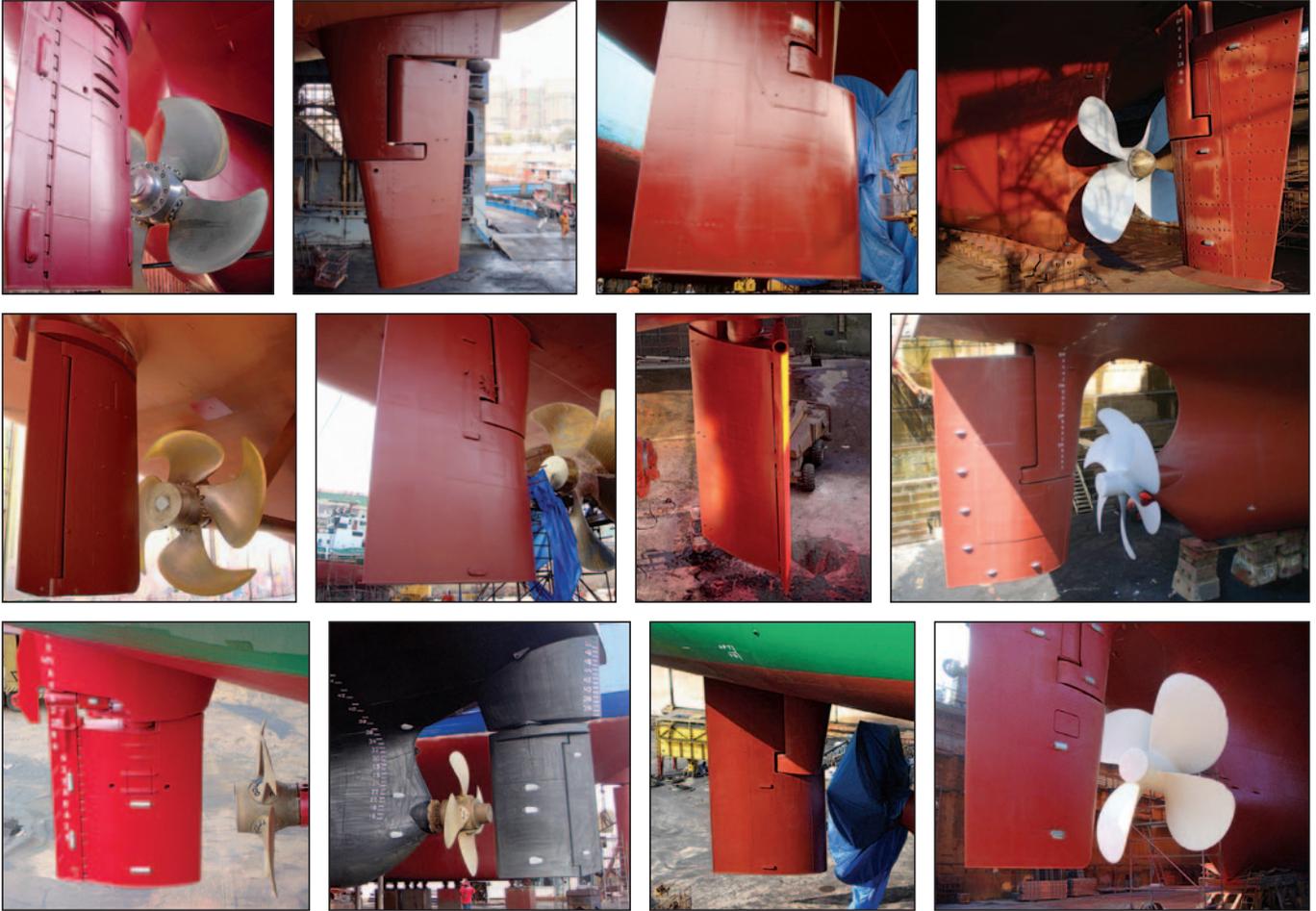


Ecospeed solves corrosion of scrubber pipes and outlets

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 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.

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At the start of 2016, the inside of a scrubber was coated with Ecospeed for the first time. The scrubber was located in one of the ballast tanks of a roro ship in Landskrona, Sweden. A lasting, chemical resistant coating was needed that could withstand the hazardous pollutants filtered out from the ship's exhaust gases. Ecospeed proved to be the perfect solution.

Since then Ecospeed has been applied on scrubber systems regularly. Over the last year our Ecospeed coating system was applied on the scrubber pipes, outlets and diffusers of well over 30 vessels.



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



Ecospeed application on scrubber pipe.

The highly corrosive fluids that flow through scrubbers and their outlets make short work of most marine paints and can cause severe corrosion of the scrubber outlet pipes as well as the external ship hull area surrounding the outlet. This has been a severe problem for ship owners and operators.

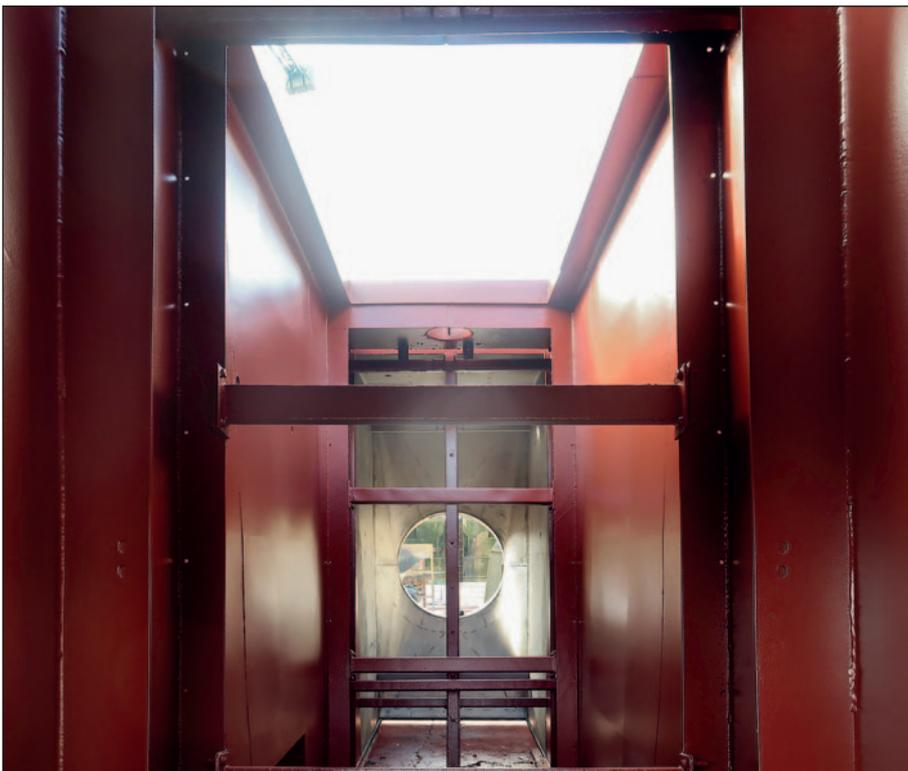
Ecospeed is highly resistant to most chemicals, including all of those that are included in the effluent from scrubbers. Coating the scrubber outlet pipes and plates, diffusers and the hull area surrounding the outlet with Ecospeed is a full and permanent solution to this problem.

Fixing corroded pipes

If an existing scrubber suffers corrosion damage, it is not too late to fix it. Subsea Industries' sister company Hydrex regularly replaces scrubber



Application on scrubber system of oil tanker.



Inside of scrubber after application of second layer.

overboard pipes. This is done on-site without the ship needing to go to drydock.

In all cases the new pipes are protected with Ecospeed. If no welding work needs to be carried out in close proximity to the coated area, the new pipes are coated in advance. If this is not an option, Ecospeed is applied after the new pipe is installed.

Pipes can also be replaced preemptively. If a pipe starts to corrode, a leak is just a matter of time. By performing the replacement before the leak occurs, a costly, unscheduled repair can be avoided.



Measuring the thickness of the coating.

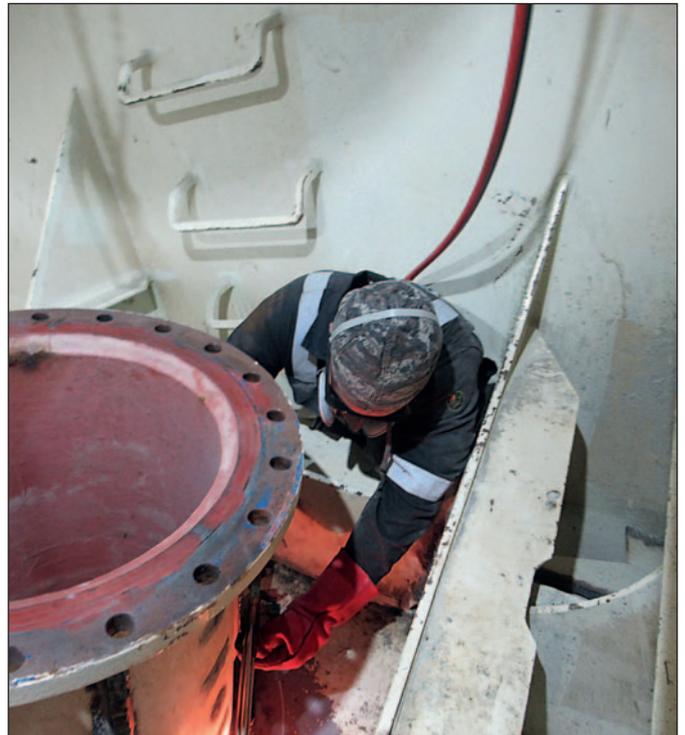
Conclusion

Several benefits make Ecospeed the perfect choice to protect scrubbers.

- The coating system is highly chemically resistant. Due to the nature of the process taking place inside the scrubber, this is essential for our customers.
- No repainting will need to be scheduled during future dockings of the ship. This saves time and money.



If not protected with Ecospeed, scrubber overboard pipes can suffer heavy corrosion.



Hydrex welder during installation of new overboard pipe.



New overboard scrubber pipe with Ecospeed protection on the inside.

- It is a true biocide-free solution. The coating is 100% toxin-free and there is no negative effect on the water quality or the marine environment at any point of its application or use. ■

Visit our website www.subind.net for more information and additional case studies or contact us at

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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 or 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.

Ecoclock is an extremely tough and durable coating designed to remain in excellent condition for 15 - 25



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

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.



FSRU in drydock after 7 years. No repaint required.

Corrosion damage very repair made ✓ easy



Subsea 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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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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