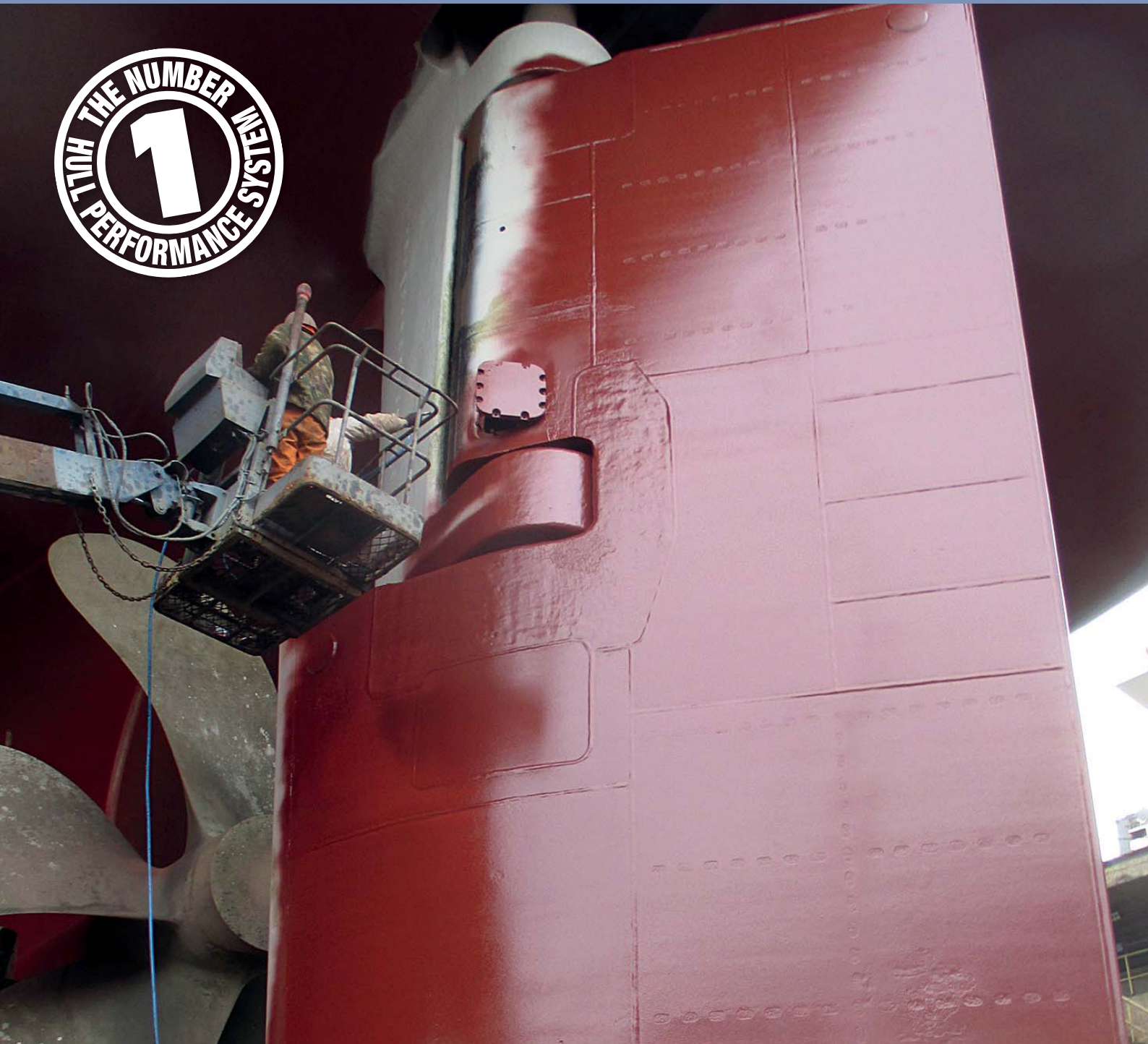


# SUBSEA

PROTECTION AND PERFORMANCE



Magazine



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# ECOLOCK® ultra long-lasting protection for offshore hulls



**E**colock is designed to protect offshore vessels for decades without the need for drydocking. Increasingly, offshore 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 biofouling that accumulates can be removed successfully and safely for UWILD and to reduce weight. Ecolock is the answer to that challenge.

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

## ECOLOCK®

LIFETIME CORROSION PROTECTION  
FOR OFFSHORE UNITS

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## Editorial



**W**e start the magazine with a detailed look into erosion and corrosion damage on rudders. We also talk about how our specialized Ecoshield coating can put a stop to this damage for good.

In this magazine we also give you an overview of our worldwide network of agents. This network allows us to reach a much bigger public directly than would otherwise be possible. Working closely together with our offices, they help us build a strong relationship with our customers.

We end the magazine with a summary of the many benefits our Ecospeed coating system can offer shipowners. Feel free to contact us if you want more information on Ecospeed or one of our other products.

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

Subsea Industries NV  
Boud Van Rompay  
Founder

# Ecoshield lasting protection against cavitation and corrosion damage



*Without proper protection cavitation damage can have a devastating effect on a rudder.*

**A** great deal of effort goes into the design and manufacture of rudders and other running gear because it is such an important part of a vessel. Without the proper protection against cavitation and the resulting erosion and corrosion damage, the financial consequences can be substantial for the owner.

Ecoshield has been developed especially for the protection of areas that are most often subject to cavitation. It has the same advantages as the regular Ecospeed coating but it is even more resistant to cavitation due to its increased strength. It is ideally used over smaller areas that need extra protection. Ecoshield provides the running gear with an impenetra-



*With Ecoshield steel repairs like this are a thing of the past.*



*All existing paint layers are removed to start with a clean slate.*

ble protective layer while its flexibility enables absorption of the forces that are produced by cavitation, thereby preventing the damage normally caused by this phenomenon.

### **Groundbreaking coating technology**

What needs to be done is either prevent the cavitation or make sure that it has no damaging effect. Ecoshield has been designed to give a very thorough and lasting protection against cavitation and corrosion. If the cavitation cannot pierce the coating then no damage can occur.

Tests conducted in a flow channel have confirmed that Ecoshield performs extremely well under severe cavitation. These tests were divided into six stages during which the coating was exposed to an increasing pressure drop, creating a growing cavitation force. Even after the last stage no erosion was present on the test patch coated with Eco-speed. The tests were carried out by the French Ministry of Defense in Grenoble.

### **Prevention of damage can start in the newbuild phase**

As a consequence of cavitation and corrosion damage on their rudders many ships are given a condition of class. Such a condition of class can have a great impact on the vessel's sailing schedule if for instance it is not allowed to enter certain ports or needs to go to drydock before a certain period of time has passed.

Understandably the owner then wants to try to hold off going to drydock as long as possible and ideally until the five year interval has passed. Temporary repairs are carried out after which the class



*An Ecoshield application is flexible and can be adapted to fit the yard's needs.*



*Only two layers are required, making the application fast and easy.*

requires that a new inspection is performed every three months.

When such a vessel eventually comes into drydock, maintenance work on the vessel's stern area, especially cavitation damage repair, can take a long time. Most of these repairs cannot be performed concurrently. This is the result of the close proximity of the rudder, the propeller and the stern area, along with the strict procedures concerning blasting, painting and welding work. Painting is therefore usually assigned to the end of the schedule and as a consequence may not get done at all or else prolongs the stay in drydock. Taking into account the tight drydock schedule of most vessels this is often very problematic.

With an Ecoshield application one can avoid these problems from day one because no repaint of the running gear will be needed during drydocking. Ecoshield will remain intact for the lifetime of the vessel and is guaranteed for ten years. At the most, touch-ups amounting to less than 1% of the surface area will be required. Planning the maintenance of the vessel's stern area therefore becomes much easier.

The newbuild phase is the perfect time to apply Ecoshield, but the coating can also be used to protect vessels that are already facing cavitation and corrosion damage.

Ecoshield's flexibility makes it easy to adapt the application schedule to the shipyard or drydock instead of the other way round. The minimum overcoating time is three hours, which means that for smaller surfaces such as rudders or bow thrusters the two required coats can usually be applied in one single day. By removing the existing paint



*Overcoating time can be as short as three hours.*



*All running gear can be protected with Ecoshield.*



*After application of the second layer, no repaint will be needed ever again.*



*Two layers, one application, no worries during future drydockings.*



*Ecoshield will stay in pristine condition.*



*Cavitation will have no further effect on rudders coated with Ecoshield.*

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.

### Conclusion

If one takes into account the costs of the temporary underwater repairs and the regular inspections required by a condition of class until the next

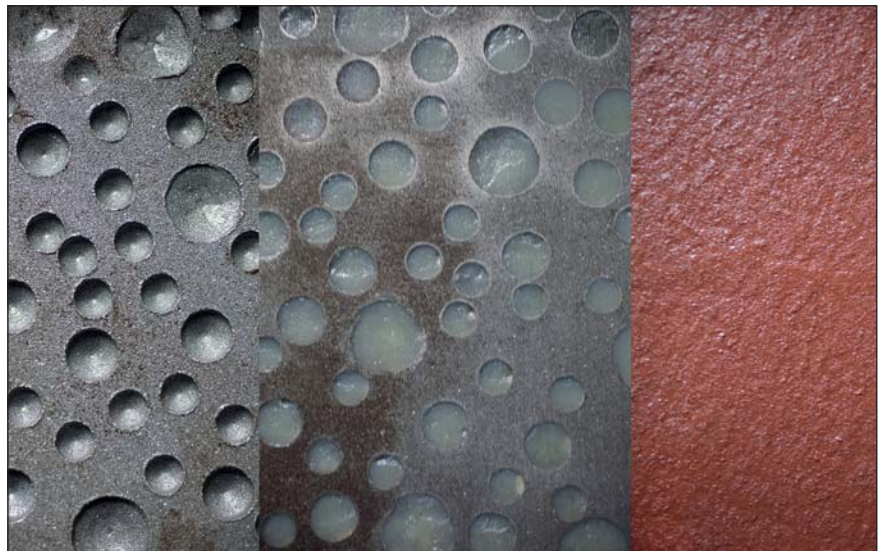
drydocking, it becomes clear that the investment in a coating system that offers extra protection from day one is easily won back. For this reason more and more owners have Ecoshield applied on a large part of their fleet or have it put in the specs of their newbuild vessels.

Over the last months the rudders and bow thruster tunnels of several types of vessels were given an Ecoshield protective coating at yards in China, Singapore, Japan, Denmark, Estonia, Turkey and Germany. A number of container vessels, vehicle carriers and ferries were treated. The applications will protect the rudders against cavitation and corrosion damage for the remainder of the vessels' service lives. ■

## Ecofix: Corrosion damage repair

**S**ubsea 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.

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.

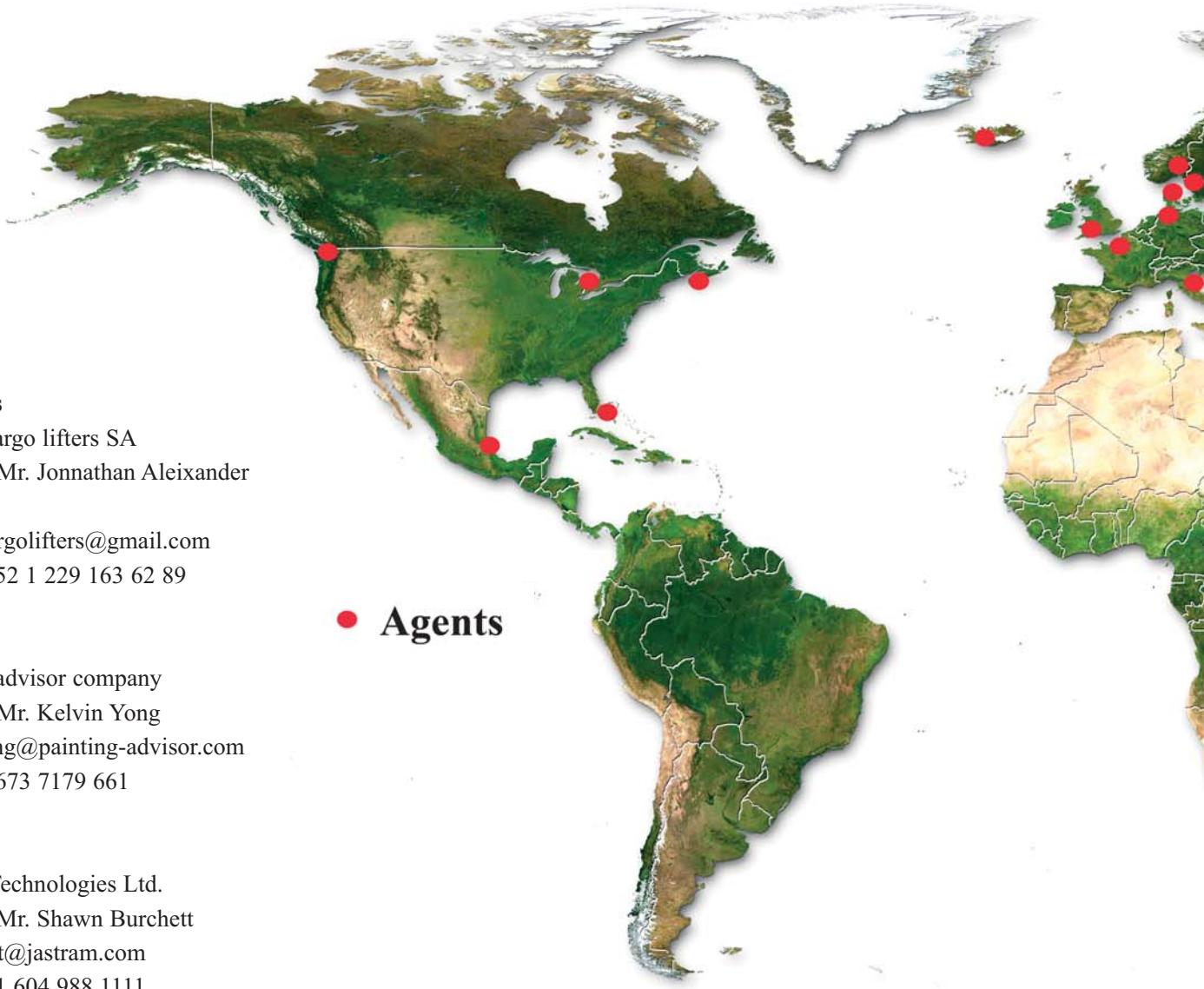


*Test plate showing the benefit of an Ecofix and Ecoshield combination.*

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 extra-

ordinary. 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. ■

# Worldwide net



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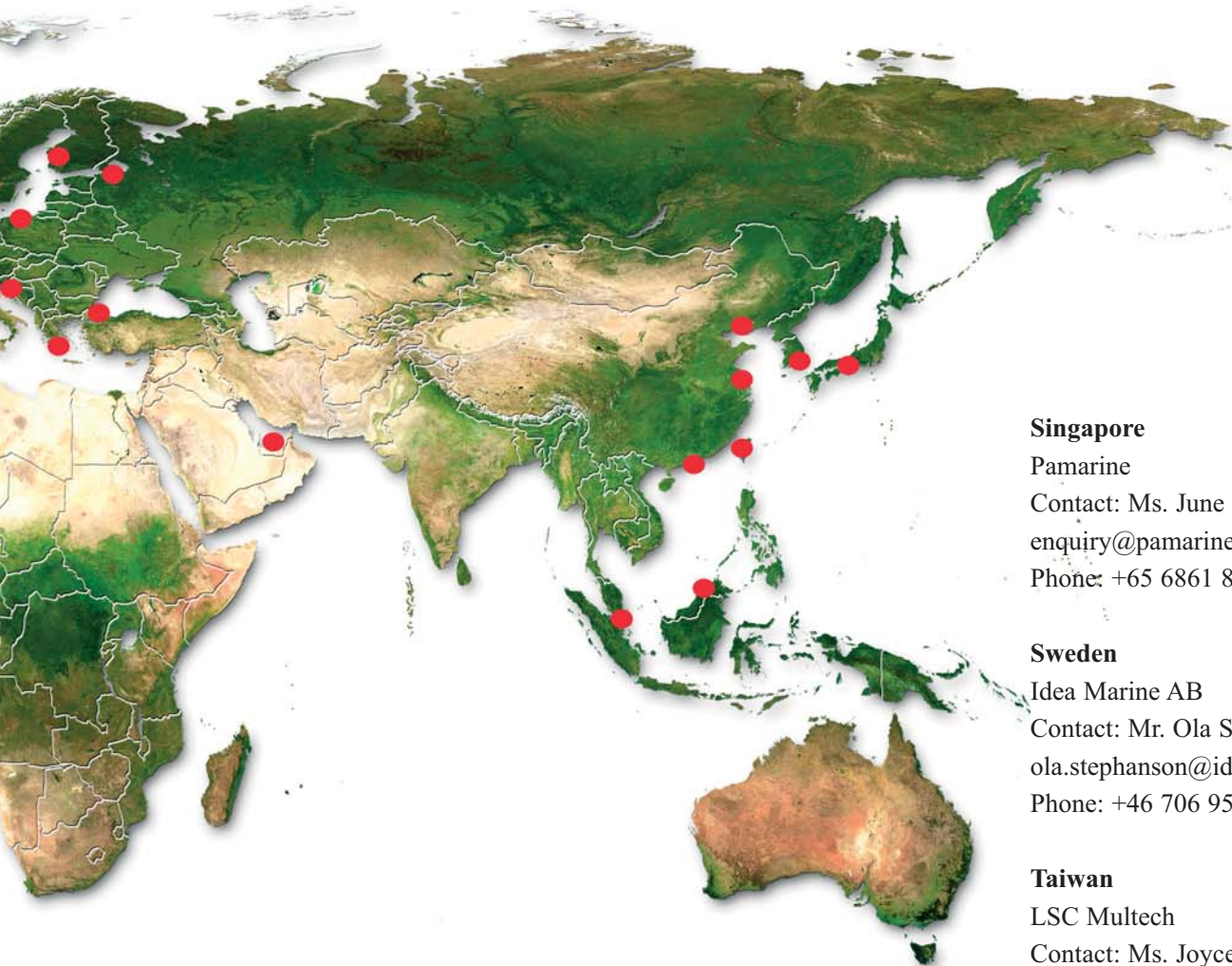
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# work of agents



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# The washable coating

**T**he purpose of Ecospeed is to offer a long-lasting, non-toxic protection for all ship hulls and to provide a system that keeps 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.

The technology can be broken down into three parts:

## 1. Coating

Ecospeed is a glassflake reinforced resin coating that is impermeable, impenetrable, long-lasting, inert and non-toxic. The coating is applied in two coats each of 500 µm dry film thickness (DFT) to a properly prepared hull, either at new build 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. Fast and easy cleaning

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. It allows divers to clean the flat areas as well as the harder to reach parts of the hull



*Ecospeed offers a cost-effective and environmentally-acceptable approach to hull protection and anti-fouling.*

without damaging the coating. One of the many unique characteristics is that with repeated underwater hull cleaning the coating's surface improves. Cleaning can be carried out whenever needed, at any point in its lifespan.

Ecospeed can also be cleaned in drydock with high pressure tools. With Ecospeed the coating is always in a brand-new, excellent condition after a high pressure washing and no material is lost. Only the fouling is removed. The coating stays on the ship instead of dispersing in the water and contaminating the shipyard and the surrounding waters.

By optimizing hull surface friction and using the best possible surface hydrodynamic characteristics, fuel savings over the lifetime of the ship are most often found to be in the 20-40 % range. In contrast with AF compounds that rapidly degrade over time, our coating lasts. Therefore the performance of the ship does not degrade either.

## 3. Minor 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. Mechanical damage such as that caused by collision or anchor chain abrasion, or by welding on the hull 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. Because no repaint is needed, several days and up to a week can be saved in drydock times during each visit.

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



# UV resistant corrosion protection

**T**he latest member in our range of coating systems is ultraviolet (UV) resistant and preserves its color while at the same time offering the corrosion and abrasion protection our coatings are known for.

Regular coatings will quickly lose their original color when exposed to the ultraviolet radiation present in sunlight. This is problematic when colorfastness is required, as is the case in for example offshore wind farms.

Ecolast is highly resistant against salt, ultraviolet radiation, waves or even ice. Mechanical damage to the coated surface is minimized. This is especially important for (semi-)submerged structures



like wind turbines that are located in splash or tidal zones.

Like all other coatings systems in the Subsea Industries family, Ecolast is also unaffected by corrosion. As a result no repaint is required once the coating has

been applied.

Application of Ecolast is done in two homogenous layers, with no need for primer or any other extra layer. This makes the application very fast and easy to adapt to the schedule of a yard.

## ECOLAST®

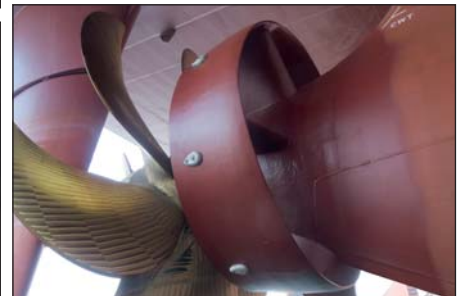
LONG TERM UV RESISTANT

**H**ydrex and Subsea Industries will be present at Posidonia 2018 together with our agent for Greece: **N. Bogdanos Marine Bureau**. We would like to welcome you at booth 2.102 in hall 2.

If you would like to learn more about how Subsea Industries can assist you, please visit our booth at Posidonia. Our team will be happy to give you the information you need. You can also contact one of our offices if you would like to make an appointment for the exhibition or if you need assistance.

**Posidonia** **Ποσειδώνια**  
The International Shipping Exhibition  
4-8 June 2018

# SUBSEA INDUSTRIES



**S**ubsea 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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