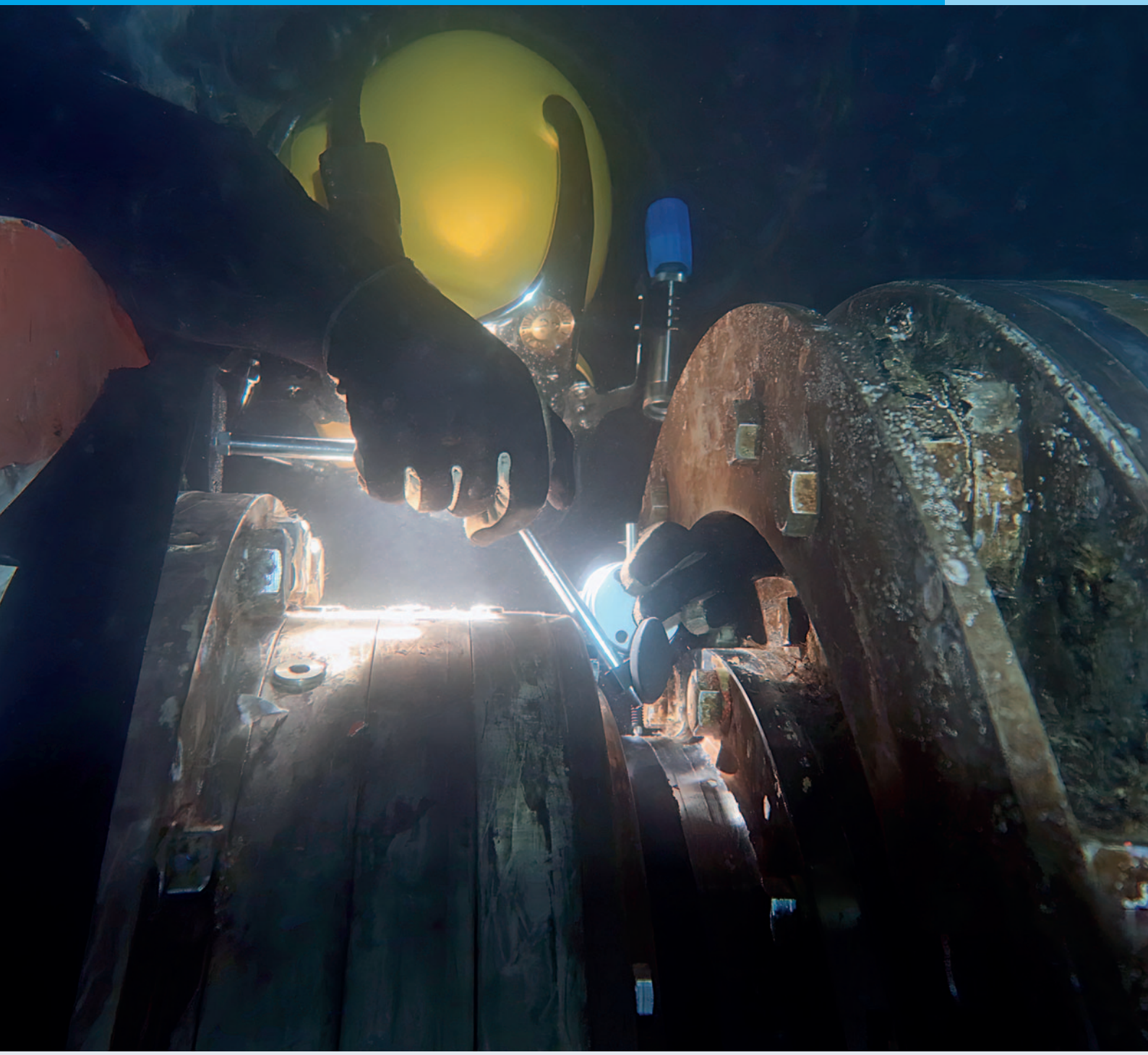
HYDREX®

UNDERWATER TECHNOLOGY

Magazine

Number *331*



Scrubber pipe repairs and lasting protection

Exhaust scrubbers filter out all harmful toxins from exhaust gases 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. This is done by coating the pipes with a highly corrosion resistant coating called Ecospeed.

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

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Editorial

In June, Hydrex and Subsea Industries took part in Posidonia 2024, together with our agent for Greece, N. Bogdanos Marine Bureau. The exhibition was very successful for everyone involved and we are already looking forward to the next edition.

Many networking opportunities presented themselves throughout the exhibition and the N. Bogdanos booth was bustling with activity from start to finish. Our representatives met many interesting people from the shipping industry. We reinforced existing business relationships while also forging new ones.

We would like to thank all of you who visited us there for coming, and we look forward to working with you on an ongoing basis. We would also like to invite you to come and visit us during SMM 2024 at the Holland Pavilion in Hall B7, booth 703.

We hope that this magazine will encourage you to contact us if you have a problem or need maintenance work carried out. We are ready to assist you 24/7.

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ISO 9001 & 45001 certified

Underwater services and technology approved by:

BUREAU VERITAS · ABS SERVICE SUPPLIER · LRQA CERTIFIED ISO 9001 · LRQA CERTIFIED ISO 45001 · APPROVED SERVICE SUPPLIER DNV DNV.COM/AF · ADC International · ClassNK · RINA · LR

Table of contents

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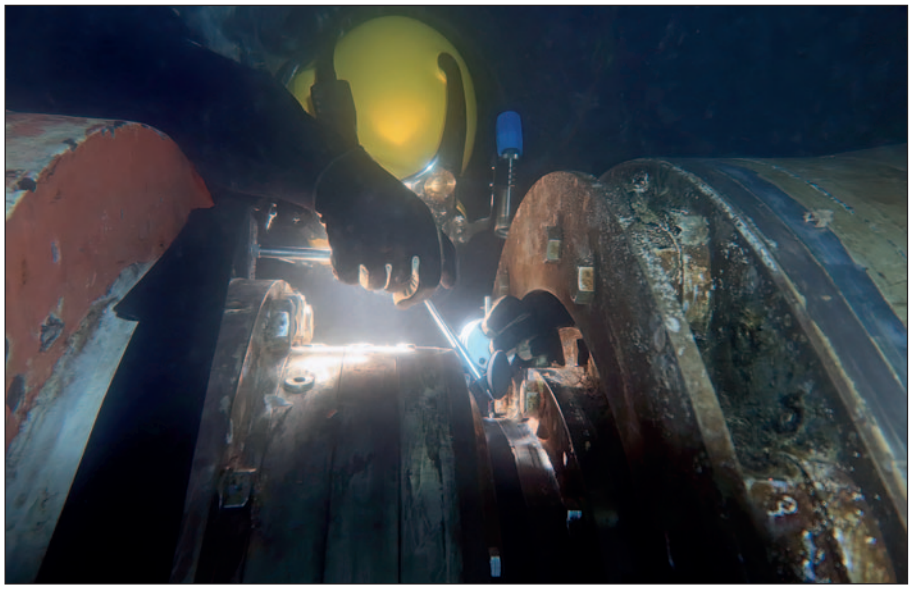
Double stern tube seal repair on roro vessel in Tasmania

Earlier this year our diver/technician teams carried out a double underwater stern tube seal repair on a roro ship berthed in Port of Burnie, Tasmania. The ship was leaking oil, making an on-site repair necessary. Using two Hydrex flexible mobdocks simultaneously the team was able to carry out the entire operation on-site and underwater, saving the owner an expensive and time-consuming trip to drydock.

After arriving on-site, the diving team first set up a monitoring station next to the vessel. The operation then started with a thorough underwater inspection of the stern tube seal assemblies.

After the inspection the divers cleaned the assemblies and installed both flexible mobdocks. By doing this they created a dry underwater environment so that they could work in drydock-like conditions.

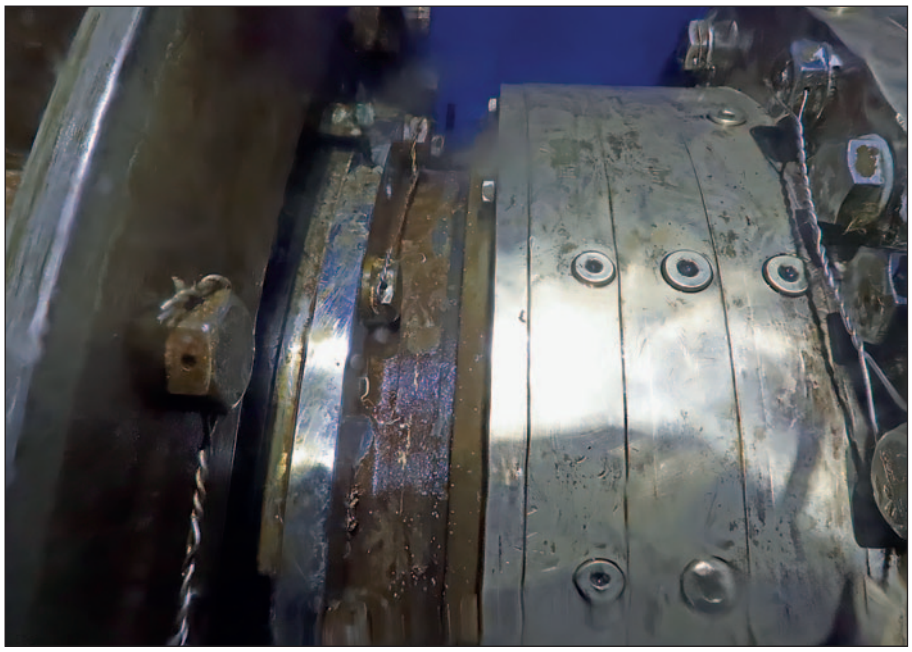
One of the seal assemblies after removal of the rope guard, prior to the repair.



Hydrex diver taking shaft readings.

The exact same procedure was followed on both stern tube seal assemblies. The split ring was first disconnected and brought to the surface to be cleaned. After cleaning the entire assembly, the divers removed the first seal and replaced it with a new one which was then bonded. This was done in cooperation with the supervising OEM technician. The procedure was repeated with the other three seals.

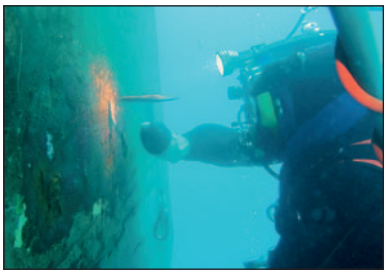
A successful operation was concluded with leakage tests, the removal of the flexible mobdocks and the rein-



Damaged running area of the seals.

Hydrex diver working inside the mobdock.

Hydrex under-water 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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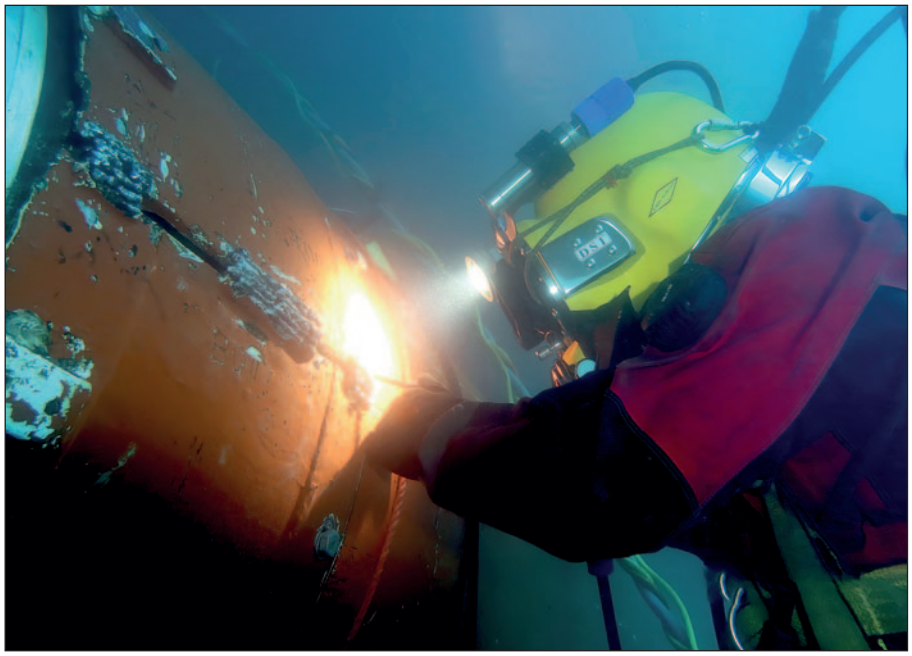
One of our divers during reinstallation of the first rope guard.



Reinstallation of the second rope guard.

stallation of the rope guards.

Long distance a stimulus, not a hindrance

Despite the remote location of the roro vessel, our technical department was able to make all practical logistic arrangements and organize a mobilization of the equipment very swiftly. In the recent past we have carried out several operations in Australia. On several occasions we mobilized to the same location for an identical job on this ship and its sister vessel, so the customer knew we could perform the operation fast, safely and to the highest quality standards.

Taking advantage of flexible mob-docks and years of experience our men carried out the repair while the ship stayed afloat. Because all the required material is ready to be transported at all times, no time is lost making preparations.

With Hydrex 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. ■

Should you ever encounter a similar situation, give us a call. We can then tell you if an underwater repair is feasible and, if so, start working on its handling.

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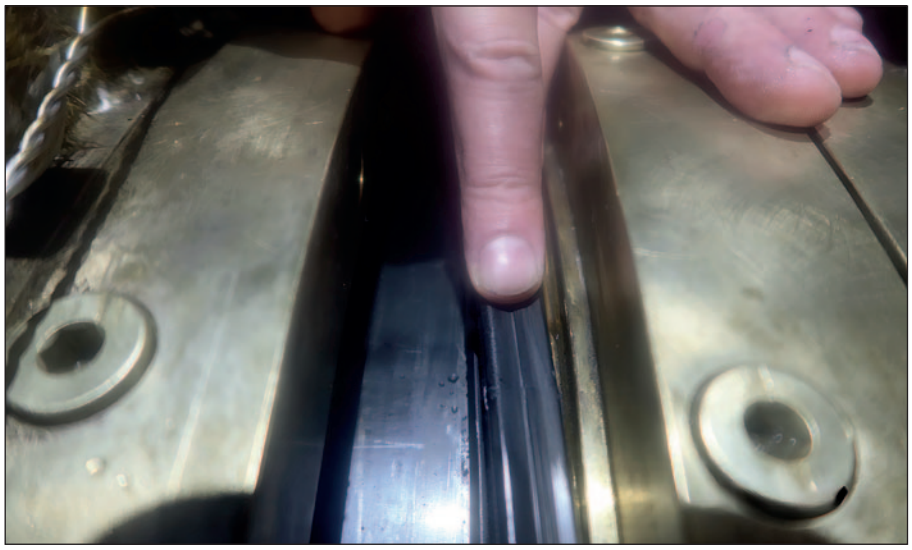
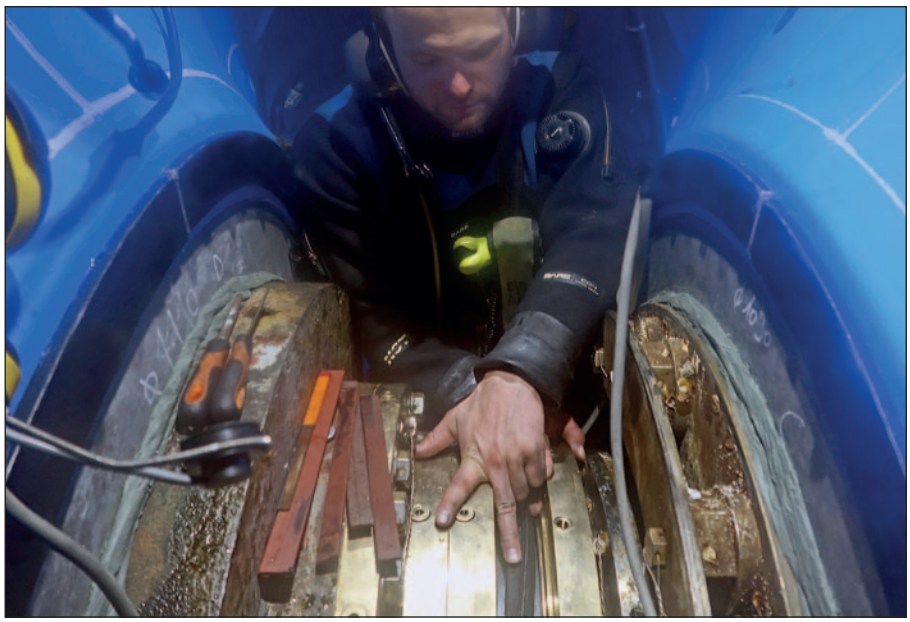
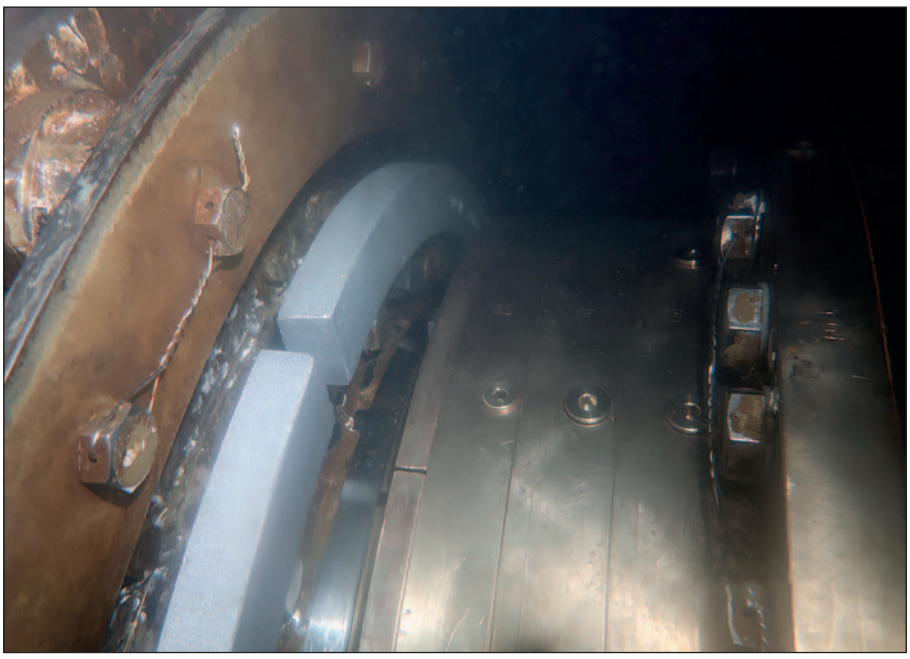


The seals were replaced and bonded one by one.



Two mobdocks were installed at the same time to work on both assemblies simultaneously.



Assembly after replacement of the stern tube seals.

High quality in-water ship re

Permanent insert repairs
Specialist class approved insert repair work carried out on a permanent basis. Providing a real alternative to drydock.

Emergency repairs
Fast response emergency repairs worldwide.

Inwater video inspections
Professional video surveys provide a reality of the problem and enable owners and classification surveyors to directly diagnose any problems.

Echo sounder inspection and replacement

Speed log
Checks for damage, marine fouling and replacement.

Bow thruster and propellers
Permanent on-site repair, maintenance and replacement with the award winning flexible mobdock technique.

Hull cleaning on suitable coatings

Bilge keel
Check and repair broken welds, renewal of sacrificial anodes.

pair and fuel saving services

Shell plating repairs in Belgium, the Netherlands and Trinidad

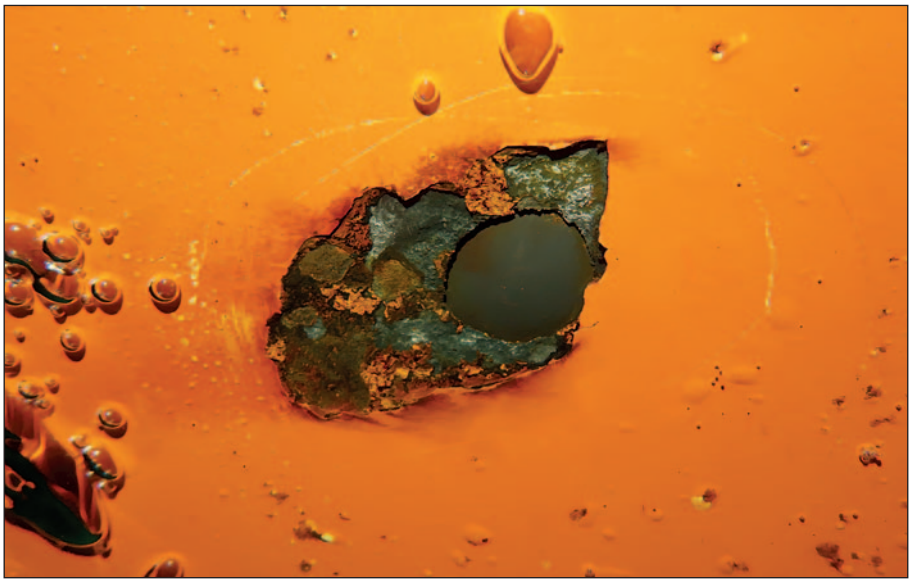
Over the last few months our teams traveled across the ocean to Port of Spain, Trinidad and just around the corner from our headquarters to Zeebrugge and Amsterdam to perform hull repairs on a car carrier and two tankers. These operations illustrate the diversity of shell plating repairs our diver/technicians 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.

Insert repairs in Port of Spain

A 164-meter chemical tanker needed to have an insert installed on a damaged section of its bottom plate.

New insert prepared at our workshop.

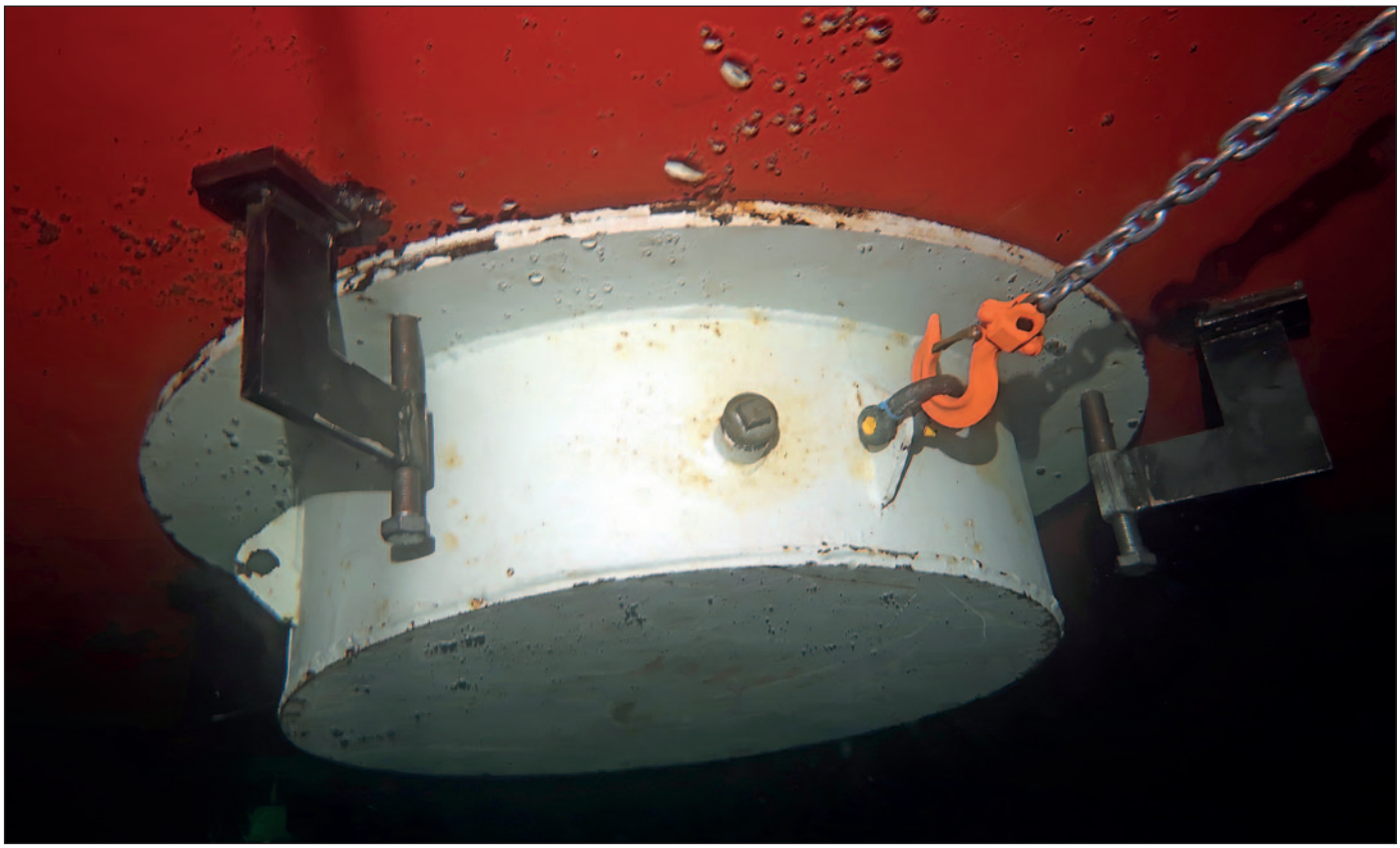


Damage seen from the water side.

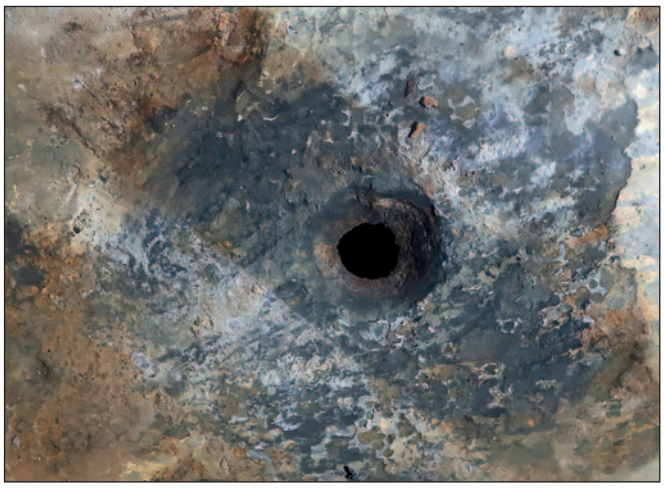
A team of our diver/technicians therefore mobilized to Port of Spain, Trinidad to perform on-site repairs.

The damaged plating was underneath the sounding pipe in one of the ballast tanks. A temporary repair had been performed, but a permanent repair was needed to avoid going to drydock.

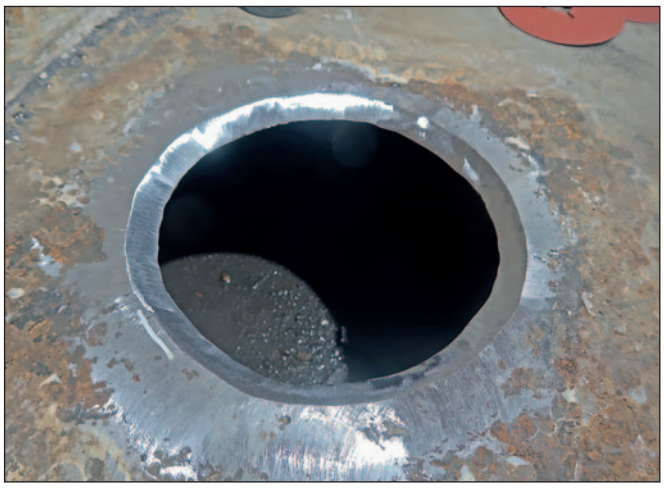
After a preliminary inspection, our divers started the insert operation by installing a cofferdam on the waterside of the affected plating. Next, they cleaned the damaged



Cofferdam installed over the affected area.



Hole in bottom plating of tanker in Trinidad.



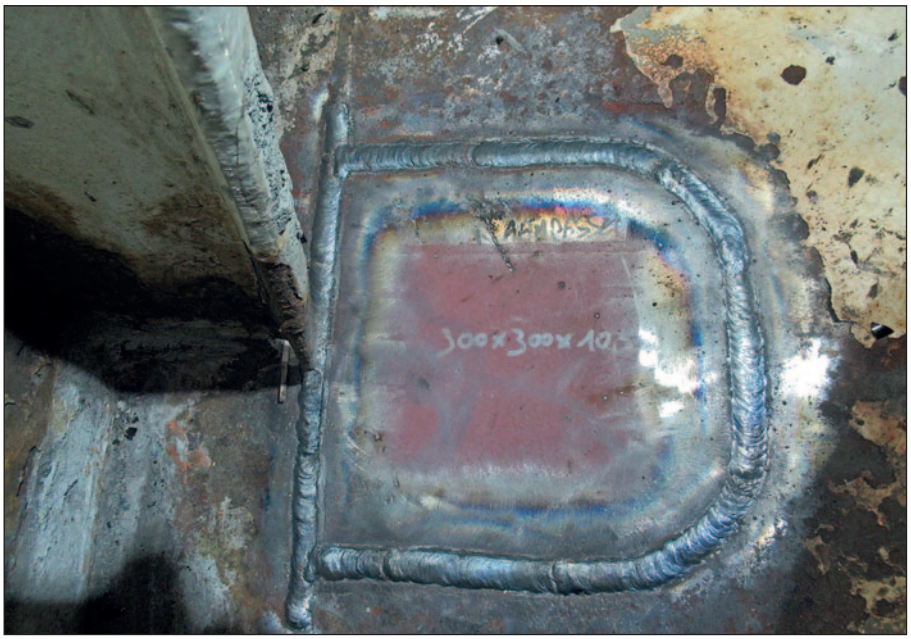
The damaged area was removed and the edge of the hole was prepared for installation of the new insert.

Fully welded new insert.

Independent ultrasonic testing.

Insert with full penetration weld seen from the water side.

Hydrex welder during operation in Amsterdam.



New insert installed on tanker in the Netherlands.

Diver getting ready for operation in Zeebrugge.

Crack on car carrier after being ground out.

One of our welders during crack repair in Zeebrugge.

Crack repair after reinstallation of the longitudinal frame.

plating and prepared the area for the operation.

A round section of the damaged plating with a diameter of 200 mm was then removed. The size of this area was decided in communication with the classification society and the owner. Next our team prepared the edges of the hole for the insert, and positioned the new plate. The insert was then welded following the Hydrex procedure for insert plates, using a full penetration weld.

An independent inspector carried out ultrasonic testing and the repair was approved by the classification surveyor present during the operation. Finally, our men detached the cofferdam from the hull.

Repair in the engine room of a tanker in Amsterdam

A similar operation was performed close to home on a 144-meter oil tanker during its stop in Amsterdam. In this case the damage was situated in the ship's engine room and an insert measuring 300 by 300 mm was installed.

The same standard procedure as in Trinidad was used. Our divers have carried out many insert repairs on all types of ships and in all areas of the hull, so they finished the operation very quickly without any delay.

Crack repair in Zeebrugge

For smaller damage such as crack repairs, it is not always necessary to install a new insert. This was the case for a 229-meter car carrier in Zeebrugge, Belgium that had a leak in its forepeak 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 immediate.

When the work area was certified gas free, our divers started the operation with an inspection of the damaged area 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.

The team then removed part of the longitudinal frame to gain access to the crack and take the exact measurements. The crack was ground out over its entire length and filled with our class approved full penetration welding.

The repair was inspected by an independent inspector and approved by the attending class surveyor. Our team concluded the repair by reinstalling the frame and 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 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 to 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. ■

If you have any questions regarding a possible hull repair, do not hesitate to contact us. We are at your disposal 24/7 and ready to mobilize almost immediately.

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Grade A wet welding certificates

We can carry out classification certified grade A wet welding. To guarantee the required high standard of these underwater welds, NDT tests were performed by ABS surveyors before the certificate was awarded.

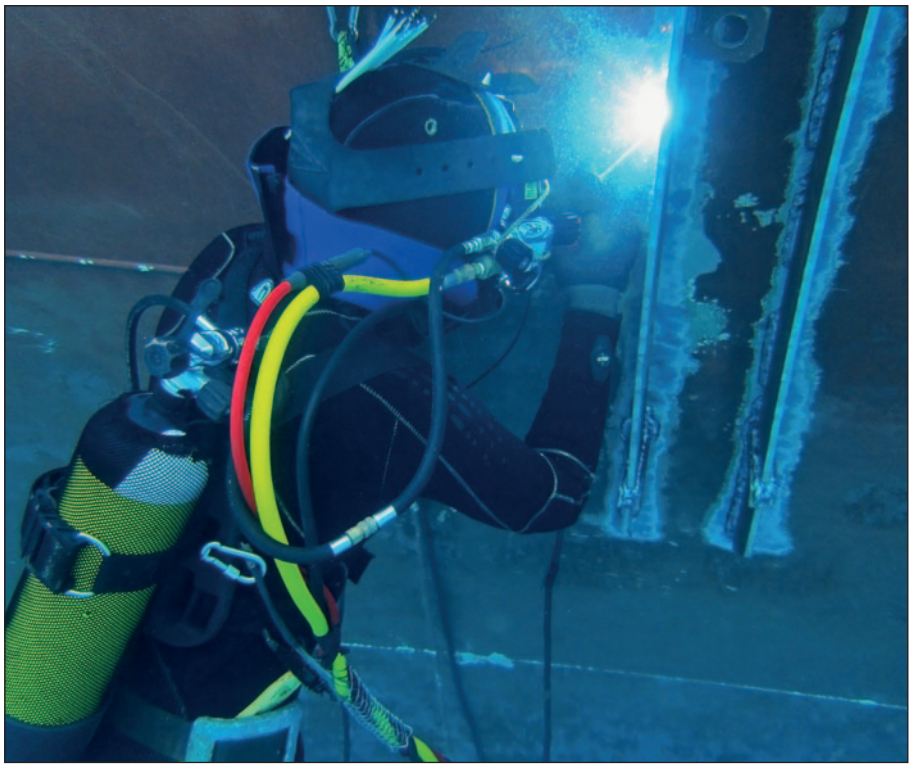
The certificate was given to carry out grade A *groove welding* underwater. Cavitation or corrosion damage on rudders, clad welding, rope guard repairs, mewis duct repairs, … can now be done with permanent welding.

With a class B weld regular inspection of the weld is required. With class A welding the deadline for an inspection is much longer. This is decided by the attending surveyor on a case by case basis.

Any required inspection will be for the underlying problem causing the damage and not for the welding work. An internal structural problem causing damage will not always be handled after the repair and will need to be followed up. For instance, doubler repairs can never be permanent because the doubler is installed over the damaged plating instead of replacing it (as is the case with insert repairs).

With class A underwater welding only a note is made stating that the affected area needs to be looked at during the next scheduled inspection. This is very important for tankers as a clean class certificate is requested by most charterers.

Even for non-class items the certificate is useful because it shows our customers that our diver/welders can carry out high quality underwater welding work. This is a major benefit for offshore units where high quality standards need to be verified before welding operations like doubler repairs can be performed. ■



We have received the approval to carry out classification certified grade A wet welding.

Weld seams of doubler plate installed over damaged hull area.

Inwater 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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