

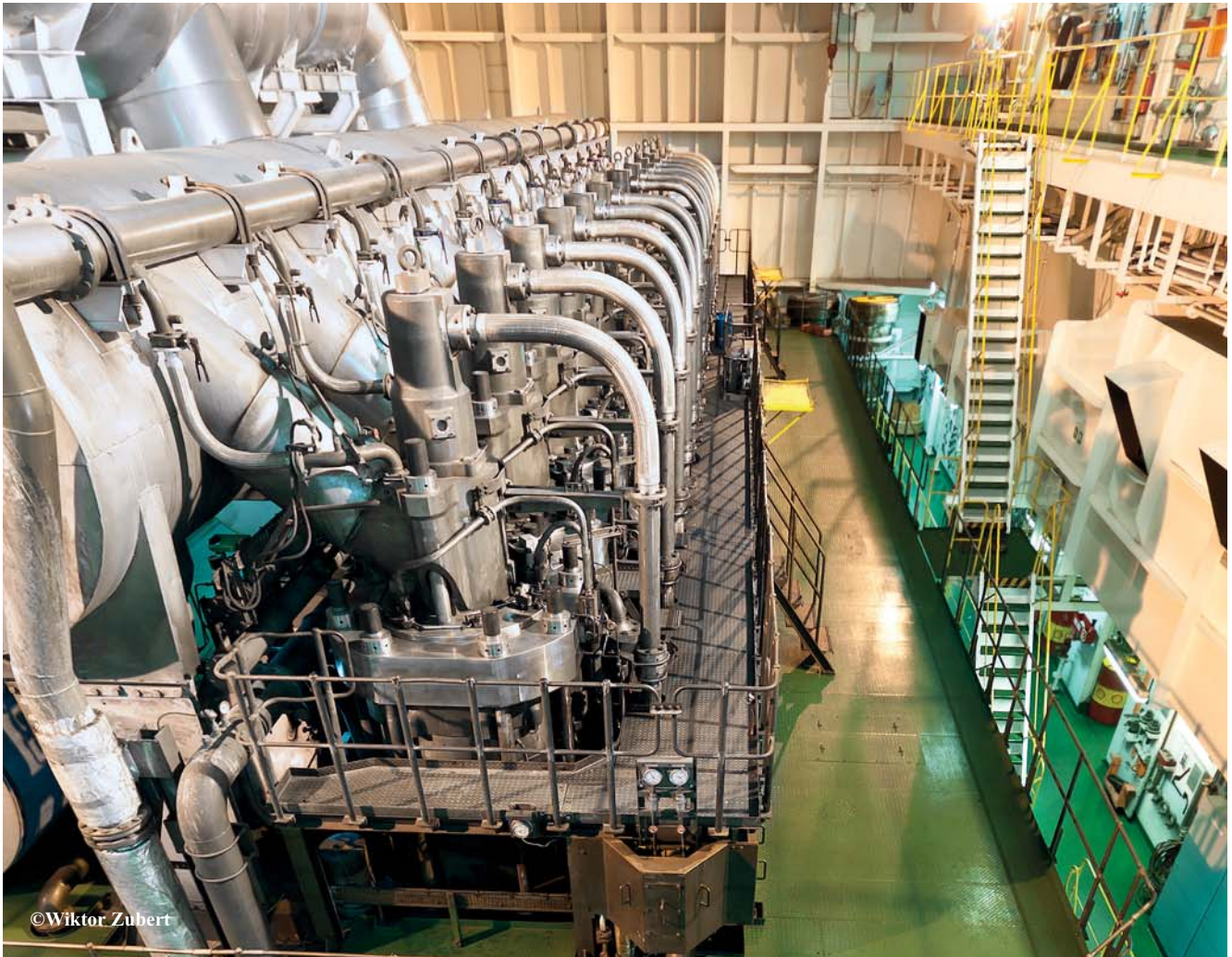
ECOSPEED®

SHIP HULL PERFORMANCE TECHNOLOGY

Magazine



Ecoshield remedies rudder cavitation damage for good	3
Why Ecospeed®?	6



The only hull performance system that gives your engine a break

Ecospeed provides your vessel with long-term protection and dramatically improves the ship's performance.

An impermeable and extremely tough coating is combined with an underwater cleaning system. This keeps the hull roughness at an optimum level and results in a

major saving in fuel.

Ecospeed gives a very thorough and lasting defense against cavitation and corrosion damage for a ship hull's entire service life. The coating comes with a ten year guarantee. No repaint will be needed during future drydockings.

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SHIP HULL PERFORMANCE TECHNOLOGY

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Ecoshield remedies rudder cavitation damage for good

Over the last couple of months a number of vessels have had their rudders coated with Ecoshield. These include a tanker, a ferry, two container vessels and several car carriers. The applications were carried out in Greece, Poland and China and will protect the rudders against cavitation and corrosion damage for the remainder of the vessels' service lives.

Some of the owners are returning customers, some are new ones, but all of them experienced the same problem: severe cavitation damage on the rudders of their vessels coated with conventional coatings. The returning customers had seen first-hand that Ecoshield solved the problem on their other rudders and wanted the same protection for the rest of their fleet. The new ones saw the excellent result obtained by other owners and chose Ecoshield to prevent corrosion and cavitation damage from reoccurring.



Rudder after surface preparation.



Inside of thruster tunnel with severe cavitation damage, prior to Ecoshield application.



Thruster tunnel after application of first layer of Ecoshield.



Ecoshield is applied in only two layers.



After application of Ecoshield, a rudder is protected for the rest of its service life.



No steel repairs or repaints are required during future drydockings.



Both layers can be applied very fast, with only three hours in between.



The application can be easily adapted to a yard's schedule.

Cavitation tests in a flow channel, carried out in Grenoble, have confirmed that Ecoshield performs extremely well under severe cavitation. The coating will prevent corrosion damage from reoccurring on an existing ship or can protect the rudder(s) of a newbuild vessel against cavitation and corrosion damage for the life of the vessel. It is the only known coating that can provide this type of full protection.

Ecoshield's flexibility makes it easy to adapt the application to the rest of the activities scheduled at the shipyard or drydock so as not to interfere with these. Overcoating time can be as short as three hours, which means that for smaller surfaces such as rudders or bow thrusters the two coats required can usually be applied in one single day.

Ecoshield is also ideally suited for

other areas prone to cavitation erosion or other damage, such as propeller nozzles, thruster tunnels, the bulbous bow or stabilizer fins. For this reason several of the vessels had Ecoshield applied to their thruster tunnels as well as the rudders.

Conclusion

The investment in a coating system that offers full protection from day one is easily won back. This becomes very clear when one takes into account the costs of the temporary underwater repairs and the regular inspections required by a condition of class, not to mention the extra costs associated with rudder repair and recoating in drydock. For this reason a growing group of owners have Ecoshield applied on the rudders 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 long-term savings they will achieve. ■



Ecoshield is the best possible protection against corrosion and cavitation damage.

ECOSHIELD®
THE DIAMOND STANDARD IN STEEL PROTECTION

Why Ecospeed®?

Ultimate hull protection

Complete corrosion protection

- Hard, tough, glassflake-based
- Flexible, very strong adhesion, thick coating
- Impermeable and impenetrable

Long-lasting – one application lasts the life of the ship.

No reapplication needed, only minor touch-ups in drydock.

- 10-year extendable warranty

Cleanable in the water

Gets smoother with underwater hull cleaning

Ultimate protection for rudders and underwater gear

- Ecoshield – a very strong version of Ecospeed designed for rudders, bulbous bows and underwater gear, prevents cavitation and corrosion damage
- Protects rudders, stabilizer fins, bulbous bow (ice), thruster tunnels, nozzles and other underwater gear

Ice class coating (certified)

- Abrasion resistant
- Low friction
- Stays on when other coatings are removed by the ice

Protection for offshore, stationary vessels

Economics

Enormous fuel savings (10 - 25% for AF and FR coating systems)

- A smooth hull
- No long term paint degradation
- Becomes hydrodynamically smoother, reducing routine cleaning
- AF and FR coatings typically reduce 20 - 45% fuel penalty after 10 years (vs. 20% for other coatings)
- Easy to keep clean of fouling (no need for slime at most)

Reapplication costs saved (no need for drydock)

Drydock savings (fewer and shorter drydock visits, no need to repaint)

Ease of application

- Two homogeneous coats, no primer, tie coat or any other coats
- 3 hour minimum overcoat
- No special environmental requirements
- No special equipment needed

Easy and quick to repair in drydock

Does not interfere with other work

Greatly reduced total ownership costs

What is Ecospeed? Ecospeed is an underwater ship hull protection and fouling control system. It consists of a tough, long-lasting, glassflake reinforced coating combined with routine in-water cleaning/conditioning. One application lasts the life of the hull. It does not degrade but becomes smoother over time with regular in-water cleaning. It can be used on any ship or submerged structure, steel, aluminum or GRP. It has the potential of great financial savings. It is designed with environmental protection in mind and is entirely environmentally safe.

Operational benefits

50% compared to conventional

condition

becomes smoother over time with

regularly degrades over time, with

every 10 - 15 years

cleaning (can be kept to a light

one application needed)

shorter drydockings since no

500µm each, no primer, midcoat,

at time, no maximum

requirements

needed

drydock

work in drydock

up cost

Environmental benefits

Reduced GHG

- Smoother hull = lower fuel consumption = reduced emissions

No toxic emissions to environment

- No heavy metals such as copper, zinc, tin
- No co-biocides such as Irgarol, Diuron and others

No contamination of water column or sediment

No harmful effects on non-target marine life

Prevents hull-borne invasive aquatic species spread

- Ships sail with clean hull, potential invasive species removed

Very low VOCs

Can be cleaned in the water safely

- No damage to coating
- No harm to environment

No repeat application, no cumulative environmental impact from preparation and application

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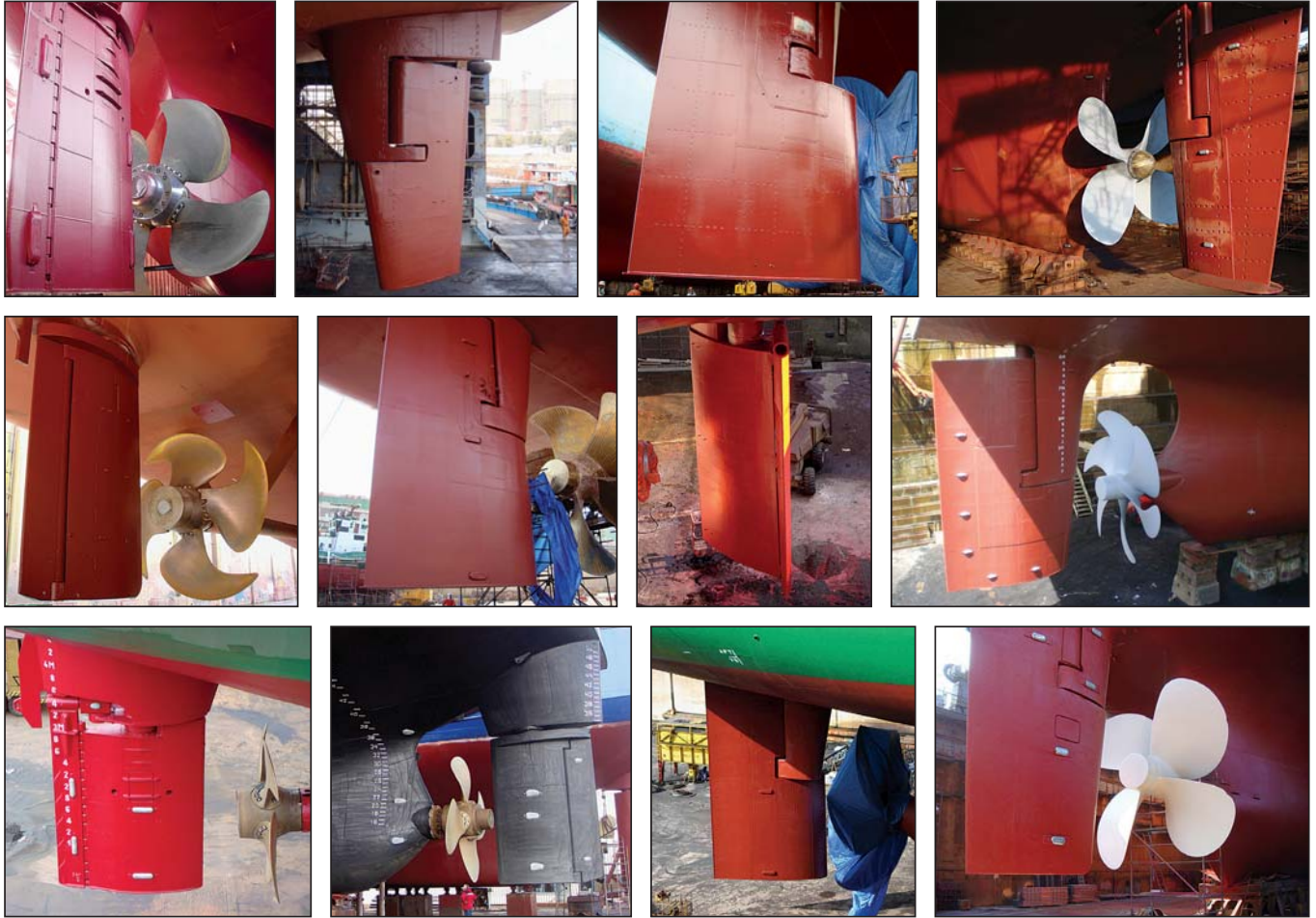
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Supreme Rudder Protection



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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