

SUBSEA

PROTECTION AND PERFORMANCE



Magazine

252



Yearly review 2023

Corrosion damage very repair made ✓ easy



Subsea Industries has a product for filling and building up a corroded and pitted steel surface to its original form prior to recoating with Ecoshield. Ecofix 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 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 basic resin as Ecoshield, the coating can be applied just one hour after the filler. The bonding and hardness are extraordinary. This is the effective alternative to very expensive fillers. And because it is part of the Ecospeed/Ecoshield family, it is fully compatible with our coatings.

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Editorial

Superintendents and others who have to deal with the underwater hull coating on cruise ships have complained of a number of issues with both biocidal antifouling coatings and foul-release coatings.

The issues come down to:

1. Toxic hulls – not environmentally sustainable, subject to criticism from ports, public and clients.
2. Considerable marine fouling which increases fuel consumption and makes the ship look unattractive.
3. Coatings damaged and rapidly degrading, becoming rougher, increasing fuel consumption and needing much repair or replacement in drydock.
4. Extended time needed in drydock to repair or replace paint.
5. In-water cleaning needed but becoming increasingly difficult to carry out, fewer ports permitting it due to the toxic nature of the coatings and to the threat of spreading invasive species.
6. Corrosion of hulls and underwater gear on high value ships.



These factors all add up to high costs, an increase in maintenance and an unwelcome impact on the environment and the cruise line's PR. And many of these issues are actually getting worse, not better.

In comparison, cruise line customers who have switched to Ecospeed are experiencing none of these problems.

Ecospeed is non-toxic. It is applied once and can be cleaned as often as needed without restrictions and without damage to the coating. In fact it becomes smoother with cleaning thus producing major fuel savings.

Drydock time is significantly reduced rather than increased. In fact one Ecospeed customer specifically noted that he was able to get his ships out of drydock several days sooner than usual due to the Ecospeed coating, saving millions. The coating at most requires minor touch-ups during routine drydocking and this can be accomplished very rapidly. Any repairs blend in perfectly and do not make the hull rough.

The coating is ultra strong and resilient and is probably the best possible protection against corrosion available today. Applied to rudders and underwater gear, Ecospeed's tougher variant Ecoshield even puts an end to rudder cavitation damage.

If you are experiencing similar problems with your cruise ships' hull coatings, please let us know by contacting one of our offices. We can arrange a time to talk or meet to give you more information on Ecospeed and how it will put an end to these problems.

A handwritten signature in black ink, appearing to read 'BVR', followed by a long horizontal line.

Subsea Industries NV
Boud Van Rompay
Founder



Ecospeed still intact 15 years after application on cruise vessel. This proves that the coating allows shipowners to keep the waterline of their vessel in pristine condition.

Yearly review 2023

The past year has been an especially successful one. A large number of new applications were completed for our different coating systems and we achieved great success with ships coming into drydock after sailing with our coatings for years. The result is many happy quotes from satisfied customers.


In this article we will be looking back at some of the major projects and success stories of 2023.

Abrasion-resistant coating certificate for all ice classes

The Lloyd's Register certificate that recognizes Ecospeed as an abrasion-resistant ice coating has been renewed and upgraded this year. Based on extended observation of the coating in use, Lloyd's changed the classification from Polar Code 6 & 7 to PC1 to PC7. This once again confirms the durability and strength of the coating and shows the lasting trust in Ecospeed given by the classification societies.

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.

The abrasion resistant coating certificate allows owners of vessels of all ice classes to reduce the thickness of the plating of the ice belt if this area is coated with Ecospeed. The ice belt is the area on the bow just



Page 1 of 1
Certificate No: LR214763581C-02
Issue Date: 01/09/2021
Expiry Date: 31/08/2026

Recognised abrasion resistant ice coating

The coating system below is recognised as an abrasion resistant ice coating for ships operating in polar regions, the classification of which is noted below.

The coating system is considered as meeting the requirements of 'effective protection' and 'special surface coating', as defined in applicable LR Rules and Regulations and / or Finnish-Swedish Ice Class Rules / Trafti Regulations, for vessels with applicable Polar Class or Ice Class notations.

The use and applicability of such coating systems, as designated by this certificate, may be considered when applying the relevant Rules criteria, for construction and service conditions.

Manufacturer	Subsea Industries N.V.
Address	Noorderlaan 9, Haven 29, Antwerpen, 2030, Belgium
Product	ECOSPEED
Ice Classification	PC1 to PC7
Product Colours	Unspecified
Film Thickness	1000µm
Surface Cleanliness	Minimum Sa 2½ (ISO 8501-1)
Surface Profile	Minimum 75 µm

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 technical datasheets, training and advice, and with the relevant requirements of Lloyd's Register's Rules and Regulations.

Heather Hughes

Heather Hughes
Team Leader - Non-Metallics to Lloyd's Register EMEA
A member of the Lloyd's Register group

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MA10 2.0

above the waterline that is most prone to mechanical damage from sailing through ice.

This saves money since less steel is required to build the hull and reduces the overall weight of the ship.

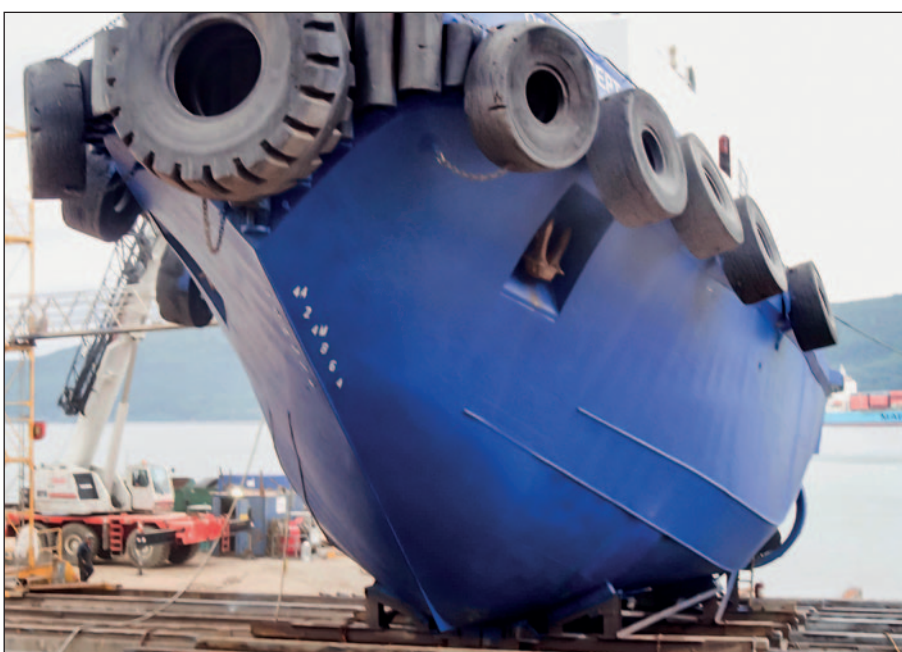
Group Ocean

Group Ocean have been applying

Ecospeed Ice on all their ice going tugs since January 2012. "What we were looking for was a 25-year corrosion protection system for our ice-going tugs," says Patrick Chabot, Director of Fleet Planning and Renewal at Group Ocean in Québec, Canada. "We do not want to do any corrosion/erosion steel work," he adds. "I believe we have now found that 25-year solution."



The Ocean Tundra 100 (right) in the Ocean Isle-aux-Coudres shipyard in Quebec, just painted with Ecospeed Ice in 2013.



The Ocean Sept-Isles in drydock three years after Ecospeed Ice was applied.



Ocean Henry Bain tug with Ecospeed Ice on the hull for full protection against the very harsh conditions of the St. Lawrence river and the Great Lakes.

The Ocean tugboats are generally built for service in harsh, icy conditions. The coating used on the hull is very important for a number of reasons. Group Ocean experimented with several options before finding the right one.

The Ecospeed Ice applied in 2012 is still in excellent condition. Olivier Garon, Director of Fleet Maintenance sees each tug when it comes into drydock. “I am very impressed with the hull condition,” he notes. “When they’re in drydock, I can see right away which vessels were painted with Ecospeed and which were not. The difference is very noticeable. There are maybe just a few little touch-ups to do, probably resulting from mechanical damage rather than from the ice, most likely anchor chain or something like that. The application has been done per instructions, so it lasts. I’m really impressed.”

Zeeland oyster cutter

Pols-Bom, a certified organic oyster cultivation company operating in Zeeland, in The Netherlands has been using Ecospeed for long-lasting, non-toxic protection of the cargo hold of their cutter, *YE 48 Op Hoop van Zegen*. The coating has held up extremely well for 15 years without need of repainting, requiring only minor touch-ups every few years.

In 2007, Ecospeed was recommended to Mr. Jacques Pols as the ideal coating for the upper part of the *YE 48*’s hold. Ecospeed was applied in two coats to a dry film thickness (DFT) of 1000 µm or 40 mils. The boat has been in constant use since then and the original coating has not needed to be replaced. In 2013 and again in 2022, Mr. Pols ordered very small quantities of Ecospeed to

Brim Explorer

In 2023 the energy-efficient sight-seeing ferry MS *Brisen* was baptized in Oslo, Norway. The carbon fiber vessel was built at the Brødrene Aa shipyard in Hyen, for ferry operator Brim Explorer. The ship's hull is protected with our non-toxic, hard coating system Ecospeed which is expected to last the ferry's lifetime. Sister vessel MS *Berg* has received the same protection.

“Applying Ecospeed is quite easy if you have some experience applying paint with a spray gun,” says spray paint specialist Torgeir “Toggen” Ulleland who performed the application on MS *Brisen*.

Going forward Brim Explorer have chosen Ecospeed for their fleet because they are concerned with all environmental aspects of their operation. “With Ecospeed we eliminate all chemical emissions to the sea, preventing harmful chemicals from disturbing the fragile ecosystems in the areas in which we operate,” says Espen Larsen-Hakkebo, CEO and Co-founder of Brim Explorer. “Our business is creating unforgettable experiences: it only makes sense to



The YE 48 Op Hoop van Zegen at her mooring in Yerseke is key to the operations of Pols-Bom oyster cultivation company.



Ecospeed on the inside of the hold of the YE 48 has remained in excellent condition for over 15 years requiring only very minor touch-ups during that time.

touch up areas where there was some mechanical damage, but otherwise the coating is protecting the steel as well as it was when first applied. It is in extraordinarily good condition. “I am a very happy customer,” says Mr. Pols.

The 100% non-toxic nature of Ecospeed is an important additional benefit. The oysters are in contact with the coating on the sides of the hold so that if it had any toxicity, it could negate the 100% organic certification.



MS Brisen will operate in Oslo and is the first fully electric ferry owned by Brim Explorer.



Beautiful view of the shipyard in Hyen, Norway, where the vessel was built.



Overcoating time between layers is very short. Smaller projects like this can be completed in a single day.

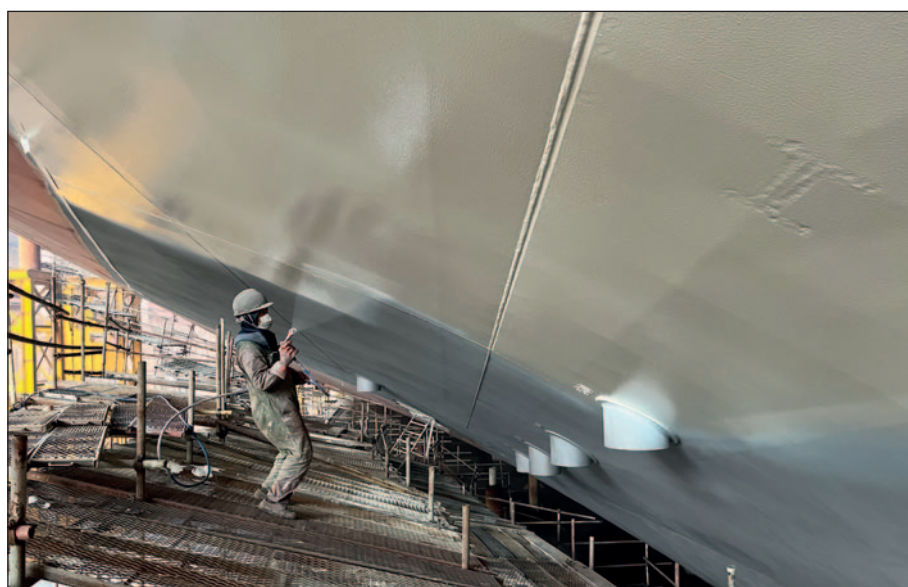
do this causing as little impact to the environment as possible. Ecospeed is therefore our preferred choice over any antifouling system.”

Scrubbers

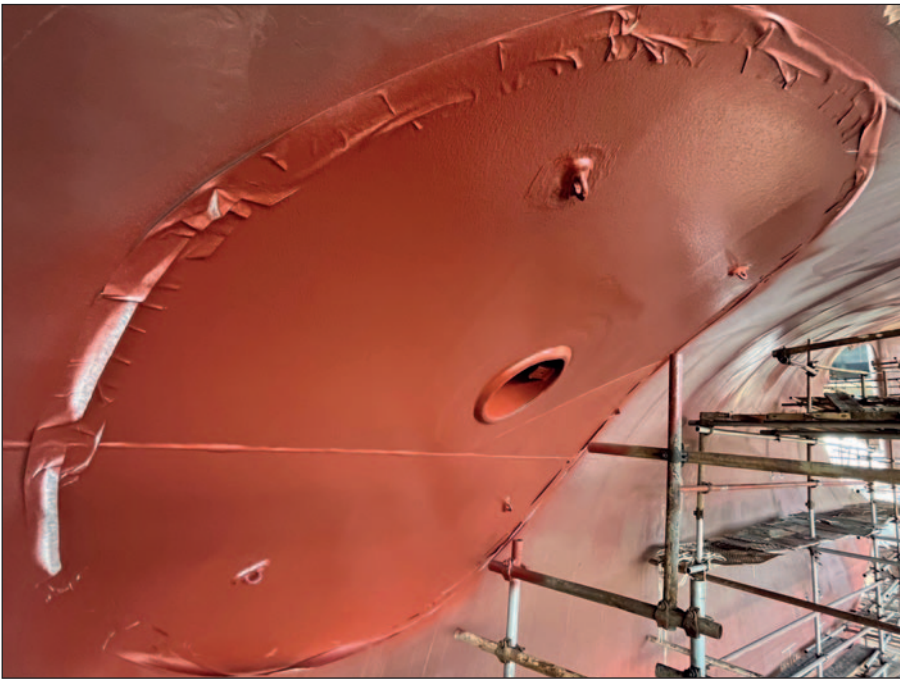
Last year our Ecospeed coating system was applied on the scrubber pipes, outlets and diffusers of a large number of ships. This demonstrates that Ecospeed is not only the best option for the underwater hull of a ship but can also be used for a wide range of other purposes. The result is a lasting, non-toxic protection

against corrosion, cavitation and mechanical damage.

Because of the tight regulations on emissions in the shipping industry, the installation of an exhaust scrubber system has become increasingly widespread. Due to the highly corrosive nature of the effluents from scrubbers, this unfortunately has also led to an increase of corrosion damage on scrubber pipes and outlets which can result in water ingress into the engine room, ballast tanks and cargo holds.



Ecospeed offers lasting corrosion damage protection.



Ecospeed provides long-lasting, chemically resistant and environmentally safe protection.

Ecospeed however is highly chemically resistant. Using the coating to protect the exterior outlets as well as the interiors of scrubbers prevents corrosion damage and the resulting consequences.

Umiak I

In April 2021, Fednav’s *Umiak I*, one of the world’s most powerful icebreaking cargo ships, had the entire hull from keel to gunnel coated with Ecospeed Ice, replacing the existing hull coating. Two years later the coating is in great shape.

Craig Verge, the superintendent of the *Umiak I* says, “I was out and had a look at the hull coating in Long Harbor, [near St. John’s in Newfoundland & Labrador, Canada].” Craig works for Canship Uglund Ltd., the St. John’s N.L. based ship management company that manages a variety of vessels including this 189-meter icebreaking bulk carrier. “The Ecospeed is holding up well – as far as I can see there does not appear to be any damage from ice whatsoever,” he says, “There is also only minimal mechanical damage



Fednav’s Umiak I, DNV ice-class ICE-15, one of the most powerful icebreaking cargo ships in the world.

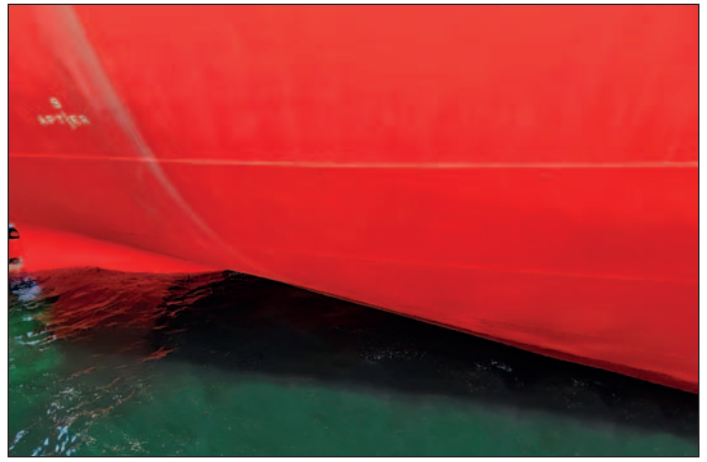
from chains on fenders and tugs, and marks from tires.” This report is from August 2023, more than two full years of service since the ship’s hull coating was changed to Ecospeed Ice.

As can be expected, the hull coating on the *Umiak I* is subjected to some of the harshest treatment any hull

coating can receive. The original coating was not holding up as well as desired. Thus it was that in the ship’s 2016 drydocking, it was decided to apply two test patches of Ecospeed Ice. For the next five winter seasons, the test patches were closely monitored and found to be holding up remarkably well.

Looking back on that decision, in light of the results shown by the recent inspection after two years of the *Umiak I*’s sailing with Ecospeed Ice, David Williams, Senior Manager, Technical Services Fleet Management at Fednav said: “Fednav has operational experience with various

ice resistant hull coatings over our history as owners and operators of ice class vessels. Service experience with Ecospeed test patches, and later a full application of Ecospeed, on the *Umiak I* has demonstrated to us that Ecospeed is the leading hull coating product, of those we have tested, for this application.”



Photos of the Umiak I at Long Harbour in July 2023 showing the condition of the Ecospeed Ice hull coating after two years of plowing through heavy ice. (Photos courtesy Craig Verge, Ship Superintendent.)

Ecoshield for rudders and running gear

In 2023 we carried out well over 100 Ecoshield applications on rudders and running gear. These were done at yards across the world on a wide range of ships.

Many of the world's leading shipping companies rely on Ecoshield to protect the rudders, thruster tunnels and other parts of the underwater ship prone to cavitation erosion and chemical corrosion. Several of these companies have been using Ecoshield successfully for a decade or more. Others are newer to the product but are wasting no time in putting it to use.

To date there have been at least 700 separate Ecoshield applications to rudders, thruster tunnels, Kort nozzles, energy saving devices such as



Application of first Ecoshield layer during the block phase.

Becker Twisted Fins®, thrusters, stabilizer fins, sea chests, Hull Vanes®, bulbous bows and other parts of the underwater ship hull and running gear that need special protection from the effects of cavitation.

An extraordinary fact we discovered about Ecoshield is that it need only

be applied once. It lasts the life of the vessel without the need for repainting beyond minor touch-ups of mechanical damage. We found this out when ships were coming into drydock ten years after the original Ecoshield application and only needing a couple of liters of paint for retouching mechanical damage.



One of our paint inspectors going over the next step with the applicator.



Application is simple if the correct procedure is followed.

Experience also showed that Eco-shield properly applied makes the use of sacrificial anodes unnecessary. This has been proven time after time.

Dutra's TSHD *Stuyvesant*

Testing of EcoShield on the Dutra Trailing Suction Hopper Dredger *Stuyvesant* shows that the coating promises to be a viable solution for protecting the hopper of a dredger.



The Trailing Suction Hopper Dredger Stuyvesant is an important element of Dutra Group's fleet.

Dredgers generally experience high wear as a result of their normal activities. In the case of the *Stuyvesant*, this occurs mainly on the flat bottom and inside the hopper. To try to mitigate some of the wear and reduce the need for steel replacement and repair, in August 2022 Dutra Fleet Manager Iain Searle decided to run tests of EcoShield on parts of the *Stuyvesant* that were particularly prone to abrasion damage.

Inspection of the hopper was carried out in mid-June 2023 which is 10 months after application. The dredger had been in normal use during that period.

Iain was very pleased with the results. "To be honest," he said, "I was expecting it to be gone in a few

weeks, so I am surprised it is holding up at all."

Overall, the coating is all in place and looking surprisingly good, considering the constant barrage of dredged material to which it is subjected. Clearly since the coating is intact, no damage to the steel has occurred and there has been no erosion or corrosion.

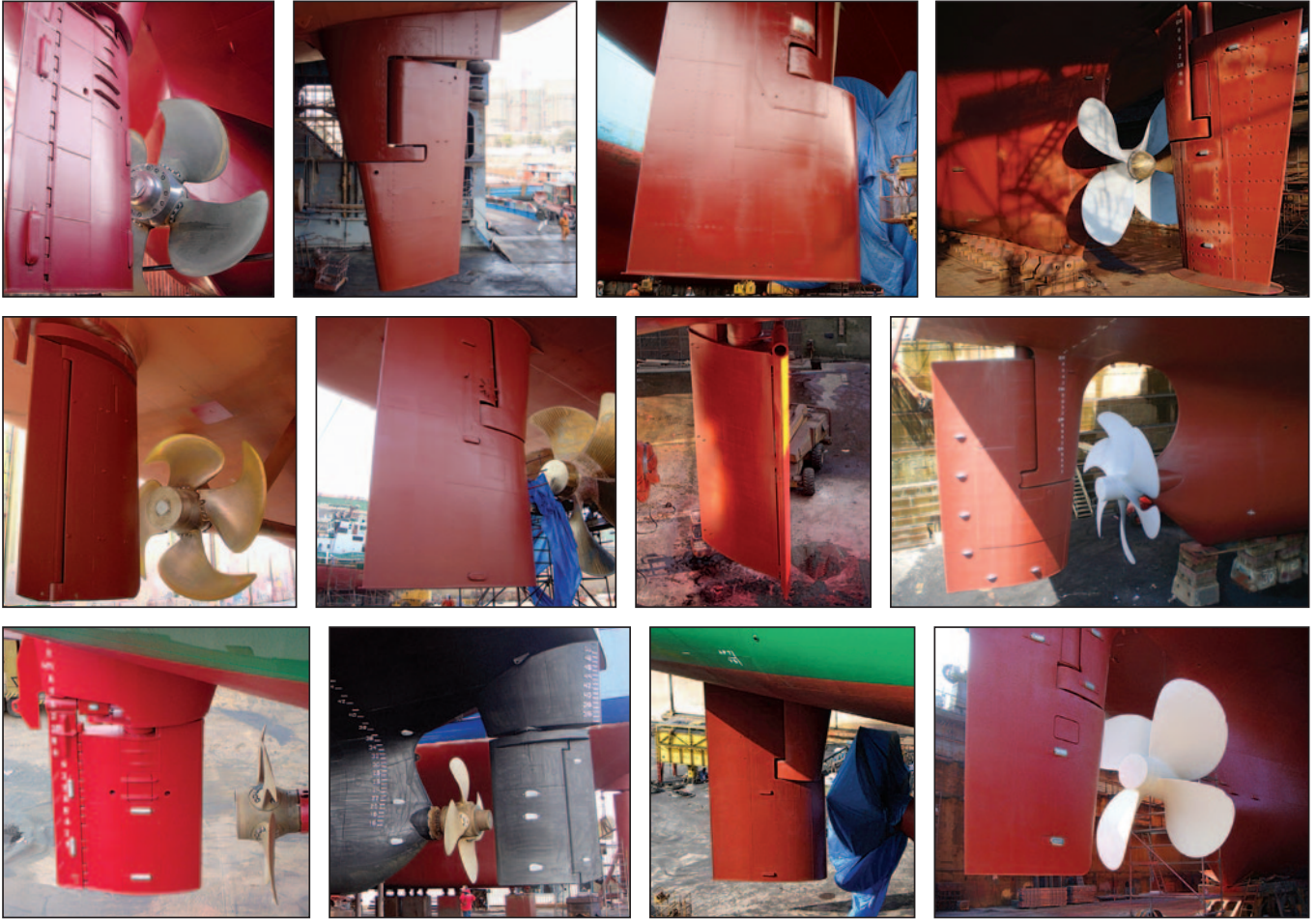
Conclusion

These are just a handful of the successes we have had in 2023, but we are very proud to have been able to help so many shipowners protect their valuable ships and boats and save large amounts of money in the process. ■



The hopper EcoShield test patch after 10 months of active duty is in excellent condition.

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 dry-dock 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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SUBSEA

PROTECTION AND PERFORMANCE



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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