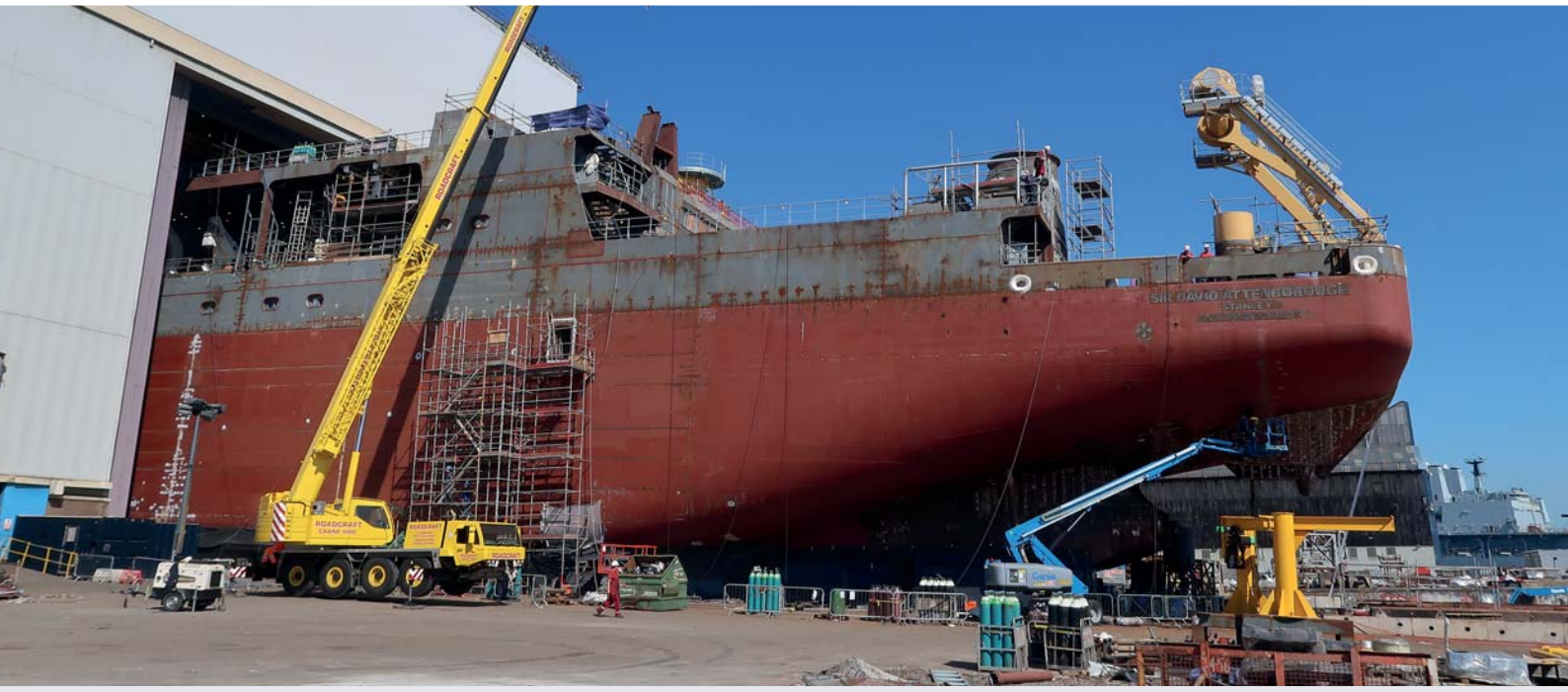
SUBSEA

PROTECTION AND PERFORMANCE

Magazine



ECOLOCK® ultra long-lasting protection for offshore hulls

Ecolock is designed to protect offshore vessels for decades without the need for drydocking. Increasingly, offshore 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.

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 vessels. Ecolock is the result of continual R&D on offshore hull coatings since the 1990s.

ECOLOCK®

LIFETIME CORROSION PROTECTION FOR OFFSHORE UNITS

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Editorial

In the first article in this magazine we write about some of the recent applications of Ecoshield on a wide range of vessels. This award winning coating system was designed to offer lasting protection against cavitation and corrosion damage for all running gear.

The second article talks about how the polar research ship *RRS Sir David Attenborough* was launched into the River Mersey from the Cammell Laird shipyard in Birkenhead. The ship will be operated by British Antarctic Survey (BAS) and will replace *RRS Ernest Shackleton*. The excellent results on that vessel made the decision to use Ecospeed an easy one.

Our hard coating along with other 'green' technologies will make *Sir David Attenborough* one of the most environmentally-safe ships afloat. We are proud to be part of this project that fits in perfectly with our goal: Clean rivers, seas and oceans.

Subsea Industries NV
Boud Van Rompay
Founder

The end of cavitation damage on running gear

Cavitation and corrosion causes severe damage to running gear that is not properly protected.

In the last few months a large number of vessels belonging to eight different owners received Ecoshield protection for their rudders, bow thruster (tunnels) and nozzles. The applications were carried out in shipyards in Turkey, the Netherlands, Singapore, Hong Kong and China on a wide range of ships. These included vehicle carriers, tankers, yachts and container ships. The running gear of all of these ships will be protected against cavitation and corrosion damage for the rest of their service lives.

Ecoshield offers permanent protection against cavitation damage for rudders. The coating protects the rudder for the service life of the ship without need for recoating or major repair. Ecoshield is also suitable for bulbous bows, stabilizer fins, nozzles and other underwater ship gear which needs special protection from corrosion.

Until now the problem of cavitation damage to rudders remained unsolved. This caused erosion, pitting and sometimes complete failure, necessitating very expensive repairs or replacement. The need for repairs to rudders, involving welding and resurfacing in drydock has been almost universal. The cost of rudder maintenance and the safety hazards connected with worn and failing rudders are out of proportion to the relatively small surface area involved. Efforts to solve this problem have taken the form of redesigning the rudder, changing its position

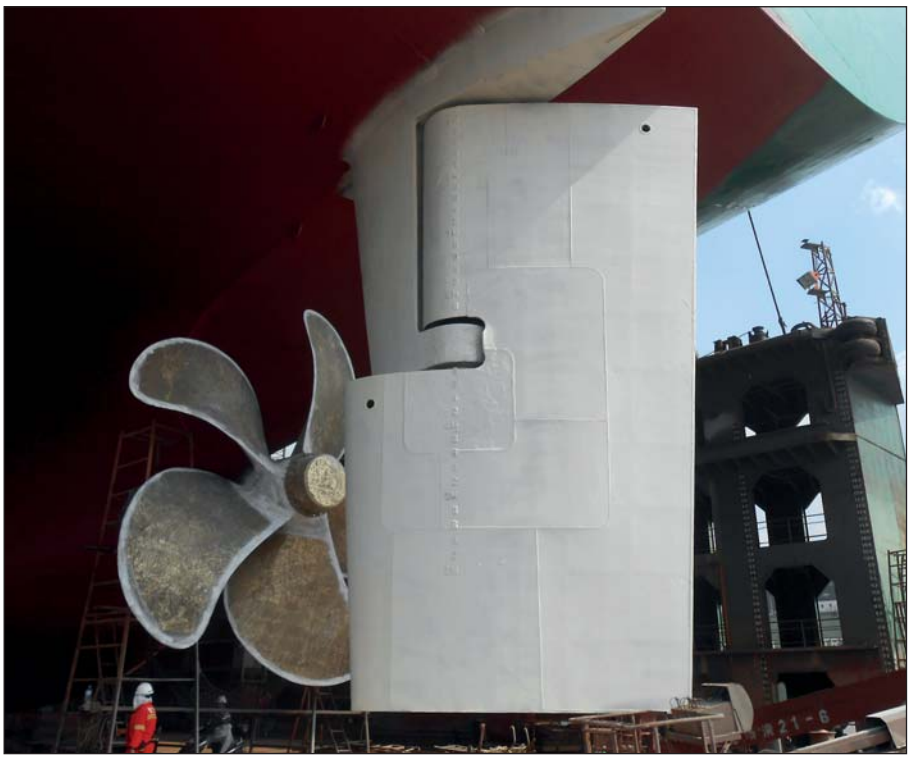
Any build-up of old paint layers is removed prior to an Ecoshield treatment.

Ecoshield can be applied fast and easy and often in a single day.

relative to the propeller, trying various materials including stainless steel, metal facing the surface, cathodic protection and a variety of coatings. But the problem has persisted.

Groundbreaking protection

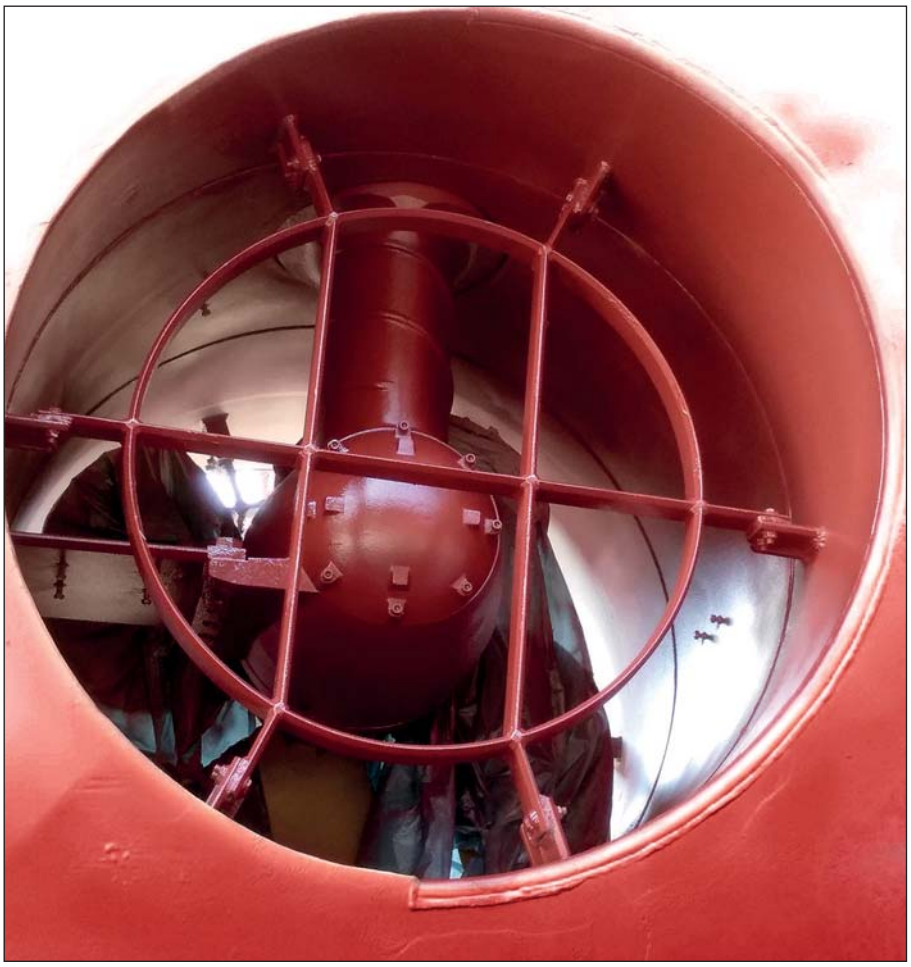
Ecoshield puts an end to these problems. The coating is a specifically reinforced version of the well-known Ecospeed non-toxic underwater ship hull coating which is designed for the entire underwater hull of any ship. Small but significant variations of the Ecospeed formula have been tested on rudders since 2002 with extraordinary results. Ships that were experiencing heavy cavitation damage to their rudders have seen no further cavitation damage erosion for over ten years and counting after application of Ecoshield. They show no sign that the coating will need replacement during the life of the ship.



Only three hours wait is required before the second layer.

Suited for newbuilds and existing vessels

Protection of the running gear of your ships is best begun at the newbuild phase. When a ship comes into drydock, maintenance of its stern area, especially cavitation and corrosion damage repair, can take a long time. There are strict procedures concerning blasting, painting, welding and propeller and stern tube seal work. Painting is then assigned



Bow thruster units and tunnels can also be protected with our coating system.

to the end of the schedule. As a consequence it may be rushed or not done at all or else may prolong the stay in drydock. With Ecoshield this is avoided from day one.

The newbuild phase is the perfect time to apply Ecoshield. However, the coating can also be used to protect vessels that have been in service for some time and are already facing cavitation and corrosion damage. Such was the case with the rudders coated over the last months.

Ecoshield's flexibility makes it easy to adapt the application schedule to the rest of the activities at the shipyard or drydock in a way which does not interfere with them. Overcoating time can be as short as three hours. This means that for smaller surfaces such as rudders or bow thrusters the two required coats can usually be applied in one single day.

Only two layers are required before a rudder is fully protected.

We can adapt the coating work to the schedule of the yard.

No repaint will be needed for the rest of vessel's lifespan.

All types of running gear can benefit immensely from an Ecoshield application.

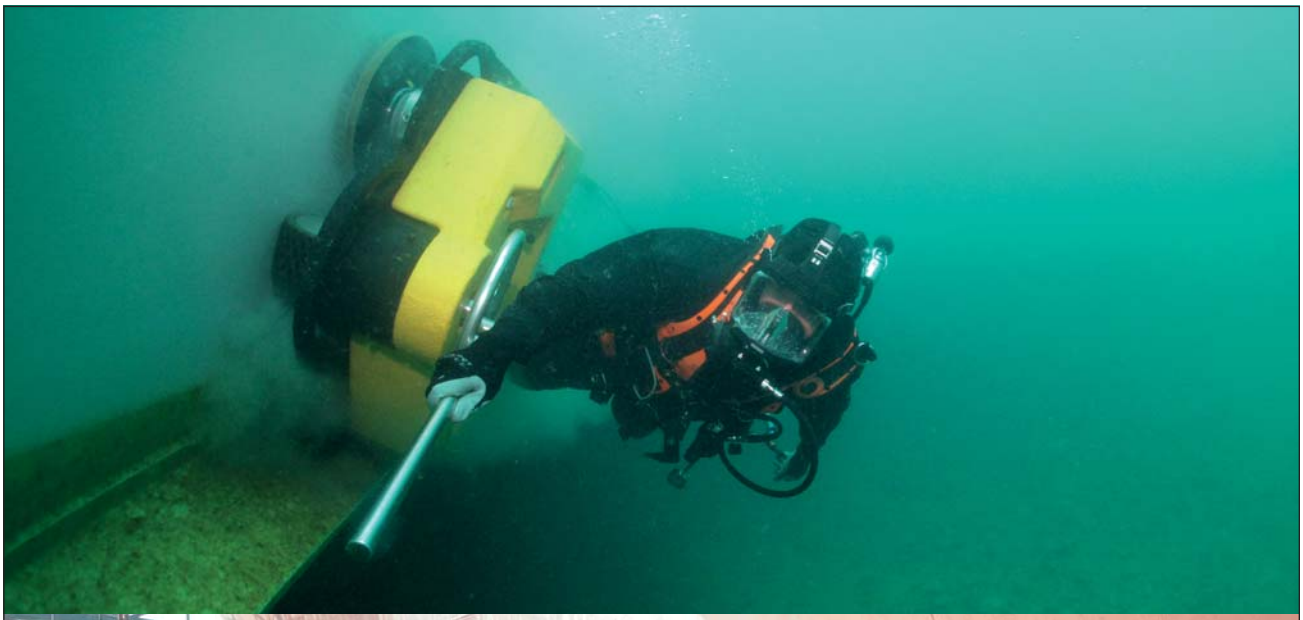
No corrosion or cavitation damage will appear on this rudder ever again.

Ecoshield insulates the rudder or other running gear and makes cathodic protection systems, including sacrificial anodes, unnecessary. This is evidenced by the very little wear on the anodes when a rudder coated with Ecoshield is inspected in drydock and by the fact that an impressed current can be turned right down with no ill effect.

Evidence of the success of the coating is the number of companies that began by coating one rudder experimentally and have ordered Ecoshield for the running gear on other ships after seeing the results in service. Most have plans to convert their entire fleet. Shipowners who have previously applied Ecoshield to rudders on ships in service are specifying the coating for the rudders and other underwater gear on their newbuilds.

Ecoshield comes with a ten year guarantee. It is the only coating known to fully protect a rudder from all cavitation damage. ■

The washable coating



Ship hulls should be protected with a system that lends itself to fast, effective cleaning without risk of damage to the coating and without posing any kind of hazard to the environment. Ecospeed is this system.

There is currently no hull coating available which will not foul. The only way to remove this fouling is to clean it off. The Ecospeed coating has a glassy surface that was designed to be washed without being damaged. This enables fast and efficient fouling control throughout a ship's entire service life, either by fast and easy underwater maintenance or high-pressure cleaning in drydock.

ECOSPEED®

SHIP HULL PERFORMANCE TECHNOLOGY

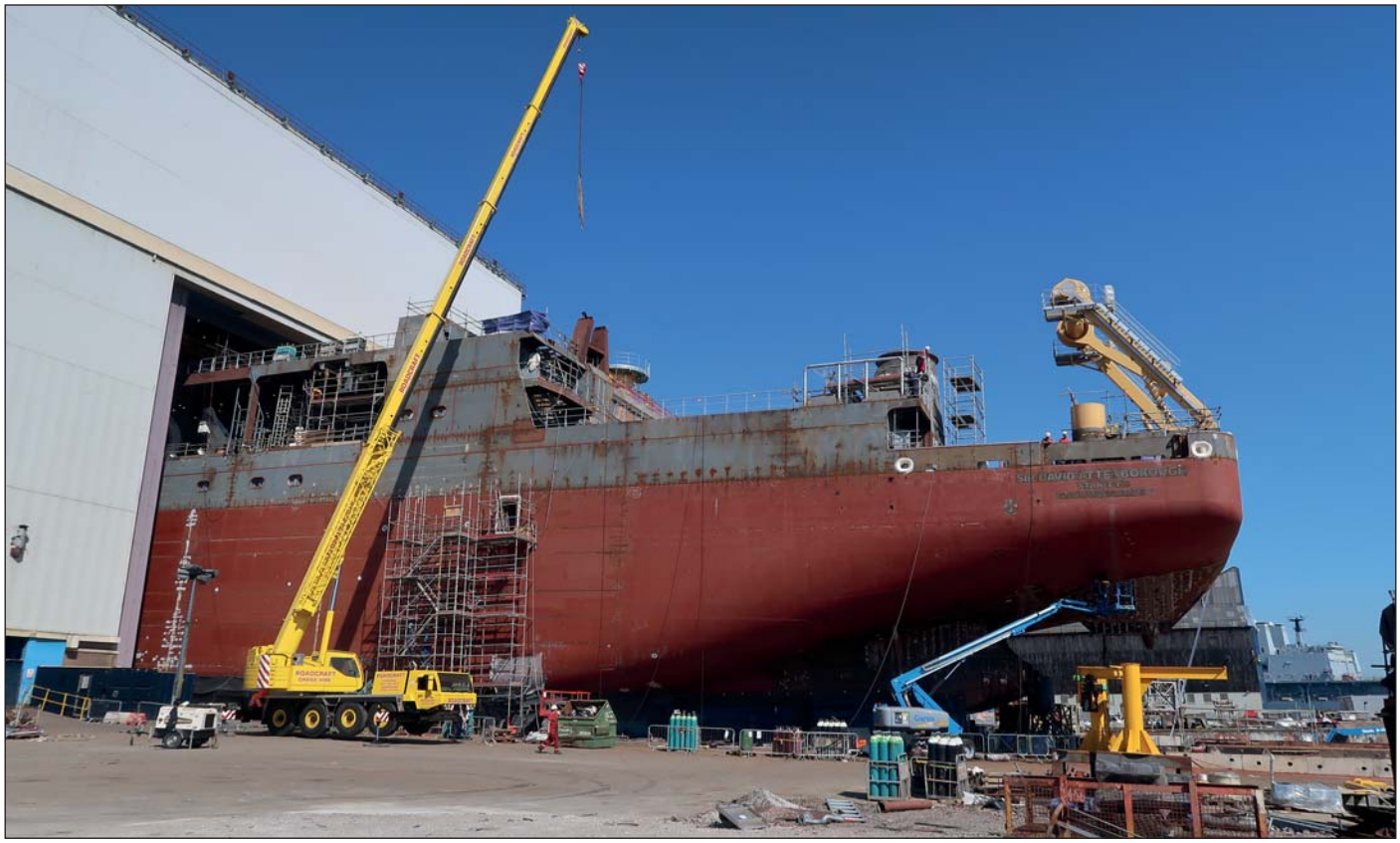
Ecospeed on the Mersey

The hull of the polar research ship *RRS Sir David Attenborough* was officially launched in July protected by the most environmentally-safe hull coating ever developed: Subsea Industries' ice abrasion resistant and washable Ecospeed.

The hull of the polar research ship RRS Sir David Attenborough *took to the water in July. Photo credit: Jon Payne (Cammell Laird).*

Commenting on the success of the vessel's launch into the River Mersey from the Cammell Laird shipyard in Birkenhead, Manuel Hof, Subsea Industries' production executive, said: "*RRS Sir David Attenborough* is now afloat with a hull protected by the same Ecospeed coating that has protected its sisters, *Ernest Shackleton* and *James Clark Ross*, for many years. It was incredibly exciting to watch the launch of this important vessel."

When the vessel is delivered to British Antarctic Survey in 2019, it will undertake world-leading environmental research into climate change and ocean protection. As such, the vessel required a fully ice-strengthened coating, without being harmful to the environment. "Ecospeed fulfils that requirement," said Hof.



The ship is constructed at the Cammell Laird shipyard in Birkenhead.

Application of the Ecospeed coating on the flat bottom of the vessel

"Ecospeed is a safe, hard-type coating with zero toxic compounds. It eliminates the potential pollution of polar waters with heavy metals or biocides and hull contamination during research activities, which is extremely important to the scientific work the vessel will carry out.

"The hard coating completely mitigates against the leaching of chemicals into the marine environment," said Hof.

Subsea Industries' Chairman Boud Van Rompay said: "We are delighted that Cammell Laird and BAS have successfully launched *RRS Sir David Attenborough*. The vessel is a showcase for an array of sophisticated technologies and systems, of which Ecospeed is one."

The 15,000gt research vessel, scheduled for operational duties in 2019, will be one of the most advanced polar research vessels in the world. The 128m long vessel will be capable of 60 days at sea without re-supply, covering a range of 18,898 nautical miles at 13 knots. ■

The thrusters of the RRS Sir David Attenborough *were treated with our Ecoshield coating for running gear.*

Ecospeed, the certified abrasion resistant coating

Ecospeed has a Lloyd's Register certificate that recognizes it as an abrasion resistant ice coating. This certificate confirms the durability and strength of the coating and shows the lasting trust in Ecospeed given by the classification societies.

The number one consideration in a hull coating for ice-going vessels and icebreakers is the ability of the coating to protect the hull in the harshest marine environment there is. Only a few types of coatings are capable of providing this protection. Typically they are certified for their ice-abrasion resistance qualities by the classification societies.

The abrasion resistant coating certificate allows owners of vessels intending to navigate in ice conditions to reduce the thickness of the plating of the ice belt if this area is coated with Ecospeed. The ice belt is the area on the bow just above the waterline that is most prone to mechanical damage from sailing through ice. This saves money in terms of requiring less steel to build the hull and reducing the overall weight of the ship. ■

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Certificate No: MNDE/2016/7392

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Recognised Abrasion Resistant Ice Coating

The product below is recognised as an abrasion resistant ice coating for ships intending to navigate in ice conditions.

If the coating is applied in way of the ice belt of ships intending to navigate in first-year ice conditions and is maintained in good condition during service, the thickness of steel plating in way of the ice belt may be reduced by up to 1 mm in accordance with relevant Rules and Regulations.

The recognition is subject to Lloyd's Register being informed of any changes in and modifications to the product's formulation or specification and the product being used in accordance with the manufacturer's instruction and with the relevant requirements of Lloyd's Register's Rules and Regulations.

Manufacturer:	Subsea Industries NV, Haven 29, Noorderlaan 9, 2030 Antwerp, Belgium
Product name:	ECOSPEED
Product colours:	Unspecified
Film thickness:	1000µm
Surface cleanliness:	Minimum Sa 2½ (ISO 8501-1)
Surface profile:	Minimum 75 µm
Date of expiry:	1 September 2021
Date of issue:	29 June 2016

Stuart Downie
Lead Specialist to Lloyd's Register EMEA
A member of the Lloyd's Register group

RECOGNISED

Ecospeed has proven on many occasions that it can withstand even the harshest winter conditions.

Corrosion damage repair made easy

Test plate showing the benefit of an Ecofix and Ecoshield combination.

Ecofix is used to fill and build up a corroded and pitted steel surface to its original form prior to recoating with Ecoshield. It is as tough as the steel itself, machinable, and can be used to repair most pitting or corrosion damage on rudders, stabilizer fins, thrusters and other underwater gear.

Ecofix is used in combination with Ecoshield, the ultimate rudder protection coating. When a rudder or other piece of underwater ship gear has not been properly protected, the surface will become corroded. Cavitation damage can cause severe pitting. The steel needs to be restored to its original shape with a smooth surface prior to recoating.

This is where Ecofix comes in. It is a superior, tested and proven filler. Because it uses the same basics, the Ecoshield coating can be applied just one hour after the filler. The bonding and hardness are extraordinary. This is the effective alternative to metal facing or very expensive alternative fillers. And because it is part of the Ecospeed/ Ecoshield family, it is fully compatible with the coating. ■

ECOFIX®
CORROSION REPAIR

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SUBSEA INDUSTRIES





Subsea Industries NV, was founded in 1983 specifically to take care of the design, development and marketing of what has become an evolving line of underwater hull and propeller cleaning equipment as well as the line of hard hull coating systems.

All products produced by Subsea Industries have the same goal in mind: To keep the underwater part of your vessel in the best possible condition for its entire lifetime at the best possible performance.

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