

# SUBSEA

PROTECTION AND PERFORMANCE



Magazine

230



**Seaspan finds permanent solution for rudder cavitation damage across its fleet of container ships**

# Corrosion damage very repair made ✓ easy



**S**ubsea 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

**A** great deal of effort goes into the design and manufacture of rudders because they are such an important part of a vessel. If a rudder is not given the proper protection against cavitation and the resulting erosion and corrosion damage, the financial and operational consequences can be substantial for the owner.

One need only examine a ship's rudder that has been subjected to cavitation to see that very severe damage can be caused by this phenomenon. Rudders become deeply pitted; paint coatings and hard steel simply disappear; whole plates can fall off and the rudder practically disintegrate altogether, all as a result of this cavitation damage.

The ideal approach to cavitation erosion would be a protection of the rudder which prevented any such damage from occurring. This solution does exist. It is called Ecoshield.

Removing the existing paint layers and applying our coating system on running gear breaks the never-ending cycle of painting, suffering damage, performing extensive repairs followed by a full repainting.



Ecoshield gives a very thorough and lasting defense for a ship's entire service life. No repaint will be required during drydocking. At most minor touch-ups will be needed.

For this reason, more and more owners have Ecoshield applied on the rudders and other running gear of a large part of their fleet or have it included in the rudder specs of their newbuild vessels. These owners invest in the right coating system for protection because they know the savings that will result.

In this magazine you can read an article about one of these owners: Seaspan. We spoke with Mr. Emilian

Jianu who is the Coating Performance Specialist for Seaspan, and asked him about Seaspan's experience with Ecoshield. They have applied Ecoshield to the running gear of over 65 vessels, with more on the way. The first applications were done over 10 years ago and the ships come into drydock with no damage showing on their rudders and no need for repainting – a few touch-ups at most.

Be sure to keep an eye out for our upcoming magazines as we have interviews with some other big industry names lined up.

You can give the rudders and running gear of your vessels the same lifelong protection. Contact us today for more information

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A handwritten signature in black ink, appearing to read 'Boud Van Rompay'.

Subsea Industries NV  
Boud Van Rompay  
Founder



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

# Seaspan finds permanent solution for rudder cavitation damage across its fleet of container ships

An interview with Mr. Emilian Jianu, NACE 3, FROSIO 3, Coating Performance Specialist for Seaspan

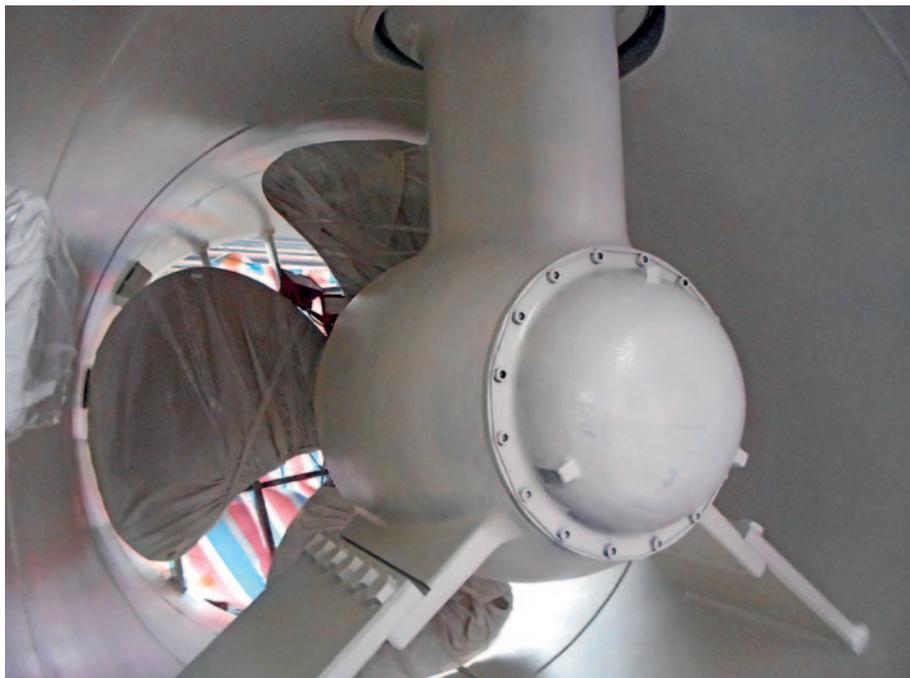
**S**easpan has, to date, applied Ecoshield to rudders and other running gear on over 65 vessels in their fleet with such success that they plan to continue using the specialized protective coating on newbuilds and on existing vessels. We asked Mr. Emilian Jianu, who is in charge of all paint selection and application for Seaspan, for his insight and experience with Ecoshield.

## Seaspan

Seaspan is the largest independent owner of containerships in the world, with twice the capacity of their next competitor, and the third largest owner overall. The company has grown steadily since its first ship was delivered in 2001, following a successful strategy of signing long-term chartering contracts with strong liner companies in tandem with shipbuilding contracts. Seaspan has built lasting partnerships with a diverse, best-in-class group of charterers, including COSCO Shipping, Hapag-Lloyd, Maersk, ONE, Yang Ming, MSC, CMA CGM and others. The company now has 112 ships in service with newbuilds being delivered regularly.

## Shipbuilding quality

Seaspan's ships are built to the highest quality standards at shipyards



*Thruster tunnel and thruster gearbox on Seaspan's Cosco Development protected against future cavitation damage with Ecoshield (first coat of two).*

such as Samsung Heavy Industries (SHI) and Hyundai Heavy Industries (HHI) in South Korea, Jiangsu Yangzijiang Shipyards (YZJ) in China and CSBC Corporation (CSBC) in Taiwan.

Over the last several years, the containership industry has focused on maximizing economies of scale by building larger and more efficient ships. Responding to industry demand, Seaspan's 10,000 and 14,000 TEU SAVER vessel series incorporate the latest technological and environmental advancements while maintaining their commitment to quality: "We use only the finest manufacturing partners in the con-

struction of our vessels," is one of the company's strengths.

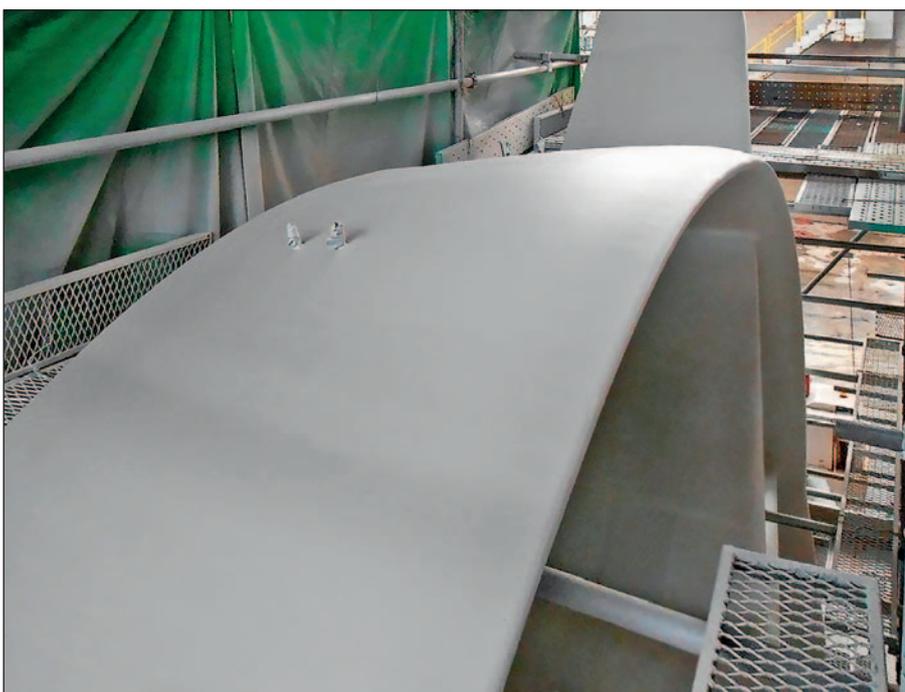
According to Seaspan, "Recent ship modification projects carried out in drydock make our vessels more useful and cost-competitive for customers."

## Rudders and running gear

Among these modifications has been the ongoing protection of the vessels' rudders and running gear with Ecoshield, one by one as they come into drydock, as well as applying this permanent solution to recent newbuilds.



*The rudder of Seaspan's CSCL Chiwan in excellent condition 5 years after Ecoshield was applied, with no repair or repaint.*



*Ecoshield is the ultimate protection for all running gear including energy saving devices that are particularly prone to cavitation erosion.*

Ecoshield, from Subsea Industries, is an extremely tough, resin-based, glass platelet composite protection for steel, aluminum, and GRP, which puts an end to cavitation damage and corrosion on the parts of the ship such as the rudders, nozzles, thruster tunnels and other running gear, which are most prone to these effects. Applied once, Ecoshield is designed to last the life of the ship with only minor touch-ups required in drydock in the case of mechanical damage.

### **Emilian Jianu – Seaspan Coating Performance Specialist**

We spoke to Emilian Jianu, Coating Performance Specialist for Seaspan, who is in charge of everything to do with marine paint for the Seaspan fleet. Mr. Jianu began his career as a seaman and went on to become a paint inspector (NACE 3 and FRO-SIO 3). For many years Mr. Jianu oversaw painting on newbuilds and on ships in drydock for Seaspan. He therefore has a practical view of ships, their construction and maintenance and the coatings that are used to protect them from the harsh sea environment, and a great deal of experience in this field. His duties have expanded to include Paint Specification Plan Approval at New Building and Dry Docking, as well as paint selection and application.

### **Serious rudder cavitation damage**

“I encountered Ecoshield many years ago,” Mr. Jianu recalls. “I was contacted by our top management. They had heard about Ecospeed at that time and asked me to research it. We were then interested in repair of the rudder blades of the ships in drydock.”



*The second coat of Ecoshield being sprayed on the rudder of Seaspans Manilla Express. A big advantage to Ecoshield is that it has a minimum overcoat time of 3 hours and no maximum.*



*The rudder of the MOL Benefactor after the second coat of Ecoshield. In 5 or 10 years the protection will remain intact.*

Recalling the extent of the problems that Seaspans was encountering before they began using Ecoshield, Mr. Jianu says, “Most of our problem was with really huge cavitation damage. Huge! To the point of completely penetrated steel, making a hole so the rudder would even fill up with water. So when it came to drydock, we were not just blasting and painting and letting the ship go. It was necessary to replace the steel plate. You can imagine the delays. There was a plan for drydock with a calculation of the number of days off-charter. Then suddenly we see the state of the rudder, and realize we have to remove many square meters of steel plate and weld in replacement steel. It created problems with delivering the ship back to the charterer in time. In those days, drydock was normally 10-12 days. In some circumstances we had to delay another 1-2 days just because of the rudder damage.”

The company was ready to test Ecoshield to see if it would help.

### **Ecoshield in 2010**

The first ship to have its rudder protected with Ecoshield was the container ship *Seaspans Vancouver* in January 2010, followed closely by seven other vessels, all of which received the same treatment in the same month. “Of course, we were following the progress of the first few ships very closely during underwater surveys to see what was going on,” Mr. Jianu continues. “The results were quite amazing.”

“Then at the first drydock we were able to see that the coating was completely intact and there were no signs of the damage that we had grown so used to and were trying to solve,” he continues. “Since then, our company maintained a coopera-

tion with Subsea Industries and Hydrex [sister company that handles underwater ship repair.]”

## Newbuild application

“Later, in 2012, when our company started a huge project here in China with 10,400 TEU ships, we decided to apply Ecoshield on the rudder blade and the energy saving device, Becker Twisted Fins, at newbuild,” Mr. Jianu continues. “We also applied it to the scrubber area of some vessels as well as the outlet pipes. Due to the product quality, we were very satisfied with Ecoshield.”

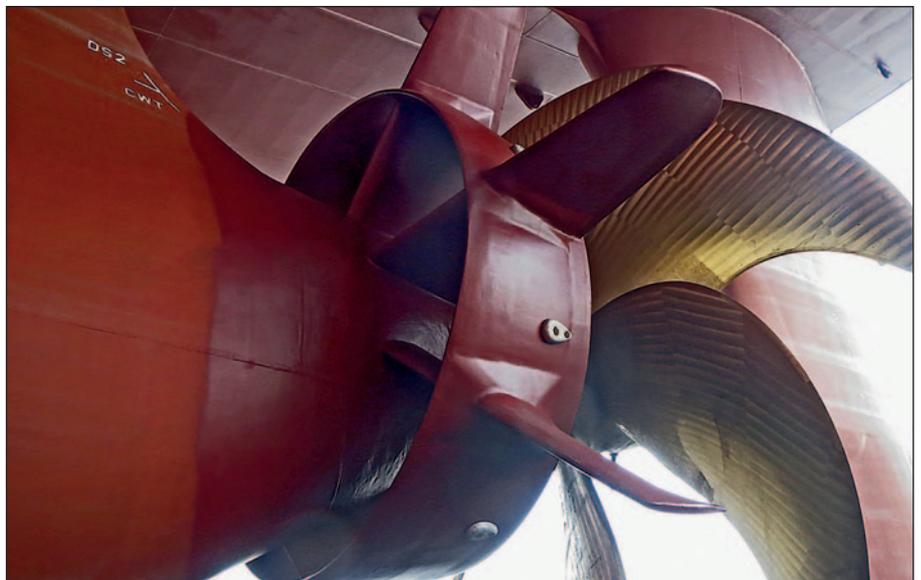
At time of writing, Seaspan has applied Ecoshield on a total of 66 vessels. On all of these the rudder has been protected. Additionally, many of them have had the same treatment on twisted fins, nozzles and thruster tunnels and on the scrubber outlet area. The highly corrosive chemicals emitted by the scrubber make short work of conventional coatings and begin to corrode the steel. Ecoshield and Ecospeed (a sister product to Ecoshield, usually used to coat the entire hull) are not affected.

Seaspan has already contracted with Subsea Industries for 13 more ships. Seven of these are for rudder, twisted fins, thruster tunnel and scrubber area applications and the other six are for the scrubber outlets on ships that have not previously had this area properly protected. For the scrubber area, usually Ecospeed is sufficient to offer the protection required as it has the same chemical corrosion resistance as Ecoshield. The latter is designed primarily to withstand the additional forces of cavitation.

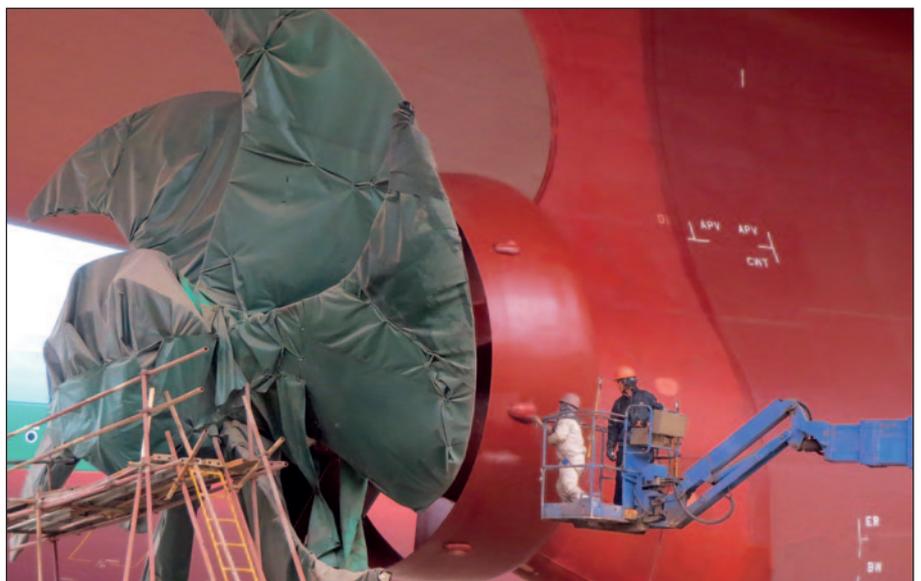
Mr. Jianu explains, “Our company point of view is that we try to imple-



*The first coat of Ecoshield on a newbuild is applied on the blocks. The application is finished in the dock after the rudder, fins, etc. have been installed.*



*The best time to apply Ecoshield is at newbuild since the running gear will remain in pristine condition for the life of the vessel without the need for repainting.*



*The final coat of Ecoshield applied to the kort nozzle on a Seaspan ship in drydock.*



*The rudder of the Seaspan New York in 2010 after sailing for 5 years with conventional paint, before Ecoshield was applied.*



*The rudder of the same Seaspan New York after sailing for 10 years with Ecoshield. This was the state of the rudder with no repair or repainting. It was simply high pressure washed after docking.*

ment Ecoshield on each of our very large number of ships, on the same areas: bow thruster tunnel, scrubber overboard outlet pipes, energy saving device or BTF, and rudder blade. Different shipyards want to use other kinds of paints, so when you upgrade the product, as with Ecoshield, everything is carried out at extra cost. The fact that our company is willing to pay that extra cost shows how much we value the performance of this product.”

Seaspan’s Coating Performance Specialist recalls that the company had previously tried a silicone coating from a well-known paint manufacturer, but the results were not really satisfactory. They also tried stainless steel plates, especially on areas that were heavily affected by cavitation. The plates themselves worked but then the welds were suffering from the cavitation damage.

And the stainless steel was very expensive. During his experience in another project, Mr. Jianu has also tried another product, but it was very difficult to apply, requiring a special gun and equipment for application that is not available worldwide and is expensive. And after application the surface was not smooth and had to be ground smooth before the next coating was applied. “It cannot achieve the performance of Ecoshield,” concludes Mr. Jianu.

Ecoshield has a companion product, Ecofix, designed to fill pitted and corroded steel and other materials easily, quickly and smoothly prior to the application of Ecoshield, where needed. Mr. Jianu has had good experience with this product as well. “It cures quickly, can easily be made smooth, zero level, and of course it is compatible with Ecoshield.”

## **Practical details**

### **How easy is Ecoshield to apply?**

“Ecoshield is easy to apply as long as all the manufacturer’s instructions are followed exactly – if you prepare well and if the shipyard listens and follows all the instructions. We also have a second pump, hose and gun as standby, in case anything happens with the previous pump.”

“At newbuilding it is easier to follow the instructions and we usually allow extra time between coats. When ships are in drydock everything is under pressure, and in some situations, we have followed the minimum overcoat time required by Subsea. I can say that after five years we have never seen any bad consequences. That was something which gave us certainty to use this product. We found we can follow the Technical Data Sheet exactly per

the maker's requirements.”

### **How is Ecoshield performing over time?**

“Last year I had a chance to see the rudders that were coated in 2012 or 2013,” says Mr. Jianu. “After high pressure washing we saw that no repair of Ecoshield was needed. In some cases on the whole rudder blade there was perhaps 15cm of damage, clearly from mechanical impact. I have seen two or three ships after 10 years and it was the same story. Follow the instructions, prepare well before starting the job, and you won't have any unpleasant surprises, not in the near future or even the distant future.”

### **How has Ecoshield affected time in drydock?**

“So far we have mainly applied Ecoshield to the rudder blade and bow thruster tunnel which are usually left till the end of the drydocking,” says Mr. Jianu. “Compared to

conventional coatings, due to not needing repairs, and due to curing times and other factors, we save somewhere between one and three days in drydock per ship.”

### **Future plans?**

“We are planning to apply Ecoshield on the rudder blade, bow thruster tunnel, energy saver and also the scrubber outlet on all our upcoming newbuilds,” says Mr. Jianu.

### **Any thoughts on our service?**

“My contact has been with the office in Belgium and the service has always been fast and helpful and we are satisfied with it,” he said. “Also your representative in China, Raul Yu, is an amazing guy. Not only professional but also a very hard worker.”

### **Conclusions**

“As a long time field inspector I am not only looking for quality of

product. I am looking for applicability *and* quality. With Ecoshield I have that. I have had a situation where another company's product was not bad, but due to using two or three kinds of accelerators, the coating failed on the spot. This is a terrible situation – to have to remove the coating and start all over again. I have never had this situation with Ecoshield.”

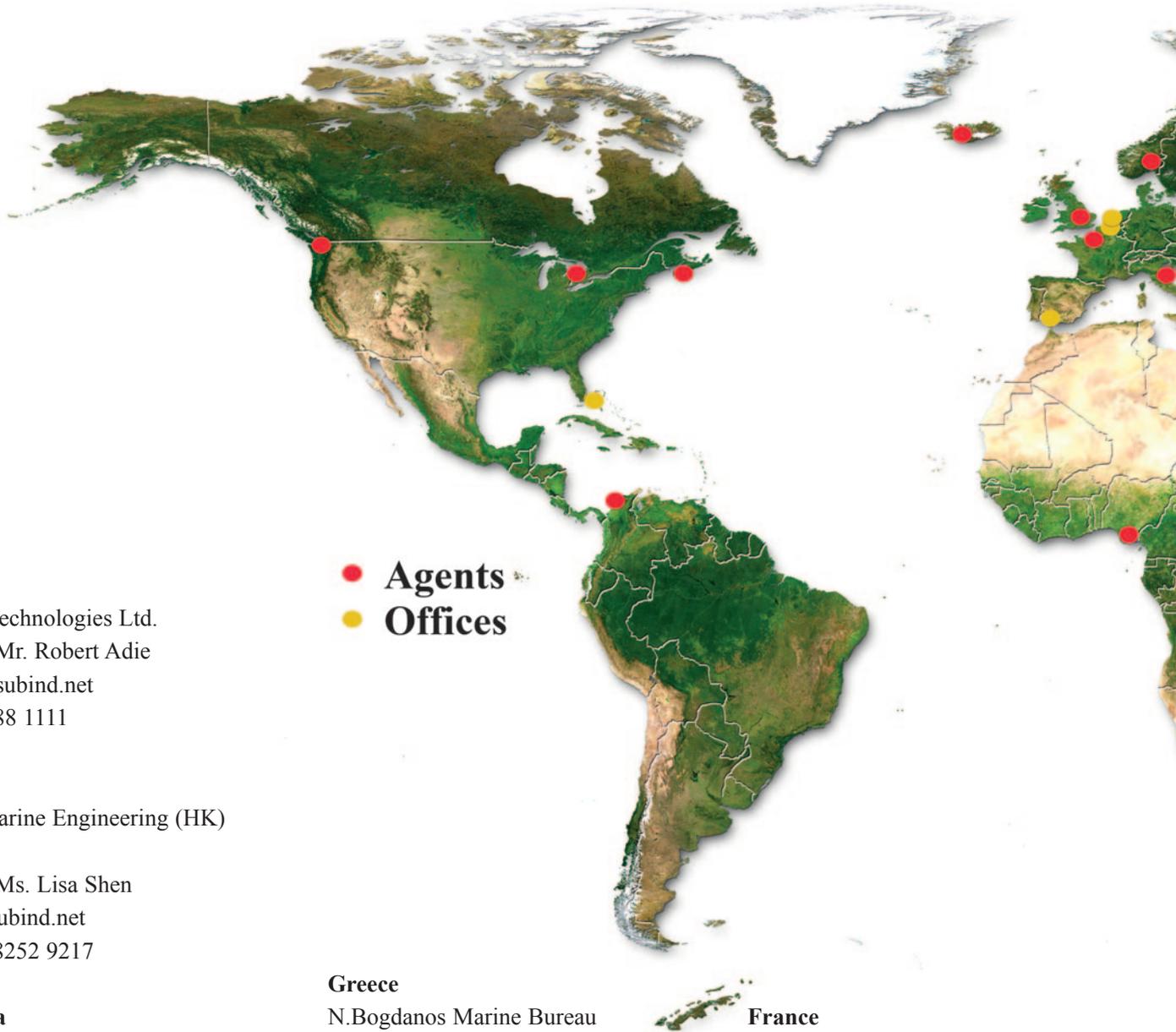
“The fact that we keep using Ecoshield means we are satisfied. Some-times we have to fight with the shipyard because they want us to use the product of some manufacturer, they have an agreement with. Even though they are pushing these other products, we insist on Ecoshield. You can come to your own conclusions. Your product is its own best advertising.” ■

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*The Seaspan Chiwan under the Bay Bridge in the San Francisco Bay. The Chiwan's rudder and bow thruster tunnel have been protected with Ecoshield since 2011 and are still in excellent condition.*

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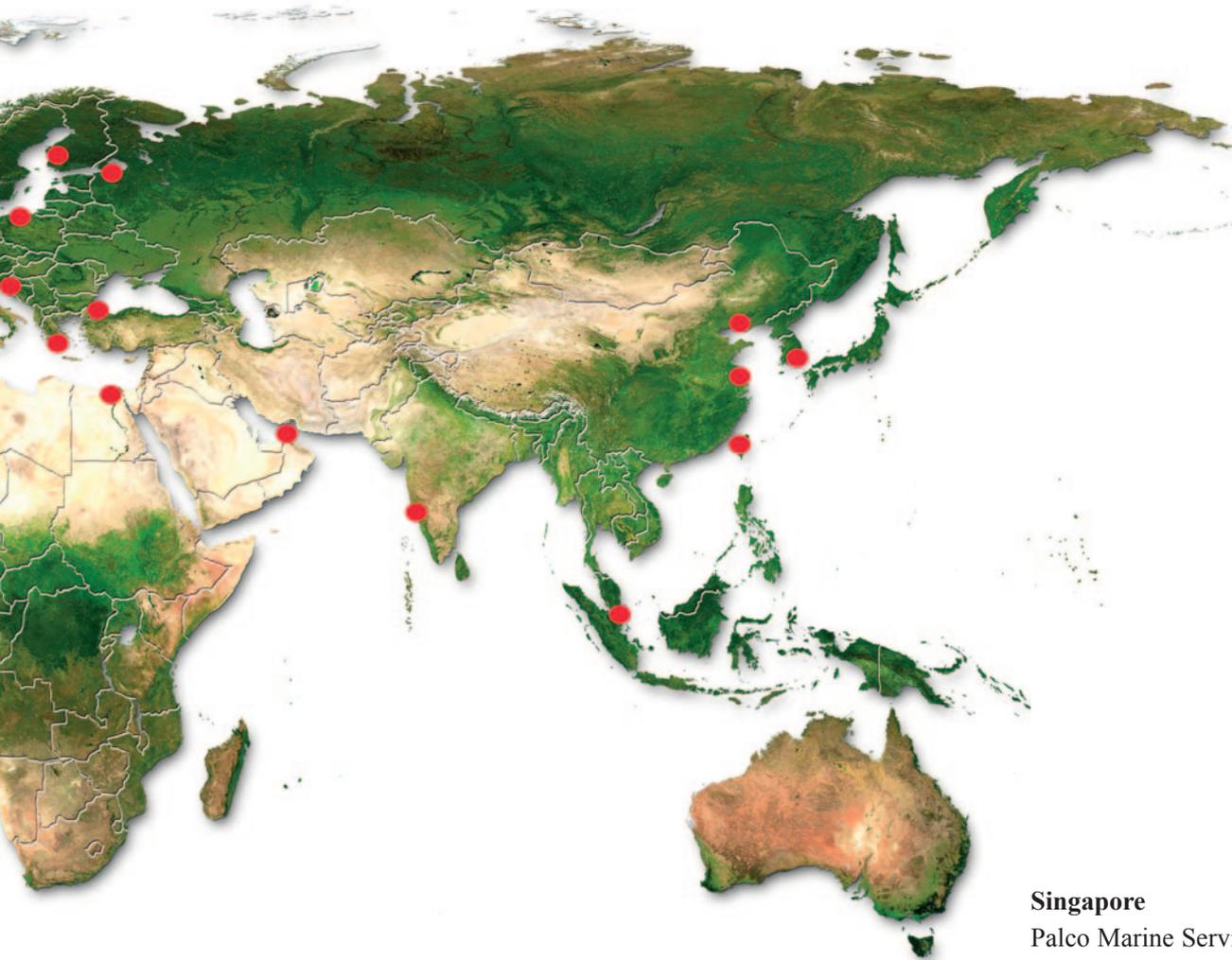
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# SUBSEA

PROTECTION AND PERFORMANCE



**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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