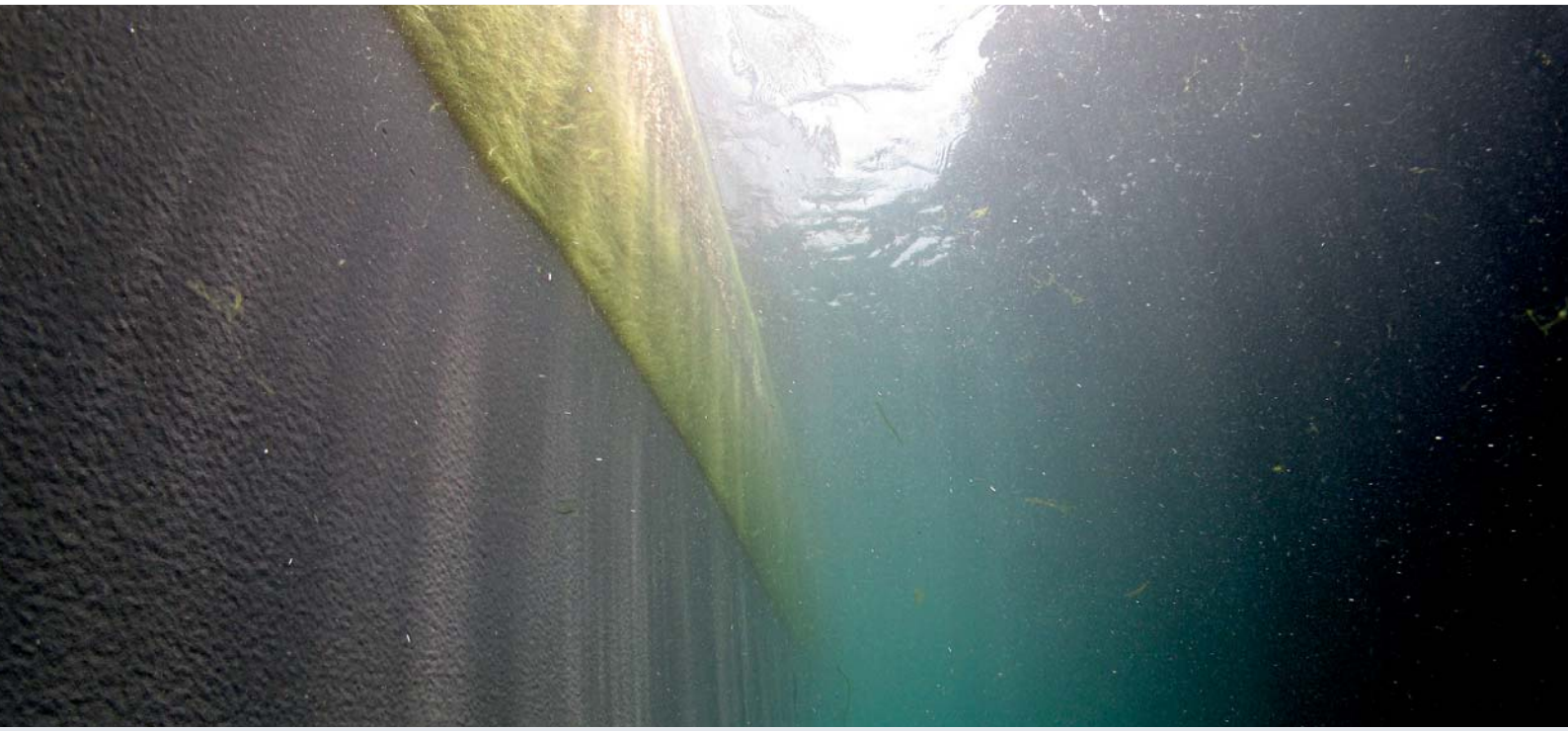
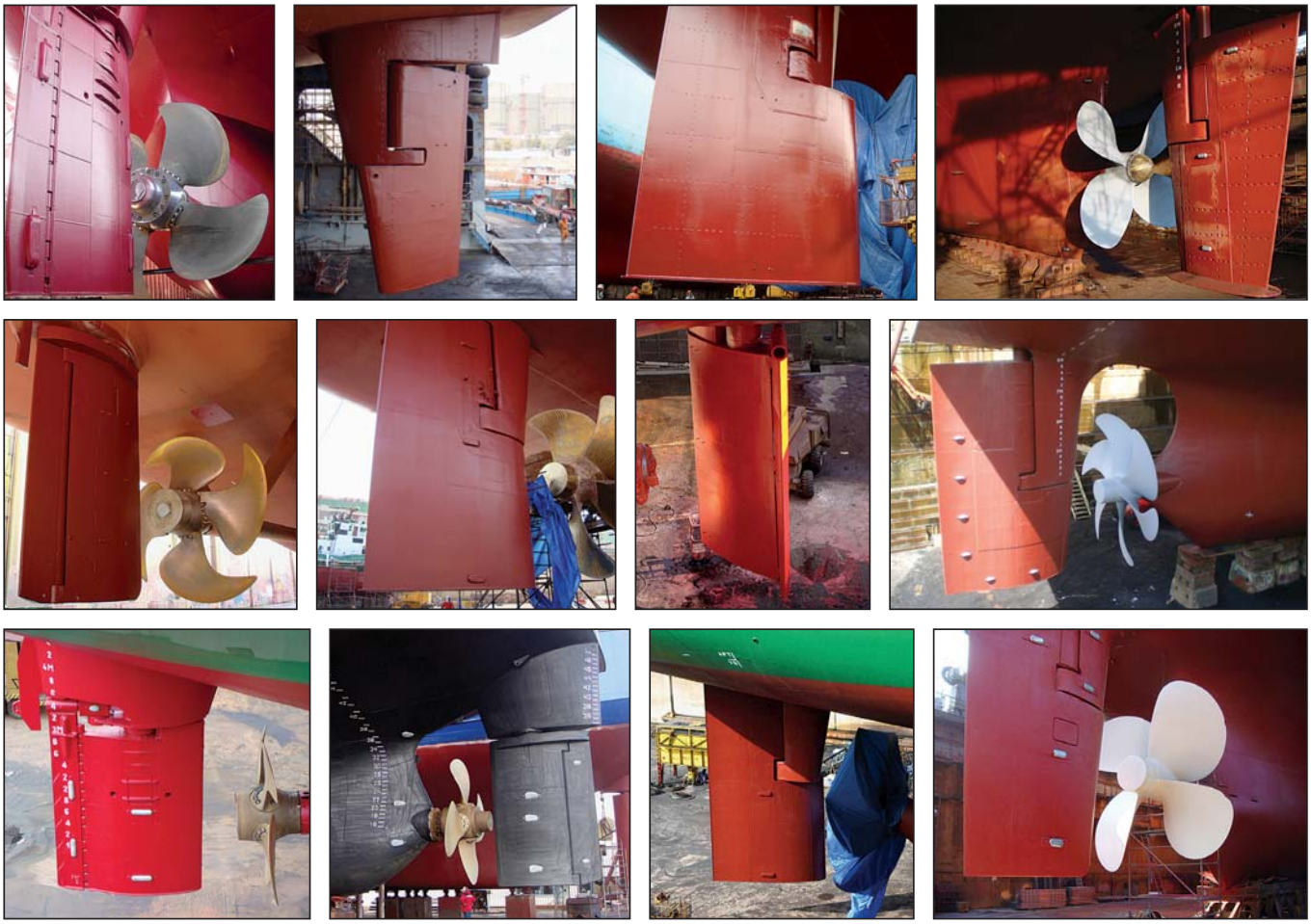
SUBSEA
PROTECTION AND PERFORMANCE

NEWS
LETTER



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

The benefits of underwater cleaning on Ecospeed

There is currently no hull coating available which will not foul. The only way to remove this fouling is to clean it off. Ship hull cleaning is an essential part of operating a vessel or a fleet efficiently and economically.

The best and most viable approach is to clean the ship 100% and to do so regularly and always before sailing if the ship has been stationary and has fouled for a long period.

Ship hulls must be protected with a system which lends itself to fast, effective underwater cleaning without risk of damage to the coating and without posing any kind of hazard to the environment. Ecospeed is this system.

Ecospeed underwater maintenance is carried out with specially designed equipment.

Fast and efficient fouling control

1. Ecospeed improves with each underwater treatment

One of the many unique factors of this underwater hull coating system is that with repeated underwater hull cleaning, the coating's surface aspect does not degrade but gradually improves. This procedure is made easy by the coating's technical properties. Cleaning can be carried out whenever needed, at any point in its lifespan, without causing damage.

2. Long lay-up periods have no effect on the condition of the Ecospeed coating

The coatings is suited for ships which have a stationary period because an impermeable and impenetrable barrier is created during application. This gives the coating its excellent and durable anti-corrosive properties and protects the underwater hull against mechanical damage. Despite the aggressive nature of certain types of fouling, no rust or damage to the steel will be present on the underwater hull of the vessel after cleaning. The hard fouling is unable to penetrate or damage the coating.

Fouling on Ecospeed can be removed fast and easy.

Fouling can be removed in drydock with high pressure tools or underwater while improving the coating.

An Ecospeed application is adapted to the shipyard's schedule and not the other way around.

3. TBT-free, copper-free and biocide-free solution

Independent tests have been carried out to provide scientific data and to authenticate the non-toxicity of the Ecospeed hull performance technology. This research proved that the coating is 100% non-toxic and that there is no negative effect on the water quality or the marine environment at any point of its application or use.

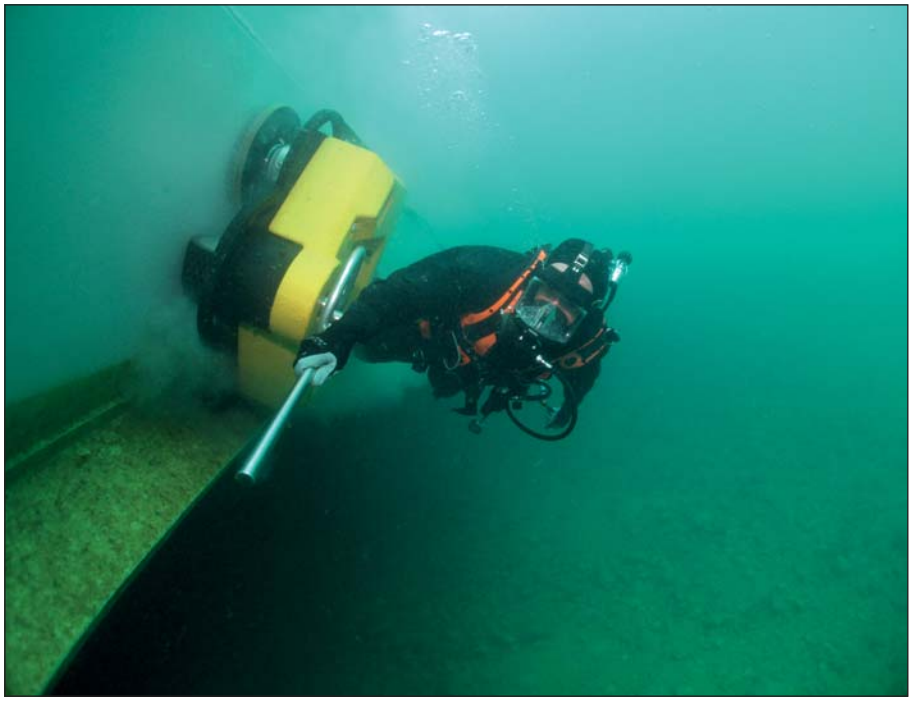
4. The solution to the NIS problem

The underwater cleaning of Ecospeed prevents the spread of Non Invasive Species (NIS). The cleaning interval is optimized to minimize fouling. Regular cleaning prevents macrofouling from building up and at the same time presents an opportunity to inspect so-called niche areas. Most of the fouling organisms will be destroyed during cleaning. As long as only microfouling or locally acquired macrofouling is cleaned off the hull and niche areas, the risk of translocation of NIS via hull fouling is minimal.

5. Underwater cleanings on Ecospeed allowed

After the submission of the results of above-mentioned tests to port authorities and environmental agencies worldwide, several major ports have overturned the existing general ban on underwater hull cleaning, specifically making an exception for

Independent tests were carried out, proving that Ecospeed is 100% toxin-free.



Regular underwater treatment of Ecospeed is at the moment a Best Available Technology to minimize the risk of transferring non-indigenous marine species.

vessels coated with Ecospeed.

6. Specially designed equipment

Underwater maintenance of Ecospeed is carried out with specially designed underwater hull cleaning tools that simultaneously remove all fouling and optimize the smoothness of the paint surface. A complete line of 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.

7. Fewer and shorter drydockings

There has been a trend of extending the maximum drydock interval from five to seven and a half years or even ten years, if a stringent set of rules is followed. One of the requirements is the execution of a very strict underwater maintenance plan. Ecospeed's qualities make the coating ideally suited for such a regime. Regular underwater cleaning will maintain and improve the ideal surface characteristics. The biggest barriers to ships staying out of drydock for 7.5 or more years are dealing with biofouling and maintaining hull coating integrity. Ecospeed allows ship owners/operators to overcome both these barriers.

Ecospeed is 100% non-toxic.

Summary

Ecospeed can be cleaned underwater without risk of chemical pollution to the environment or of damage to the coating. The coating will improve in smoothness with each cleaning. Underwater maintenance of Ecospeed prevents the spread of NIS. For these reasons several economically important ports have already overturned the existing general ban on underwater hull cleaning, specifically making an exception for vessels coated with Ecospeed.

Ecospeed's qualities also make the coating ideally suited for the very strict preventative underwater maintenance plan that is part of the requirements to extend a vessel's drydock interval to 7.5 years.

Underwater maintenance of Ecospeed is carried out with in-house designed underwater hull cleaning equipment. This allows the cleaning of the flat areas as well as the harder to reach parts of the hull without damaging the coating. ■

Navy vessels benefit greatly from the fact that Ecospeed can always be restored to its optimum condition even after lengthy lay-up periods. This hull was coated five years earlier.

ECOSPEED®
SHIP HULL PERFORMANCE TECHNOLOGY

Unique range of 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 unit.

MC111.

MC111

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.

MC131

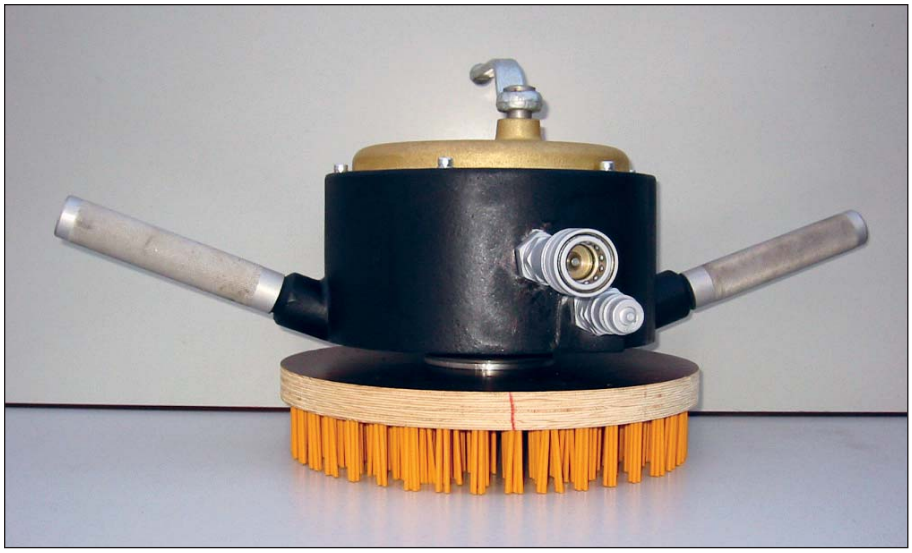
The MC131 is a compact unit designed for cleaning all kinds of marine fouling from yachts and smaller ships to offshore oil & gas platforms. The brush rotation speed is adjustable by the diver so as to achieve an optimum hourly cleaning rate.

MC212

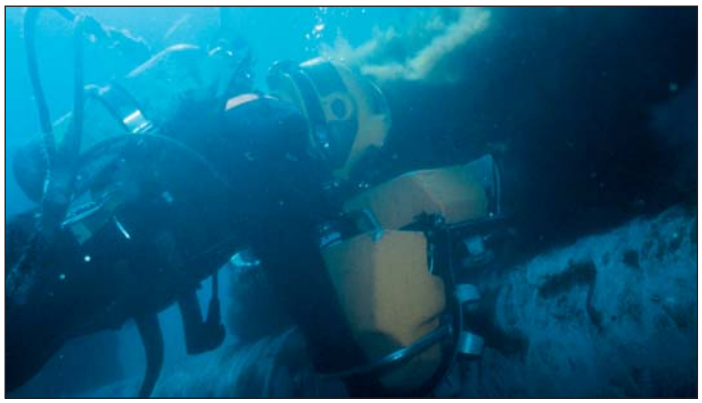
The MC212 has an enviable track record, with over 20 years of service. It is the most efficient cleaning machine currently available and is highly regarded by the industry internationally. The MC212 is designed for cleaning light, medium and heavy marine fouling from ship hulls, offshore oil & gas platforms (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.

MC313

The unique patented design of the MC313 underwater hull cleaning unit will stand up to the most difficult underwater cleaning conditions encountered on various types of ships. The downward pressure of the brushes can easily be adjusted throughout the operation and the heads are self-adjusting to the contours of the hull. This, coupled with



MC131.



MC212.

a powerful four-wheel drive system, are major technological breakthroughs in subsea cleaning.

Different types of fouling can be treated with the appropriate pressure and tools so damage is prevented to the underlying paint layers. The MC313 has a very efficient cleaning record. It is designed for larger ship hulls or other large, reasonably flat surfaces. ■

MC313.

Ecofix: Corrosion damage repair

Subsea Industries has launched a new 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.

Test plate showing the benefit of an Ecofix and Ecoshield combination.

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 damage can cause severe pitting. The steel needs to be restored to its original shape with a smooth surface prior to recoating.

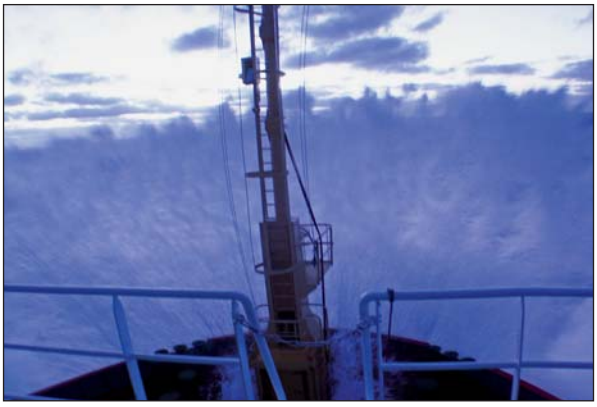
This is where Ecofix comes in. It is a superior, tested and proven filler. Because it uses the same basic resin as Ecoshield, the coating can be applied just one hour after the filler. The bonding and hardness are extraordinary. This is the effective alternative to metal facing or very expensive alternative fillers. And because it is part of the Ecospeed/Ecoshield family, it is fully compatible with the coating. ■

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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