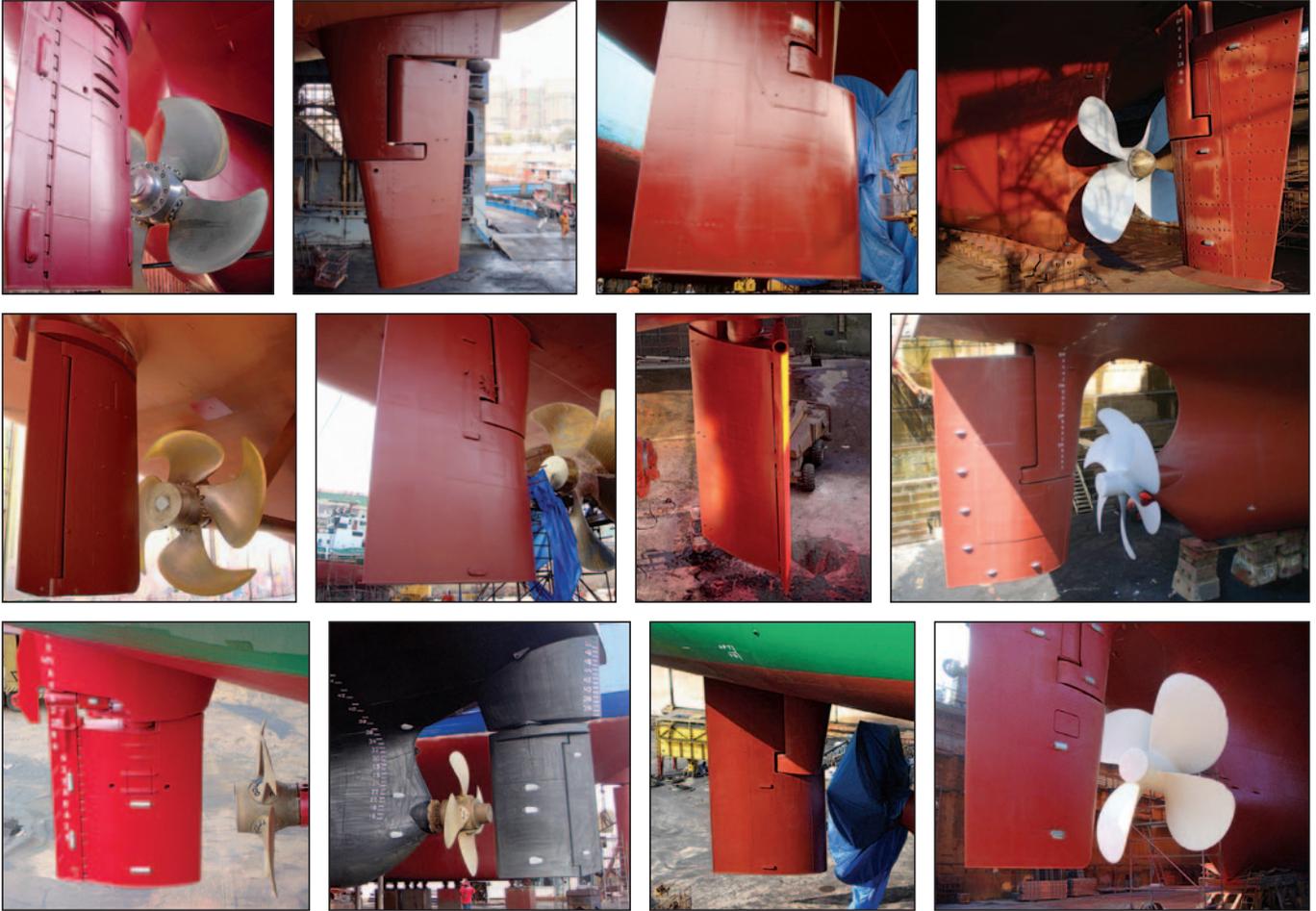




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LASTING PROTECTION



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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Editorial

Ecospeed is designed to withstand the rigors of ship use for the life of the vessel. The coating is completely inert and contains no biocidal or toxic material. Its strength and durability is created by the presence of glass flakes within the coating.

Using Ecospeed and removing all fouling in an early stage is the complete answer to the problems of NIS and biocidal contamination of the marine environment. The coating has many additional benefits for ship owners. This strategy becomes possible because Ecospeed has extreme durability and is completely non-toxic.

Underwater maintenance of Ecospeed is carried out with specially designed underwater hull cleaning tools that simultaneously remove all fouling and optimize the smoothness of the paint surface.

Cleaning can be carried out whenever needed, at any point in Ecospeed's lifespan. The coating is in fact designed to be cleaned as often



as needed, and this allows Ecospeed to always operate at peak efficiency – saving further money for operators and reducing GHG emissions.

The Ecospeed benefits include:

1. It is a non-toxic solution, offering safety for the marine environment instead of the inevitable damage caused by biocidal anti-fouling.
2. Ecospeed presents a clean and efficient surface to the water, sav-

ing the ship operator fuel. The coating does not need to be removed and replaced every five years.

3. It is the only real guarantee that NIS will not be spread via ship hull fouling. If ships leave their port of departure free of fouling organisms, they will arrive at their next destination with a clean hull and thus pose no threat of spreading NIS via hull fouling.
4. Ports also benefit from the absence of biocidal pollution and NIS.
5. Drydock intervals can be lengthened. In the case of a high quality, surface treated coating, no repainting is required. At first application the hull is blasted and prepared. The coating is applied only once and lasts for the life of the vessel. Only minor touch-ups to mechanical damage are required during scheduled drydocking. This obviates the need to drydock solely for painting, and shortens the time in drydock.

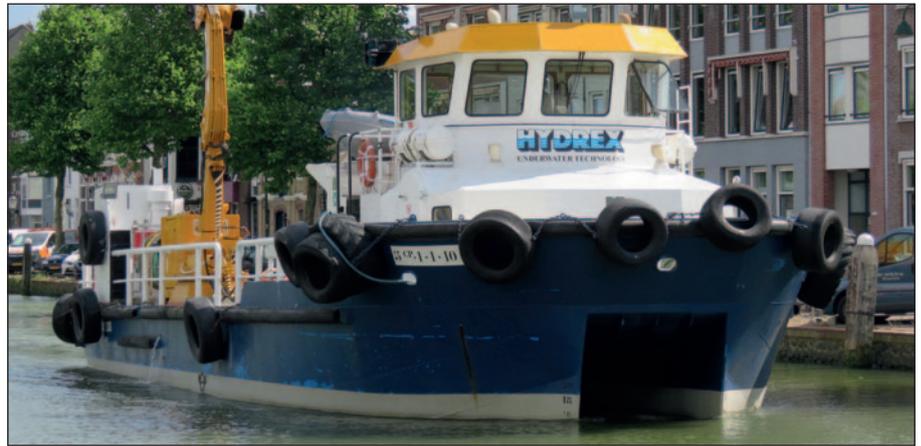


Ecospeed underwater maintenance is carried out with specially designed equipment.

6. Reduced fuel consumption resulting from a smooth hull means lower fuel bills and atmospheric emissions. The absence of paint degradation over the life of the coating further reduces fuel costs.

Ecospeed is an entirely different, more cost-effective and environmentally-acceptable approach to hull protection and anti-fouling. There is no need to reblast and recoat the hull; no corrosion, no impact on the environment and, if regular hull cleaning is carried out, tremendous fuel savings can be achieved.

If you drop us a line, we can tell you how Ecospeed can benefit you. We will look at your specific situation



This dive support vessel was coated with Ecospeed 10 years ago. It can be cleaned effortlessly and legally in harbours, such as the Port of Rotterdam, which have banned the underwater hull cleaning of conventional coatings.

and give you all the data you need. This will allow you to make an informed decision on the next underwater hull coating for your ship.

Subsea Industries NV
Boud Van Rompay
Founder

Corrosion damage repair made ^{very} 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.



Two newbuild tugboats given lasting protection for sailing in thick ice in Russia

Four years ago, Ecospeed was applied on *Antarctic*, a shallow draught anchor handling tug supply (AHTS) vessel owned by Ark Shipping Company. The success of this application led the owner of the boat to order the same protection for his next two shallow draught AHTS vessels: *Polar* and *Polus*. Coating of these vessels took place at the Atlas Shipyard in Kocaeli, Turkey where they were built.

Ark Shipping Company is a large Russian business structure performing river and sea transportation. The organization has been successfully operating in the transport and logistics market since 1992. The key cargo transportation routes run through the basins of the Neva, Volga, Oka, Don rivers, the Caspian, Black, and Azov seas, as well as the



Application of second Ecospeed layer.

Gulf of Finland and the seas of the Arctic Ocean.

Atlas Shipyard was established in May 2005 and has focused on the construction and repair of special-

ized vessels up to 25.000 Dwt. The layout of the facilities and manufacturing processes at Atlas Shipyard allows for maximum efficiency through application of mass production techniques in shipbuilding.

The best protection for ice-going vessels

Due to its unique composition, **Ecospeed** is not only the best protection available for underwater hulls of icebreakers and ice going vessels, the coating also provides the best hull performance and is the easiest ice going paint to apply and maintain.

Many applications on ice going hulls show that our coatings can withstand the impact of ice for many years on end. Some of these vessels have been sailing for well over ten years without needing to be repainted.



Part of the tugs' unique design are their six rudders that were all coated with Ecoshield.



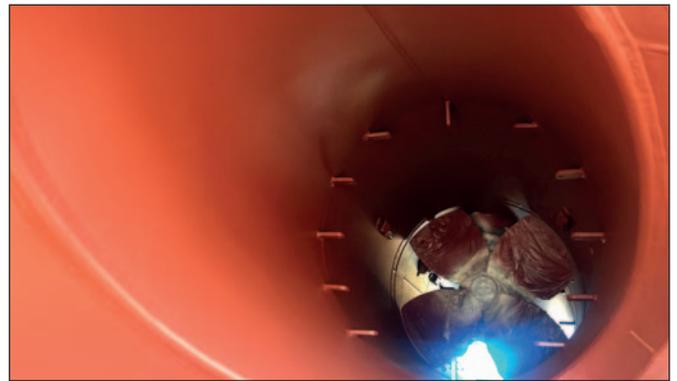
Shallow draught anchor handling tug Polar after Ecospeed application.

Ecospeed has been recognized by Lloyd's Register as an abrasion resistant ice coating for ships. Its correct use on the ice belt specifically permits a reduction of the ice belt's steel plating by up to 1mm.

As part of their unique design *Polar* and *Polus* have six rudders each. These were all coated with our **Ecoshield** coating as were the propeller nozzles and thruster tunnels. Ecoshield offers permanent protection against cavitation damage for rudders, bulbous bow, stabilizer fins, thruster nozzles and other underwater ship gear which needs special protection from corrosion.



Thruster tunnel after application of first layer...



and after second layer.



The hull of this tug was coated with Ecospeed, the rudders and nozzles with Ecoshield.



Application can easily be adapted to the shipyard's schedule.

Complying with the Polar Code

Ark Shipping Company originally selected our coatings amidst strong competition because of their proven performance in polar waters. The Ice-Class 1A, 65m tug *Antarctic* carries out anchor handling and oil recovery duties in the ecologically sensitive Arctic in compliance with

the IMO Polar Code requirements.

Manuel Hof, Sales & Production Executive and NACE Coatings Inspector at Subsea Industries, explained that the Polar Code recommends the application of abrasion resistant, low friction coatings to vessels operating in ice-covered waters.

“There is a risk that conventional anti-fouling can degrade rapidly in polar ice, leach chemicals or leave paint fragments behind when ice impacts damage the coating. There is no such risk with a hard-type coating. Ecospeed and Ecoshield are tough, durable and highly abrasion resistant protective coatings.” said Hof.

Orkun Çomuoğlu who is the managing director at Amat Engineering, Subsea Industries’ agent in Turkey said: “These are super ice-class vessels that require extensive hull protection for the operations they (will) undertake. The positive experience with the *Antarctic* made the choice for the next two vessels much easier for the owner.” ■

Contact us for further information on how you can give the same complete and lasting protection to your (ice-going) vessels.

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Polus after application.

Typhoon series of underwater cleaning systems

In harsh underwater environments it is essential to have sturdy and reliable equipment. The unique design of our underwater cleaning machines provides the efficiency and durability required in such conditions. All our systems are carefully designed with operational safety as a prime consideration. A range of systems is available for various applications. All our cleaning units are sold separately or supplied with a complete support system including umbilical, tools and hydraulic power unit.

MC313

The unique patented design of the MC313 underwater hull cleaning unit will stand up to the most difficult underwater cleaning conditions encountered on various types of ships. It is designed for larger ship hulls or other large, reasonably flat surfaces. The downward pressure of the brushes can easily be adjusted throughout the operation and the heads are self-adjusting to the contours of the hull. This, coupled with a powerful all-wheel drive system, are major technological break-throughs in subsea cleaning.

Different types of fouling can be treated with the appropriate tools so the underlying paint layers are preserved. The MC313 is highly efficient. It is a tool for the true professional.



MC313.



MC212.

MC212

The MC212 has an enviable track record, with 40 years of service. It is the most efficient cleaning machine currently available and is highly regarded by the industry internationally. The MC212 is designed for cleaning light, medium and heavy marine fouling from ship hulls, offshore oil & gas platforms, jetties, piles, intakes and internal

pipelines. The equipment has a self-balancing feature, which allows the operator to use the tool safely and effortlessly for long periods.

MC131

The MC131 is a compact, lightweight unit. It is designed for cleaning all kinds of marine fouling from yachts and smaller ships, niche areas on larger ships and offshore oil &

gas platforms. The brush rotation speed is adjustable to achieve an optimum hourly cleaning rate.

MC111

The MC111 is our smallest model specially designed for cleaning ship hulls, propellers and thrusters. The MC111 is very handy and can be easily taken into difficult corners and niches while still obtaining the desired results. ■



MC131.



MC111.

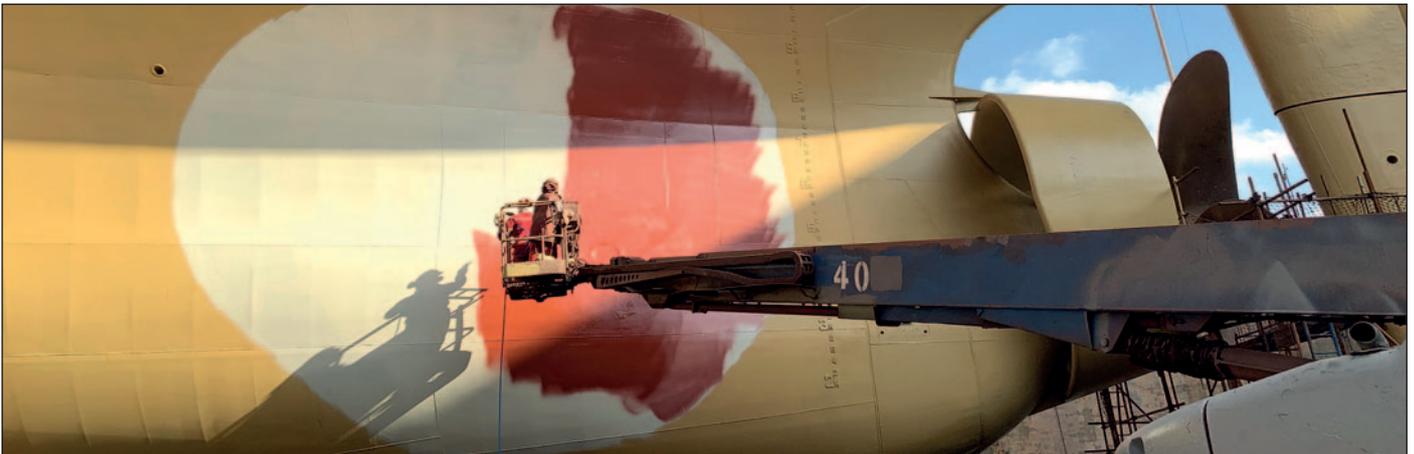
Lasting scrubber protection

Ecospeed fits in seamlessly with the environmental idea behind scrubber systems. It is a lasting, chemically resistant coat-

ing 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



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RRS Sir David Attenborough receives lifelong protection from Ecospeed



© Jon Payne

When the polar research ship RRS Sir David Attenborough was launched its hull was protected by the most environmentally-safe hull coating ever developed: Subsea Industries' ice abrasion resistant and washable Ecospeed.

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.

The vessel 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.

Ecospeed is a safe, hard-type coat-

ing 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.

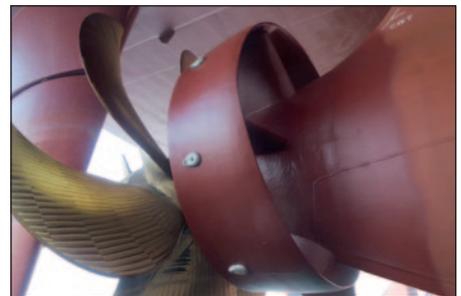
Contact us for further information on the cost and energy savings Ecospeed will bring for your (ice-going) vessels.

**SUBSEA
INDUSTRIES**

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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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