

SUBSEA

PROTECTION AND PERFORMANCE

Magazine



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ECOLOCK® 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.

ECOLOCK®

LIFETIME CORROSION PROTECTION
FOR OFFSHORE UNITS

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Editorial



The shipping world is undergoing immense change, especially with the introduction of mandatory regulations designed to reduce shipping's impact on the marine environment. Copper in marine coatings is likely to be the next item on the regulatory agenda.

Such regulations place a financial burden on the shipowner, resulting in ever-tighter profit margins. But what if you could meet your current and future environmental targets, while reducing fuel consumption and drydocking costs by half? With Ecospeed, just one coat will last the lifetime of the vessel, without the need for regular re-blasts and re-coats, reducing the time your vessels spend in drydock.

We are also proud to announce the launch of the latest member in our range of coating systems: Ecolast. This product is Ultra-Violet (UV) resistant and preserves its color while at the same time offering the corrosion protection our coatings are known for.

Subsea Industries NV
Boud Van Rompay
Founder

Subsea Industries takes Ecospeed demonstrator vessel on the road



Subsea Industries will take the demonstrator vessel on a 'roadshow' to demonstrate the performance and cleaning simplicity of our coating systems.

Shipowners, shipbuilders and representatives from the Green Award Foundation attended the first in a series of planned 'roadshows' Subsea Industries has initiated to demonstrate the zero environmental impact and simplicity of cleaning hulls protected with its Ecospeed hard coating.

Taking place last month in Maas-sluis, just outside Rotterdam, guests boarded the Subsea Industries' maintenance and dive support vessel to watch how vessels coated with Ecospeed can be cleaned effortlessly and legally in harbours, such as the Port of Rotterdam, which has banned the underwater hull cleaning of conventional hull coatings.

As divers set about cleaning the 22.7m catamaran's hull, which had

been coated with Ecospeed some eight years ago, it was noted that the surrounding water remained clean with only fouling being washed off the vessel. There was no paint loss or toxic plumes emitted to otherwise contaminate marine life and sediments.

This was of particular interest to environmental certification agency Green Award Foundation, whose representatives explained that environmentally-certified shipowners using Ecospeed could benefit from a 10% reduction in port fees.

Erwin Strik, Subsea Industries' Sales Officer, said that high pressure cleaning regular anti-fouling coatings would damage the coating, resulting in costly corrosion problems.



As divers cleaned the catamaran's hull, there was no paint loss or toxic plumes.

Using specially-designed tools and equipment, divers from the underwater hull cleaning specialist Hydrex cleaned the vessel in just two hours. However, a typical VLCC would take a double dive team about 12 hours at a cleaning rate of 2000m² per hour.

“Ecospeed is not a foul-release paint but rather a coating system that requires a completely different, more cost-effective and environmentally-acceptable approach to hull protection and anti-fouling,” Strik told the industry guests.

“Paint degradation is typical of traditional marine hull coatings, resulting in the need for reblasts and recoats more or less every time the vessel docks. This repeat business model is costing shipowners dearly and is completely unnecessary.

Subsea Industries’ Executive Director Boud Van Rompay explained: “With Ecospeed there is no need to reblast and recoat the hull; no chance of corrosion, no impact on the environment and, if regular hull cleaning is carried out, fuel savings of up to 40% can be achieved.

“What’s more, if Ecospeed is applied to ice-going ships and the vessel is maintained in good condition during service, Classification Societies have ruled that the thickness of steel plating may be reduced by up to 1mm and this in the area most prone to damage from ice impact. As a result there are considerable savings to be made.”

Ecospeed requires just two coats with a curing time of three hours between each one. A typical soft paint, however, requires four to five coats with a curing time of 12 hours between each.

Willem Hopmans, Subsea Industries’ Marine Project Officer, said: “We all have an environmental interest in what is happening in the water but we can clean Ecospeed hulls in water very quickly and without damage to the marine environment. Ecospeed is the only sustainable solution for protecting ships’ hulls and we will now take the vessel to ports around Europe to demonstrate just how safe the coating is and how simple and cost-effective it is to clean.” ■



Willem Hopmans: “We all have an environmental interest in what is happening in the water.”



Shipowners, shipbuilders and representatives from the Green Award Foundation attended the first in a series of planned Ecospeed demonstration ‘roadshows’.

Ecolast: UV resistant corrosion protection

We are proud to announce the launch of the latest member in our range of coating systems: Ecolast. This product is UltraViolet (UV) resistant and preserves its color while at the same time offering the corrosion and abrasion protection our coatings are known for.

Regular coatings will quickly lose their original color when exposed to the ultraviolet radiation present in sunlight. This is problematic when colorfastness is required, as is the case in for example offshore wind farms.

The bottom part of the tower of wind turbines are all coated in the same regulated yellow. It is essential that the coating used does not change color. In most cases an extra layer of polyurethane is applied to preserve the color. This additional layer is however not abrasive resistant and offers only a temporary fix. A more permanent and less cumbersome solution is therefore needed. Enter Ecolast.

Ecolast is highly resistant against salt, ultraviolet radiation, waves or even ice. Mechanical damage to the coated surface is minimized. This is especially important for (semi-) submerged structures like wind turbines that are located in splash or tidal zones.

Ecolast will keep its color because it is highly ultraviolet resistant. Like all other coatings systems in the Subsea Industries family, Ecolast is also unaffected by corrosion. As a result no repaint is required once the



©Teun van den Dries

Ecolast will keep its color because it is highly ultraviolet resistant, which is a key benefit for offshore wind farms.



©Teun van den Dries

Wind turbines like this will benefit greatly from Ecolast, as the coating will preserve the regulated color of the lower part of their towers.

coating has been applied, safeguarding the color and the integrity of the structure or vessel.

Application of Ecolast is done in two homogenous layers, with no need for primer or any other extra

layer. This makes the application very fast and easy to adapt to the schedule of a yard.

If you want to receive more information about Ecolast or any other Subsea Industries product, feel free to contact us. We are ready to assist you. ■

Belgian headquarters

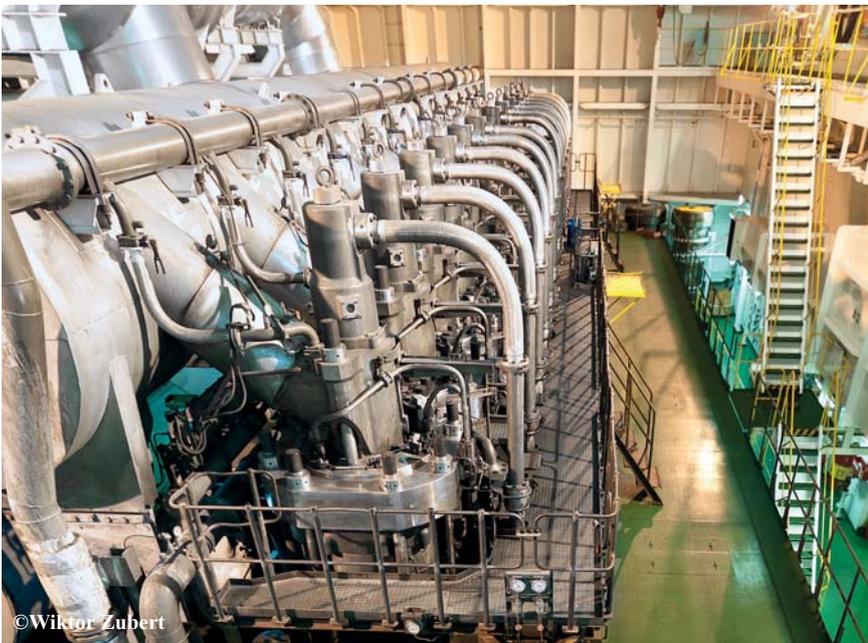
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ECOLAST®
LONG TERM UV RESISTANT

The only hull performance system that gives your engine a break



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**SUBSEA
INDUSTRIES**

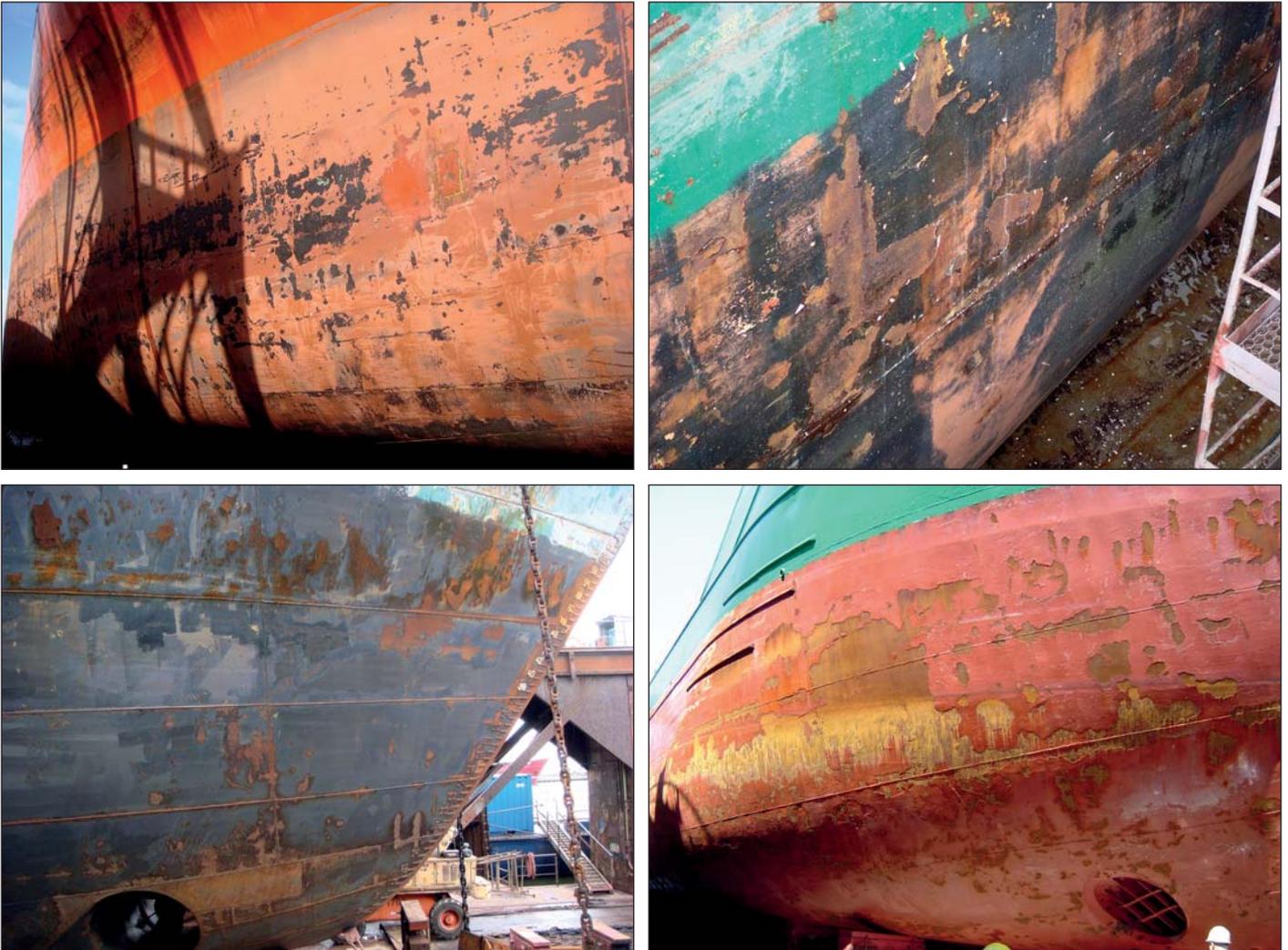
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Ecospeed provides your vessel with long-term protection and dramatically improves the ship's performance.

An impermeable and extremely tough coating is combined with an underwater cleaning system. This keeps the hull roughness at an optimum level and results in a major saving in fuel.

Ecospeed gives a very thorough and lasting defense against cavitation and corrosion damage for a ship hull's entire service life. The coating comes with a ten year guarantee. No repaint will be needed during future drydockings.

Cardinal problems solved



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

Our technology has solved several cardinal problems relating to ship hull performance and protection.

With our line of environmentally safe coating products, combined with a profound knowledge of underwater maintenance work and tools, we have succeeded in providing a massive breakthrough in the field of underwater ship hull performance and protection with a substantial reduction in fuel consumption, virtually zero emission and huge time and cost savings during newbuilding and drydocking.

1. Hull surface friction

By optimizing surface roughness to its absolutely attainable optimum limits without future deterioration or degradation, we consider the problem of hull surface friction solved. As the coating has a lifetime equivalent to that of the ship, its surface characteristics are maintained over the same period.

2. Corrosion

We believe we have reduced the corrosion problem to an almost zero effect. An example is that ship hulls handled by us keep their sacrificial

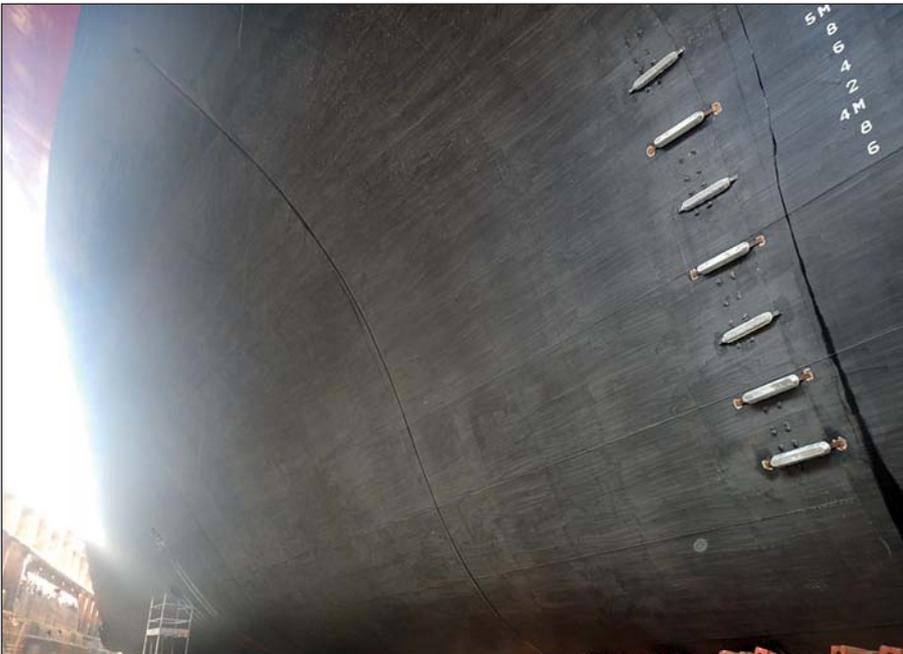
anodes 100% intact, even after prolonged periods of 5-10 years in the water. Corrosion is virtually absent on our hulls.

3. Cavitation erosion

Cavitation erosion and corrosion thus caused is entirely solved. Cavitation erosion damage resulting in often very expensive repairs and time loss in drydock can now be avoided entirely.

4. Fuel savings

By optimizing hull friction and using the best possible surface



Ship hulls coated with Ecospeed keep their sacrificial anodes intact.



Ecospeed coating on a cruise vessel after 6 years, seen here in drydock and in water.

hydrodynamic characteristics, proven fuel savings over unlimited periods i.e. 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 coatings last, hence the performance of the ship does not degrade either.

5. Anti-fouling toxic particles emissions

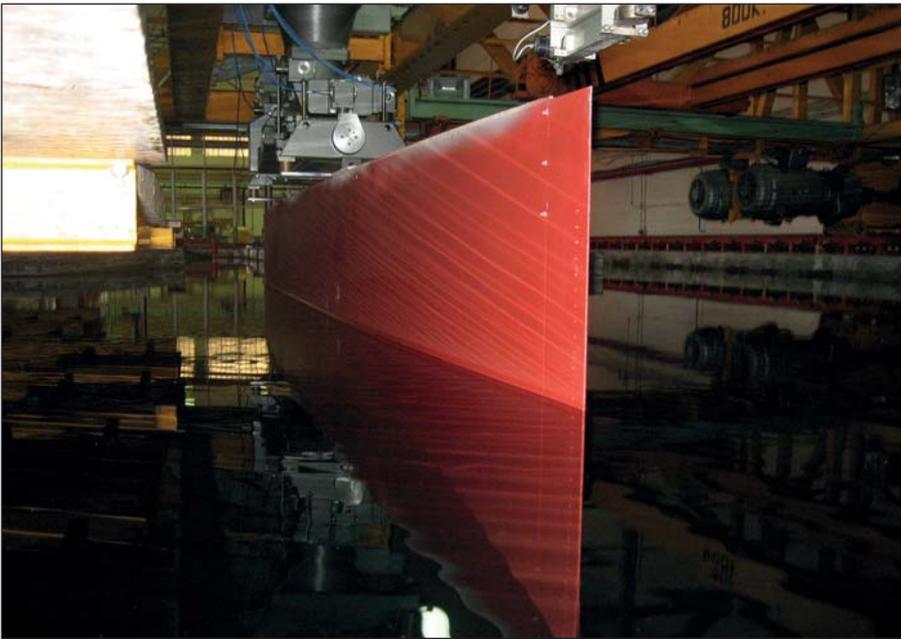
Yearly 1 million tons of AF toxic chemicals and heavy metals are being used and lost at sea. This extremely detrimental and very damaging pollution resulting in billions of silt and sediment remedial cost can now become a thing of the past entirely.

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. Transfer of invasive species

This has become a totally manageable and cost-effective method and poses no major problems other than the repeated, environmentally safe, cleaning in-situ of the ship hull. Even when done frequently, its cost is dwarfed by the fuel savings thus realized. Mitigation of the transfer of invasive species and very large fuel savings, never obtained before, are obtained by the same method i.e. regular in-situ underwater cleaning or other sanitation technologies.



Stringent testing has been carried out on our coatings to achieve the best possible result.



Navy vessel after sailing with Ecospeed on its hull for several years.

8. Time and effort in dry-dock

As reapplication is never necessary, work and time in drydock can be more than halved. Planning for work in drydock can be made to be very precise as paint renewal is avoided. 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 and margins will increase. This beneficial effect will be most notable in shipyards in NW Europe and North America.

9. Building costs

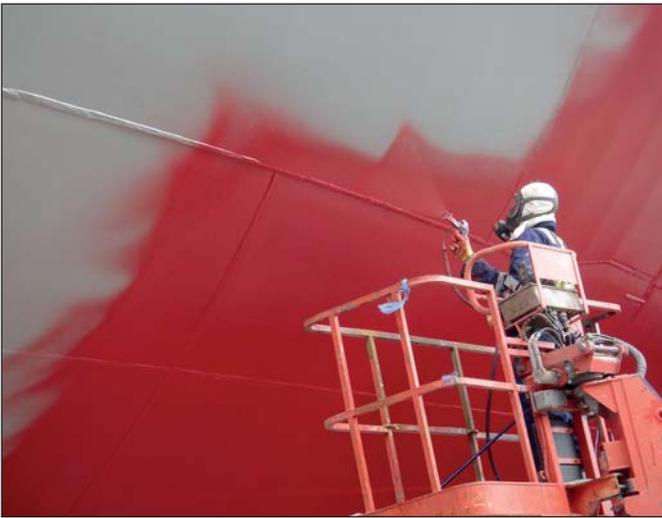
Cost for new building ships is substantially reduced as the repairs of these homogenous coatings, easy to apply and repair, are many times more efficient resulting in thousands of man hours saved during the building process. The reapplication of AF paint for speed trials in drydock at the end of the building period is not necessary any longer as a simple underwater hull cleaning is sufficient. The latter usually saves as much as the total cost of the coating material supplied.

10. Financial

As the coatings will last the lifetime of the ship, they are now part of the investment and other accounting and financial rules can be applied than if it were a simple repetitive application and therefore returning cost. The cost of repeated application of chemicals has changed into a fixed asset, entirely part of the ship.

11. Ice-going and icebreak- ing ships

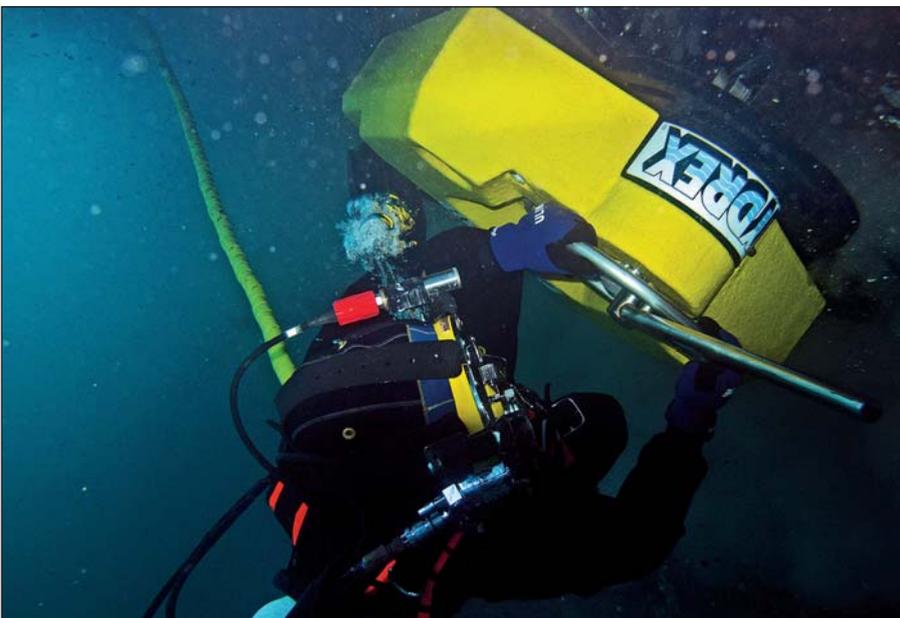
RRS Ernest Shackleton, RRS James



Application is a one-time investment, with no repaints needed for the rest of a ship's service life.



Application of our coating systems is fast, flexible and easy.



Cleaning of our coating systems is 100% environmentally safe and can be carried out without damaging the coating. Our underwater cleaning machines are available for sale to owners and contractors.



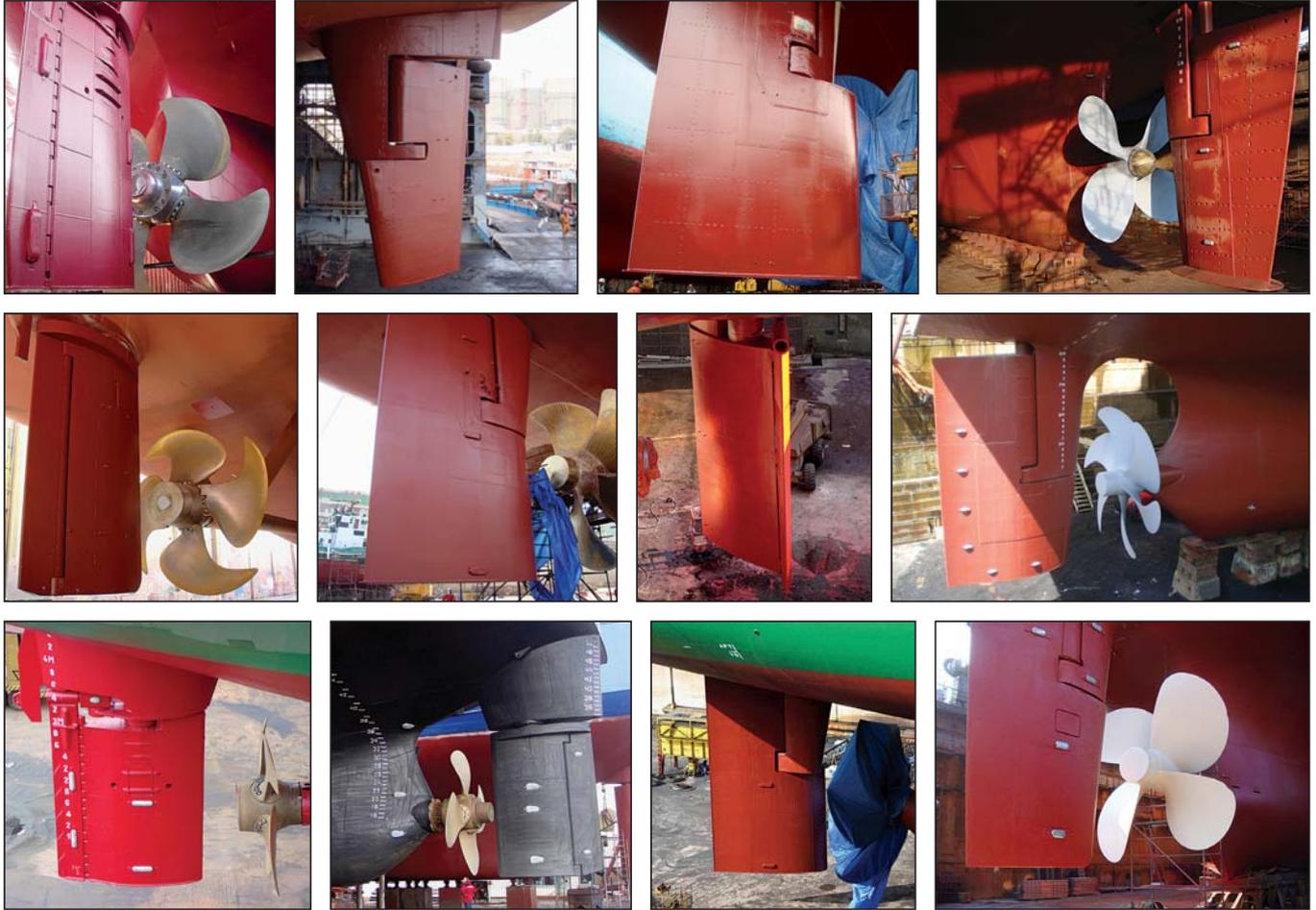
Many case studies have shown that our coatings can withstand the impact of ice for many years on end.

Clark Ross, HMS Protector, all of British Antarctic Survey, have been coated with our products with great and conclusive results. Another 150 applications on ice going hulls have shown that our coating can withstand the impact of ice for many years on end, proving its superior strength and durability.

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 new building costs. We have formulated the best way to prevent loss of coating in ice and general arctic conditions. ■

The only coating that offers lasting rudder 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

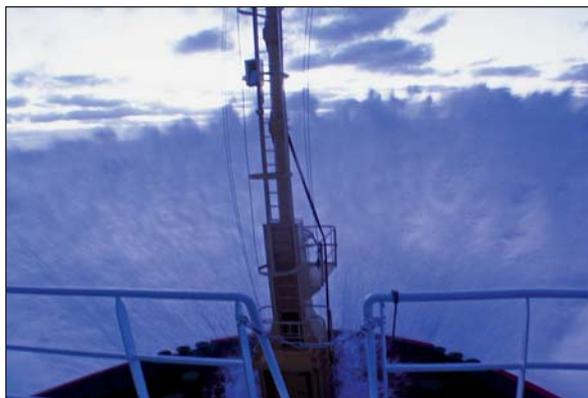
to perform extensive repairs in drydock followed by a full repainting, again and again.

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

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.

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