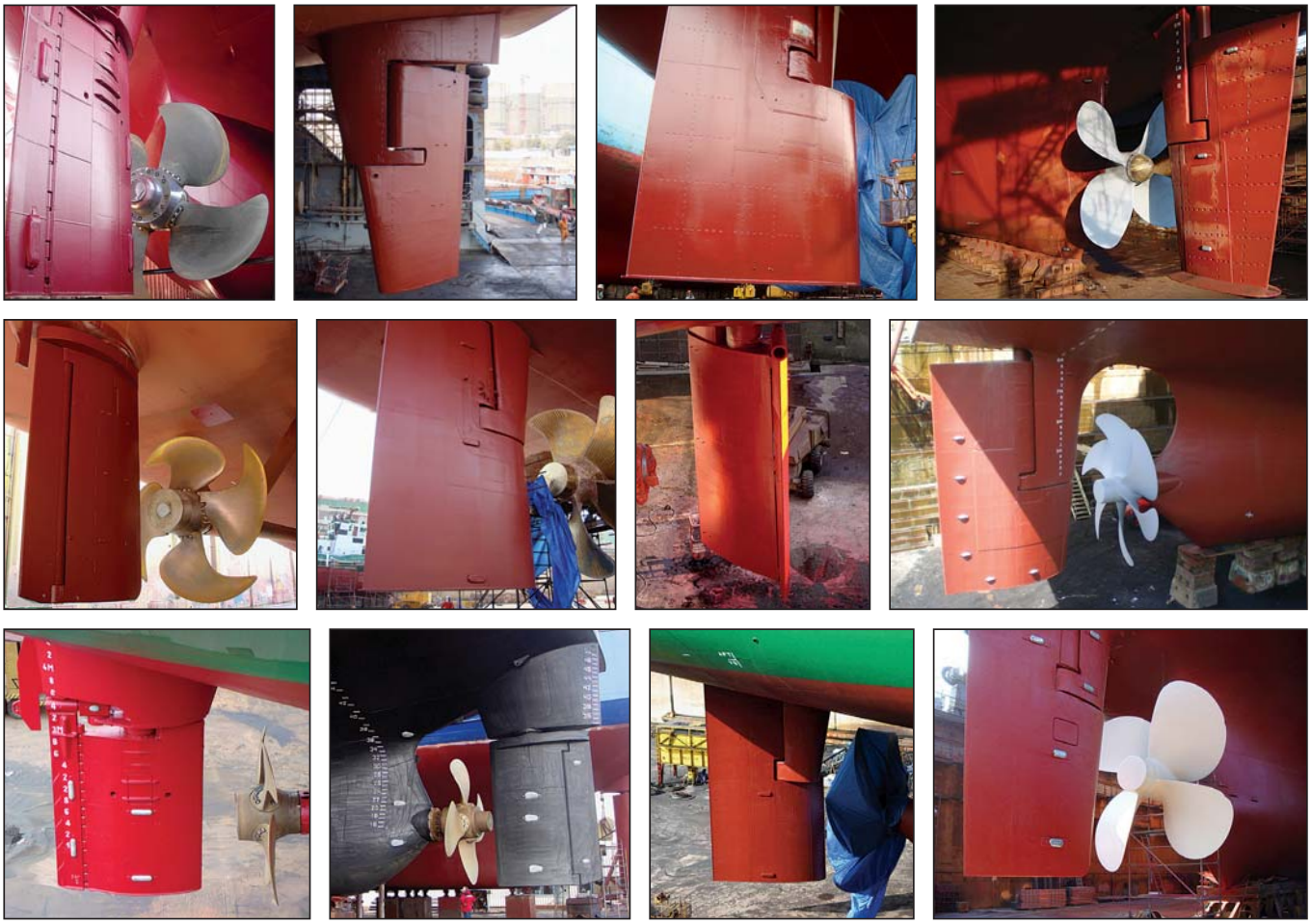
SUBSEA
PROTECTION AND PERFORMANCE

NEWS
LETTER

The only coating that offers lasting rudder protection



Ecoshield gives a very thorough and lasting defense against cavitation and corrosion damage for a ship hull's entire service life.

The coating equally provides the rudder with an impenetrable protective layer while its 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.

By removing the existing paint layers and applying Ecoshield on the rudder we can break the never ending cycle of painting, suffering damage, having to perform extensive repairs in dry-dock followed by a full repainting, again and again.

With an Ecoshield application no full repaint will be needed during drydocking. Ecoshield is guaranteed for ten years. At the most, minor touch-ups will be required.

ECOSHIELD®

THE DIAMOND STANDARD IN STEEL PROTECTION

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Multi-purpose survey vessel coated with Ecospeed in Poland

In November Ecospeed was applied on the hull of the multi-purpose research vessel *Imor* in Gdańsk, Poland. The 32,5-meter catamaran is owned by the Maritime Institute in Gdańsk and was designed to perform a range of tasks such as oceanographic measurements, hydrographic or geophysical operations and bottom inspection. Due to the nature of these tasks, the ecological benefits Ecospeed offers were very important in deciding on the coating.

The Maritime Institute in Gdańsk is a research and development unit supervised by the Ministry of Maritime Economy. For over fifty years the Institute has been closely associated with maritime economy. The Institute conducts research work, scientific and implementation projects, studies and assessments. The mission of the Maritime Institute is to take care and preserve the values of the sea and sustainable development of the Polish maritime economy.[1]

The r/v *Imor* was built in 2005 as a multi-purpose shallow water survey and ROV support vessel. She can be easily re-configured according to the requirements. The small size, small draught, high relative power and great flexibility of possible applications makes her ideal for work in shallow waters.

She is mainly used for operations in the Baltic and North Sea area.

[1] Source: http://www.en.im.gda.pl/about-institute

The underwater hull of r/v Imor *prior to Ecospeed application.*

Ecospeed is 100 % environmentally safe.

The underwater hull will be protected for the rest of the vessel's service life.

Ecospeed was applied during the vessel's docking in Gdańsk.

The current activities of the vessel include the creation of an inventory of marine mineral resources and investigations concerning the impact of economy on marine environment and ecosystems.

A 100% non-toxic underwater hull coating

Ecospeed ties in perfectly with the ecological ideas of the Maritime Institute. The coating offers a TBT-free, copper-free, biocide-free and silicone oil free solution for the protection of the underwater hull. The Ecospeed hull protection and performance system is today's Best Available Technology for reduction of fuel consumption, GHG and other emissions through hull hydrody-

R/v Imor *after Ecospeed application on her underwater hull.*

namics and fouling control.

In 2008, stringent tests were carried out within the framework of an EU LIFE demonstration project to provide scientific data and to authenticate the non-toxicity of the Ecospeed hull performance technology. This research proved that the coating is 100% free of toxic substances and that there is no negative effect on the water quality or the marine environment at any point of its application or use. Moreover, the massive amounts of VOC and zinc anode emission associated with conventional hull coating systems are reduced to almost zero.

Preventing the spread of Non-Indigenous Species

Over the last several years there have been concerns that non-indigenous species (NIS) are transported by fouled hulls just as much or even more than in ballast water. Once a hull becomes heavily fouled, a situation occurs where there is an increased risk of transporting NIS that needs to be remedied by defouling activities, either by out-of-water removal or by underwater cleaning. In this respect, underwater cleaning has come under some scrutiny out of fear that viable NIS are released and spread, rather than contained and disposed of by the operation. Several ports and countries have banned underwater cleaning out of concerns about pulse release of biocides and/or an increased risk of transferring NIS. Taking into account the delicate ecological research r/v *Imor* is used for, this is an especially important issue for the researchers.

The underwater cleaning of Ecospeed can be regarded as a safe measure that prevents, rather than remedies, the spread of NIS. Firstly, Ecospeed can be cleaned on a regular basis without damaging the coating's surface. The cleaning interval is optimized to minimize fouling and the associated increase in fuel consumption. In other words, regular cleaning prevents macrofouling from building up and at the same time presents an opportunity to inspect so-called niche areas. Secondly, Ecospeed is a very durable coating that withstands abrasive cleaning for which very effective specialized tools have been developed. As a result, many of the fouling organisms will be destroyed during cleaning. As long as only microfouling or locally acquired macrofouling is cleaned off the hull and niche areas, the risk of translocation of NIS via hull fouling is minimal. Standard use of Ecospeed is the key to resolving the hull-borne NIS issue.

Summary

The use of an environmentally safe underwater ship hull coating was essential in fulfilling the ecological goals of the Maritime Institute. Ecospeed offers a perfect lasting solution for any individual or company that takes its environmental responsibility seriously. ■

Taking into account the delicate ecological research the vessel is used for, the ecological benefits Ecospeed offers were very important.

Ecolock long-lasting protection for offshore hulls

Ecolock is a product from the makers of Ecospeed and Ecoshield. It is designed to protect offshore units for decades without the need for drydocking. Increasingly, floating production units such as FPSOs, FSOs, FLRSUs and others used for offshore oil and gas exploration, drilling, storage and transport need to stay out of drydock for 15, 25 even 40 years. The challenge has been to protect the underwater hull from corrosion and to provide a cleanable surface so that the biofouling that accumulates can be removed successfully and safely for UWILD and to reduce weight. Ecolock is the answer to that challenge.

EXMAR chose Ecospeed to coat the hull of its first-of-a-kind floating LNG liquefaction, and storage unit, the Caribbean FLNG.

For decades it has been known that glassflake reinforced hard coatings last longer, are tougher and more resilient, need less repair and replacement than any other type of hull coating. Soft coatings such as biocidal antifouling and foul-release coatings do not hold up well. They need to be repaired or replaced often which is not good news for shipowners and operators and particularly offshore operators who need to keep their ships out of drydock. Their antifouling or foul release properties require that the ship move through the water at relatively high speed. On stationary vessels the fouling simply builds up.

Ecolock is an extremely tough and durable coating designed to remain in excellent condition for 15 - 25 years without drydocking, repair or replacement.

Ecolock is an extremely tough and durable coating designed to remain in excellent condition for 15 - 25 years without drydocking, repair or replacement. Ecolock can be cleaned underwater as often as needed to meet the UWILD and weight requirements of FPSOs, drill ships and other offshore units. Ecolock is the result of continual R&D on offshore hull coatings since the 1990s.

As long as it is standardly applied, Ecolock comes with a 10, 15 or 20 year warranty, if the coating is maintained according to the specifications. The thickness of the coating can be increased to extend its longevity. Even if minor mechanical damage does occur, because of the superior adhesion of Ecolock no undercreep will occur. ■

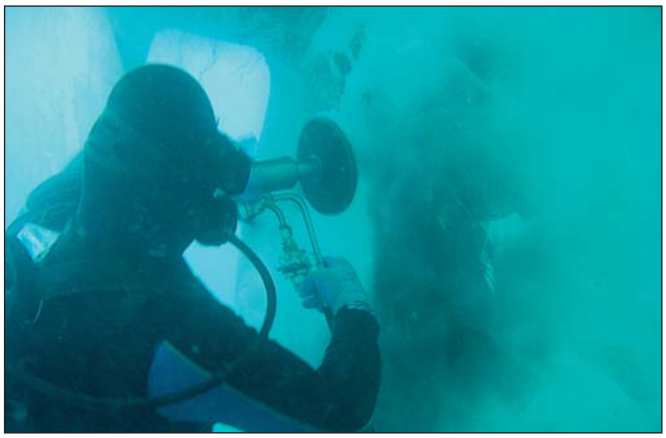
ECOLOCK®
LIFETIME CORROSION PROTECTION

Underwater Cleaning Equipment

In harsh underwater environments it is essential to have sturdy and reliable equipment. The unique design of our underwater cleaning machines provides the efficiency and durability required in such conditions. All our systems are carefully designed with operational safety as a prime consideration. A range of systems is available for various applications. All our cleaning units are offered separately or supplied with a complete support system including umbilical, tools and hydraulic power unit.

MC 111

The MC111 is our smallest model specially designed for cleaning and polishing ship hulls, propellers and thrusters. The MC111 is very handy and can be easily taken into difficult corners and niches while still obtaining the desired results.



MC 131

The MC131 is a compact unit designed for cleaning all kinds of marine fouling from yachts and smaller ships to offshore oil & gas platforms. The brush rotation speed is adjustable by the diver so as to achieve an optimum hourly cleaning rate.

MC 212

The MC212 is designed for cleaning light, medium and heavy marine fouling from ship hulls, offshore oil & gas platforms (concrete or steel), jetties, piles, intakes and internal pipelines. The equipment has a self-balancing feature, which allows the operator to use the tool safely and effortlessly for long periods.

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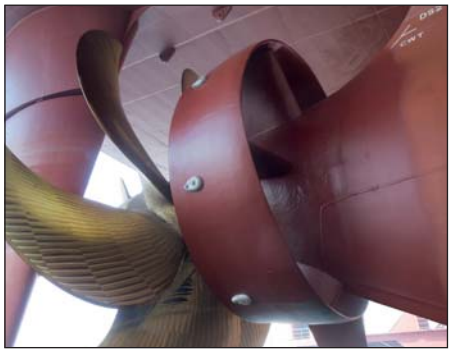

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