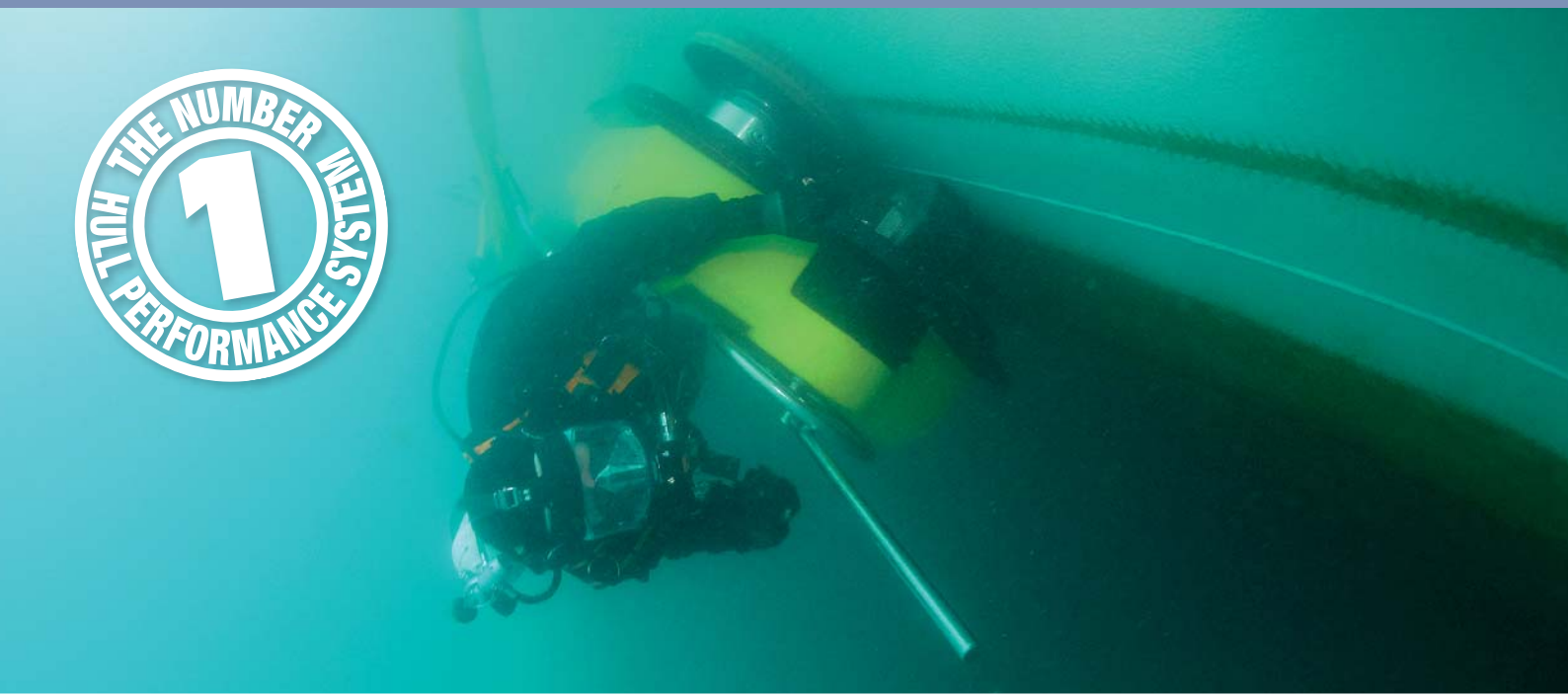
SUBSEA

PROTECTION AND PERFORMANCE

Magazine

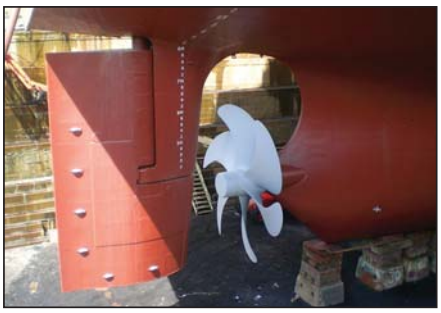


LASTING PROTECTION









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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ECOSHIELD®

THE DIAMOND STANDARD IN STEEL PROTECTION

Editorial:

Later this month, the official naming ceremony of the *RRS Sir David Attenborough* will take place at the Cammell Laird Shipyard in Birkenhead. This new polar research ship is designed to keep Britain at the forefront of world-leading scientific research in Antarctica and the Arctic and we are very proud to be part of this project.

RRS Sir David Attenborough has a hull protected by the same Ecospeed coating that has protected *RRS Ernest Shackleton* and *RRS James Clark Ross*, for many years.

She will undertake world-leading environmental research into climate change and ocean protection. As such, the vessel required an ice-breaker coating, without being harmful to the environment. Ecospeed fulfils that requirement.

Ecospeed is a safe, hard-type coating with zero toxic compounds. It eliminates the potential pollution of polar waters with heavy metals or biocides and hull contamination during operations in ice. The hard coating completely mitigates against the leaching of chemicals into the marine environment. This is extremely important to the scientific work the vessel will carry out.

RRS Sir David Attenborough is a showcase for an array of sophisticated technologies and systems, of which Ecospeed is one.

The 15,000gt research vessel will be one of the most advanced polar research vessels in the world and will be capable of 60 days at sea without re-supply, covering a range of 18,898 nautical miles at 13 knots.

Further on in this magazine you can find more information on the many benefits our coating systems offer to ice-going vessels. If you drop us a line, we can tell you how Ecospeed 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 underwater hull coating for your ship. You will not have to worry about this ever again if you choose Ecospeed.

Subsea Industries NV
Boud Van Rompay
Founder

The RRS Sir David Attenborough *being guided into the wet basin at Cammell Laird Shipyard in Birkenhead. Photo credit: Jon Payne.*

The washable coating

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

Ecospeed offers a cost-effective and environmentally-acceptable approach to hull protection and anti-fouling.

The technology can be broken down into three parts:

1. Coating

Ecospeed is a glassflake reinforced resin coating that is impermeable, impenetrable, long-lasting, inert and non-toxic. The coating is applied in two coats each of 500 µm dry film thickness (DFT) to a properly prepared hull, either at new build or in drydock for an in-service vessel. It works equally well on steel, aluminum or GRP. A minimum of about 3 hours is required in between coats and there is no maximum overcoat time. This coating has extraordinary adhesion and bonding qualities. It is very tough and resistant to abrasion. It is also flexible and remains firmly bonded to the plates even when these flex considerably.

2. Fast and easy cleaning

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. It allows divers to clean the flat areas as well as the harder to reach parts of the hull without damaging the coating. One of the many unique characteristics is that with repeated underwater hull cleaning the coating's surface improves. Cleaning can be carried out whenever needed, at any point in its lifespan.

Ecospeed can also be cleaned in drydock with high pressure tools. With Ecospeed the coating is always in a brand-new, excellent condition after a high pressure washing and no material is lost. Only the fouling is removed. The coating stays on the ship instead of dispersing in the water and contaminating the shipyard and the surrounding waters.

By optimizing hull surface friction and using the best possible surface hydrodynamic characteristics, fuel savings over the lifetime of the ship are most often found to be in the 20-40 % range. In contrast with AF compounds that rapidly degrade over time, our coating lasts. Therefore the performance of the ship does not degrade either.

3. Minor touch-ups in drydock

The coating is expected to last the full service life of the ship without need for replacement or any major repair. Mechanical damage such as that caused by collision or anchor chain abrasion, or by welding on the hull can easily be touched up during routine drydocking. Because the coating consists of a single, homogenous layer, any repair or touch-up easily blends in without any difficulty. The integrity of the hull coating is maintained despite such repairs. Because no repaint is needed, several days and up to a week can be saved in drydock times during each visit.

The coating alone provides superior hull protection, but it is the full Ecospeed technology that results in the major fuel savings ■

Reasons for switching to a washable coating

Washable hard coatings like Ecospeed are designed to withstand the rigors of ship use for the life of the vessel. They are completely inert and contain no biocidal or toxic material. Usually their strength and durability is created by the presence of glass flakes within the coating.

The "Wash before you go" strategy, with a washable coating, is the complete answer to the problems of NIS and biocidal contamination of the marine environment. It has many additional benefits for ship owners. The strategy becomes possible because hard hull coatings have extreme durability and are non-toxic.

Ecospeed is in fact designed to be cleaned as often as needed, and this cleaning allows the coating to always operate at peak efficiency – saving further money for operators and reducing GHG emissions. The benefits of a washable hard coating include:

Fouling on Ecospeed can be removed fast and easy.

Ecospeed underwater maintenance is carried out with specially designed equipment.

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.

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, saving 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

When divers clean an Ecospeed hull, there is no paint loss and no toxic plumes are created.

The coating can be quickly washed in drydock with high pressure tools.

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 service 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.

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.

Conclusion

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. ■

ECOSPEED®
SHIP HULL PERFORMANCE TECHNOLOGY

An underwater ship hull coating needs to be easy to apply, it needs to stay on your ship for many years and it needs to save you money. ©New SIGHT Photography.

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 dry-dock 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.

ECOLOCK®

LIFETIME CORROSION PROTECTION FOR OFFSHORE UNITS

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Choosing the best hull coating for ice-going ships and icebreakers

The number one consideration in a hull coating for ice-going vessels and icebreakers is the ability of the coating to protect the hull in the harshest marine environment there is. Only a few types of coatings are capable of providing this protection. Typically they are certified for their ice-abrasion resistance qualities by the classification societies. This status also means that use of these coatings permits a reduction in the otherwise required thickness of the ship's scantlings. This saves money in terms of requiring less steel to build the hull and reducing the overall weight of the ship.

Antifouling and foul-release coatings are not suitable for ice-going ships. They do not provide adequate protection for the hull and the impact and abrasion of the ice soon damages or removes them.

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

Experience has shown that Ecospeed stays on the hull longer and resists the ice far better than the most generally used specialized ice coatings. The glassflake reinforced coating uses a different resin than other specialized ice coatings which means that it remains bonded to the ship's plates even as they flex and bend under ice pressure and impact.

The coating is extremely tough and resilient. It stays on the ship much longer than other ice coatings and holds up much better, providing smooth protection for the hull for years.

Longevity, asset protection

A ship with a well-protected hull over its service life will be worth more when the time comes to sell it than one which has a corroded, eroded hull. This comes down to how well it has been protected. This, in turn, depends on the coating system and maintenance methods used.

Ecospeed will last the life of the ship without the need for any major repair or full replacement of the coating.

Low friction, fuel economy

An ice-going hull coating must have low friction characteristics in order to be fuel efficient. But it is not enough for the hull to be smooth and have low friction at launch. It must stay that way for the life of the vessel. Most hull coatings, including specialized ice coatings, become rougher and rougher over time due to damage, disbonding and spot repairs. This will reduce fuel efficiency more and more as time goes on.

Ecospeed will hold up and will not be damaged in the ice and so will remain smooth for the life of the vessel, thus saving fuel. Even if minor repairs are needed in drydock,

Certificate No: MNDE2016T392
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Recognised Abrasion Resistant Ice Coating

The product below is recognised as an abrasion resistant ice coating for ships intending to navigate in ice conditions.

If the coating is applied in way of the ice belt of ships intending to navigate in first-year ice conditions and is maintained in good condition during service, the thickness of steel plating in way of the ice belt may be reduced by up to 1 mm in accordance with relevant Rules and Regulations.

The recognition is subject to Lloyd's Register being informed of any changes in and modifications to the product's formulation or specification and the product being used in accordance with the manufacturer's instruction and with the relevant requirements of Lloyd's Register's Rules and Regulations.

Manufacturer:	Subsea Industries NV, Haven 29, Noorderlaan 9, 2030 Antwerp, Belgium
Product name:	ECOSPEED
Product colours:	Unspecified
Film thickness:	1000µm
Surface cleanliness:	Minimum Sa 2½ (ISO 8501-1)
Surface profile:	Minimum 75 µm
Date of expiry: Date of issue:	1 September 2021 29 June 2016

Stuart Downie
Lead Specialist to Lloyd's Register EMEA
A member of the Lloyd's Register group

they blend in perfectly, leaving the hull smooth and fuel efficient.

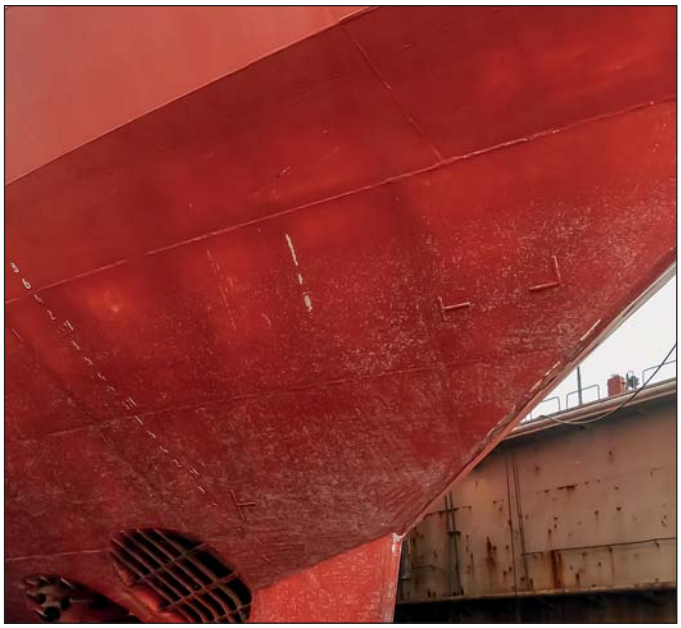
Ease of application

Some specialized ice-class paints are quite effective but are difficult to apply, with demanding environmental conditions, specialized application equipment and skills not necessarily available or possible at all shipyards. A true ice-class coating that can be applied as easily as a regular coating is rare. This can be an important point in deciding which coating to apply to a ship.

Applying Ecospeed is a simple process which can be carried out using usual spray equipment without tenting and heating. Minimum overcoat time is only a few hours and there is no maximum, making it easy to fit into your drydock or new build schedule. Only two coats required, each of 500μm. Preparation requires grit blasting to 75μm profile and Sa 2.5. Application requirements

Before Ecospeed

After Ecospeed



Photos on left show an icebreaker/Antarctic supply ship after a single season in the ice with a leading specialized ice paint. Photos on right show the same ship sailing in the same conditions four seasons after Ecospeed was applied, with no repainting during that time.

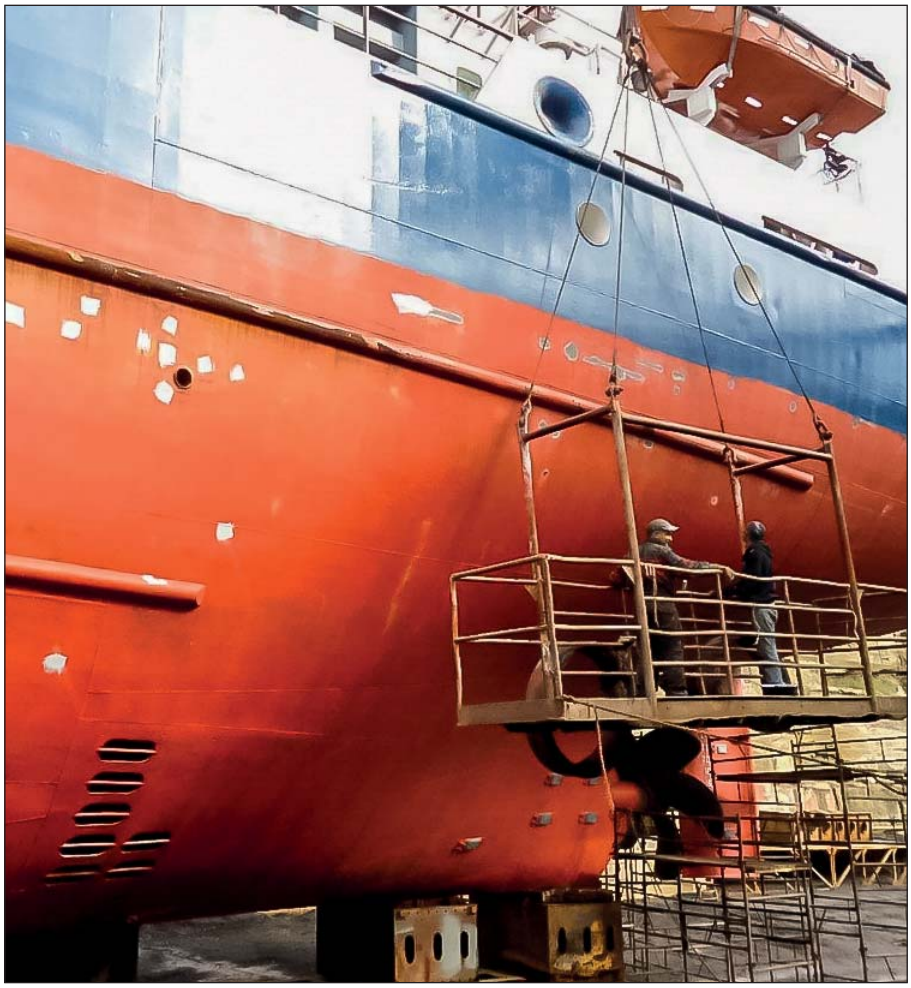
Before Ecospeed

Hull of ice-going general cargo ship after a season in ice, eight years after launch with annual coating repair or replacement.

After Ecospeed

Recoated with Ecospeed, the hull is smooth and produces low friction.

Five years after Ecospeed



Five years after Ecospeed was applied. The hull is still smooth and the coating intact, requiring no coating repair since application and only minimal touch-ups in drydock despite trading in icy waters.

consist of a normal, single-head spray gun, humidity not above 85%, temperature 0° - 60° C. Minimum overcoat time of 3 hours (at 20° C), no maximum. Immersion time 24 hours after.

Rudders and running gear, special protection

A specially formulated version of Ecospeed known as Ecoshield® is used for protecting rudders and other running gear from cavitation and corrosion damage. Ecoshield is equally effective in ice as in water.

Applied once, Ecoshield provides lifelong protection for the rudder, stabilizer fins, thruster tunnels and other parts of the underwater ship particularly prone to cavitation and corrosion. Ecoshield is fully compatible with Ecospeed. It can be applied at the same time in the same way. It can also be applied under or over Ecospeed. ■

Contact us for more information or an estimate for Ecospeed and/ or Ecoshield for your ice-going ships.

ECOSPEED®
SHIP HULL PERFORMANCE TECHNOLOGY

Corrosion damage repair made easy

Test plate showing the benefit of an Ecofix and Ecoshield combination.

Ecofix is used to fill and build up a corroded and pitted steel surface to its original form prior to recoating with Ecoshield. It 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 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 basics, the Ecoshield 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 Ecospeed/ Ecoshield family, it is fully compatible with the coating. ■

ECOFIX®
CORROSION REPAIR

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SUBSEA INDUSTRIES






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.

www.subind.net

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