SUBSEA

PROTECTION AND PERFORMANCE

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Subsea Industries is looking for representative agents

To support our continuous growth, we are expanding our worldwide network of Subsea Industries agents. This allows us to reach a much bigger public directly than would otherwise be possible.

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

The purpose of the Ecospeed range of coatings and cleaning technology is to offer a long-lasting, non-toxic protection for all ships with a system that keeps a hull ultra-smooth and free of fouling for the service life of the vessel with minimal repair and no replacement. Instead of using chemicals to kill and repel marine fouling organisms, Ecospeed uses a hard, impermeable, impenetrable coating along with manual removal of fouling at an early stage.

Contact us if you are interested in joining our network and help us build a strong relationship with our prospects and customers. We look forward to hearing from you.

SUBSEA INDUSTRIES

+ 32 3 213 5318
agents@subind.net
www.subind.net

Editorial

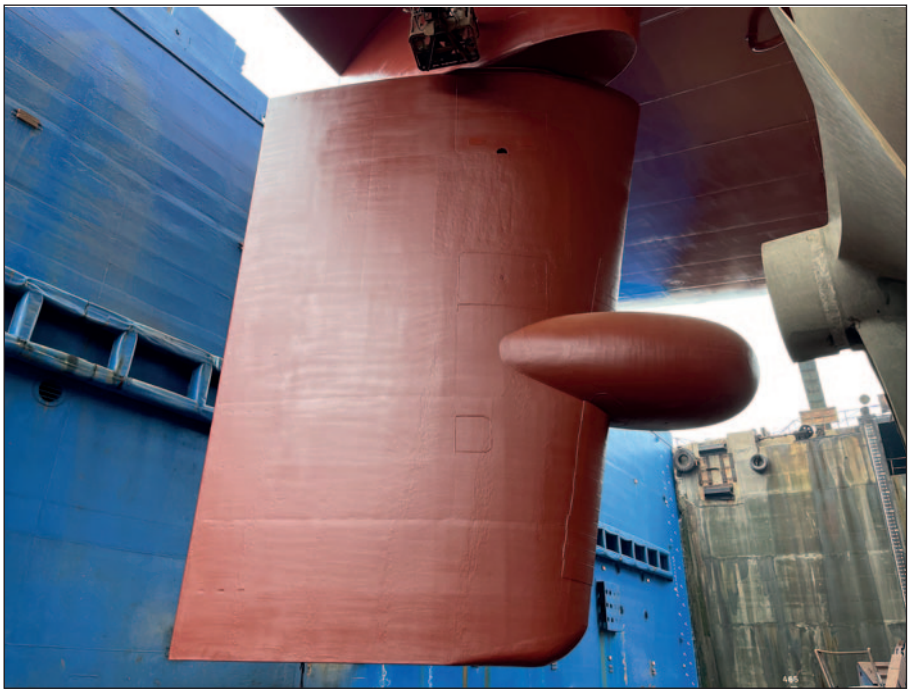
In the first article in this magazine we talk about the many advantages Ecoshield has for shipowners that want to protect the running gear of their vessels against the devastating effects corrosion and cavitation can have.

Most customers start off with one rudder as a test, but without exception they soon order more. The easy application of our coating systems and the excellent results make the decision to order the same treatment for the rudders of their other vessels a no-brainer.

In most cases they quickly expand the areas protected with Ecoshield to other running gear like nozzles, thrusters and thruster tunnels. Another easy step is to choose Ecospeed for the application of scrubber pipes, outlets or diffusers.

Because all our coating systems can be applied very quickly and need only two layers with just three hours of curing time in between, application of all the smaller areas mentioned above can be done in a single day. This allows us to carry out the coating in between other work that needs to be done in the yard with no impact to schedule.

Just in the last four months a major shipping company went from ordering just one rudder to having our coatings on ten vessels with ten more planned for the near future. They follow the same routine as many other owners: as soon as a vessel is scheduled for drydock they contact us with the specifications of the areas they want protected and we arrange for the coating to be delivered to the yard at the requested time. It's as simple as that. No further fuss or planning for the owner and, more importantly, no more worries about the condition of his ship's running gear for the remainder of its service life.



Only two layers are required before a rudder is fully protected and anodes are no longer needed.

You can give the rudders and running gear of your vessels the same lifelong protection. If you contact us, my team will give you all the information you need.

Subsea Industries NV
Boud Van Rompay
Founder

Permanent protection against cavitation

In the last few months more than twenty vessels belonging to several different owners received Ecoshield protection for their rudders, bow thrusters (and tunnels), Becker Twisted Fins and in some cases boot tops and scrubber outlet areas. The applications were carried out in Belgium, Poland, China, Turkey, Dubai and the U.S.A. on a wide range of vessels. These included container ships, roro ships, a dredger and general cargo vessels. The running gear of these ships will be protected against cavitation and corrosion damage for the rest of their service lives.

Rudders, thrusters, nozzles and other underwater running gear are exceptionally prone to corrosion and cavitation damage. Cavitation is caused by bubbles produced by the spinning of propeller blades. If running gear is not given the proper protection against this the damage can be severe.

This leads to expensive and time-consuming repairs in drydock at least or malfunctioning of the running gear at worst. A rudder has been found missing in its entirety on more than a few occasions with substantial financial consequences.

A growing number of shipowners are using Ecoshield strategically to protect the rudders and running gear of their entire fleet. They see the savings that are possible because there is reduced time in drydock at newbuild and when in service, no hot work is needed anymore and anodes can even be dispensed with.

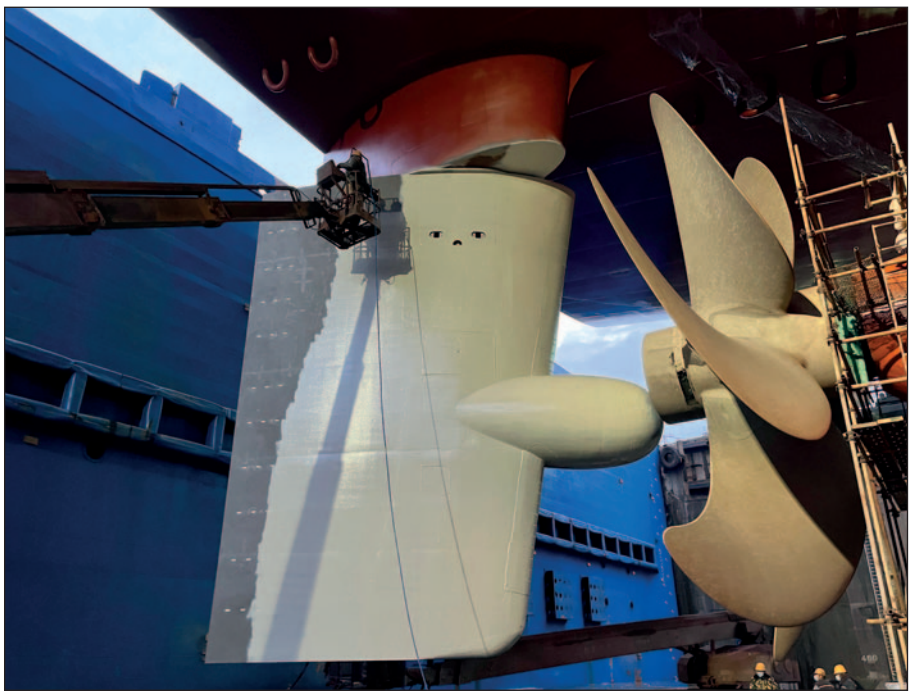
Cavitation and corrosion damage can destroy a rudder, so a lasting protection is essential.

A lasting solution is available

Ecoshield was designed to protect all running gear for the lifetime of the vessel. This coating system is applied only once. No repaint will be needed during future drydocking. Only small touch-ups to repair mechanical damage will be required.

Applying Ecoshield is a fast and easy to learn process. No special equipment or personnel are required. As a result an application is very flexible and can easily be scheduled around the planning of the yard. Only two layers are required. The minimum overcoating time between these layers is only three hours. This means that most

Rudder after surface preparation, ready for Ecoshield application.



An Ecoshield application is very flexible and can be adapted to the yard's schedule.

running gear can be coated in a single day.

Newbuild ships benefit the most from Ecoshield. Applying the coating during building means a vessel's running gear will be protected from the moment the ship leaves the shipyard until the end of its service life. A shipowner will not have to worry about repainting during any of the scheduled dockings.

An existing ship can also be protected with Ecoshield. If for instance a rudder has already suffered corrosion damage, the coating can prevent any further damage from occurring. In such case Ecoshield can be used in combination with another product in the Subsea Industries family.

Ecofix

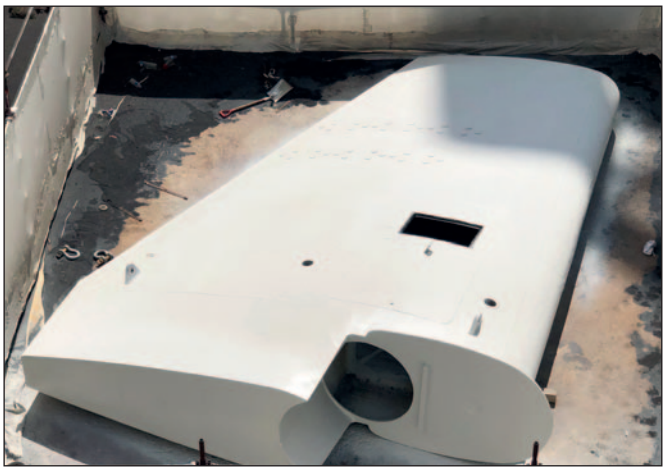
Ecofix is a superior, tested and proven filler that restores the steel to its original shape with a smooth surface prior to recoating. Because it uses the same basic resin, Ecoshield can be applied just one hour after the filler. Ecofix can replace hotwork in most cases.

Slot welds can also be filled with Ecofix on a newbuild rudder prior to Ecoshield application.

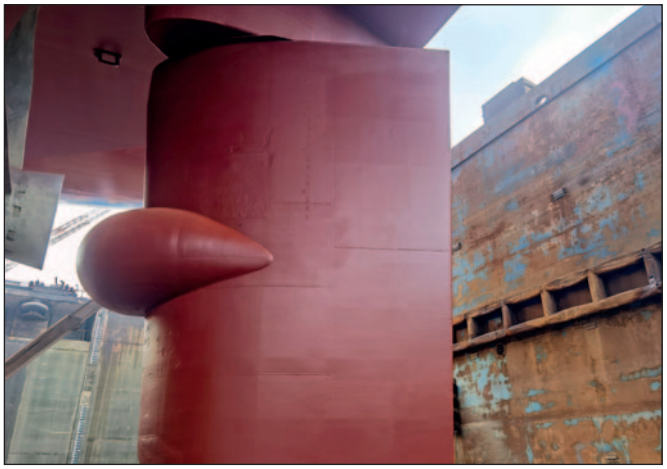
From one rudder to an entire fleet's running gear

Since the original application, rudders have been coated on a wide variety of ships: cruise ships, cargo vessels, container carriers, ro-ro cargo ships, cable layers, dredgers, crude oil tankers, research vessels, ice-going ships and icebreakers, tugboats, reefers, passenger ferries, bulkers, navy vessels and others. These applications were performed in shipyards across the globe.

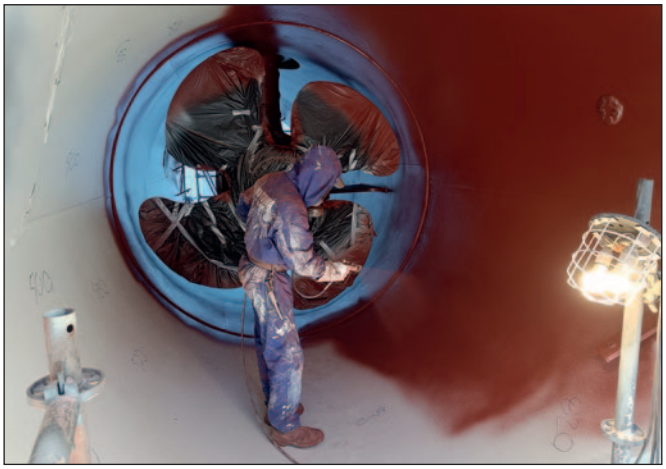
All running gear can be fully protected with our coating.



Ecoshield can be applied during the block phase or when the rudder is already attached to the ship.

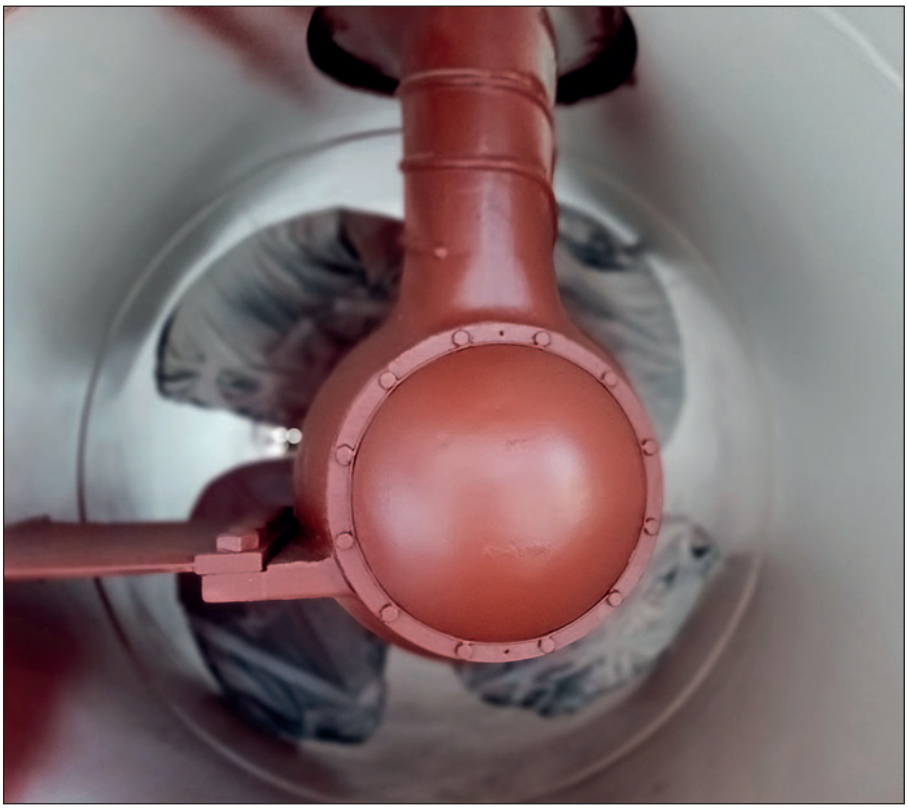


This rudder will be protected against cavitation damage for its entire lifetime.



Both layers can be applied very fast, with only three hours in between.

Application of first Ecoshield layer on thruster tunnel.



No repaint will be required on this thruster during future drydockings.

Shipowners that began with a test on a single rudder have since then ordered the same protection for the running gear of their entire fleet. Several have included the coating in the newbuild specs to make sure cavitation and corrosion cannot touch the steel of their ship's running gear. Even after years of service these owners are experiencing zero cavitation damage or failure.

Do you want the certainty that your ship's running gear is protected for its entire lifetime? Contact us today. ■

+ 32 3 213 5318
info@subind.net

ECOSHIELD®
ULTIMATE PROTECTION

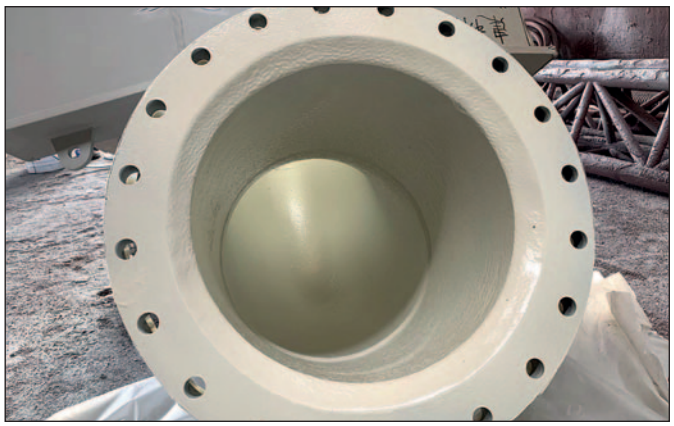
Ecoshield can protect a rudder against cavitation damage.

Lasting scrubber protection

Ecospeed fits in seamlessly with the environmental idea behind scrubber systems. It is a lasting, chemically resistant coating that will withstand the hazardous pollutants and will prevent corrosion damage and the resulting consequences. Ecospeed will protects the exterior outlets as well as the interiors of scrubbers for the lifetime of the vessel.

Outlets

Overboard pipes



Holding tanks

The actual scrubber

Subsea Industries NV
+ 32 3 213 5318
info@subind.net
www.subind.net

ECOSPEED®
SHIP HULL PERFORMANCE TECHNOLOGY

All major issues solved

Our technology has solved all major problems relating to ship hull performance and protection.

The effect of corrosion can be devastating if the wrong protection is used for an underwater hull.

1. Optimized surface friction:

By optimizing surface roughness to its upper limits without future deterioration or degradation, we solved the problem of hull friction. The coating has the same lifetime as the ship. Surface characteristics are maintained over the same period.

2. Fuel savings:

By optimizing hull surface friction and using the best surface hydrodynamic characteristics, fuel savings over the ship's lifetime are in the 20-40% range. In contrast with AF compounds that rapidly degrade, our coatings and thus the ship's performance last.

3. Corrosion:

We have reduced the corrosion problem to a zero effect. Ship hulls handled by us keep their sacrificial anodes 100% intact, even after prolonged periods of 5-10 years in the water. Corrosion is virtually absent on our hulls and anodes are no longer needed.

4. Cavitation erosion:

Cavitation erosion damage resulting in often very expensive repairs and time loss in drydock can now be avoided entirely. 1000 rudders have been protected so far with a 100% success rate over a 15-year period.

5. Anti-fouling toxic particles emissions:

Yearly 1 million tons of AF toxic chemicals and heavy metals are used and lost at sea. This extremely

Ecospeed still intact eight years after application on cruise vessel.

damaging pollution results in billions of silt and sediment remedial cost. All of this can now become a thing of the past entirely.

6. Repeated application of degraded AF coatings:

This is now an obsolete routine as our coatings last the lifetime of the ship. Peak distribution of toxic materials caused by repeated applications in drydock and thus emissions in ports and rivers has been overcome.

7. Time and effort in drydock:

As reapplication is never necessary, work and time in drydock can be more than halved. Planning work in drydock can be done very precise as only small touch-ups will be needed. Waiting for acceptable weather is no longer necessary. This allows drydock companies to deliver on time. As a result more ships can be docked in the same period.

8. Transfer of invasive species:

The underwater cleaning of Ecospeed prevents the spread of biofouling entirely. The cleaning frequency is optimized to minimize fouling. This process is 100% environmentally safe and prevents macrofouling from building up.

9. Building costs:

Cost for newbuilding ships is substantially reduced as the repairs of our homogenous coatings are many times more efficient. This results in thousands of man hours saved during the building process. Reapplication for speed trials at the end of the building period is not necessary any longer: a simple underwater hull cleaning is sufficient. This saves more than the total cost of the coating material supplied and the ship's speed is guaranteed.

Experience has shown that Ecospeed stays on the hull much longer and resists the ice far better than the most generally used specialized ice coatings.

10. Ice-going and icebreaking ships:

150 ice going hulls, including 4 ships owned by British Antarctic Survey, have been coated with our products with great and conclusive results. This shows that they can withstand the impact of ice for many years on end. Our coatings have also been applied on the newbuild research vessel RRS Sir David Attenborough, the biggest commercial shipbuilding contract in Britain for 30 years.

Summary

We have optimized hull surface roughness and hence hull friction resulting in fuel savings in the 20-40% range. We have cracked all major problems in corrosion and cavitation erosion. We have halted all anti-fouling toxic emissions. We have substantially reduced the cost and time of drydocking and its peak distribution of toxic particles due to repainting work. We have provided the most adequate solution to mitigate the transfer of invasive species. We have reduced newbuilding costs. We have formulated the best way to prevent loss of coating in ice and general arctic conditions. ■

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.

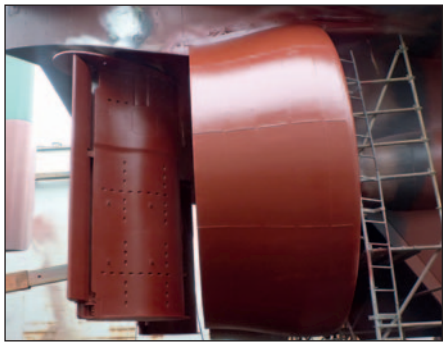
Ecolock is an extremely tough and durable coating designed to remain in excellent condition for 15 - 25 years without drydocking, repair or replacement. Ecolock can be cleaned underwater as often as needed to meet the UWILD and weight requirements of FPSOs, drill ships and other offshore vessels. Ecolock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

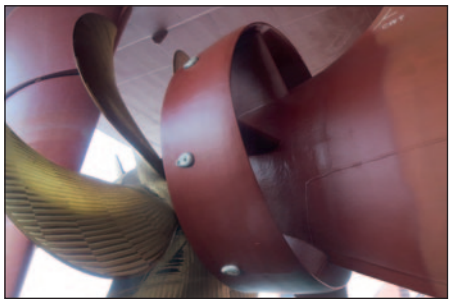
Subsea Industries NV
+ 32 3 213 5318
info@subind.net
www.subind.net

ECOLOCK®
LIFETIME CORROSION PROTECTION

SUBSEA

PROTECTION AND PERFORMANCE





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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