SUBSEA
PROTECTION AND PERFORMANCE

Fast and easy cleaning. Ecoshield is still intact 6 year after application.

ECOLOCK® ultra long-lasting protection for offshore hulls

Ecolock 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.

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Editorial

What if my rudder has already suffered damage?

Cavitation damage on rudders and running gear remains a persistent challenge across the shipping industry. For many shipowners, it is an all-too-familiar story: steel surfaces gradually deteriorate, drydock scopes expand, and maintenance costs continue to rise over time.

Ideally, this damage would be prevented from the outset. As you will read later in this magazine, vessels that had their rudders protected with Ecoshield during the newbuild phase in 2019 are now entering drydock with their coatings fully intact. No cavitation damage, no corrosion, and no need for repair. With more vessels from that same period scheduled for inspection, the same outcome is expected.

But what if that decision was not made at the beginning? What if your rudder, or any other running gear, has already suffered damage?

This is the situation many operators face today. Cavitation erosion may already have caused pitting, material loss, and surface degradation. In response, repairs are carried out, often repeatedly, creating a cycle of grinding, welding, and recoating that returns at every drydock. Breaking that cycle is still possible.

The first step is proper restoration of the damaged steel. This can be efficiently carried out using Ecofix, a filler specifically developed to rebuild surface affected by cavitation erosion and corrosion. Once the surface is restored to its original profile, Ecoshield can be applied to provide long-term protection.

Together, Ecofix and Ecoshield form a complete solution. Ecofix restores what has been lost, while Ecoshield ensures that the damage does not return. The coating creates a strong, glassflake-reinforced barrier that protects the surface against further cavitation and corrosion, effectively stopping the deterioration process.

The impact is significant. Instead of planning for recurring repairs, shipowners can move toward predictable maintenance. Drydock visits become simpler, with inspections replacing extensive steel work. Costs are reduced, downtime is minimized, and the condition of the running gear is stabilized for the long term.

As the examples later in this magazine demonstrate, application at newbuild delivers the best outcome. But even when applied later, Ecoshield offers something equally valuable: a definitive end to ongoing damage.

And in an industry where control over cost and reliability is essential, that makes all the difference.

Subsea Industries NV
Boud Van Rompay
Founder

Why applying Ecoshield at newbuild is the smartest coating investment a shipowner can make

Two vessels recently entered drydock after several years in operation. Their rudders had been coated with Ecoshield during newbuild in 2019. Upon inspection, the coating was still fully intact—no cavitation damage, no corrosion, and no need for repair.

Importantly, these are not isolated cases. Several more vessels coated with Ecoshield in 2019 are scheduled to enter drydock soon, and based on consistent past performance, the same results are expected. This growing body of evidence reinforces a clear message: when Ecoshield is applied from the start, damage simply does not occur.

The hidden cost of waiting

Too often, rudder protection is only addressed after problems arise. By that time, cavitation erosion has already attacked the steel, leaving deep pitting and initiating corrosion. What follows is an expensive and time-consuming repair process involving grinding, welding, and recoating. In many cases, this becomes a recurring issue throughout the vessel's lifetime.

This reactive approach creates a cycle that is both costly and inefficient. Each drydock brings new repairs, additional downtime, and increasing maintenance budgets, all while the underlying problem continues to return.

Rudder 6 year after Ecoshield application. Fouling is removed easily with high pressure washing without damaging the coating.

Breaking the cycle at newbuild

Ecoshield was developed to eliminate this cycle entirely. When applied during the construction phase, the coating forms a highly durable, glassflake-reinforced barrier that protects the rudder from the very first day of operation. Steel is never exposed, meaning cavitation erosion and corrosion never get the chance to start.

Application of first Ecoshield layer during the block phase. This has no effect on the quality of the coating.

Slot welds can be filled with Ecofix, a filler fully compatible with Ecoshield.

This preventive approach changes the equation completely. Instead of managing damage, shipowners avoid it altogether. The rudder remains in its original condition, even after years of continuous service.

The same principle applies to other critical components exposed to aggressive flow conditions. Stern thrusters, nozzles, and other running gear protected with Ecoshield show the same long-term resistance to cavitation and erosion. By extending protection beyond the rudder, shipowners can safeguard the entire propulsion area, ensuring consistent performance and eliminating another source of recurring repair costs.

Long-term performance without recurring repairs

Unlike conventional coatings, Ecoshield is designed as a permanent solution rather than a consumable system. Once applied, it remains in place for the lifetime of the vessel, requiring only minimal touch-ups in case of accidental mechanical damage.

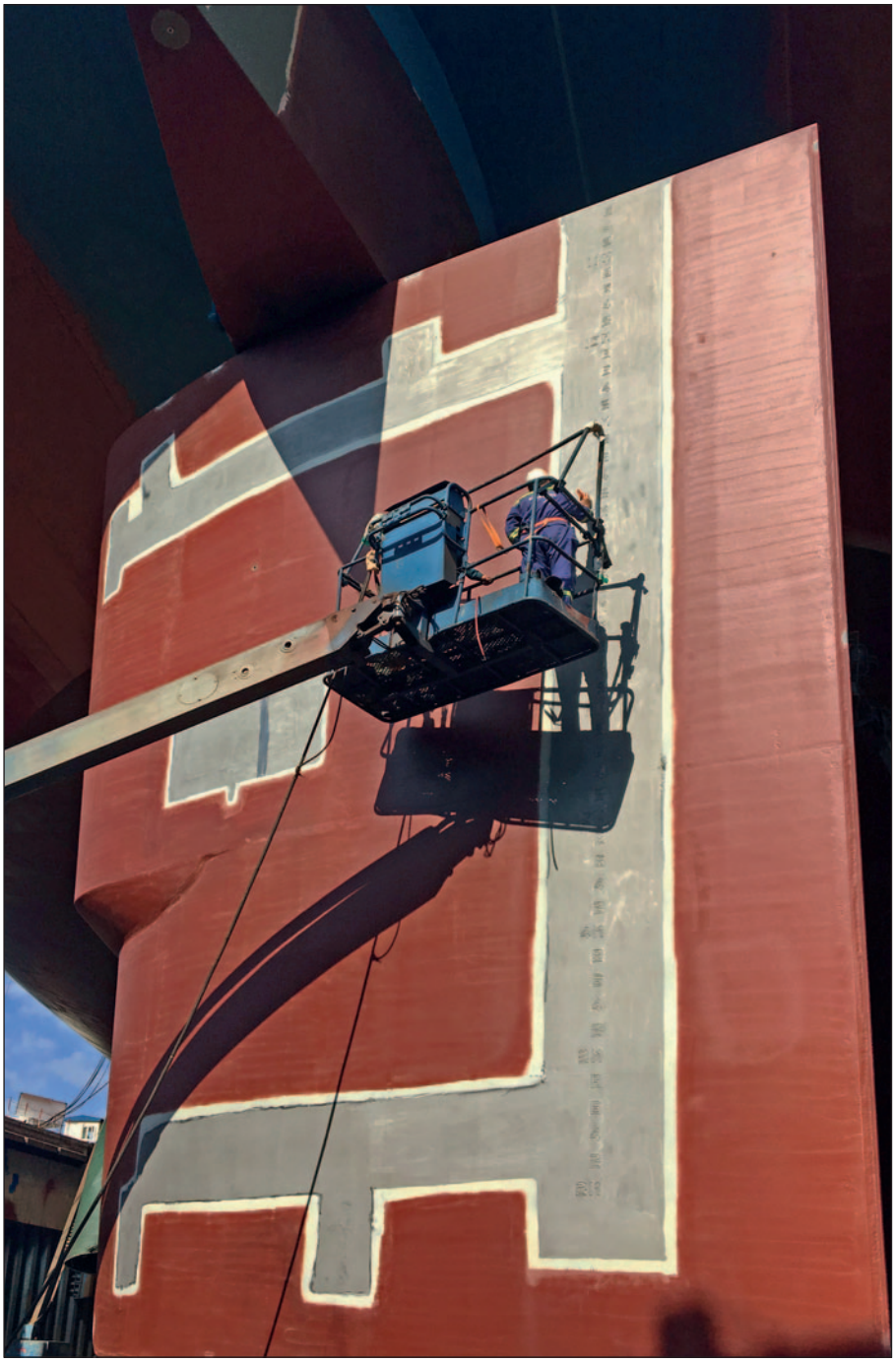
This long-term reliability is supported by a 10-year warranty and backed by real-world performance. Vessels that received Ecoshield well over a decade ago continue to demonstrate that their running gear remains in excellent condition, with no need for steel repairs during drydock inspections.

Reduced drydock time and operational impact

One of the most tangible benefits of applying Ecoshield at newbuild is the impact on drydock efficiency. When rudders and other critical areas are free from cavitation damage, there is no need for extensive

Ecoshield is applied in only two identical layers.

Application is flexible and can easily be scheduled around other work in the yard.



After assembly, the remaining areas on the rudder can be coated, forming one homogenous coat with the areas coated during the block stage.

steel work or complex recoating procedures. Inspections become straightforward, and turnaround times are significantly reduced.

Over the lifespan of a vessel, this translates into meaningful operational advantages. Less time in drydock means more time in service, improving both scheduling flexibility and overall profitability.

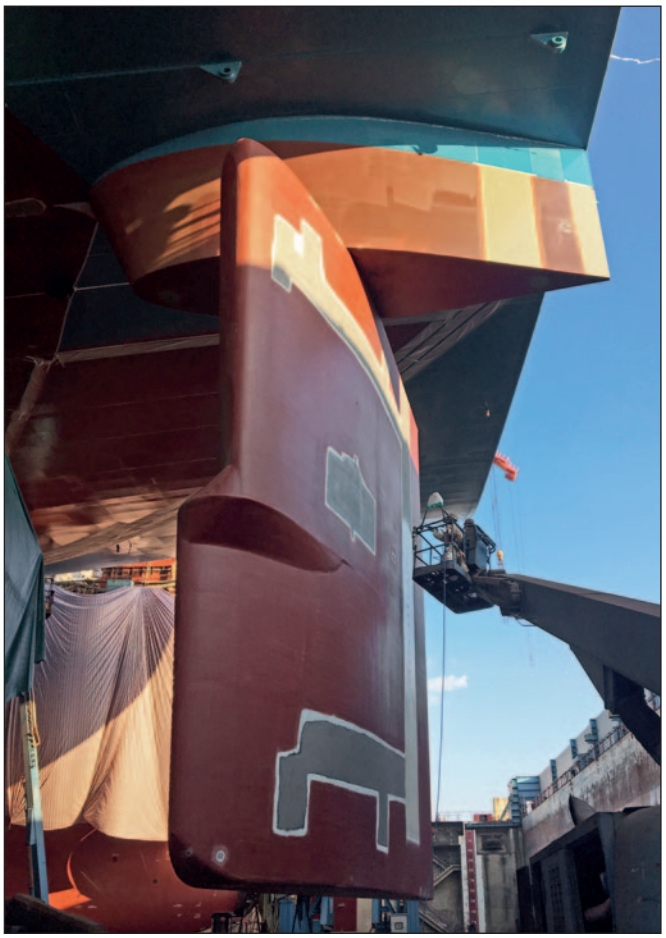
A practical choice during construction

From a logistical perspective, applying Ecoshield during newbuild is also the most efficient option. The coating can be integrated seamlessly into the shipyard process, without the time pressure typically associated with drydock repairs. Its fast-curing properties allow for quick application, often within a single day, making it easy to incorporate into tight construction schedules.

A proven solution across the industry

Ecoshield has been applied on a large and growing number of vessels worldwide, with major shipowners adopting it as a standard specification for newbuilds. This shift reflects a broader industry trend: moving away from reactive mainte-

After six years, no recoat or repairs are needed, saving time and money.



Ecoshield protects all critical components against cavitation and corrosion damage.

Ecoshield offers lifetime protection and comes with a 10-year warranty.

Protection of running gear should start on day one.

The difference between the rudder and the area not protected by our coatings is clearly visible after six years.

nance and toward long-term asset protection.

The vessels coated in 2019, and the many more now approaching their first drydock inspections, clearly demonstrate the effectiveness of this approach.

The expectation that these upcoming inspections will show the same intact condition is not optimism, but the result of consistent, proven performance across multiple vessel types and components.

ECOSHIELD®
ULTIMATE PROTECTION

Newbuild vs. repair: a clear conclusion

Applying at newbuild	*Waiting for damage*
Protection from day one	Steel already exposed
No cavitation damage	Severe erosion and corrosion
Minimal maintenance	Repeated repairs
Shorter drydocks	Extended downtime
Lower lifecycle cost	High cumulative cost

Conclusion

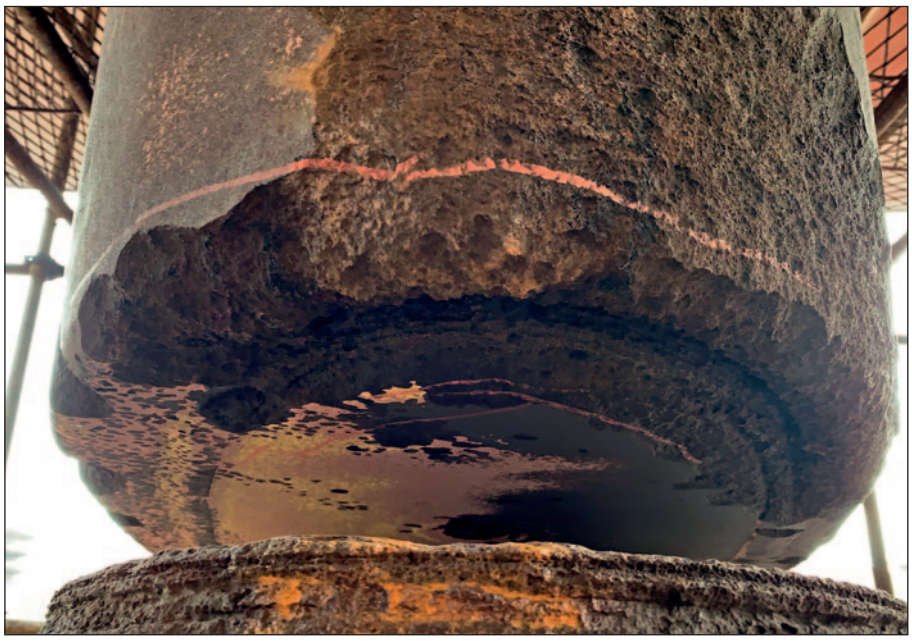
The evidence is clear. Applying Ecoshield at the newbuild stage allows shipowners to avoid damage entirely rather than dealing with its consequences later.

With more vessels now entering drydock and confirming the same results, the case for early application becomes even stronger. ■

The right decision is made at the beginning.

Rethinking underwater asset protection: from reactive maintenance to long term strategy

In the maritime and offshore industries, asset protection has traditionally been approached as a cycle of damage and repair. Hulls, rudders, thrusters and offshore structures are exposed to a relentless combination of corrosion, cavitation and mechanical stress. Over time, even the best conventional coatings degrade, leading to repeated drydockings, costly repairs and operational inefficiencies.



Severe cavitation damage on unprotected running gear highlights the limitations of conventional coating systems in high-impact zones.

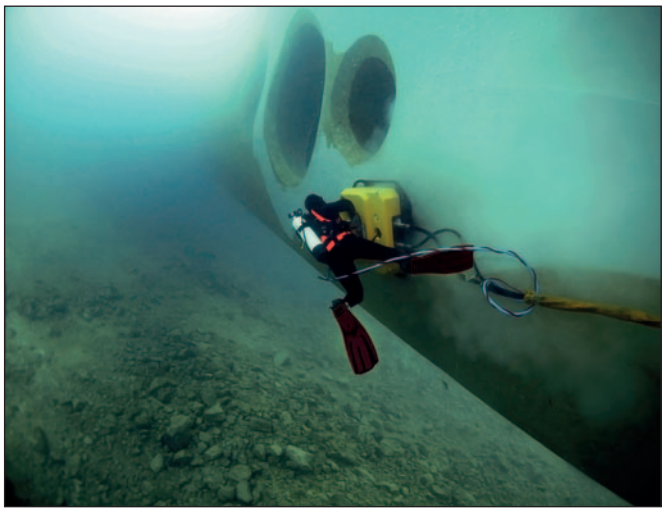
However, a growing number of operators are shifting away from this reactive mindset. Instead, they are adopting a long-term protection strategy – one that focuses on eliminating recurring damage rather than managing it.

This shift is driven by real world experience across fleets and offshore installations. Operators have observed that conventional systems often fail in critical areas such as running gear and scrubber components, where extreme forces and aggressive chemical environments accelerate deterioration. Cavitation alone can cause severe pitting and structural weakening, while acidic exhaust scrubber flows can rapidly corrode steel surfaces if not properly protected.

Drydocking remains a critical moment for inspection and coating application, directly influencing long-term asset performance.

The consequences extend beyond material damage. Increased drydock frequency, longer repair times and unplanned maintenance all contribute to higher total cost of ownership. For high utilization vessels or fixed offshore units, even minor disruptions can translate into significant financial losses.

A new approach is therefore emerging, one that integrates durability, cleanability and environmental compliance into a single solution. Instead



A clean, smooth hull surface maintained over time demonstrates the effectiveness of durable, non-eroding coating systems.

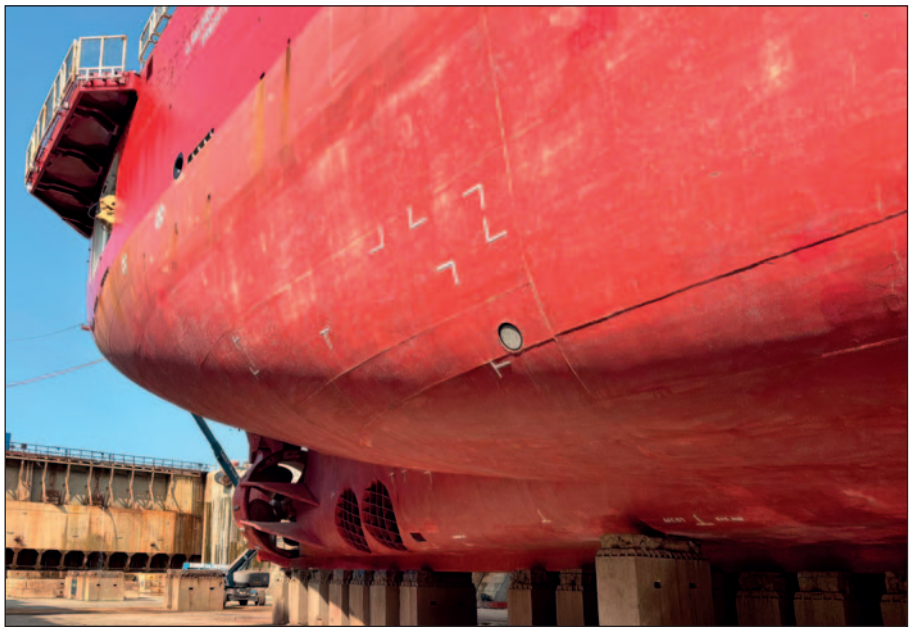
Cleaning can be performed underwater or with high-pressure washing in drydock without damaging the coating, maintaining efficiency throughout the vessel's service life.

Operations in demanding environments require coating systems that can withstand abrasion, impact and continuous exposure.

Large offshore units can be coated in the block stage. After assembly, erection joints and weld seams can be rapidly prepared and coated, forming one homogenous layer with earlier coated areas.

The second coat can be painted on with no limited window for application.

When our hard coating systems are applied, any build-up of paint layers is ended forever.



The coating still looks amazing on this icebreaker, even 16 years after application with no repaint.

of relying on coatings that gradually wear away, operators are turning to systems engineered to remain intact for the lifetime of the asset. These coatings act as a permanent barrier against corrosion and erosion, fundamentally changing maintenance planning.

One of the key advantages of this approach is the ability to perform in-water cleaning without compromising coating integrity. Traditional antifouling paints often restrict cleaning due to environmental regulations and rapid degradation. In contrast, nontoxic, hard coatings allow for regular underwater maintenance, keeping surfaces smooth and optimizing fuel efficiency over time.

This capability has proven particularly valuable for vessels operating in demanding conditions, such as high traffic coastal routes or ice-prone waters. In these environments, coatings must withstand not only biological fouling but also abrasion and impact. Long-term protective systems have demonstrated consistent performance even after years of service, with minimal need for repair or recoating.

The same principle applies to offshore assets, where accessibility is limited and maintenance interventions are complex. Structures designed to remain in service for decades benefit from coatings that can endure extended exposure without requiring replacement. By reducing the need for frequent inspections and repairs, operators can focus on operational continuity rather than maintenance logistics.

Ultimately, the move toward permanent protection reflects a broader evolution in asset management. Rather than accepting degradation as inevitable, forward-thinking operators are investing in solutions that preserve structural integrity from the outset. The result is a more predictable maintenance cycle, improved operational efficiency and a lower environmental footprint.

In practice, this shift is supported by advanced coating systems designed for specific operational challenges. Hard, nontoxic coatings such as Ecospeed enable hulls to remain smooth through regular in-water cleaning, while glassflake reinforced systems such as Ecoshield protect running gear and scrubbers against cavitation and corrosion. For offshore structures, solutions such as Ecolock provide long-term resistance to harsh marine environments. Together, these technologies illustrate how coating selection plays a central role in moving from reactive maintenance to durable, long term asset protection.■

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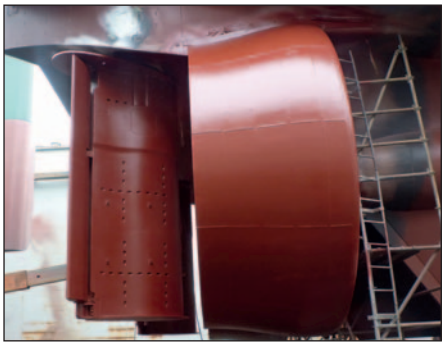

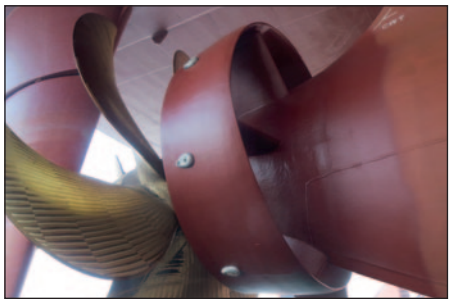

Subsea Industries NV, was founded in 1983 specifically to take care of the design, development and marketing of what has become an evolving line of underwater hull and propeller cleaning equipment as well as the line of hard hull coating systems.

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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