

SUBSEA

PROTECTION AND PERFORMANCE

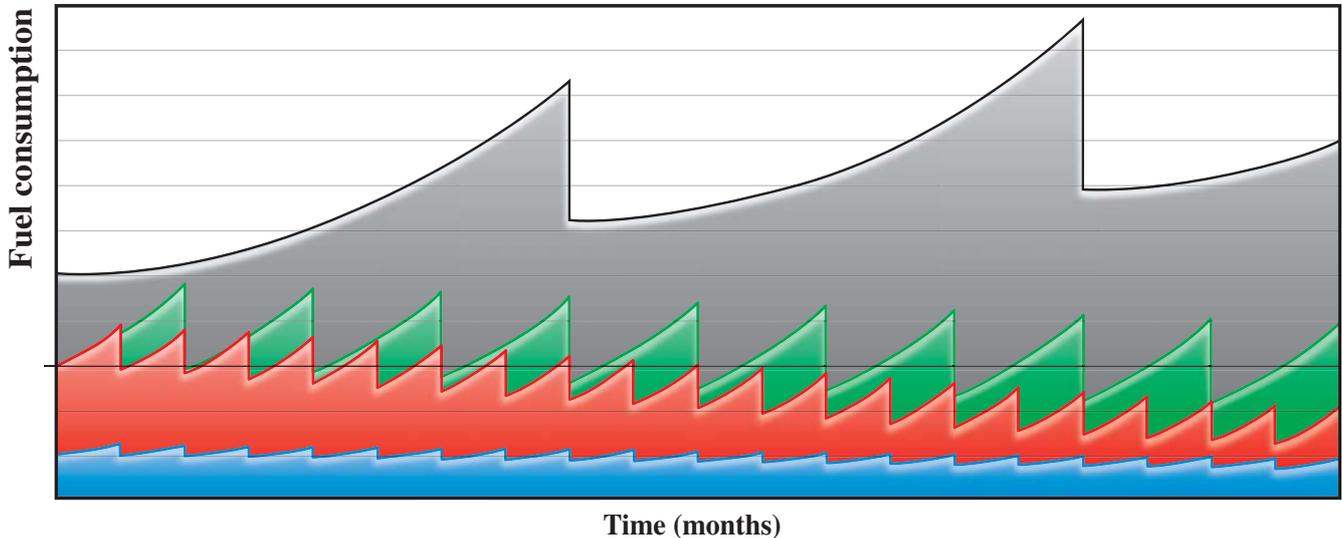
Magazine



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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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Introducing: Subsea Magazine

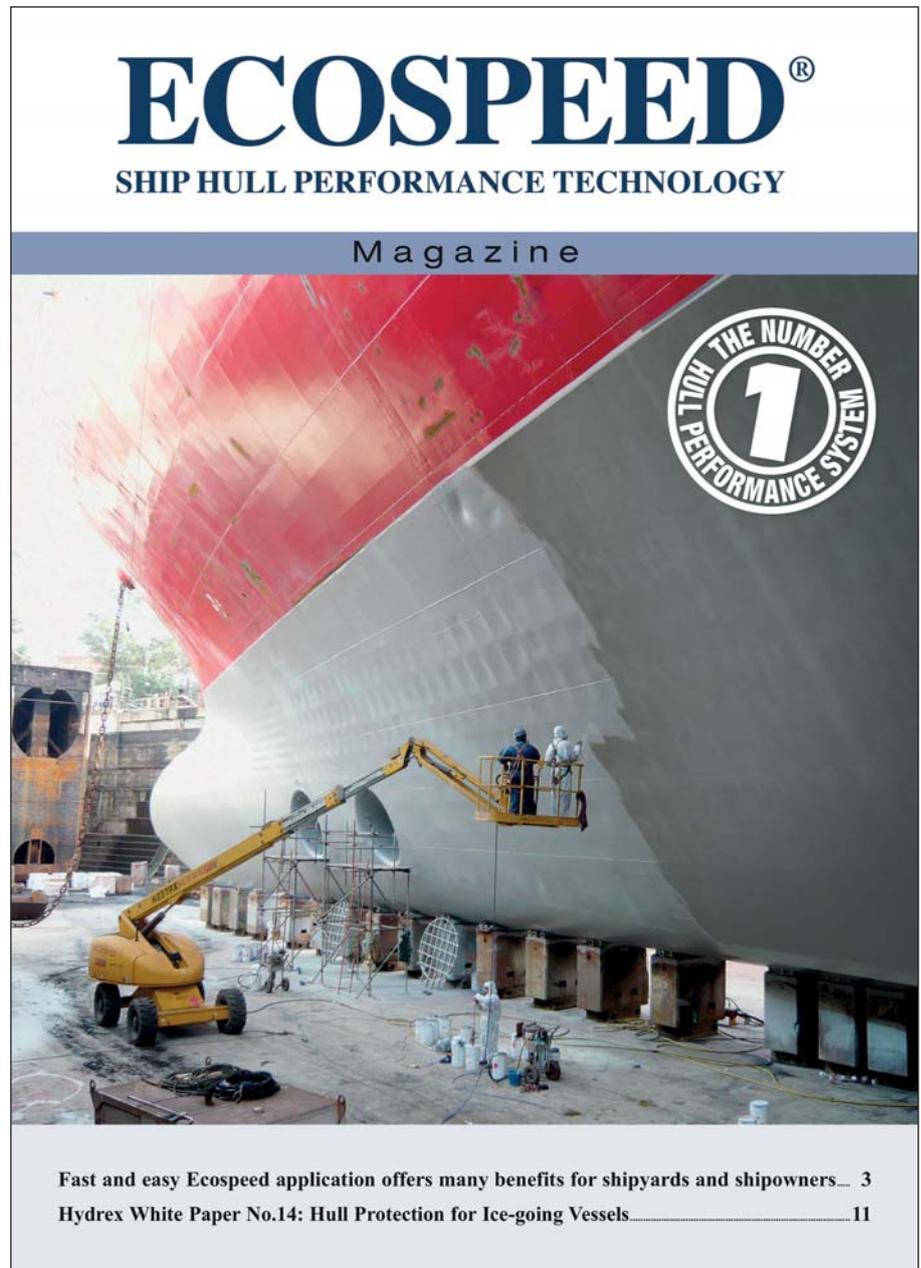
As you probably will have noticed, we have changed the name of our monthly magazine. Up until now it was always called the Ecospeed Magazine. However, over the last few years the range of products that are covered in this publication have been growing. To represent this we felt that a name change was in order. And what better name giver than the company that has developed all these products: Subsea Industries NV.

Our ship hull performance system Ecospeed is off course still an important part of the content of the magazine, but over the last couple of years there has also been a lot of attention for Ecoshield, our coating for underwater running gear. Last year Ecolock, designed for offshore units, joined the ranks. Besides our award winning coating family of hard hull coating systems there is also our evolving line of underwater hull and propeller cleaning equipment.

It was with this cleaning equipment in mind that Subsea Industries NV was originally founded in 1983 as Subsea Cleaning Systems NV.

In-house developed underwater cleaning equipment

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.



ECOSPEED®
SHIP HULL PERFORMANCE TECHNOLOGY

Magazine

THE NUMBER 1 HULL PERFORMANCE SYSTEM

Fast and easy Ecospeed application offers many benefits for shipyards and shipowners... 3
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The 'Ecospeed Magazine' has been renamed 'Subsea Magazine' to represent the growing range of products featured in the publication.

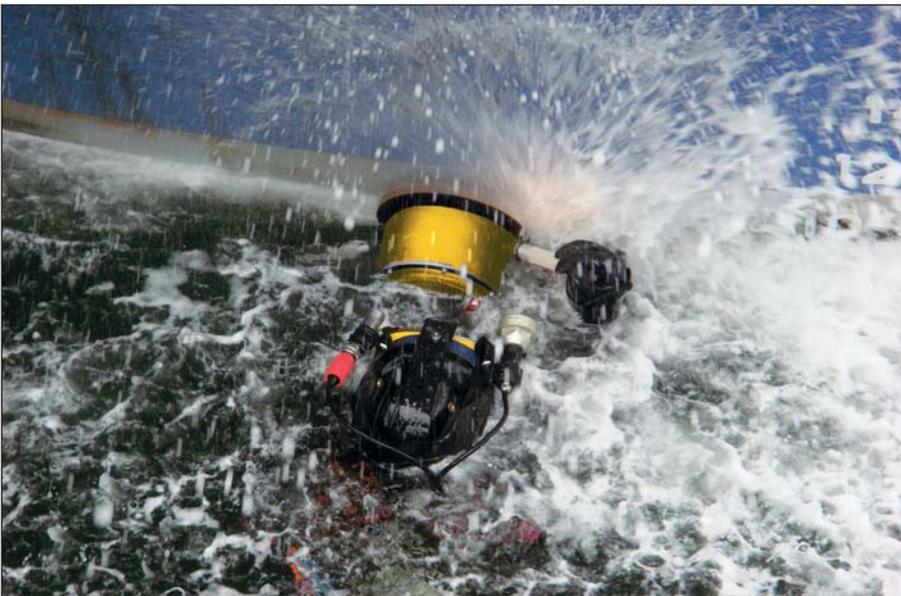
A complete set of complementary equipment was designed in-house to allow divers to clean the flat areas as well as the harder to reach parts of the hull without damaging the coating. The combination makes it possible to have a 100% clean hull after each maintenance session. This results in the best possible hydrodynamic condition of the under-

water hull throughout the service life of the vessel as well as the removal of any potentially harmful invasive aquatic species which the ship may have picked up.

The MC111 is our smallest model specially designed for cleaning and polishing ship hulls, propellers and thrusters. The MC111 is very handy



The MC111 is designed for cleaning and polishing ship hulls, propellers and thrusters



The MC131 is designed for cleaning yachts and smaller ships to offshore oil and gas platforms.



The MC212 is designed for cleaning marine fouling from ship hulls, offshore oil and gas platforms, jetties, piles, intakes and internal pipelines.

and can be easily taken into difficult corners and niches while still obtaining the desired results.

The MC131 is a compact unit designed for cleaning all kinds of marine fouling from yachts and smaller ships to offshore oil and gas platforms. The brush rotation speed is adjustable by the diver so as to achieve an optimum hourly cleaning rate.

The MC212 is designed for cleaning light, medium and heavy marine fouling from ship hulls, offshore oil and gas platforms (concrete or steel), 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.

The MC312 underwater hull cleaning unit will stand up to the most difficult underwater cleaning conditions encountered. Different types of fouling can be treated with the appropriate pressure and tools so damage is prevented to the underlying paint layers. It is designed for larger ship hulls or other large, reasonably flat surfaces.

Our R&D department is constantly working on ways to improve the available underwater cleaning equipment even further. New versions of the tools are regularly put into practice to achieve an even faster cleaning rate without losing any of the quality.

All our systems are carefully designed with operational safety as a prime consideration. All our cleaning units are offered separately or supplied with a complete support system including umbilical, tools and hydraulic power.



Ecospeed was launched commercially in 2002. (Pictured: RRS James Clark Ross)

The right coating for the right area

In 1993 research begun on developing a new, long-lasting, non-toxic method of protecting ship hulls. Three years after the final development of Ecospeed, the system was launched commercially in 2002. Ecospeed is an environmentally safe underwater hull coating system which improves a ship's performance and provides it with long-term protection. It consists of a unique, entirely original and thoroughly proven system that combines the advantages of an easy-to-apply superior coating, a surface treatment for hydrodynamic optimization and a long term underwater maintenance service system. The coating protects the hull for the service life of the ship without need for recoating or major repair and comes with a ten year guarantee. Since its launch in 2002 Ecospeed has won numerous

awards, the most recent being the National Energy Globe award 2015. You can read more about this award further on in the magazine.

In 2013, after more than 10 years of strenuous testing, Ecoshield, was launched for permanent protection against cavitation damage for rudd-



In 2013 Ecoshield was launched.



ECOLOCK[®]
LIFETIME CORROSION PROTECTION

Ecolock was launched in 2014. (Pictured: the Caribbean FLNG.)

ders. Ecoshield is also suitable for bulbous bows, stabilizer fins, thruster nozzles and other underwater ship gear which needs special protection from corrosion. Ecoshield is a specifically reinforced version of Ecospeed. Small but significant variations of the Ecospeed formula have been tested on rudders since 2002 with extraordinary results. Ships that were experiencing heavy cavitation damage to their rudders have seen no further cavitation damage erosion for as long as 10 years after the glassflake coating was applied. Ecoshield was awarded the Seatrade 2014 Innovation in Ship Operations Award.

In 2014 Ecolock was launched. Ecolock is an extremely tough and durable coating designed to remain in excellent condition for 20 years or more 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 Research & Development on offshore hull coatings since the 1990s. At the end of April of this year Ecolock won the QinetiQ 2014 Maritime Innovation Award.

Underwater maintenance of these coating systems is carried out with

our underwater hull cleaning equipment that simultaneously removes all fouling and optimizes the smoothness of the paint surface.

Company goal

Whether it is the range of underwater cleaning equipment or the various 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. ■

Ecospeed wins Energy Globe Award 2015

On 25 June 2015 two delegates from the Austrian Chamber of Commerce at the Austrian embassy in Brussels, Mrs. Martina Madeo and Mr. Henry Simon, visited Subsea Industries nv in Antwerp to present the company with the National Energy Globe Award for sustainability for 2015. Subsea Industries won the award for Belgium for its Ecospeed non-toxic hull coating project. Production Executive Mr. Manuel Hof accepted the award on behalf of the company.

According to the jury report, "this year's National Winner of the Energy Globe Award in Belgium set out to replace these toxic antifouling coatings with a non-toxic alternative, stopping water pollution and also reducing fuel and greenhouse gas emissions. A win-win situation for both: Humans and environment."

"It is our duty and responsibility to assure that our young people will have an intact environment tomorrow." With these words Wolfgang Neumann launched the ENERGY GLOBE World Award for Sustainability in 1999, today's most prominent and prestigious environmental prize.

From all over the world, projects are showcased that conserve and protect our resources or that employ renewable energy. The goal is to present successful sustainable projects to a broad audience, for many of our environmental problems already have good, feasible solutions. More than 1.500 projects and initiatives



from a total of 177 countries were submitted for this year's award.

Purposes of the winning Ecospeed non-toxic hull coating system project:

- To develop and implement a cost-effective, entirely non-toxic ship hull coating and fouling control

system to replace existing toxic coatings and thus stop the ongoing pollution of the world's oceans, ports and waterways by the use of heavy metal and other biocides.

- To develop and implement a system of ship hull coating and underwater cleaning which reduces propulsive fuel consump-



Production Executive Mr. Manuel Hof receiving the award from Mrs. Martina Madeo, delegate from the Austrian Chamber of Commerce.

tion of ships by 20% or more, thus reducing GHG and other emissions on the part of shipping by a similar amount.

- To develop and implement a ship hull coating and underwater cleaning system which is effective in preventing the spread of non-indigenous species.
- To develop and implement a ship hull coating system which provides complete corrosion protection for the lifetime of the ship without need of replacement beyond minor touch-ups.

The fact is that existing ship hull coating and fouling prevention technology is highly environmentally hazardous in a number of ways as well as being economically unviable. The Ecospeed project set out to remedy this situation and develop a new Best Available Technology in its stead.

The overall aims of the project have been achieved and the technology is already in successful commercial application on many ships, meeting all the aims it set out to achieve.

The technology is fully developed and ready for implementation throughout the world fleet.

When implemented broadly, the savings in fuel, the accompanying reduction in GHG and other emissions, the absence of thousands or millions of tons of copper and other biocides being leached into the oceans and the curtailing of the spread of invasive species will be very dramatic.

Ecospeed's benefits

Subsea Industries has developed the most environmentally safe and benign solution to ship hull protection and biofouling control.

Ecospeed, combines a hard, inert, completely non-toxic coating with in-water conditioning and routine underwater cleaning. The direct effects of the use of this coating system include:

- Drastically lower VOC emission during application than other coating systems.
- Tough, anticorrosion protection for the lifetime of the ship's hull with no need for repainting beyond very minor touch-ups during regular drydocking.
- No biocides leached into the oceans.
- Fuel consumption reductions compared to other coating systems currently in use, with a corresponding reduction in GHG, NOx, SOx and other emissions.
- Avoidance of the environmentally destructive painting and repainting required many times during the service life of ships with current hull coatings, which results in heavily polluted areas around ship repair yards and drydocks.
- When used correctly, not permitting fouling to exceed slime or light weed, Ecospeed is the most effective system for preventing the spread of NIS via ship hulls since Ecospeed coated ships sail with a clean hull.

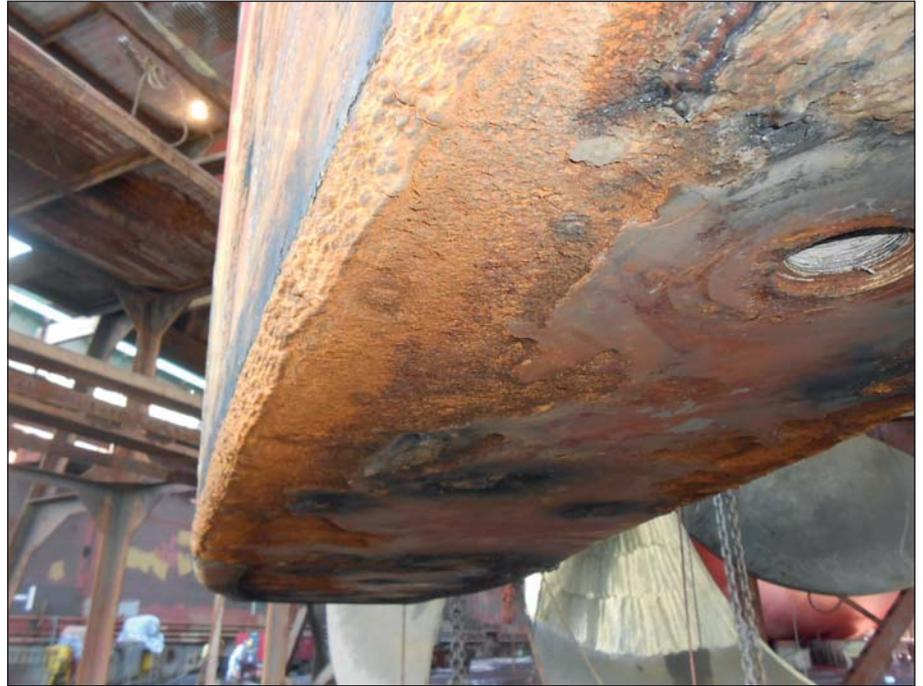
All of these factors make Ecospeed by far the most environmentally safe ship hull coating system available today and made the jury decide to give the Energy Globe Award for 2015 to Subsea Industries for the Ecospeed project. ■

ECOSPEED®
SHIP HULL PERFORMANCE TECHNOLOGY

Lasting cavitation damage protection for running gear

Over the last few months a number of vessels have had their rudders coated with Eco-shield at shipyards in China, Singapore, Germany, France, the United Kingdom, Poland, Hong Kong and Spain. These include several container vessels, ro-ro vessels, a crude oil tanker and a multi-purpose offshore vessel. The applications will protect the rudders against cavitation and corrosion damage for the remainder of the vessels' service lives.

All the vessel belonged to different owners. Some of the owners are returning customers, some are new ones, but all of them experienced the



Ecoshield will prevent damage like this from occurring.



Thruster tunnels can also be given lifelong protection with Ecoshield.



Any application starts with surface preparation.



Ecoshield is applied in only two layers.

same problem: severe cavitation damage on the rudders of their vessels coated with conventional coatings. The returning customers had seen firsthand that Ecoshield

solved the problem on their other rudders and wanted the same protection for the rest of their fleet. The new ones saw the excellent result obtained by other owners and chose

Ecoshield to prevent corrosion and cavitation damage from reoccurring.

The coating will prevent corrosion damage from reoccurring on an existing ship or can protect the rudder(s) of a newbuild vessel against cavitation and corrosion damage for the life of the vessel. Ecoshield is guaranteed for ten years. As a result of the application no repainting is needed during future dockings.

Groundbreaking protection for all running gear

Besides offering rudder protection, Ecoshield is also suitable for thrusters, azimuth thrusters, azipods, thruster nozzles, Kort nozzles, thruster tunnels and other underwater ship gear which needs special protection from corrosion. The extra strength coating protects these areas for the service life of the ship. There is no need for recoating or major repair. For this reason the Kort nozzle of the crude oil tanker and the multi-purpose offshore vessel were also coated with Ecoshield, as were the thruster tunnels of both ro-ro vessels and one of the container vessels.



Rudders of ro-ro vessel after application of first layer.



Application of second layer of Ecoshield on rudder of crude oil tanker.



Application can easily be adapted to the schedule of the yard.



Ecoshield also offers lasting protection for Kort nozzles and other running gear.



No repaint will be required during future drydockings.

The coating can be applied at the newbuild stage or in drydock for ships already in service. Overcoating time can be as short as three hours, which means that the two coats required can usually be applied in one single day.

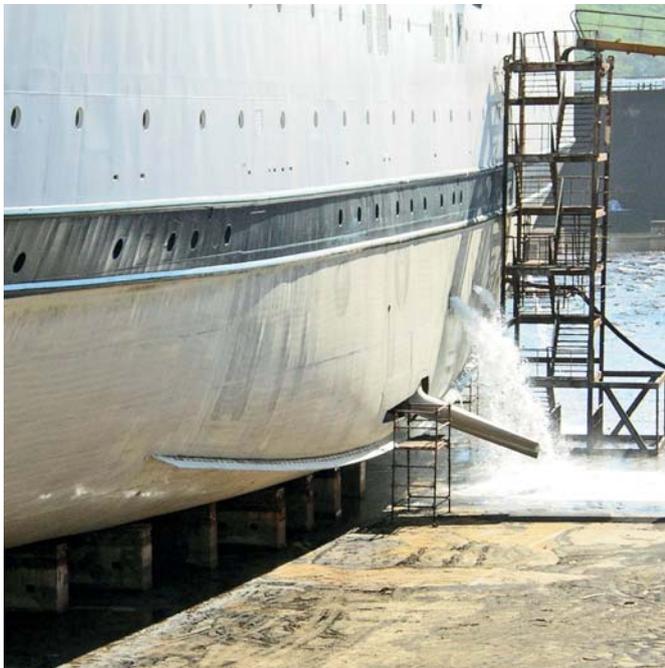
Evidence of the success of the product is the number of companies which began by coating a rudder on one ship experimentally and went on to coat other running gear on the same ship and the rudders and running gear of other ships.

Most are converting their entire fleet as a result of seeing the pristine condition of the coated areas after sailing for several years (some up to ten years and counting).

You can give the rudders and running gear of your vessels the same lifelong protection. Contact one of our offices for more information. ■

ECOSHIELD®
THE DIAMOND STANDARD IN STEEL PROTECTION

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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