

**SUBSEA**  
PROTECTION AND PERFORMANCE



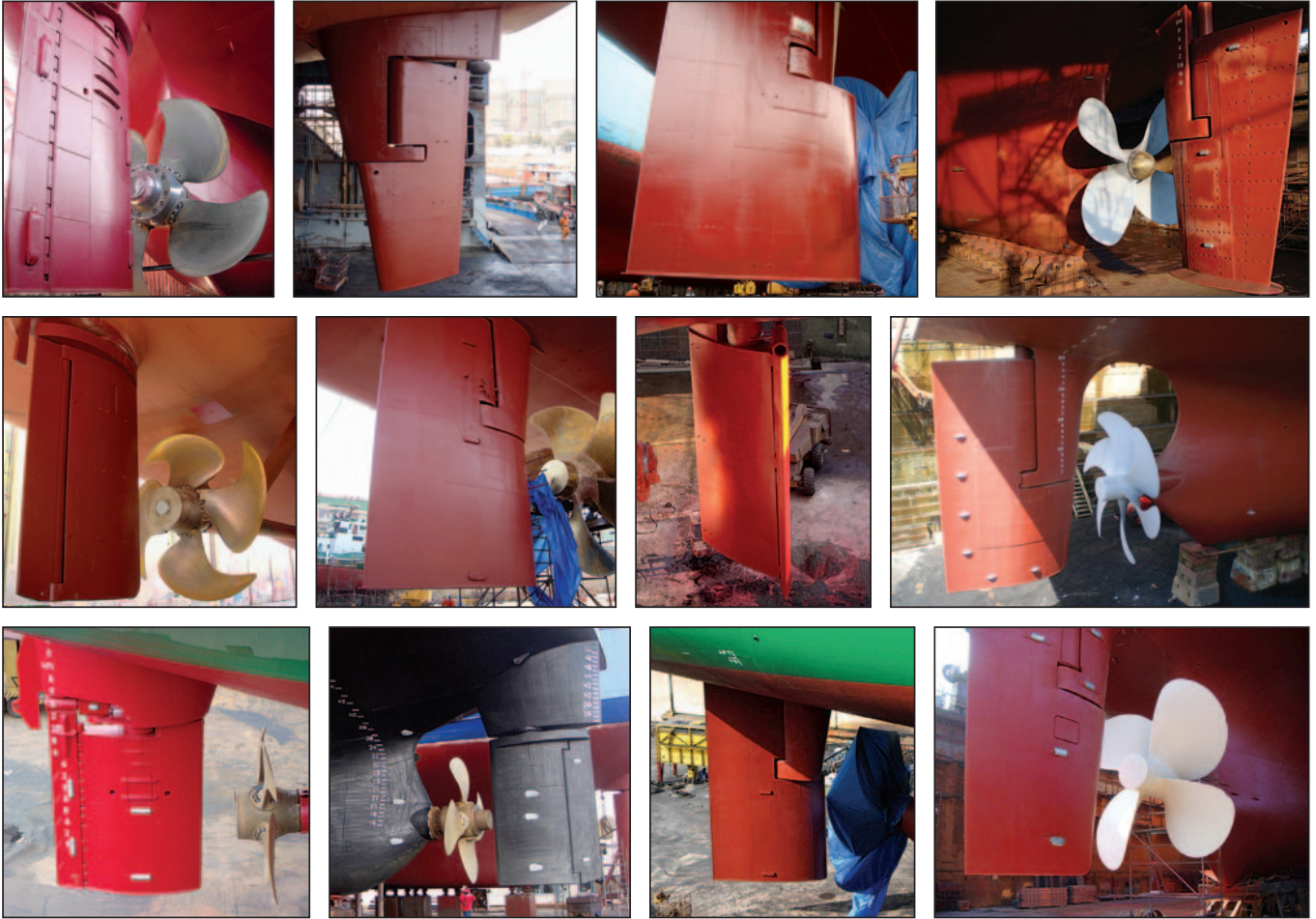
**NEWS**

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**Durability of the Ecospeed coatings**

# LASTING PROTECTION



**E**coshield 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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# Durability of the Ecospeed coatings

**H**ow long should a ship hull coating last? Is it enough for it to stay on the hull for two and a half to five years and be replaced at the next drydocking? Or should it in fact last the life of the ship without the need to repaint, 25 years or more?

## Current situation with coating durability

Some coatings, such as antifouling or foul release coatings, are not expected to last very long before they need to be replaced. Ships typically spend many days in drydock with the coating scheme being patched up and spot repaired and then the full topcoat of antifouling or foul release paint being completely reapplied.

There are downsides to this approach:

The cost to the owner of repainting is high – not only materials and labor but also drydock fees and, above all, off-hire time.

There is an environmental penalty. Where does the antifouling or foul release coating go in between drydockings? The ship leaves drydock with a new coat of paint. It comes back into drydock with that coating mostly disappeared. The toxic and polluting paint with heavy metals, biocides, silicone oils, PFAS and microplastics has come off and disappeared into the sea, where it drops to the bottom and settles in the sediment. No wonder there is such a huge, planetary-wide problem with highly contaminated sediment.



*Typical repair in drydock of an antifouling coating which is patched and then a new topcoat applied.*

Because traditional ship and boat hull paint is not very durable, the protection offered is only partial. On rudders and running gear, for example, the coating can be destroyed by cavitation, leaving the bare steel to erode and corrode unprotected. This in turn can result in the need for hot work in drydock, which itself is very time-consuming and expensive. Scrubbers and scrubber outlets are another example of poor protection provided by traditional coatings which quickly disappear under the onslaught of the highly acidic effluents from scrubbers. This affects the recycling tank, the overboard pipes and the entire area of the hull around the overboard pipe.

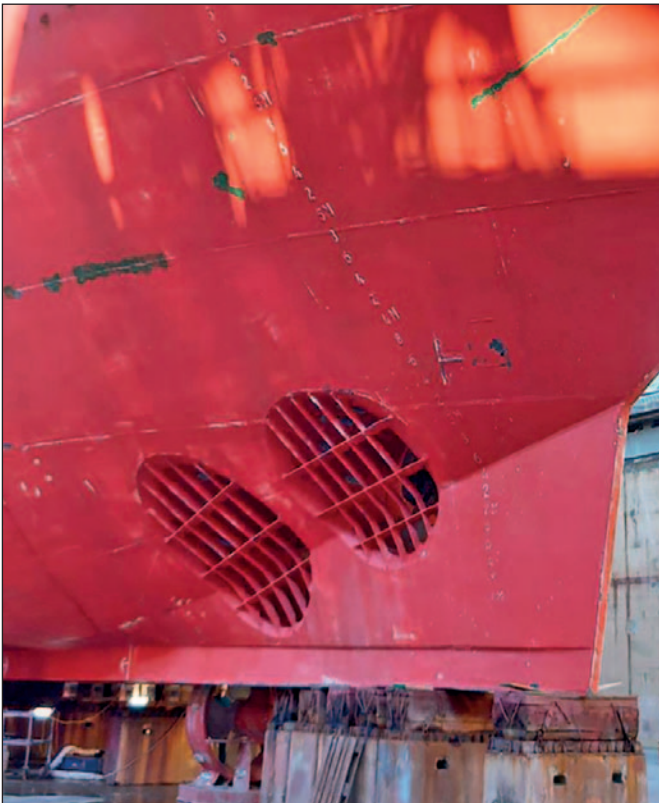
The cycle of replacing the topcoat every 2.5 - 5 years is generally repeated for several drydockings until the coating is so rough that the hull

needs to be completely blasted back to bare steel and the entire coating scheme replaced, usually every 10 - 15 years.

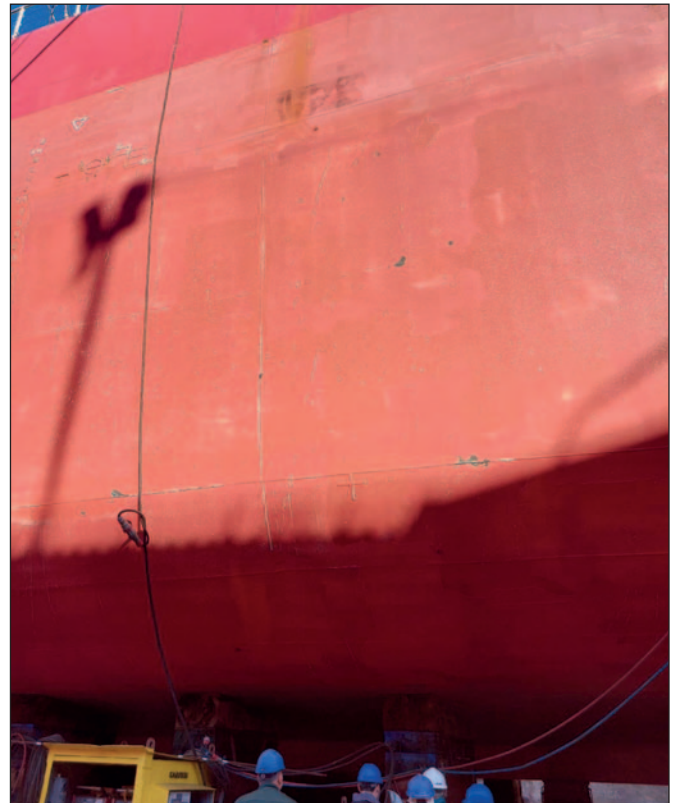
## Another philosophy and approach

With its Ecospeed family of hard, non-toxic coatings, Subsea Industries has operated on the basis that the hull paint should provide life-long protection for the hull without the need to repaint. Touch-ups of mechanical damage may be required, but these are very quick to carry out, and they leave the coating as good as new and, perhaps more importantly, as smooth as when the original coating was applied.

This, in addition to the requirement that the coatings be entirely non-toxic, was the philosophy and busi-



*The hull of the RRS Ernest Shackleton, now RV Laura Bassi, original Ecospeed coating still in excellent condition after 12 years of heavy ice breaking.*



*Another view of the RRS Ernest Shackleton's Ecospeed coating after 12 years. It has not been repainted.*

ness model behind Ecospeed and later Ecoshield and Ecolock. They are all designed, manufactured and applied with durability in mind, as well as no harmful impact on the marine environment.

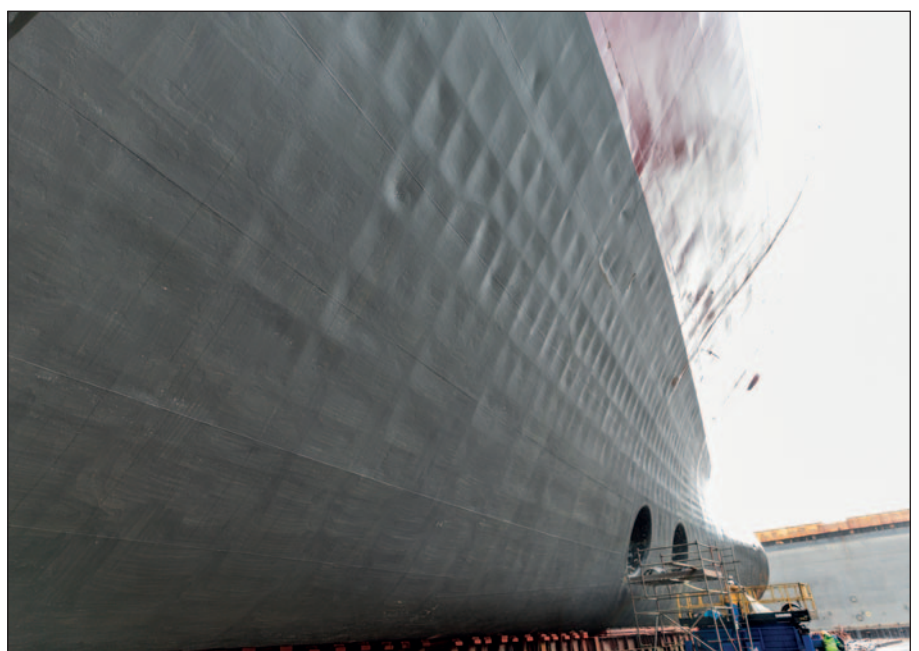
### Cases in point

The RRS *Ernest Shackleton*, now the *RV Laura Bassi* is an icebreaking Antarctic research and supply ship that routinely breaks 2.5 meter ice on its missions to stations in the polar regions every year.

The traditional ice class coating that the ship was using was found to be unsatisfactory and needed frequent replacing. The British Antarctic Survey who were operating the ship at the time found Ecospeed Ice in 2008 and the coating was applied. It has remained intact all the way to the present, needing only touch-ups of mechanical damage to the coating during routing drydocking.

When OGS acquired the ship in 2019, Mr. Rosario Martino, Naval Architect and Marine Engineer for the vessel's ship managers, ARGO s.r.l. said, "It was impressive to see the Ecospeed paint in an excellent condition even after so many years of service. We have performed only

touch-ups in the bow area affected by the impacts with the ice layer." He added, "When *Laura Bassi* returned from her first Arctic campaign, during which she encountered quite a few icy areas, it was clear that the Ecospeed paint did its job impeccably."



*The hull of the Oceanex Sanderling with the original Ecospeed coating intact after 11 years of sailing in very harsh conditions in Nova Scotia.*



*Hull of a small cruise ship with the original Ecospeed coating intact 10 years after application.*

Oceanex's dry bulk cargo ship *Oceanex Sanderling* sails in ice off the coast of Nova Scotia in very harsh conditions. The conventional coating originally applied needed extensive repair annually due to the abrasion of floating ice, often containing sand, grit, lava and gravel. The wear and tear on the paint was leaving the hull bare and exposed to the corrosive effects of salt water and air. The ship was coated with Ecospeed in 2011 and the coating has not been replaced since. When she was in drydock in Amsterdam in

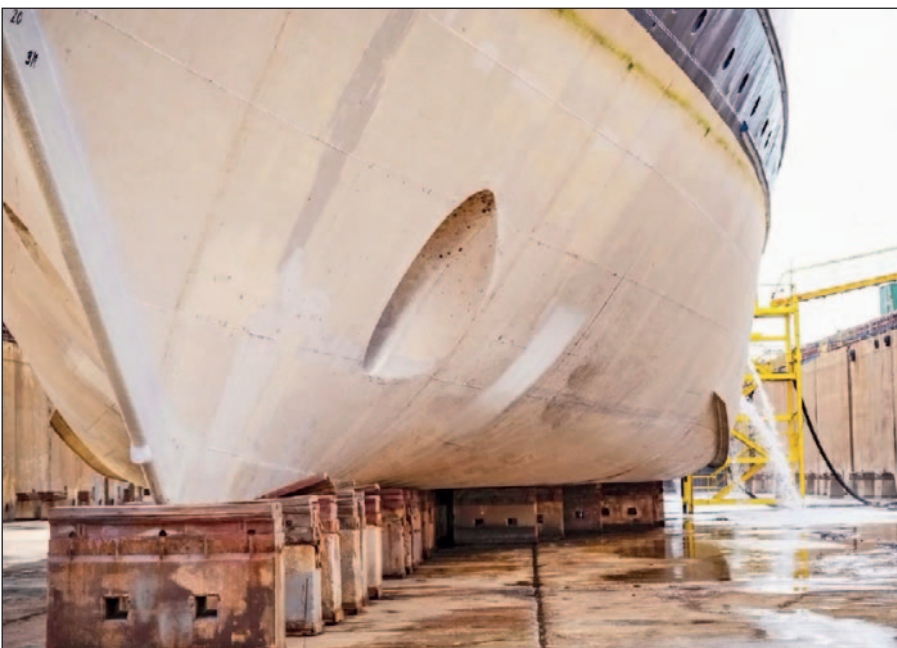
2022, the hull coating was still in excellent condition and only very minor repairs were needed to restore the coating to as good as new.

A small cruise ship that mostly sails in the Caribbean and has long periods laid up, was coated with Ecospeed in 2008. The hull is cleaned by divers on the ship's crew. The original coating is still intact and only touch-ups have been carried out in the intervening 16 years, for example when welding on the hull was needed in order to make modifica-

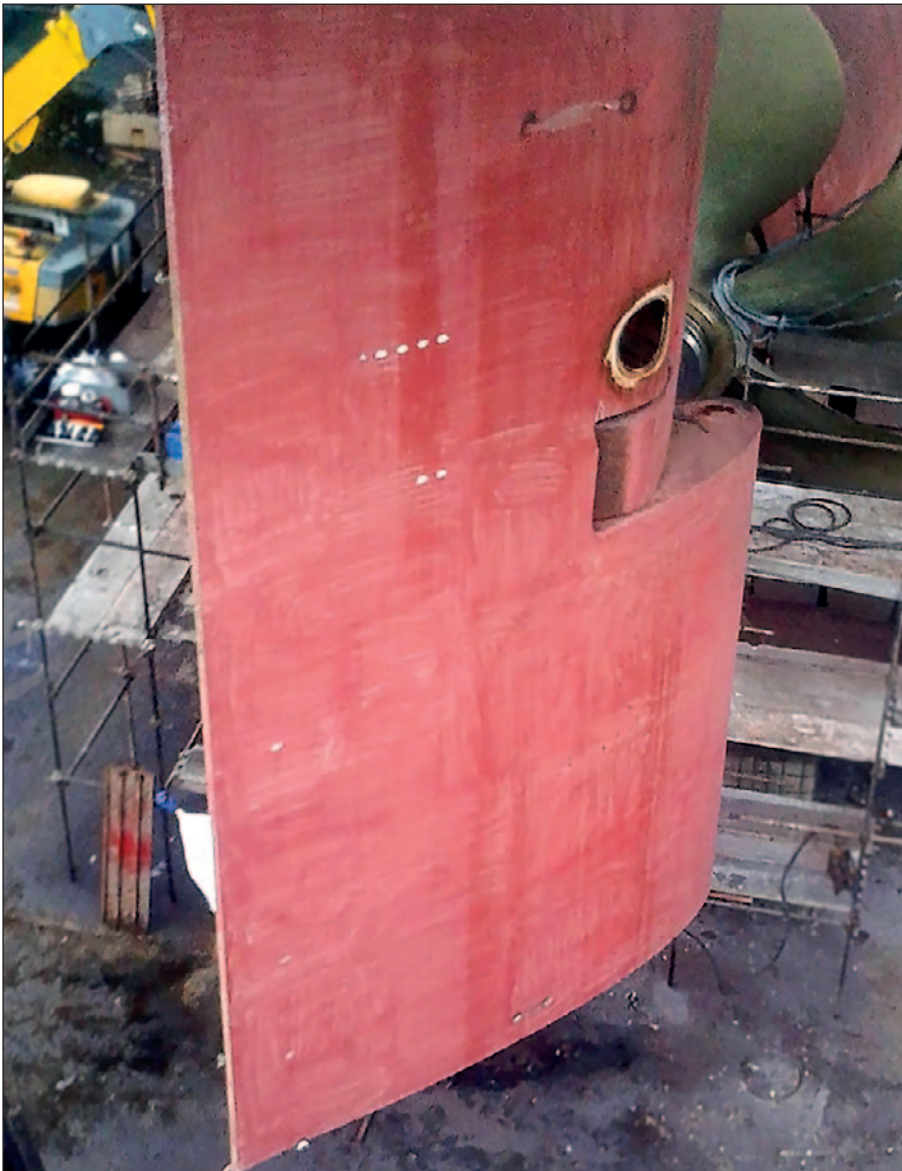
tions to the interior of the ship. The coating is very easy to repair when needed and has remained smooth.

Conventional coatings on rudders and running gear are notoriously short lived. But a thousand or more rudders, thruster tunnels, propellers, boot tops, bulbous bows, stabilizer fins and other running gear have been very successfully coated with Ecospeed and not needed to be recoated in later drydockings. The durability of Ecospeed is unparalleled in this type of application, and more and more major shipping companies are turning to the coating to protect their rudders and running gear and reduce time in drydock.

Offshore stationery assets such as FLNGs, FSRUs and others are a special case. They are often stationed in a particular location for 20 - 40 years without going to drydock. They may need to be cleaned on site in order to reduce weight from too much biofouling or in order to facilitate UWILD inspections by class. Ecolock has proved to be an excellent solution, and more and more owners are turning to this coating to protect their assets, especially when they learn that it can come with a 35-year warranty.



*The same ship in drydock after 13 years with the original Ecospeed coating on the underwater hull.*



*The rudder of the CSCL Chiwar 10 years after Ecoshield was applied, with no repainting.*



*The FLNG Eemshaven being washed down in drydock 7 years after Ecolock was originally applied.*

## How we can accomplish this longevity

It starts with the idea that hull coatings *can* last a long time if the manufacturer wants them to. After that it's a matter of using the best resin for the purposes, vinyl ester. It does not become brittle over time as is the case with epoxies. It is acknowledged as the most long-lasting and durable base for this type of coating. To that we add a high proportion of special, large aspect ratio glass platelets and bonding agents. The result is a tough, durable, long-lasting, non-toxic coating.

A key factor in the durability of the coating on a ship's hull is the preparation. Our coatings are only guaranteed to last if the preparation and application requirements are adhered to. This means grit blasting the steel to a roughness of 75 microns (about 3 mil) and a cleanliness of SA 2.5 or equivalent, which is near white steel. Application conditions are quite lenient as far as temperature, humidity and so on.

Ecospeed coatings are applied in two coats (sometimes three) of 500 $\mu$ m/20 mil each with an overcoat time of 3 hours minimum but no maximum. Total dry film thickness is 1000  $\mu$ m/40 mil or, for a longer warranty especially in the case of Ecolock, 1500 $\mu$ m/60 mil. Subsea Industries sends a knowledgeable coatings inspector to guide the application, ensure the preparation is correct and that the final DFT is achieved.

Ours is a new and different approach to hull coating – one that is designed to be environmentally safe as well as cost-effective for ship and boat owners. ■

# Corrosion damage very repair made ✓ easy



**S**ubsea Industries has a product for filling and building up a corroded and pitted steel surface to its original form prior to recoating with Ecoshield. Ecofix 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 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 resin 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 very expensive fillers. And because it is part of the Ecospeed/Ecoshield family, it is fully compatible with our coatings.

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**S**ubsea 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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