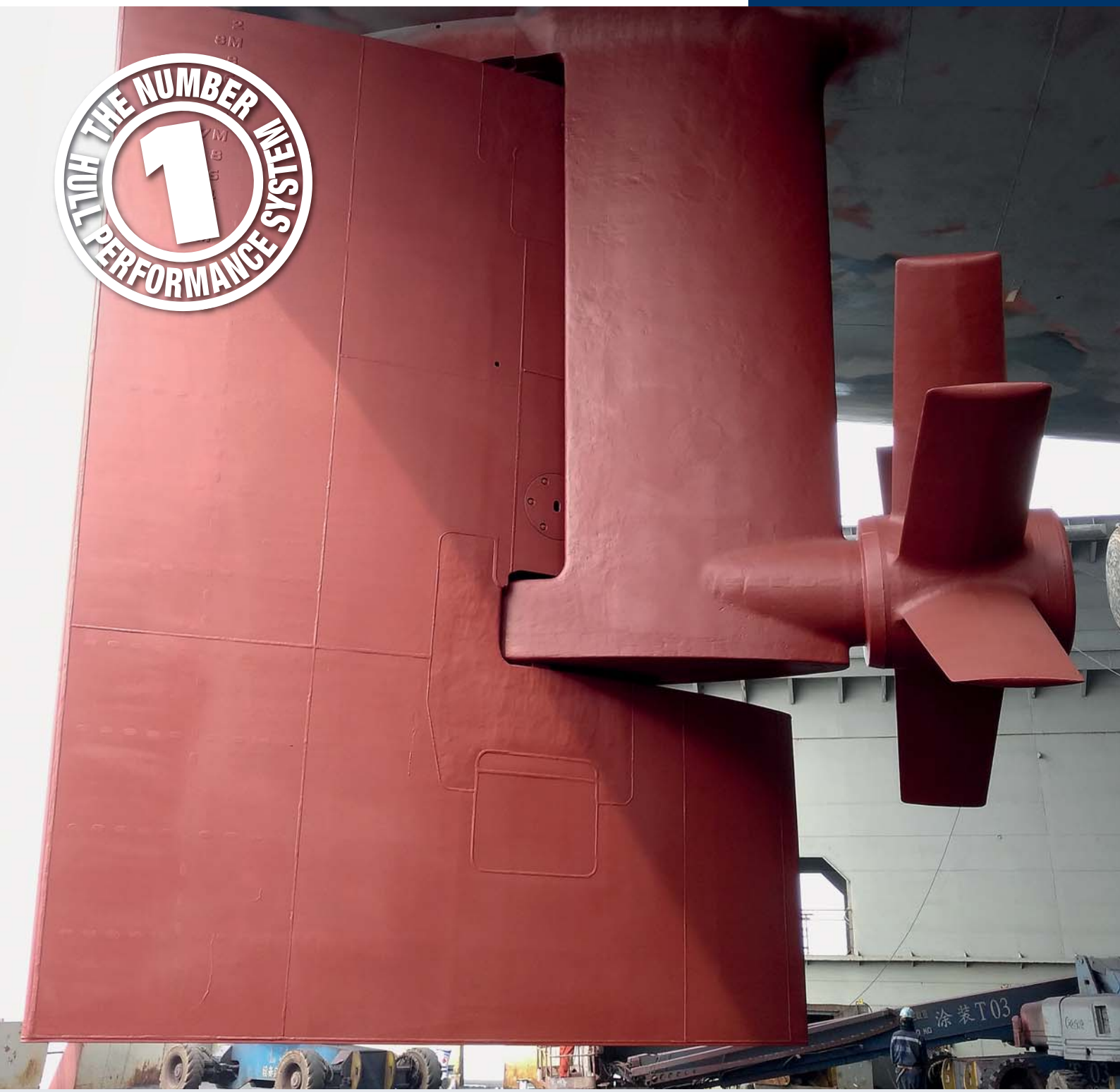
SUBSEA
PROTECTION AND PERFORMANCE

NEWS
LETTER



Corrosion damage repair made easy

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

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.

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. ■

ECOFIX®
CORROSION REPAIR

Subsea Industries NV
Phone: + 32 3 213 5318
Fax: + 32 3 213 5321
info@subind.net
www.subind.net

The end of cavitation damage on your ship's running gear

In the last few months a large number of vessels belonging to nine different owners received Ecoshield protection for their rudders, bow thruster tunnels or kort nozzles. The applications were carried out in shipyards in Turkey, Sweden, the Netherlands and China on a wide range of ships. These included vehicle carriers, roro vessels and container ships. The running gear of all of these ships will be protected against cavitation and corrosion damage for the rest of their service lives.

Not protecting rudders properly can lead to very extensive cavitation damage.

Ecoshield offers permanent protection against cavitation damage for rudders. The coating protects the rudder for the service life of the ship without need for recoating or major repair. Ecoshield is also suitable for bulbous bows, stabilizer fins, thruster nozzles and other underwater ship gear which needs special protection from corrosion.

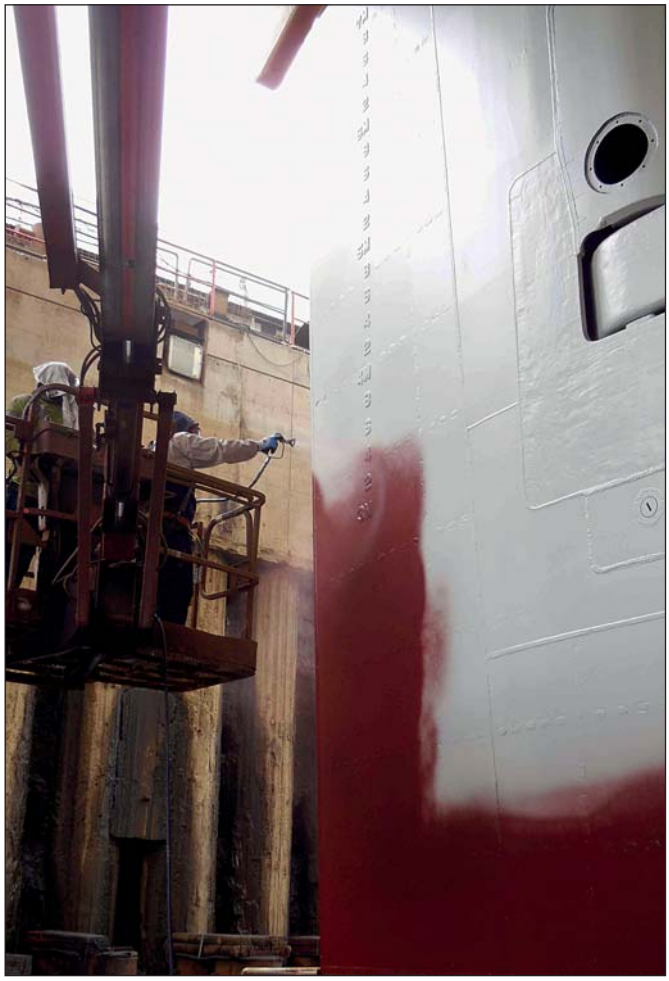
Until now the problem of cavitation damage to rudders remained unsolved. This caused erosion, pitting and sometimes complete failure, necessitating very expensive repairs or replacement. The need for repairs to rudders, involving welding and resurfacing in drydock has been almost universal. The cost of rudder maintenance and the safety hazards connected with worn and failing

Surface preparation prior to Ecoshield application.

Application of first of two identical Ecoshield layers.

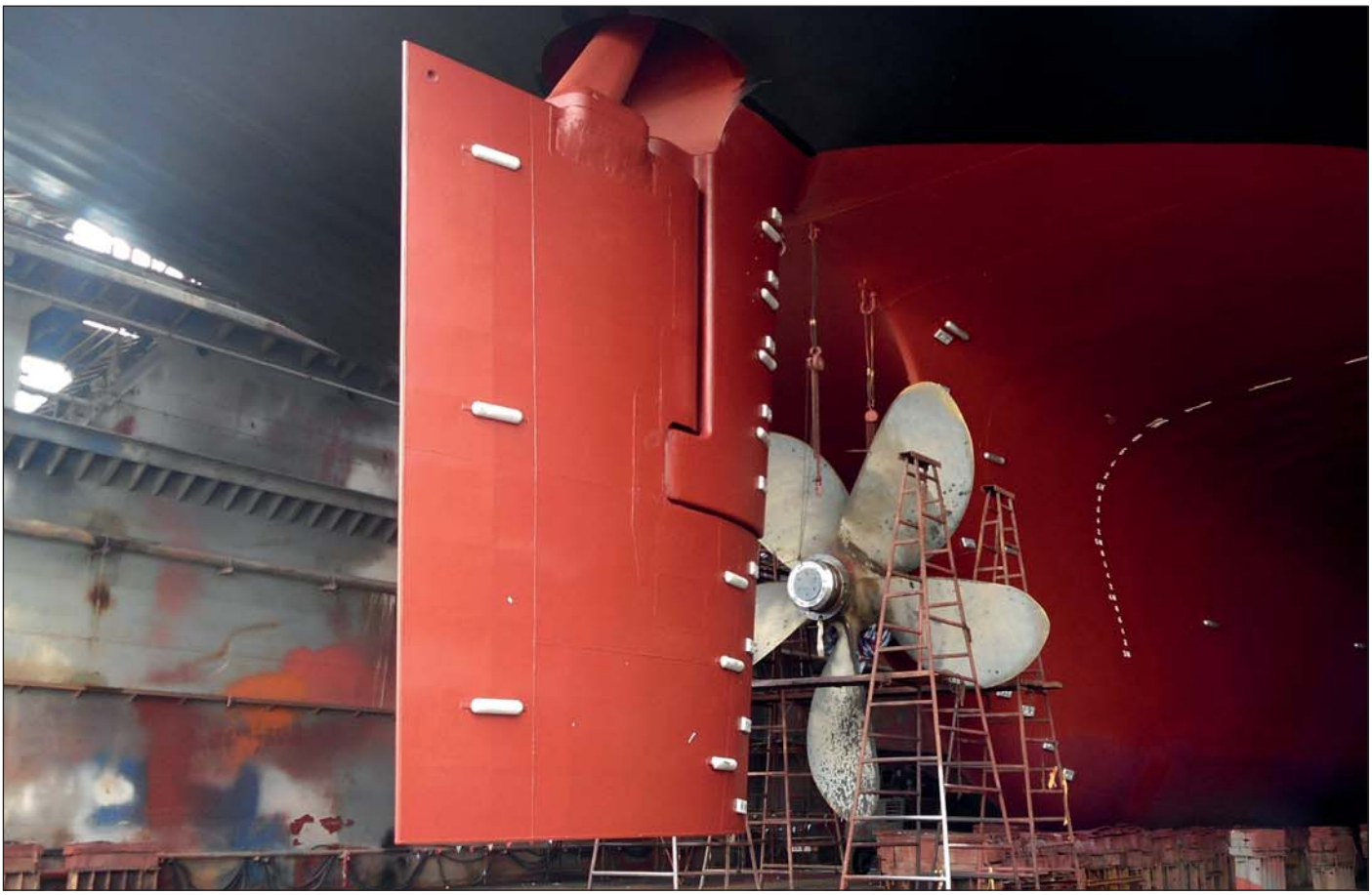
Ecoshield application can easily be fitted into a yard's schedule.

Overcoating time in between layers can be as short as three hours.



No repaint will be needed for the rest of the vessel's lifetime.

Application of second layer.



Ecoshield gives lasting protection against corrosion and cavitation damage.

rudders are out of proportion to the relatively small surface area involved. Efforts to solve this problem have taken the form of redesigning the rudder, changing its position relative to the propeller, trying various materials including stainless steel, metal facing the surface, cathodic protection and a variety of coatings. But the problem has persisted.

Groundbreaking protection

Ecoshield puts an end to these problems. The coating is a specifically reinforced version of the well-known Ecospeed nontoxic underwater ship hull coating which is designed for the entire underwater hull of any ship. Small but significant variations of the Ecospeed formula have been tested on rudders since 2002 with extraordinary results. Ships that were experiencing heavy cavitation damage to their rudders have seen no further cavitation damage erosion for over ten years (and counting) after application of Ecoshield. They show no sign that the coating will need replacement during the life of the ship.

Suited for newbuilds and existing vessels

Protection of the running gear of your ships is best begun at the newbuild phase. When a ship comes into drydock, maintenance of its stern area, especially cavitation and corrosion damage repair, can take a long time. There are strict procedures concerning blasting, painting, welding and propeller and stern tube seal work. Painting is then assigned to the end of the schedule. As a consequence it may be rushed or not done at all or else prolong the stay in drydock.

The newbuild phase is the perfect time to apply Ecoshield. However, the coating can also be used to protect vessels that have been in service for some time and are already facing cavitation and corrosion damage. Such was the case with the rudders coated over the last months.

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

Ecoshield insulates the rudder or other running gear and makes cathodic protection systems, including sacrificial anodes, unnecessary. This is evidenced by the very little wear on the anodes when a rudder coated with Ecoshield is inspected in drydock and by the fact that an

Ecoshield offers the best possible protection for a rudder's entire lifespan.

No cavitation damage will occur on rudders or running gear coated with Ecoshield.

impressed current can be turned right down with no ill effect.

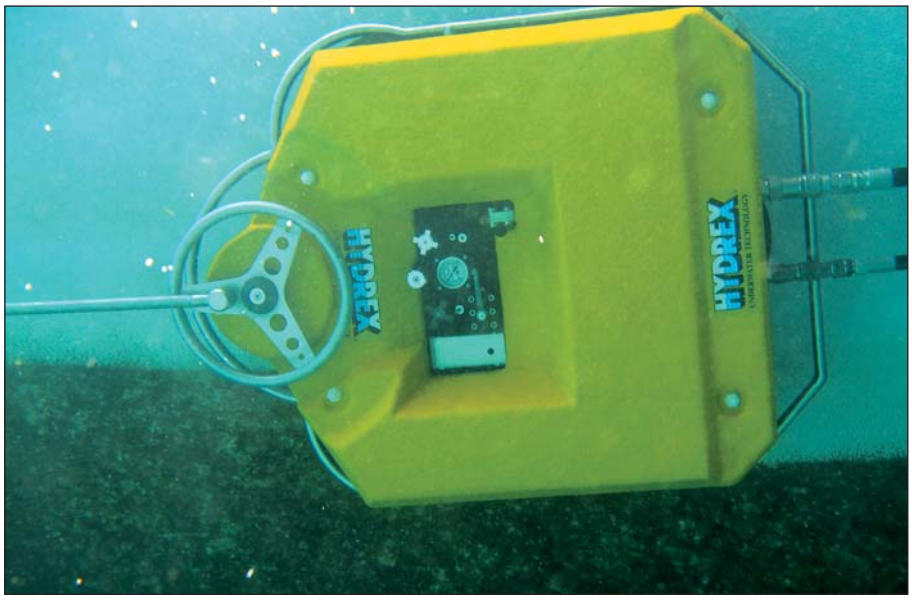
Evidence of the success of the coating is the number of companies that began by coating one rudder experimentally and have ordered Ecoshield for the running gear on other ships after seeing the results in service. Most have plans to convert their entire fleet. Shipowners who have previously applied Ecoshield to rudders on ships in service are specifying the coating for the rudders and other underwater gear on their newbuilds.

Ecoshield comes with a ten year guarantee. It is the only coating known to fully protect a rudder from all cavitation damage. ■

Thruster tunnels and other running gear can also be protected with Ecoshield.

Ecospeed, the coating for ultra long lay-ups

As a consequence of the current economic climate, more and more ship owners are forced to lay one or more of their ships up for longer periods. This has, however, no adverse effect on an Ecospeed coating which can always be restored to its optimum condition, regardless of how much fouling has attached itself to the hull while the vessel has been laying idle.

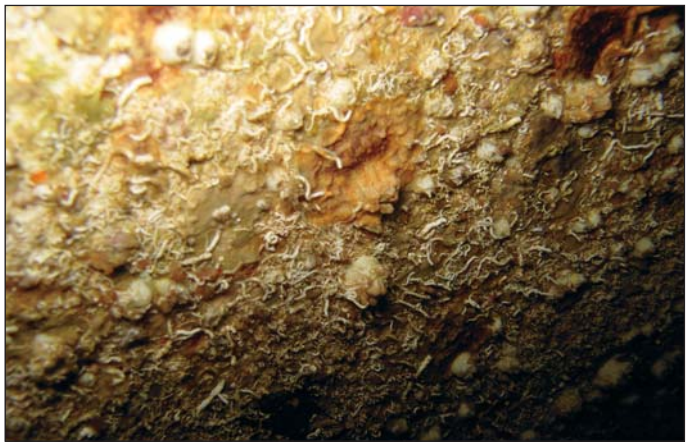


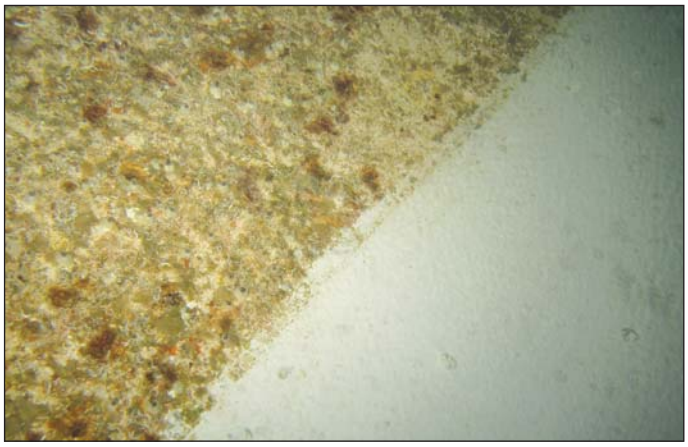
Even after long stationary periods the underwater hull of a vessel coated with Ecospeed can easily be cleaned underwater.

Ecospeed is ideally suited for ships during lay-ups because of its impermeability. This gives the coating its excellent and durable anticorrosive properties and protects the underwater hull against damage caused by any type of marine fouling. 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.

This is illustrated by a cruise ship that remained stationary in the Caribbean for seven months after it was coated with Ecospeed. After this period the coating's qualities allowed a complete removal of all fouling from the underwater hull of the vessel during an underwater cleaning without causing *any* damage to the underlying paint layers.

The coating's properties totally prevent fouling penetration, making the cleaning process extremely easy. It can be performed underwater or with controlled high pressure tools in drydock and can be repeated whenever needed during the vessel's lifespan without causing damage or deterioration in quality. The coating's surface characteristics even significantly improve with each underwater hull cleaning. This unique quality gives shipowners the opportunity to have their ship operational again and its hull restored to its optimum condition whenever needed without any additional financial setback.


Thick layer of fouling on cruise ship after laying idle in the Caribbean for seven months.


Fouling removal from cruise ship without damage to the Ecospeed 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.

www.subind.net

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Phone: + 32 3 213 5318
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