

ECOSPEED®

SHIP HULL PERFORMANCE TECHNOLOGY

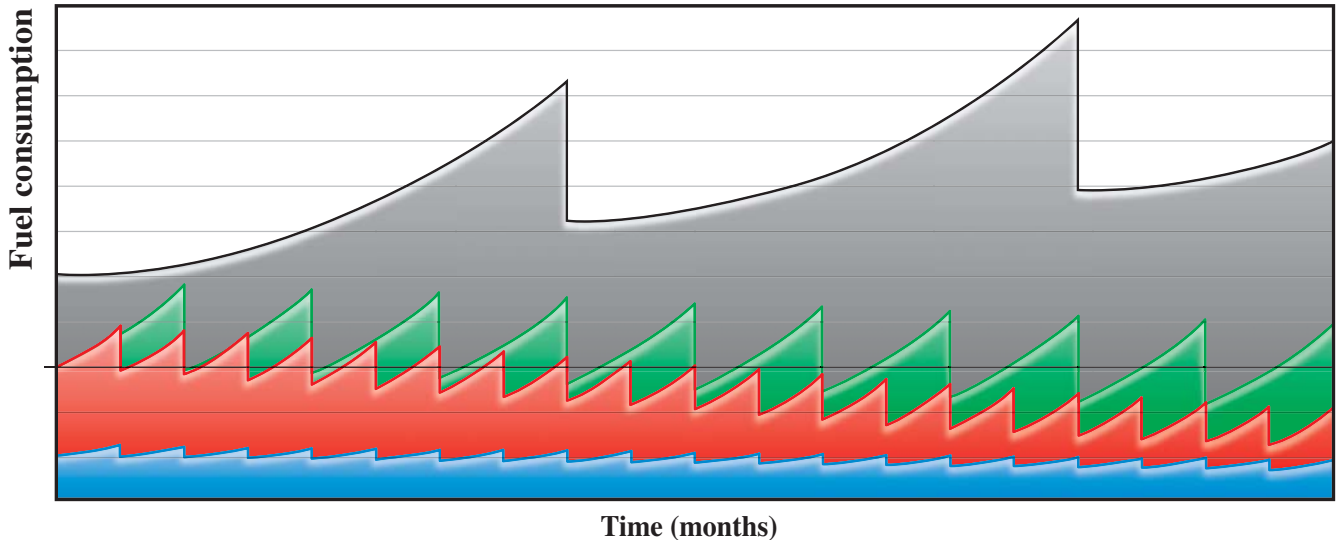
Magazine



Maximum protection and savings for ice-going vessels

Millions in fuel savings

Development of additional fuel consumption over time



- Ecospeed with 2 cleanings per year
- Ecospeed with 4 cleanings per year
- Ecospeed with optimum cleaning intervals
- Active antifouling paints

Most ships sail with a chartering contract that includes a penalty clause if fixed distance/fuel consumption ratios are not met. However, this is unpredictable with regular paint systems and will also worsen over the years. The ship becomes more expensive and profits are reduced.

The protective Ecospeed ship hull performance technology however

not only keeps the ship's performance stable but even improves it with repeated underwater maintenance. The coating is designed to be cleaned routinely with specially designed underwater hull cleaning tools. These simultaneously clean and improve the smoothness of the paint surface. This avoids penalties as well as producing enormous fuel savings.

One major cruise line has been quo-

ted as saying that they are saving 10% on fuel costs with Ecospeed compared to the earlier TBT coating which they replaced. Another cruise ship found that they gained 1.5 knots over sea trials speed when they replaced their hull coating with Ecospeed.

Contact us to find out how Ecospeed can help you achieve major fuel savings.

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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.



RECOGNISED ABRASION RESISTANT ICE COATING

Certificate No: MNDE/2011/4335

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

Providing 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.

Company: **Subsea Industries NV,
Haven 29,
Noorderlaan 9,
2030 Antwerp,
Belgium**

Product name: **ECOSPEED**


Product colours: **Unspecified**

Film thickness: **1000 µm**

Surface cleanliness: **Minimum Sa 2½ (ISO 8501-1)**

Surface profile: **Minimum 75 µm**

Valid until: 1 September 2016
Date of issue: 16 August 2011


Jian-Zhong Zhang
Surveyor to Lloyd's Register EMEA
A member of Lloyd's Register Group

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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,

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



General cargo ship, before Ecospeed, one season trading in Baltic ice.

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, 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 environmen-

After Ecospeed



Same ship, same conditions, two years after Ecospeed applied, no repaint.



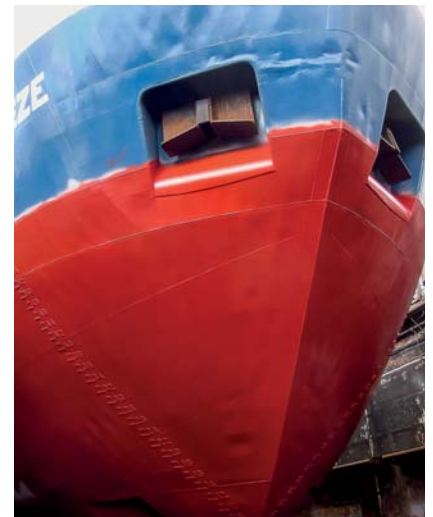
Same ship, same conditions, five years after Ecospeed applied, no repaint.

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 applied, the same hull is still smooth and the coating intact, requiring only minimal touch-ups in drydock despite trading in icy waters and no coating repair since application.



Ecospeed application to the British Antarctic Survey's James Clark Ross. 1-2-3: Hull with previous coating, grit blasting, spray equipment. 4-5-6: First coat Ecospeed, beginning of second coat Ecospeed. 7-8-9: Finished Ecospeed coating. No special application requirements.

tal 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 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.

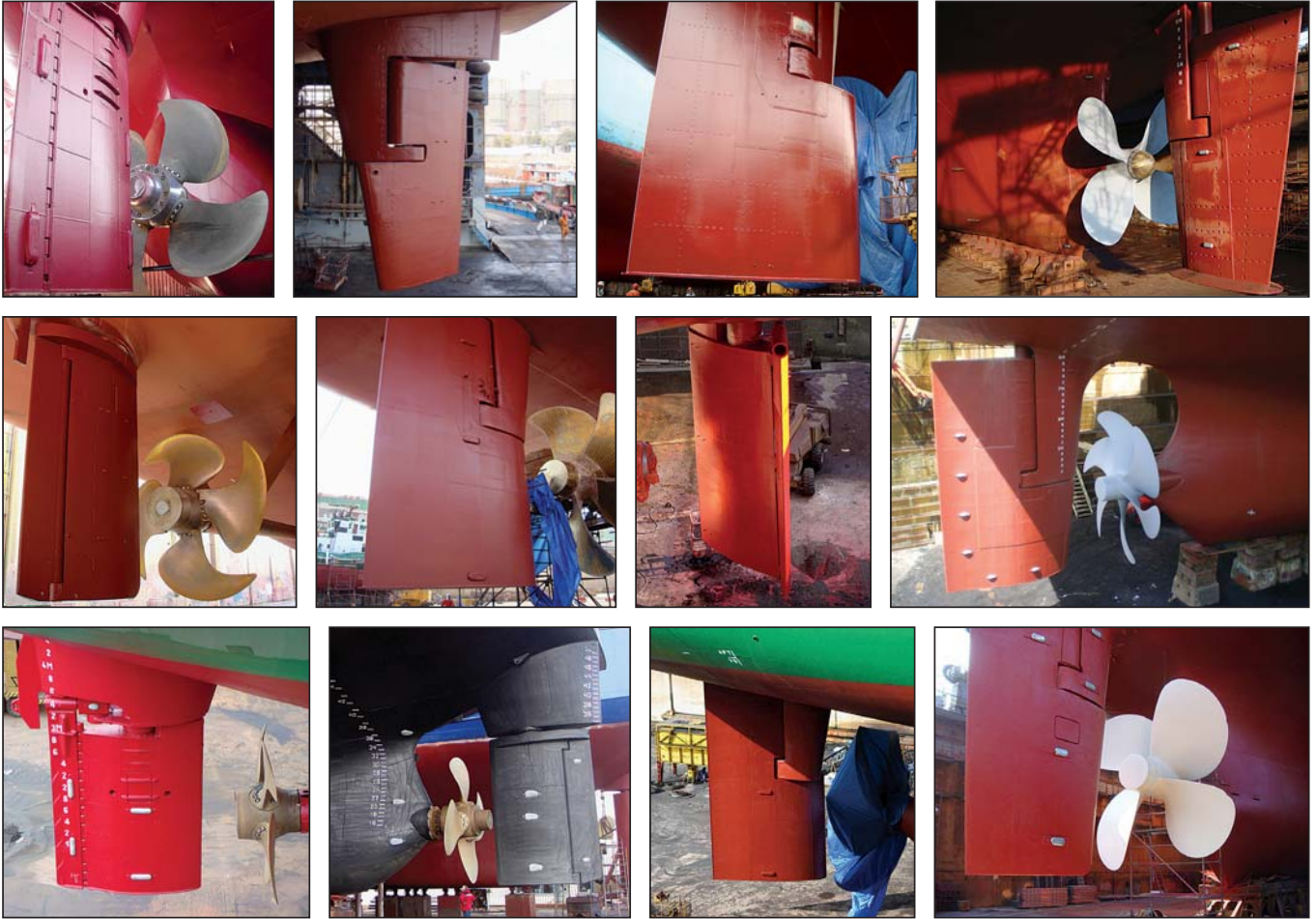
Rudders and running gear, special protection

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

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.

ECOSHIELD® **ULTIMATE PROTECTION**

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What is Ecospeed?

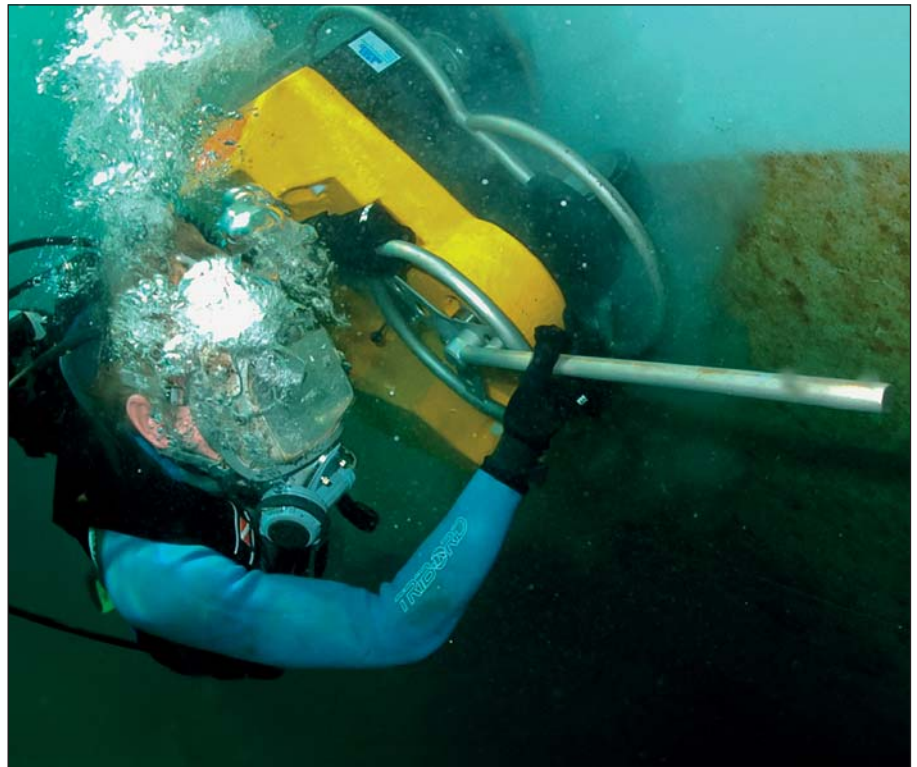
The purpose of Ecospeed is to offer a long-lasting, non-toxic protection to all ship hulls and underwater gear and to provide a system of keeping a hull very smooth and free of fouling for the service life of the vessel with minimal repair and no replacement. Instead of using chemicals to try to kill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

What does Ecospeed technology consist of?

The technology can be broken down into its constituent parts:

1. Coating. A glassflake reinforced resin coating that is impermeable, impenetrable, long-lasting, inert and non-toxic. The coating is applied usually in two coats each of 500 µm dry film thickness (DFT) to a properly prepared hull, either at new build (ideal) 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. Buffing/conditioning of the new coating. This is done in the water using specially developed equipment and tools. It is best done a month or more after first



Ecospeed coated hull being cleaned of slime.

application of the coating. It results in a surface that has 30-50% less friction in ice than the leading ice class coating and in comparable lower friction in water. This in turn lends this technology its extraordinary fuel efficiency.

3. Routine underwater cleaning.

Once the coating has been applied and conditioned, it will need to be cleaned routinely to keep fouling to never more than slime and light weed. Frequency of cleaning will depend very much on the operating pattern and environment of the ship. In tropical waters, and especially if the ship is idle for periods or spends much time at anchor or quayside, the hull may need to be cleaned regularly. In colder waters or ice conditions, cleaning need be much less frequent, even as little as a few times a year.

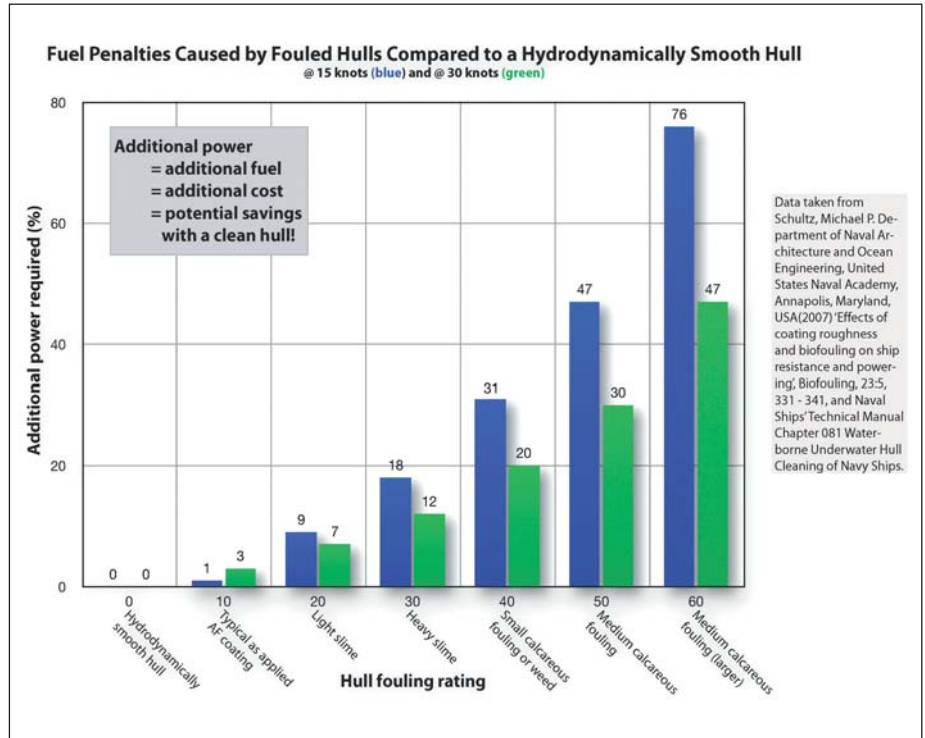
There is a distinct foul-release property to the coating which becomes more noticeable as the coating becomes smoother and smoother. It has been found that it is possible to break down the hull cleaning/conditioning to better adapt it to the ship's schedule. So one side of the hull can be cleaned during one port visit and the other side and/or flat bottom and niche areas can be cleaned on a subsequent visit to the same or another port.

4. 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. However, mechanical damage such as that caused by collision or anchor chain abrasion, or by welding on the hull or other causes 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.

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

ECOSPEED®
SHIP HULL PERFORMANCE TECHNOLOGY



Fuel penalties graph.

The only hull performance system that gives your engine a break

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.



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ECOLOCK® long-lasting protection for offshore hulls now available

Ecolock is a new product from the makers of Ecospeed and Ecoshield. It is designed to protect offshore units for decades without the need for drydocking. Increasingly, floating production 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 bio-fouling that accumulates can be removed successfully and safely for UWILD and to reduce weight. Ecolock is the answer to that challenge.

For decades it has been known that glassflake reinforced hard coatings last longer, are tougher and more resilient, need less repair and replacement than any other type of hull



EXMAR chose Ecospeed to coat the hull of its first-of-a-kind floating LNG liquefaction, and storage unit, the Caribbean FLNG.

coating. Soft coatings such as biocidal antifouling and foul-release coatings do not hold up well. They need to be repaired or replaced often which is not good news for ship-owners and operators and particularly offshore operators who need to keep their ships out of drydock. Their antifouling or foul release properties require that the ship move

through the water at relatively high speed. On stationary vessels the fouling simply builds up.

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 units. Ecolock is the result of continual R&D on offshore hull coatings since the 1990s.

As long as it is standardly applied, Ecolock comes with a 10, 15 or 20 year warranty, if the coating is maintained according to the specifications. The thickness of the coating can be increased to extend its longevity. Even if minor mechanical damage does occur, because of the superior adhesion of Ecolock no undercreep will occur. ■



Ecolock is an extremely tough and durable coating designed to remain in excellent condition for 15 - 25 years without drydocking, repair or replacement.

ECOLOCK®
PROTECTING STEEL

ECOSPEED®

SHIP HULL PERFORMANCE TECHNOLOGY



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lity enables absorption of the forces that are produced by cavitation. This prevents the damage normally caused by this phenomenon.

By removing the existing paint layers and applying Ecospeed on the hull 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 Ecospeed application no full repaint will be needed during drydocking. Ecospeed is guaranteed for ten years. At the most, minor touch-ups will be required.

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Save millions in drydock expenses and off-hire time



Hull of cruise ship after 5 years with Ecospeed coating with no replacement or major repair. This is the state of the hull when the ship came out of the water, without any cleaning or touch-up in drydock.

When your hull coating never needs replacing or major repair, you can save a lot of money in drydock fees, off-hire time, materials and labor.

Most hull topcoats are designed to be replaced once or twice every five years. The full hull coating scheme has to be fully replaced every 10 - 15 years down to bare steel. Over that time period, the coating degrades and

becomes rougher until it's no longer worth trying to patch it up. And it costs you a fortune in fuel to compensate for the additional hull friction.

Imagine a coating that's guaranteed for 10 years and is expected to last 25 without replacement or major repair. A coating that gets smoother over time, not rougher.

Imagine coming into drydock after 3 or 5 years and finding that your hull coating only requires a few minor touch-ups and doesn't even need to be washed off.

Just think how much money you will save.

Call us today for a quote to convert your hull to Ecospeed or start off right, with Ecospeed, on a new build.

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