HYDREX®

UNDERWATER TECHNOLOGY

Magazine

Number *293*

In-water bow thruster repairs

Our lightweight flexible mobdocks are designed to be easily transported around the world and are used to close off the thruster tunnel on both sides, allowing divers to perform repairs and other operations in a dry environment around the bow thruster unit.

This technique enables to reinstall the propeller blades of an overhauled thruster inside the thruster tunnel after the unit has been secured or replace the blades or seals and perform repair work on a specific part without removing the unit.

Since the development of this flexible mobdock technique, numerous thruster repairs have been carried out by Hydrex diver/technicians around the world.

There is no need to send the vessel to drydock as all operations can be carried out in port or while the vessel is stationary at sea. Normal commercial activities can therefore continue without disruption.

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Editorial

Welcome to the latest edition of our Hydrex magazine. This month we write about a some of the many underwater operations our divers have carried out recently. They all serve the same purpose: to keep your vessel sailing without any unneeded hindrance to your schedule.

The first article in this magazine lists the many advantages underwater stern tube seal repairs offer to shipowners around the world. This technology has been successfully used on numerous occasions in the last 20 year.

In the second article we give an overview of some of the recent hull repairs our teams have performed around the world. These examples show the wide range of shell plating operations we can offer to our customers, all of which are carried out very fast and to the high quality and safety standards we are known for.

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ISO 9001 certified

Underwater services and technology approved by:

BUREAU VERITAS · ABS · ISO 9001 · VCA* · DNV·GL · ADC International · ClassNK · RINA · LR

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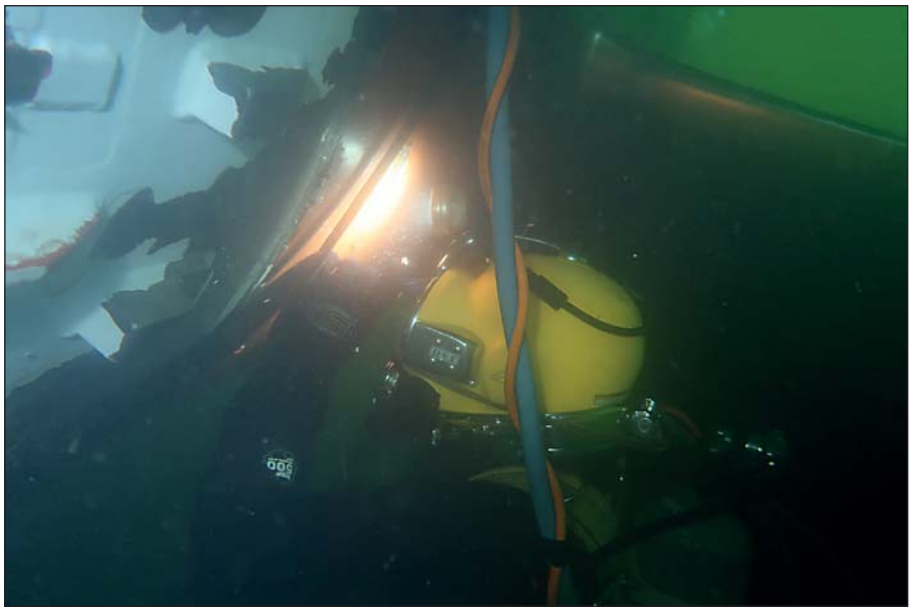
Immediate worldwide service for underwater seal repairs

We have developed a flexible mobdock repair method that enables the underwater replacement of all types and sizes of shaft seals. This technology has been successfully used for many years and just recently our diver/technicians performed stern tube seal repairs in Antwerp and Tasmania. Keep an eye out for a more detailed article on that last job in one of our upcoming magazines.



Hydrex diver working on the rope guard.

Damaged stern tube seals will cause an increasing amount of oil leaking or water ingress as the damage worsens. By replacing the seals when the damage is first discovered, we keep the down time low. The ship can keep its schedule because seal repairs can be performed during cargo operations. We do this by creating a dry underwater working environment around the shaft.

One of our divers working inside our flexible mobdock.

It is not always straightforward to replace seals, because there can be quite a bit of variation in the configurations of the stern tube itself. There can also be complications with the liners, which can be worn down and show grooves. All this is routinely handled by our teams on the jobs.

All shaft seal repairs we offer are performed in cooperation with the OEM. We usually supply the equipment but the owner is free to supply his own OEM seals. We can handle all type of seals from all manufacturers.

Rope guard brought to shore during nightshift in Antwerp.

Our workboats are ready for immediate deployment to operations in Belgium and the Netherlands.

New seal bonded and ready for installation.

Below you can find an example of a stern tube seal repair one of our teams performed.

Leaking seal assembly fixed underwater in Antwerp

One of our diver/technician teams carried out an underwater stern tube seal repair on a 300-meter container vessel berthed in Antwerp. The ship was suffering from an oil leak, making an immediate repair necessary. Using a Hydrex flexible mobdock the team was able to carry out the entire operation on-site and underwater, saving the owner an expensive and time-consuming trip to dry-dock.

Once the operation was confirmed all preparations were handled swiftly and the lightweight equipment was mobilized immediately from our headquarters in Antwerp. After arriving on-site, the diving team first set up a monitoring station next to the vessel. The operation then started with the removal of the rope guard and a thorough underwater

Reinstalling the rope guard.

Hydrex diver installing the seal assembly after replacement of the seals.

Team leader following the operation from inside the monitoring station.

inspection of the stern tube seal assembly.

After the inspection the divers cleaned the assembly and installed the flexible mobdock. The split ring was then removed and brought to the surface to be cleaned. Next the divers removed the first seal and replaced it with a new one which was bonded. The procedure was repeated with the other seals.

A successful operation was concluded with leakage tests, the removal of the flexible mobdock and the reinstallation of the rope guard.

By organizing everything from start to finish the owner did not have to worry about making any arrangements for the repair. After the seals had been successfully replaced he could sail his vessel to its next stop free of oil leaks. ■

If you have received this magazine at the wrong address or if your company is going to move, please let us know.

You can contact us at:
hydrex@hydrex.be
or at
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KEEPING SHIPS IN BUSINESS

Scrubber pipe repairs and lasting protection

Exhaust scrubbers filter out all harmful toxins from exhaust gasses of marine diesel engines. These hazardous pollutants can severely corrode the pipes of the scrubber. Using the experience we have accumulated over the years allows us to assist you at moment's notice if this happens.

We offer a full package to owners that are experiencing similar damage. Not only can we replace the corroded exhaust pipe while your vessel stays on schedule, but we can make sure that you will not have to call us again in a few months time for the same problem.

Contact us for more information on scrubber pipe replacements or other underwater repairs. We are at your disposal 24/7.

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High quality in-water ship re

pair and fuel saving services

Sea valves, sea chests and gratings
In-water inspection, cleaning and repair of intakes and valves, installation of new sea chests, condensers and coolers afloat.

Stern tube seal replacement
Permanent inwater stern tube seal replacements and repairs with the unique Hydrex flexible mobdock technique.

Propeller operations
Propeller cleaning with special tools, on-site blade straightening and cropping. Permanent repairs to all types of propellers or installation of propeller cone fins.

Rudder repairs
Permanent on-site repairs on all types of rudders with groundbreaking new technology.

Pintle and bushing repair and replacements

Shell plating repairs across Europe

Over the last few months our teams traveled across Europe to perform hull repairs on a wide range of vessels, including a cruise ship, a container vessel, a drill ship, a roro vessel and a tanker. In this article we give you a summary of a few operations to illustrate the diversity of shell plating repairs our diver/technicians are trained for.

We offer class approved hull repairs combining both underwater cofferdam installation and inside dry welding. Both parts of such an operation are performed by the same team of in-house trained diver/welders working at the highest quality standards.

Removing damaged shell plating on tanker in Rotterdam.

New insert positioned and ready for welding.

Insert welded and ready for NDT.

Insert repairs in Rotterdam and Palermo

In Rotterdam our men performed insert repairs on a 145-meter tanker and a 300-meter container vessel. These operations were carried out afloat with the use of an external cofferdam.

We have a wide range of standard cofferdams available at our offices, but a tailor-made cofferdam can also be created to fit a specific hull shape. This was the case for the insert repair on a 228-meter drill ship in Palermo, Italy.

Our divers start an insert operation by installing a cofferdam on the waterside of the affected plating. Next they remove any frame, pipe or other obstacle covering the area on

Cofferdam installed on the hull of tanker in Rotterdam.

the inside. The damaged plating is cleaned and prepared for the operation.

A section of the damaged plating is then removed. The size of this area is decided in communication with the classification society and the owner. Next our team prepares the edges of the hole for the insert and they position the new plate. The insert is then welded following the Hydrex procedure for insert plates, using a full penetration weld.

Next an independent inspector carries out ultrasonic testing and the repair is approved by the classification surveyor who is present during the operation. Finally our men reinstall any obstacles they removed and detach the cofferdam from the hull.

Crack repair in Zeebrugge

For smaller damages like crack repairs, it is not always necessary to install a new insert. This was the case for a 180-meter roro vessel in Zeebrugge, Belgium that had a leak in its ballast tank. As our fast response centers have a large stock of state-of-the-art equipment ready, mobilization for smaller operations like this can be almost immediately.

When the work area was certified gas free, our divers started the operation with an inspection of the damaged area and this on both sides of the hull. Next the team installed a cofferdam on the outside of the hull. This allowed them to perform work on the crack inside the ballast tank without water ingress.

Frame reinstalled over new insert.

Damaged shell plating on container ship in Rotterdam.

Hydrex underwater inspections

Underwater inspections are an essential aspect of ship repairs. Building upon conventional technical skills and know-how while also taking advantage of the latest technology, Hydrex offers a unique hull monitoring service to its customers. This gives ship owners total control of the underwater hull and the underwater gear of their vessels. An informed decision can then be made concerning any required follow-up action. Catching problems early can save you much money in the long run.

Hydrex diver/technicians can carry out inspections underwater and on-site very swiftly without disturbing the vessel's sailing schedule.

With fuel costs amounting to 40% of operational expenses and continuing to rise, reducing fuel consumption is a vital concern of ship owners. This is the reason why hull monitoring pays for itself. Underwater hull roughness, marine fouling, bent propellers and poor paint condition are all factors that will increase fuel usage due to the drag or inefficiency created by the damaged or affected area. The data gathered can then be used to see if actions are required.

Our diver/technicians are trained for a wide range of operations and they can carry out the inspections in port or at anchor anywhere in the world.

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New insert secured and ready for welding.

New insert installed on container ship.

Hydrex diver during underwater operation in Italy.

Tailor-made cofferdam on drill ship in Palermo.

Leaking crack on roro ship in Zeebrugge.

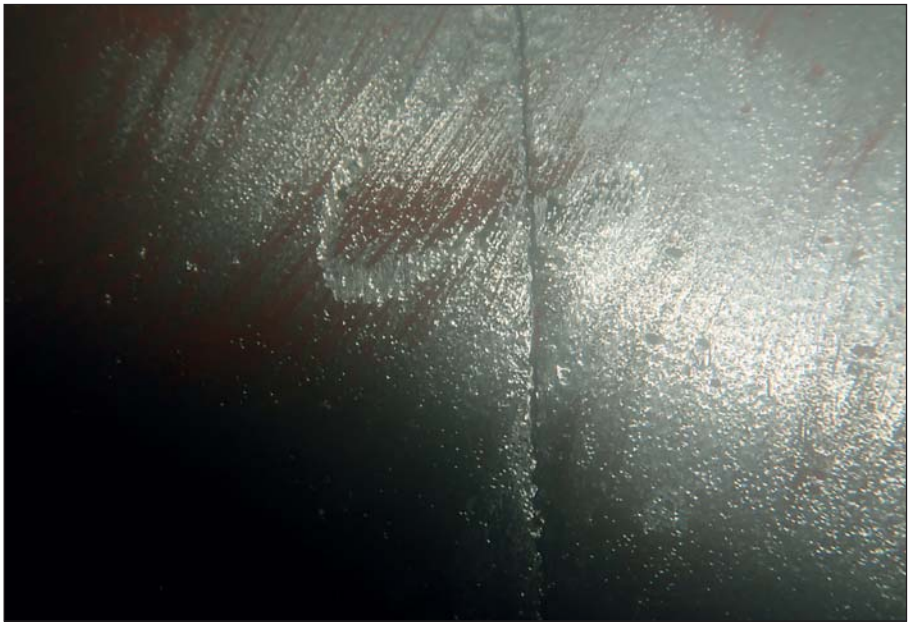
The team then removed the frames to get access to the crack and take the exact measurements: 510 mm. The crack was ground out over its entire length and filled with our class approved full penetration welding.

The repair was inspected and approved by the attending class surveyor. Our team concluded the repair by removing the cofferdam.

As a result of this temporary repair the owner of the vessel did not have to go off schedule for an emergency visit to drydock but could make arrangements for a follow up repair at a more convenient time and location.

Conclusion

We have the know-how and experience needed to find the best solution



Crack seen from waterside.

Grinding out crack on roro ship.

Ground out crack.

Crack during welding.

for any problem you might encounter with your ships. This can be a simple routine repair or a unique complex one, as illustrated by these case studies.

All repairs are performed at the highest technical standards by our teams following in-house developed procedures. These operations are approved by the major classification societies.

Our goal is to keep you sailing with no delay.■

Contact us to find out how we can assist you. We are available 24/7.

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Underwater propeller repairs

When damage to propellers occurs due to impact with ice and other debris we can help you, even if the damage is quite extensive. Our teams can restore the propeller's balance and efficiency.

By taking advantage of the in-house developed cold straightening technique, damaged blades can be straightened underwater, allowing the ship to return to commercial operations without the need to drydock.

If straightening is not an option, the affected area of the blade will be cropped. This is done to achieve the greatest possible efficiency. Cropping is carried out using our propeller blade cutting equipment.

Our teams can also carry out any other repair work on the propeller. Examples of this are the removal and reinstallation of entire propeller blades or replacement of the propeller seal ring.

Contact us for more information on underwater propeller repairs. We are at your disposal 24/7.

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