ECOSPEED®

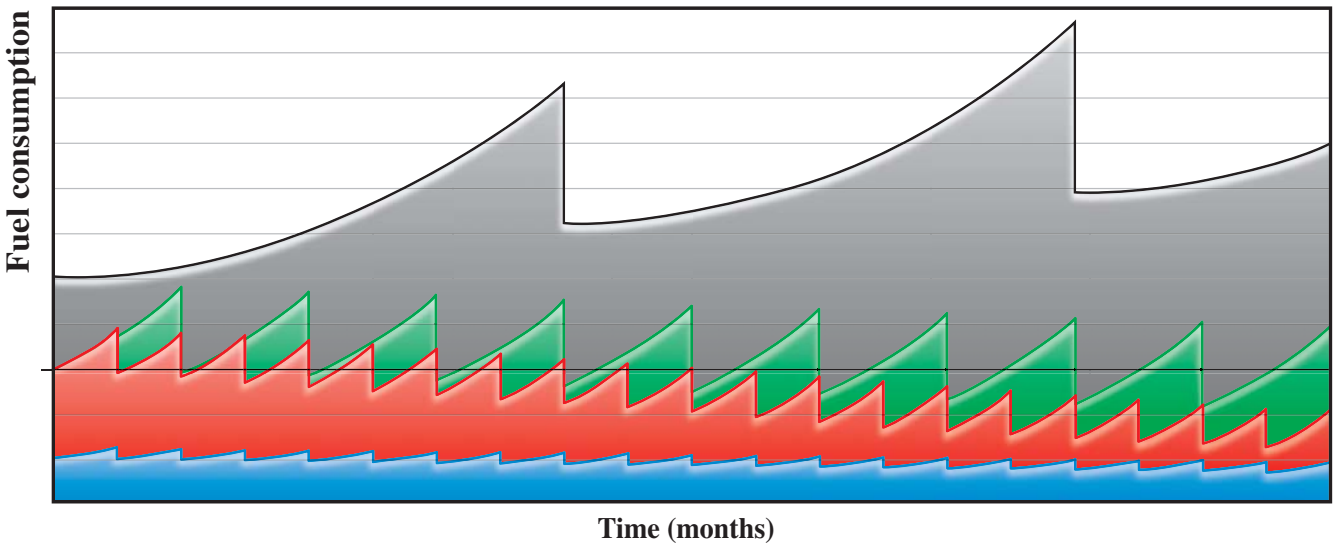
SHIP HULL PERFORMANCE TECHNOLOGY

NEWS LETTER

Royal Navy Ice Patrol Ship coated with Ecospeed

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 quoted 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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Cover: *Image of HMS* Protector, *at Port Lockroy, on north-west shore of Wiencke Island, in Palmer Archipelago. Source: http://www.defenceimagery.mod.uk*

Royal Navy Ice Patrol Ship coated with Ecospeed

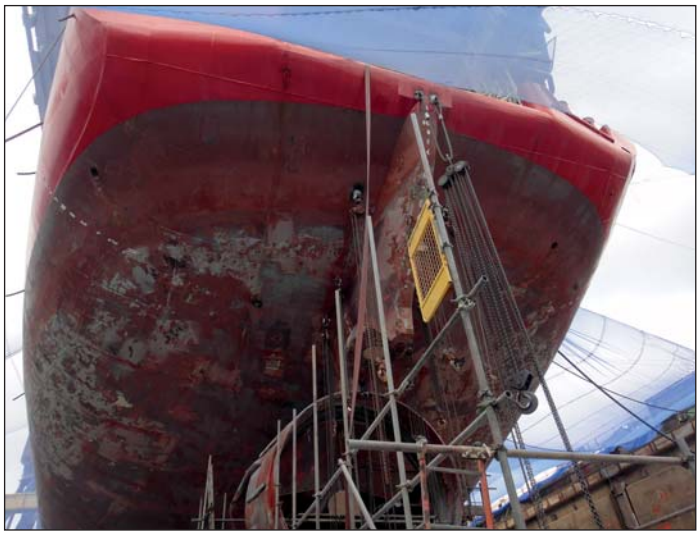
At the end of May, the Royal Navy Ice Patrol Ship HMS *Protector* was coated with Ecospeed at the A&P Tyne Ltd. Shipyard in Tyne and Wear, United Kingdom. The vessel is deployed on operations for 330 days a year, mostly in the Antarctic region. It is therefore essential that her underwater hull is protected against the harsh icy conditions she is faced with.

On the 2nd December 2013, HMS Protector *conducted a base inspection on the Ukrainian Vernadsky Research Base. The base was renamed Faraday Station in August 1977 in honour of British scientist Michael Faraday until Ukraine took over the operation of the base in February 1996. Source: http://www.defenceimagery.mod.uk.*

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. Ecospeed demonstrates excellent attachment to the hull and successful resistance to extremely icy conditions. Ecospeed has proven its ability to withstand the harshest winter conditions on numerous occasions. For over seven years a number of vessels coated with Ecospeed have been sailing as far as both the North and the South Pole. These vessels' underwater hulls frequently have to endure the impact of large pieces of floating dry ice. Despite this none of these vessels have required more than just a few touchups during their drydock visits.

HMS *Protector*

HMS *Protector* is a Royal Navy Ice Patrol Ship built in Norway in 2001. The vessel was designed for long Antarctic expeditions and for supporting subsea work. As MV *Polarbjørn* (Norwegian for polar bear) she operated under charter as a polar research icebreaker and a subsea support vessel. In 2011 the vessel was chartered by the British Ministry of Defence as a temporary replacement for the ice patrol ship,



Condition of the hull of HMS Protector *prior to Ecospeed application.*

Panoramic image of HMS Protector*, in the vast and beautiful landscape of Antarctica. Source: http://www.defenceimagery.mod.uk.*

HMS *Endurance* before being purchased in September 2013.

Prior to the Royal Navy charter, she underwent a ten day refit. The helicopter deck which was originally located above her bridge, was repositioned over the stern. Also a new echosounder for survey work was installed. She was also modified to allow the carriage of the ancillary vessels and vehicles (survey boats, all-terrain vehicles) used in support of the British Antarctic Survey. HMS *Protector* is capable of positioning to pinpoint accuracy in winds of up to 80 knots and is fitted with an impressive array of specialist equipment.

She is currently deployed on Antarctic patrol to provide a UK sovereign presence in the British Antarctic Territory. The purpose of

An Ecospeed application starts with a surface preparation.

Application of first layer of Ecospeed. The coating is applied in only two layers.

this operation is to reinforce the region's security and good governance. A further goal is to meet the UK treaty obligations and exercise rights under the Antarctic Treaty System through inspections, hydrographic charting and support to scientific research.

Who protects the *Protector*?

The Ice Patrol Ship is a symbol of the Royal Navy's global reach, operational flexibility and the Service's ability to sustain operations wherever and whenever that presence is required. For a vessel like this it is a must to have a coating system that does not need to be replaced regularly and protects the steel against the impact of the ice.

Experience has shown that Ecospeed stays on the hull longer and resists the ice far better than the most gen-

Application of second layer of Ecospeed. No repaints will be needed during future drydockings.

After Ecospeed application the hull of the vessel is protected against even the harsh icy condition of the Antarctic region.

erally used specialized ice coatings. The glassflake reinforced coating uses a different resin 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.

Ecospeed has received the Lloyd's Register certificate that recognizes the coating as an abrasion resistant ice coating. This allows owners of vessels intending to navigate in ice conditions to reduce the scantlings of the ice belt, the area on the bow just above the waterline that is most prone to mechanical damage from sailing through ice, if this area is coated with Ecospeed.

Keeping the environment safe

Soft coatings such as biocidal anti-fouling coatings and foul-release coatings easily scrape off on the ice, depositing toxic substances in what are often particularly delicate marine environments. They are quite unsuitable to even occasional sailing in ice-covered waters. Ecospeed is tested and proven to be completely non-toxic and safe in any marine environment, including icy waters. This is another important benefit for a vessel like the HMS *Protector* that spends most of her time sailing in the sensitive waters of the Antarctic region.

Summary

Due to its unique composition, Ecospeed offers the best protection available for underwater hulls of icebreakers and ice-going vessels. The coating system also provides the best hull performance and is the easiest ice-going paint to apply and maintain. ■

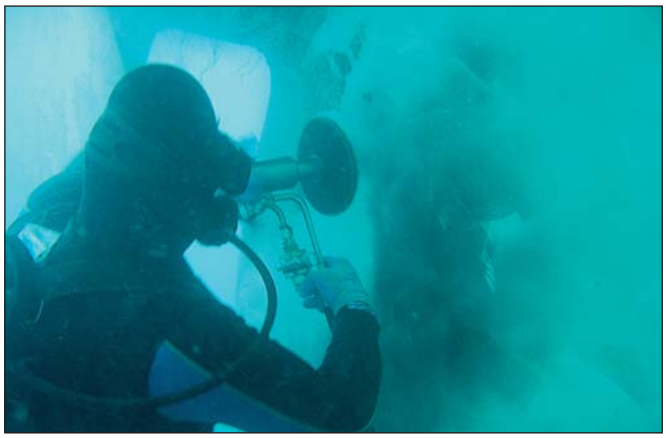
ECOSHIELD®
THE DIAMOND STANDARD IN STEEL PROTECTION

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. 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 offered separately or supplied with a complete support system including umbilical, tools and hydraulic power

MC 111

The MC111 is our smallest model specially designed for cleaning and polishing 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.



MC 131

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

MC 212

The MC212 is designed for cleaning light, medium and heavy marine fouling from ship hulls, offshore oil & 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.

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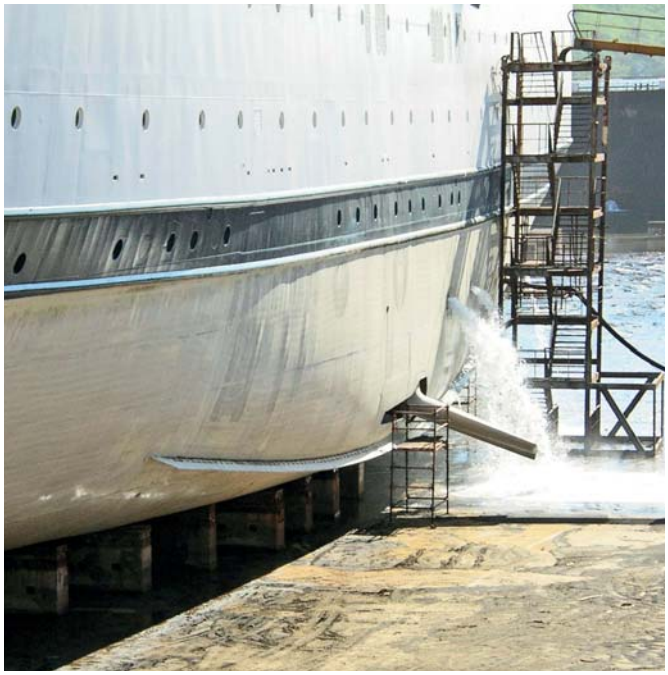
Save millions in drydock expenses and off-hire time



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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