

SUBSEA
PROTECTION AND PERFORMANCE



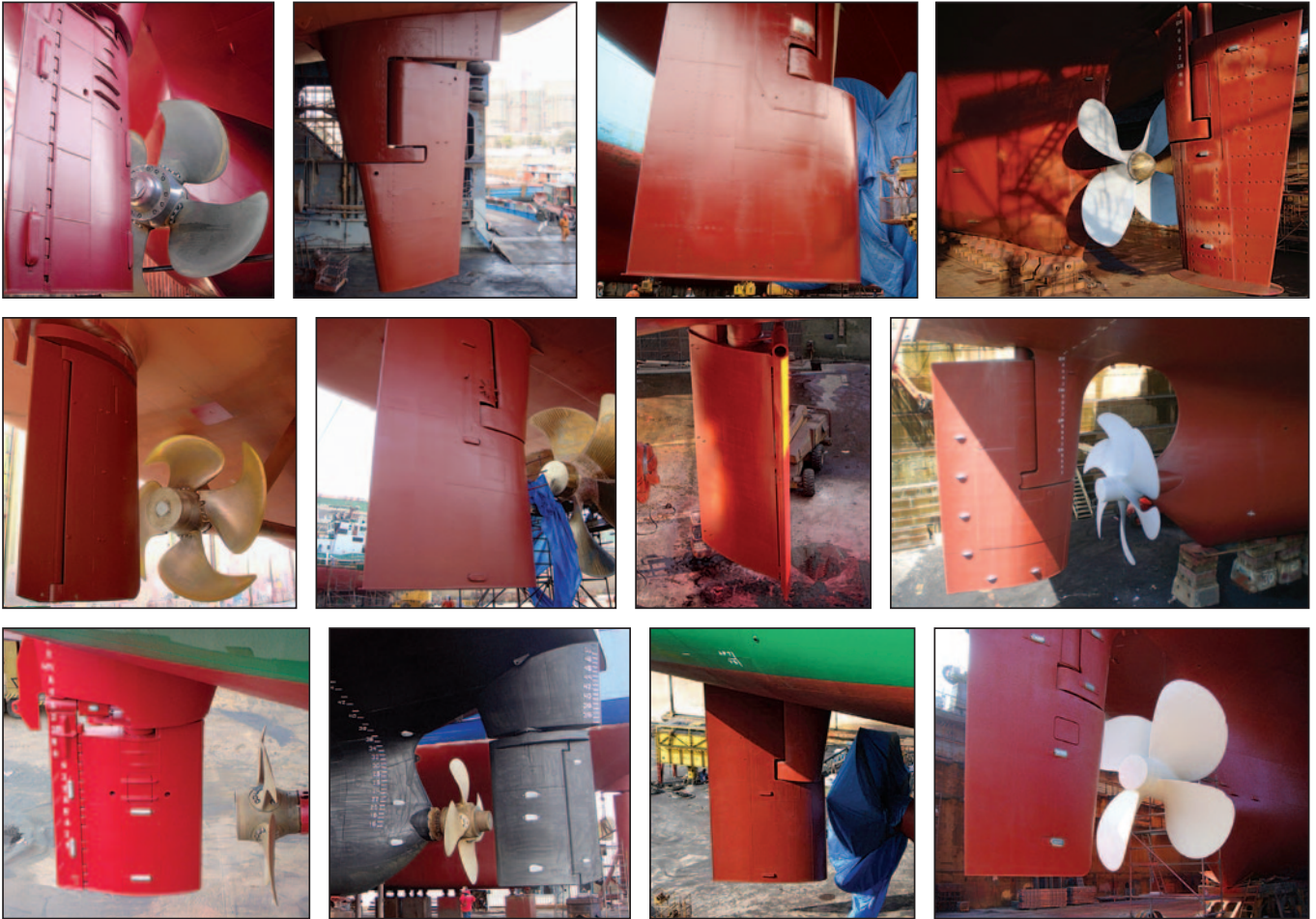
NEWS

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A full range of coating systems for all conditions

LASTING 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 drydock 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.

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A full range of coating systems for all conditions

Ecospeed was the first coating we launched in 2002. Since then several other products have joined the Subsea Industries family. In this article we look at our range of coating systems. There are many reasons why choosing our products is the best option for a ship owner. Each product is designed for a different situation and need. But all the coatings have in common their extreme durability, service life and the lack of toxic emissions.

Ecospeed

Ecospeed is our flagship coating and was the first to be launched commercially. It is a hull coating system which provides long-lasting, non-toxic protection for all ship hulls. The hull is kept very smooth and free of fouling for the service life of the vessel. It requires minimal repair



Group Ocean have been applying Ecospeed Ice on all their ice going tugs since January 2012.

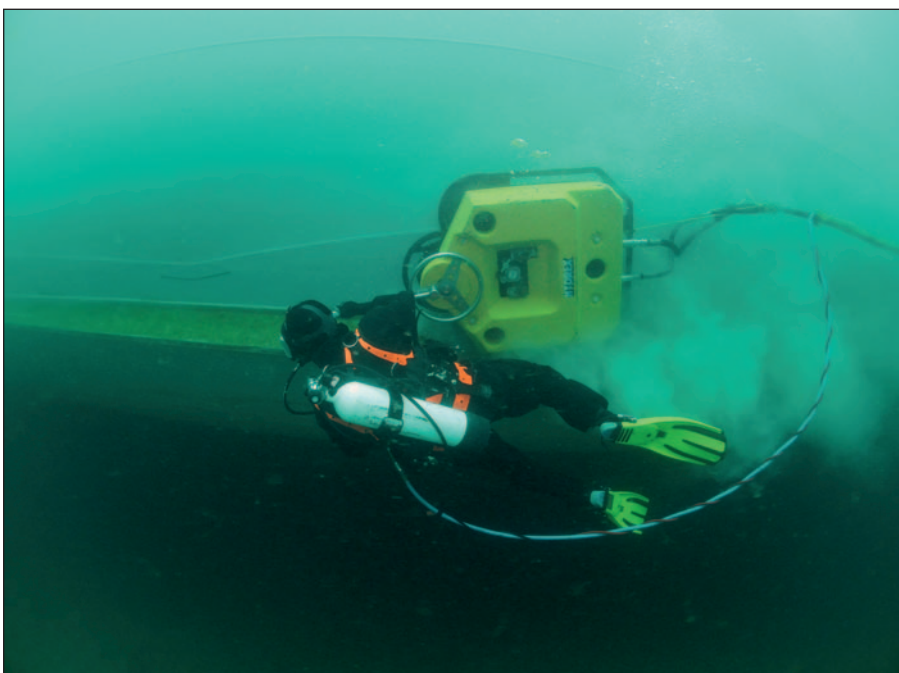
and no replacement. Correct use of the system results in major fuel savings compared to conventional coating systems.

The coating can be applied at new

build (ideal) or in drydock on an in-service vessel. Overcoat time is three hours minimum, no maximum. Ecospeed has extraordinary adhesion and bonding qualities. It is very tough and resistant to abrasion and is certified ice-abrasion resistant. It is also flexible and remains firmly bonded to the plates even when these flex considerably.

The coating is cleaned routinely to keep it smooth and free from slime and weed. This is done in the water using specially developed equipment and tools. Even extreme hard fouling can be removed without damage to the coating or the marine environment.

Frequency of cleaning depends on the operating pattern and environment of the ship, but the coating can be cleaned as often as needed without any negative effects. The cost of cleaning is dwarfed by the fuel savings.



Underwater maintenance of Ecospeed can be carried out whenever needed without causing harm to the coating or the environment.



Oil tanker after application of second Ecospeed layer in shipyard in Turkey.

Ecospeed's extraordinary toughness, chemical resistance and strong bonding make the coating suitable for many applications where an ordinary coating simply will not hold up. Examples of this are scrubber outlets and surrounding hull areas, decks of RoRo vessels and others requiring wear resistance, and ballast tanks.

Ecospeed Ice

The original Ecospeed coating was not intended as an ice-class coating. Its ice-abrasion resistance was discovered by accident. Incredible results with Ecospeed were reported by ice-going ships, tugs, ice-breakers, polar supply and research ships, the world's most powerful ice-

breaking cargo ship and many other ships that sail in ice and are concerned about protecting the environment.

Focusing on its ice-going capabilities, Ecospeed was refined to create Ecospeed Ice. This is the proven, ultimate hull protection for icebreakers and ice-going vessels. It is designed and formulated to last the life of the vessel with no need for replacement. Ecospeed Ice simply stays on the hull no matter the conditions of sea and ice. It has ice-abrasion resistance classification Polar Code 1 – 7. This means it can sail in any seas with any conditions of ice for twelve months of the year. Plate thickness can be reduced considerably in areas where the coating is applied.



Spindletop is the largest aluminum pilot boat constructed in the US. The boat was coated with Ecospeed in 2021.

Because of the excellent results our Ecospeed coating was selected to protect many ice going ships including the newbuild research vessel *RRS Sir David Attenborough* and the world's most powerful, non-



Ecospeed will protect the area around the scrubber outlets for the ship's entire lifetime.



Application of our coatings is very flexible and can be adapted to the yard's schedule.



This icebreaking tugboat has been protected by Ecospeed ice since it was built.

nuclear ice-breaking cargo ship, *Umiak I*.

Ecoshield

Ecoshield is an enhanced version of Ecospeed. Small but significant variations of the Ecospeed formula have been tested on rudders since 2002 with extraordinary results. After years of testing the product was launched in 2013.

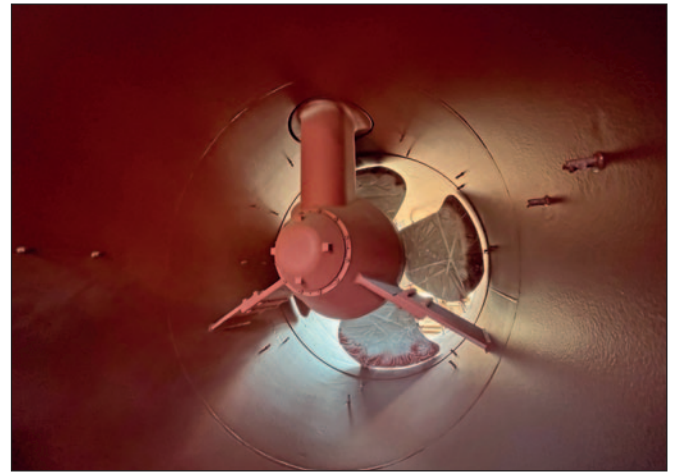
Ecoshield is designed to protect rudders and other underwater running gear from the effects of cavitation: erosion, pitting and corrosion. We have a constantly growing number of new and returning customers. We have vessels sailing with the coating system on their rudders and other running gear for fifteen years or more. When they come into drydock, the coating is always in excellent shape.

Ecoshield has been applied to the rudders and other running gear of ships owned by many major ship owners including MSC, CMA CGM, Seaspam, Danaos, NYK, Pleiades and many others. A large number of these vessels have since drydocked. The areas protected with Ecoshield experienced zero cavitation damage and did not need to be recoated. As one customer said, on seeing one of his vessels in drydock five years after application, 'the coating simply works.' And a highly qualified independent coating inspector who has inspected every type and brand of coating said, "In 25+ years of inspecting a wide range of ship coating projects as an independent coating inspection and consulting company, **we can honestly say that we have never come across a product equal to Ecoshield.**"

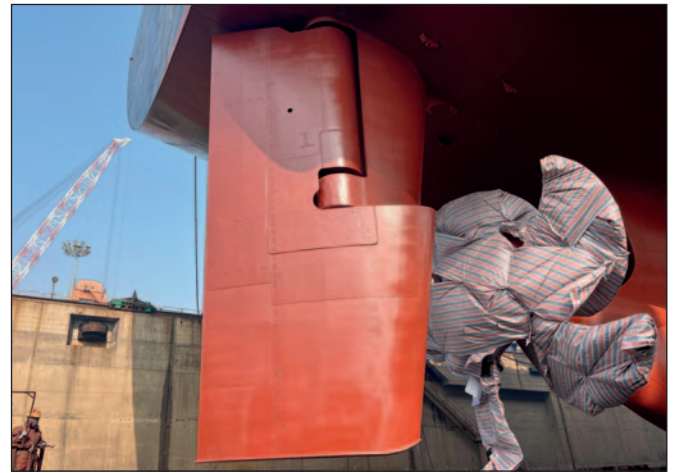
Ecoshield is not only used on rudders, but also on thrusters, thruster



Ecoshield has been designed to give a very thorough and lasting protection against cavitation damage and corrosion.



Thruster (tunnels) and other running gear can be fully protected with Ecoshield.



This rudder will be protected against cavitation damage for its entire lifetime.

tunnels, nozzles and other running gear. We also work with OEMs to include Ecoshield in the newbuild plans of their products. This allows them to offer their customers a complete package with lasting protection.

Ecofix

Ecofix is used for filling and building up a corroded and pitted steel surface to its original form prior to coating it with Ecoshield. Ecofix is as tough as the steel itself. It is 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 pro-

tection 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 basic ingredients as Ecoshield, the 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 Subsea Industries family, it is fully compatible with our coatings.

Ecolock

Ecolock is used on stationary offshore units. The main benefits of the coating system are long-term corrosion protection and the fact that it can be cleaned without any negative effects. These units are designed to stay on location for 15, 25 and even up to 40 years. Hull integrity and corrosion protection are of major importance. Class usually demands an underwater inspection twice every five years to make sure the hull is in good shape. Regular cleaning is required so that proper inspections can be carried out. While it does not have to be cleaned to maintain its integrity, Ecolock can be cleaned as often as needed and with any level of fouling present. The coating is not harmed in any way.



Applying Ecofix on the pitted areas of a rudder.

Neither is the environment.

The standard warranty is 15 years, but for Ecolock this can be extended to 25 years. This is really a guarantee, not just a commercial promise.

Over the last couple of years, we have been involved in several large offshore projects, including two for Exmar NV. Exmar, headquartered in



Floating Storage and Regasification Unit (FSRU) during its undocking.

Antwerp, Belgium, introduced the world's first floating LNG liquefaction barge, the Caribbean FLNG, in 2013. The main reason for choosing Ecolock was to protect the underwater hull from corrosion for at least 15 years without having to drydock or repair or replace the hull coating. Another key factor in choosing the hull coating system was the need for a clean, environmentally safe hull to facilitate the required class inspections.

Ecolock was recently chosen for two FLNG carrier conversions to FSRUs

for a major energy company. The owner chose Ecolock for its proven long-term protection from corrosion and because it can be cleaned without any harmful effects.

One of our Ecolock projects was planned to be deployed in locations where there is a great deal of fishing activity. So, besides being sure that the coating would hold up for the time required, the owner and the local authorities wanted to be absolutely sure that no toxic elements would leach into the aquatic environment. Ecolock will not leach any harmful chemicals even during removal of heavy fouling.

Contact us today

If you would like information on any of these coatings, do not hesitate to contact us. Our team will gladly assist you. If you drop us a line, we can tell you how our coating systems can benefit you. We will look at your specific situation and give you all the data you need.

This will allow you to make an informed decision on the next, and last, underwater hull coating for your ship or offshore structure. ■



Application of Ecolock on one of the blocks of an EXMAR FSRU.

SUBSEA

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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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