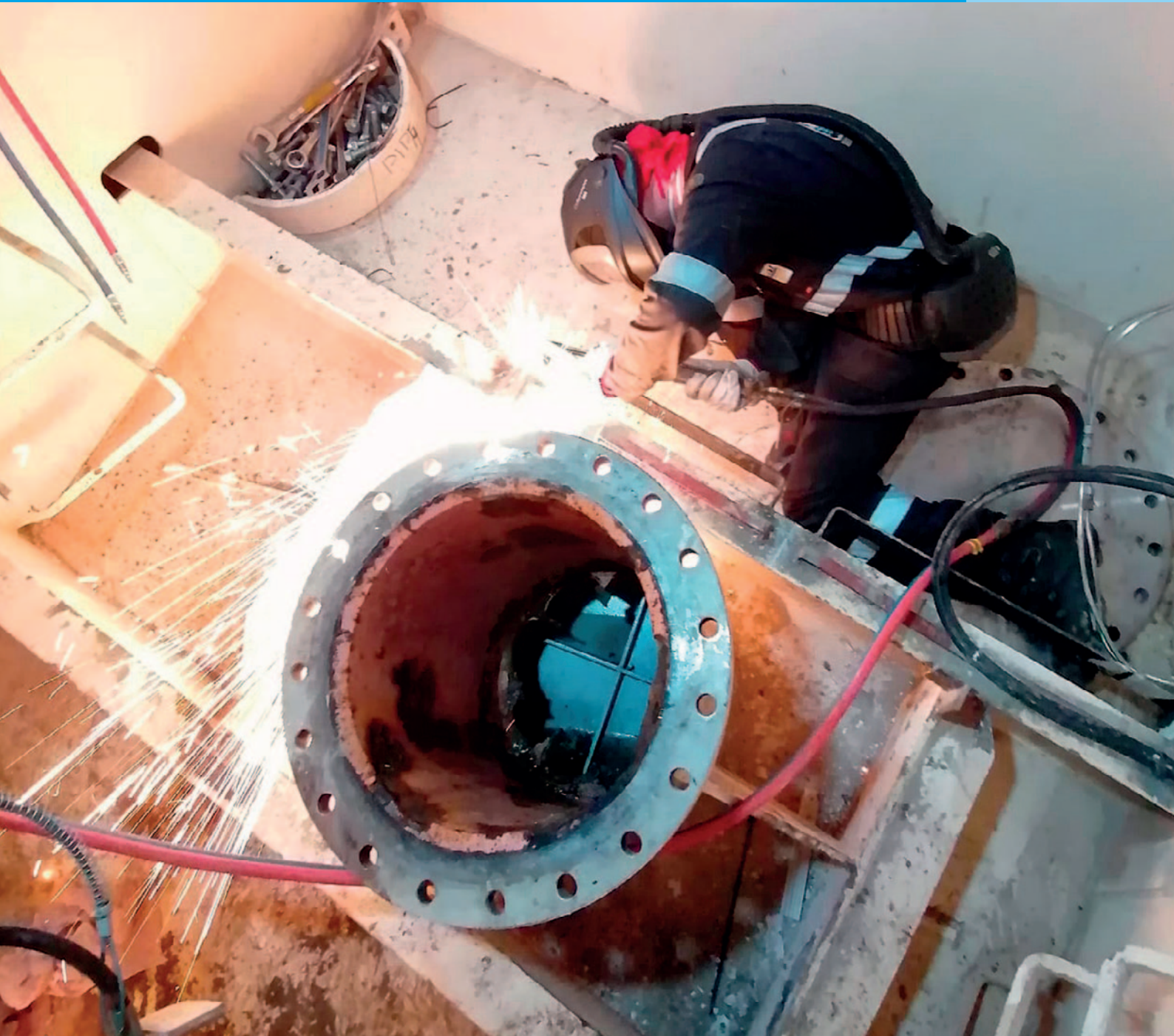


HYDREX[®]

UNDERWATER TECHNOLOGY

Magazine

Number 297



Scrubber overboard pipe repairs in Belgium, France, Spain and Malta.....	4
High quality in-water repair and fuel saving services.....	8
Double stern tube seal repair on pipe laying vessel in Rotterdam	11
Large fuel savings with new propeller surface treatment technique.....	14

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.

HYDREX
UNDERWATER TECHNOLOGY

+ 32 3 213 5300 (24/7)
hydrex@hydrex.be
www.hydrex.be

Editorial



Welcome to the latest issue of our monthly magazine. In it we write about a few of the many underwater repair operations our diver/technician teams performed recently.

In the first article you can read about two scrubber repairs we carried out. Using the experience we have accumulated over the years allows us to assist you at moment's notice if you experience a corroded scrubber pipe.

The second article describes the replacement of the damaged seals of both stern tube assemblies of a pipe laying vessel in Rotterdam.

The articles in this magazine cover only a small section of the wide

range of services we can offer to our customers. If you want to learn more about the other ways in which we can assist you, give us a call. My team will gladly give you all the information you need. You can also visit our website for a more thorough overview of our underwater repair and maintenance services.

As always we are on call and remain at your disposal 24/7.

Hydrex founder
Boud Van Rompay
bvr@hydrex.be
www.hydrex.be

Table of contents



Scrubber overboard pipe repairs in Belgium, France, Spain and Malta

4-7



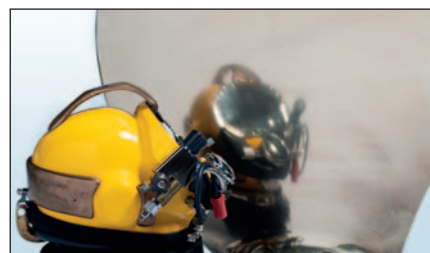
High quality in-water repair and fuel saving services

8-9



Double stern tube seal repair on pipe laying vessel in Rotterdam

11-13



Large fuel savings with new propeller surface treatment technique

14

ISO 9001 certified

Underwater services and technology approved by:



**BUREAU
VERITAS**



ClassNK



HYDREX
UNDERWATER TECHNOLOGY

To receive a free copy, e-mail to:
hydrex@hydrex.be



Scrubber overboard pipe repairs in Belgium, France, Spain and Malta

Recently our diver/technicians carried out scrubber overboard pipe repairs in ports in Belgium, France, Malta and Spain. On a 397-meter container ship two pipes were replaced while one pipe was replaced on an oil tanker. In all cases the pipes were protected with a corrosion resistant coating produced by Subsea Industries.

Exhaust scrubbers are systems that filter out all harmful toxins from exhaust gasses of marine diesel engines. These can severely corrode the pipes of the scrubber which can result in water ingress if not handled quickly enough.

In the examples below all pipes needed to be replaced completely. They were constructed at our ware-



New scrubber pipe on tanker after welding.

house in Antwerp. Our divers are certified wet and dry welders as well as technicians which allowed us to offer full repairs from start to finish

to each of the customers.

The inside of the pipes were coated with Ecospeed to protect them against corrosion. This product is produced by Subsea Industries (www.subind.net) and is highly corrosion resistant. Taking into account the nature of the process taking place inside a scrubber, this is essential for a lasting protection of the pipe. The coating can also be used to protect a newly installed scrubber system from day one.

Fast mobilization

A team traveled to the oil tanker's location in Antwerp. After arriving at the ship they first performed an inspection of the damaged areas on both the waterside and the onboard side of the hull.



Final work on the flange of the new scrubber pipe in Antwerp.



New scrubber pipe coated with Ecospeed.



Removing the old scrubber pipe.

Permanent in-water rudder repairs now possible without drydocking



Hydrex has developed an entirely new method enabling permanent repairs of rudders without drydocking the ship. Permanent repairs were hitherto not possible and ships had to drydock in case a major defect was found. The newly designed equipment is light-weight and can be mobilized very rapidly in our special flight containers.

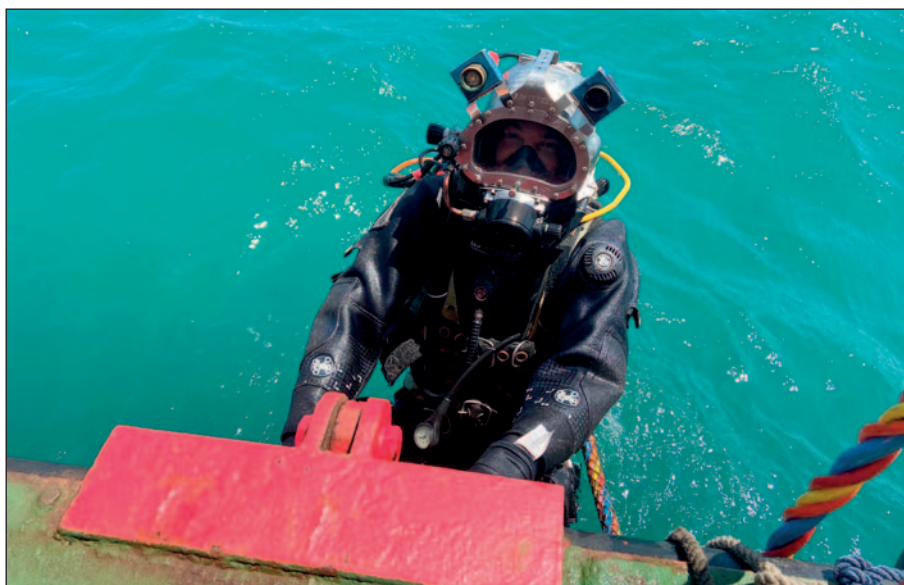
Major defects on rudders very often cause unscheduled drydocking of ships. The new method designed by our technical department allows engineers, welders and inspectors to perform their tasks in dry conditions. Class approved permanent repairs on-site, without moving the ship, are now possible and commercial operations can continue. Steel repairs and replacements can be performed and pintle and bushing defects can be solved without the loss of time and money associated with drydocking.

The equipment can be mobilized within hours to any port in the world and is available for rapid mobilization from the Hydrex headquarters in Antwerp.

HYDREX
UNDERWATER TECHNOLOGY



Independent inspector checking the welds.



Hydrex diver after underwater operation.

Our diver/welders then sealed off the outlet of the overboard pipe. This was done with a custom cofferdam designed and constructed at our workshop.

The stub piece of the scrubber pipe was then removed and replaced with a new one. It was positioned and secured with a full penetration weld. When the welding was complete the surface was cleaned and an MPI was carried out by an independent inspector.

Adapting to the customer's schedule

The operation on the container ship was almost identical to the repair described above. However, the vessel was on a very tight schedule and it was essential that the ship could keep to this schedule during the repair. For this reason we split up the operation in several stages. These were carried out in different ports to fit the customer's need: Barcelona, Fos-Sur-Mer and Malta.

Our team first traveled to Spain. There they installed the cofferdam and loaded all the needed equipment onboard. The ship then sailed on to France where our diver/technicians replaced the two damaged scrubber pipes and unloaded the equipment. The final part of the operation took place in Malta. During this stop the cofferdam was removed and a final inspection was performed.

Preventive maintenance

We offer a full package to owners that are experiencing similar damages. We replace the corroded exhaust pipe while your vessel stays on schedule and we make sure that you will not have to call us again for the same problem.



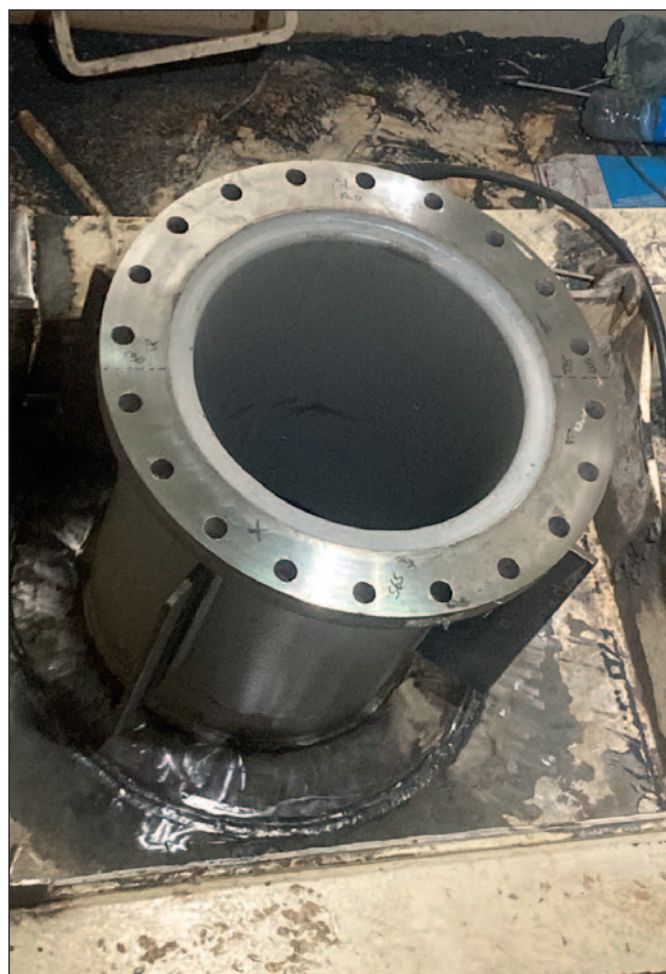
Preparing the edge of the shell plating for a new scrubber pipe.



Hydrex vans during operation in Barcelona.



Hydrex diver/welder during installation of a new scrubber pipe.



One of the new scrubber pipes after welding.

Most ships sail on a tight schedule. We know how important it is to prevent any loss of time. Our technical department has many years of experience in drawing up a repair plan that fits in perfectly with a vessel's schedule. Working in shifts or splitting up an operation in stages are just a few of the many ways we can

make sure that the impact of the repair is limited to the absolute minimum or avoided entirely.

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

+32 3 213 53 00
hydrex@hydrex.be



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

KEEPING SHIPS IN BUSINESS



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

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 straight-

ened 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.

HYDREX
UNDERWATER TECHNOLOGY

+ 32 3 213 5300 (24/7)
hydrex@hydrex.be
www.hydrex.be

Double stern tube seal repair on pipe laying vessel in Rotterdam

Our diver/technicians replaced the seals of both stern tube assemblies of a pipe laying vessel berthed in Rotterdam. Using a Hydrex flexible mobdock they were able to carry out the entire operation on-site and underwater, saving the owner an expensive and time-consuming trip to drydock.

A team traveled to the vessel's location on one of our workboats. These workboats are fully equipped as dive support stations with hydraulic cranes, winches, nautical and communication equipment, and a dive control room. They are stationed in Rotterdam and Antwerp which allows for a fast mobilization throughout both ports.

Once the operation was confirmed all preparations were handled swiftly and the lightweight equipment was mobilized. The operation then



Hydrex workboat on its way to the operation.

started with the removal of the rope guard and a thorough underwater inspection of the first stern tube seal assembly.

After the inspection the divers cleaned the assembly and installed the flexible mobdock. By doing this

they created a dry underwater environment so that they could work in drydock-like conditions.

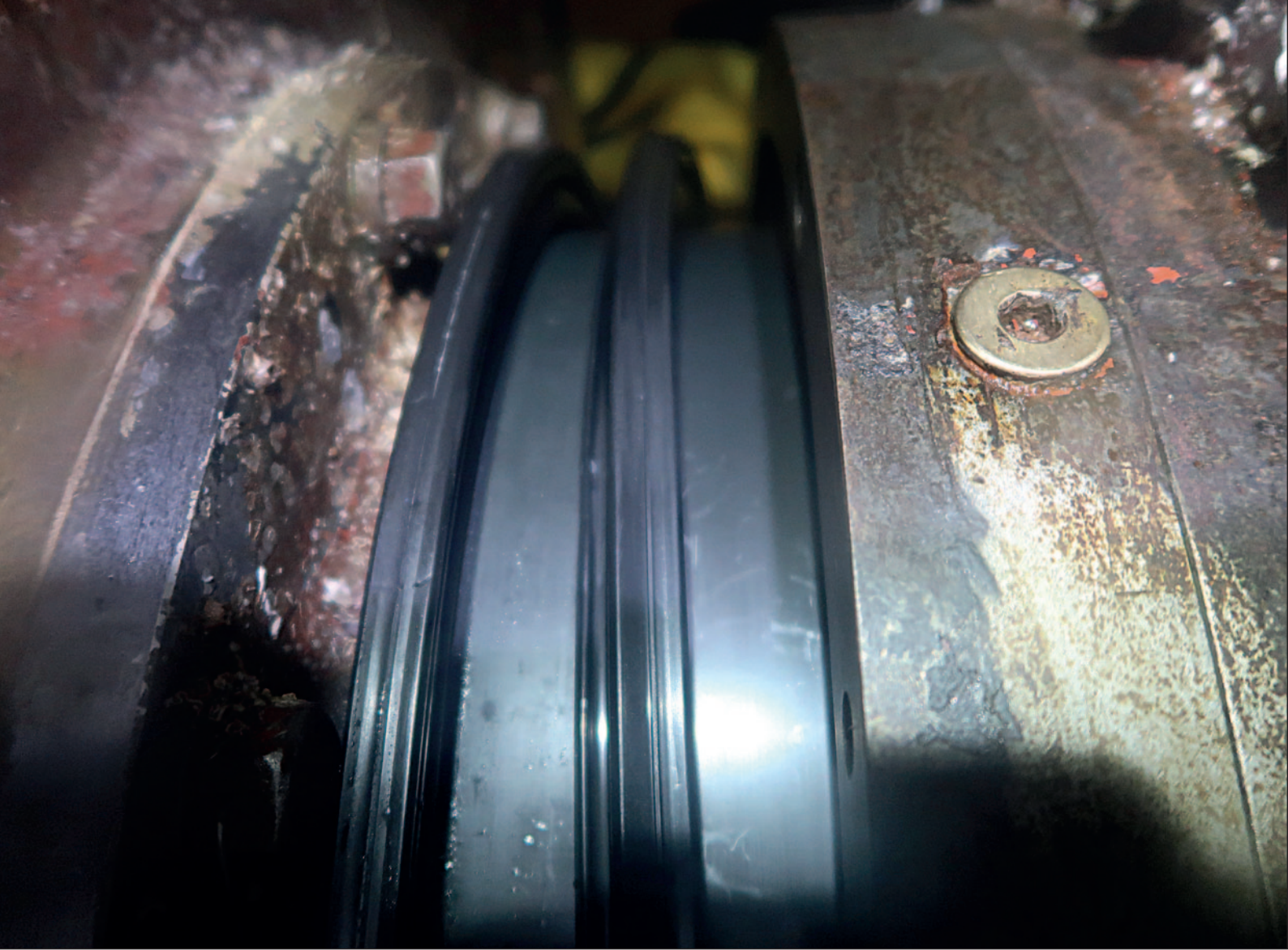
The split ring was then removed and brought to the surface to be cleaned. After cleaning the entire assembly, the divers removed the first seal and



One of our fully equipped monitoring stations.



One of our diver/technicians working inside our flexible mobdock.



Old stern tube seal (left) and new seal (right).



Hydrex diver securing the bolts on a rope guard.

replaced it with a new one which was bonded. They then did the same for the other seals.

A successful operation was concluded with leakage tests, the removal of the flexible mobdock and the reinstallation of the rope guard. The procedure was repeated to remove the seals of the second stern tube assembly.

Conclusion

Working together with the OEM allowed Hydrex to provide the customer with original spare parts which guarantees the best quality material. A technician of the seal manufacturer was also present during the operation.

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. ■

+32 3 213 53 00
hydrex@hydrex.be

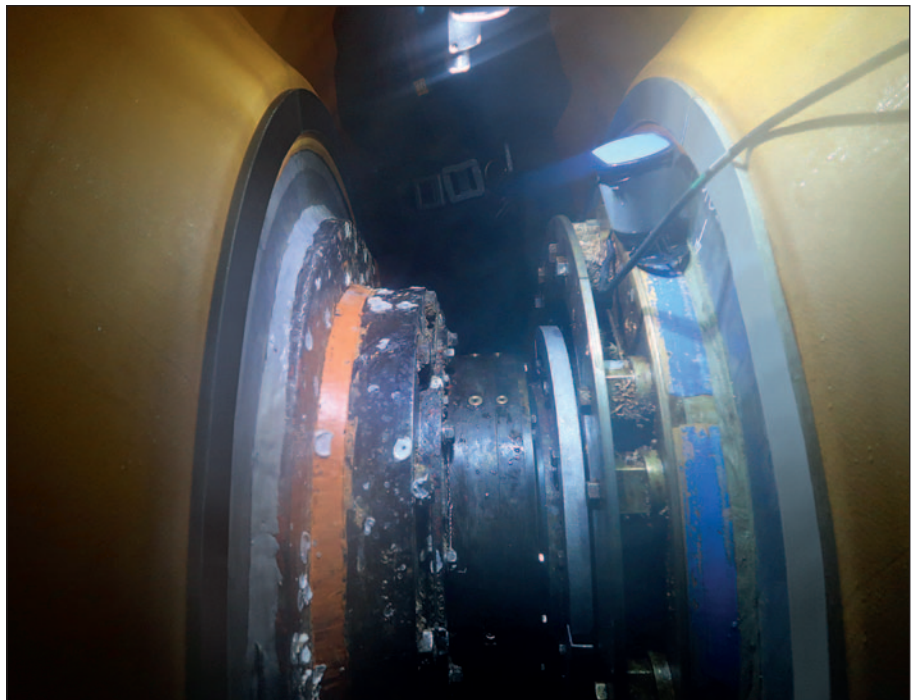


Getting ready for an underwater operation.

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
+ 32 3 213 53 00

KEEPING SHIPS IN BUSINESS



Stern tube assembly after seal replacement.

Always the same high quality

We have developed a flexible mobdock repair method that enables the underwater replacement of all types and sizes of shaft seals. It allows ship owners to keep their vessels sailing, saving precious time and money.

Damaged stern tube seals will cause

oil leaks or an ingress of water. By replacing the seals as soon as possible we can keep the down time low. Because seal repairs can be performed during cargo operations the ship can keep its schedule.

It is not always straightforward to replace seals. There can be quite a

bit of variation in the size of the stern tube itself and for instance the liners can be worn down and show ruts. However, all this is routinely handled by our experienced teams. ■



Large fuel savings with new propeller surface treatment technique

We discovered an unsophisticated but very efficient technology to enhance propeller blade surfaces. With this method we can achieve surface conditions that were never seen before. This can only be done underwater.

When a comparison is made between the surface condition of an average propeller, as our divers regularly see it, and the smoothness that is obtained with our cleaning technique, savings are in the 5-10% range. These results are easily achieved. The cost of such an operation is very attractive and is very easily gained back in a matter of days (or even hours).

Regular maintenance is easy to schedule and results in ultra-smooth propeller surfaces. Continuous and large fuel savings are now possible.



With our method we can achieve surface conditions never seen before.

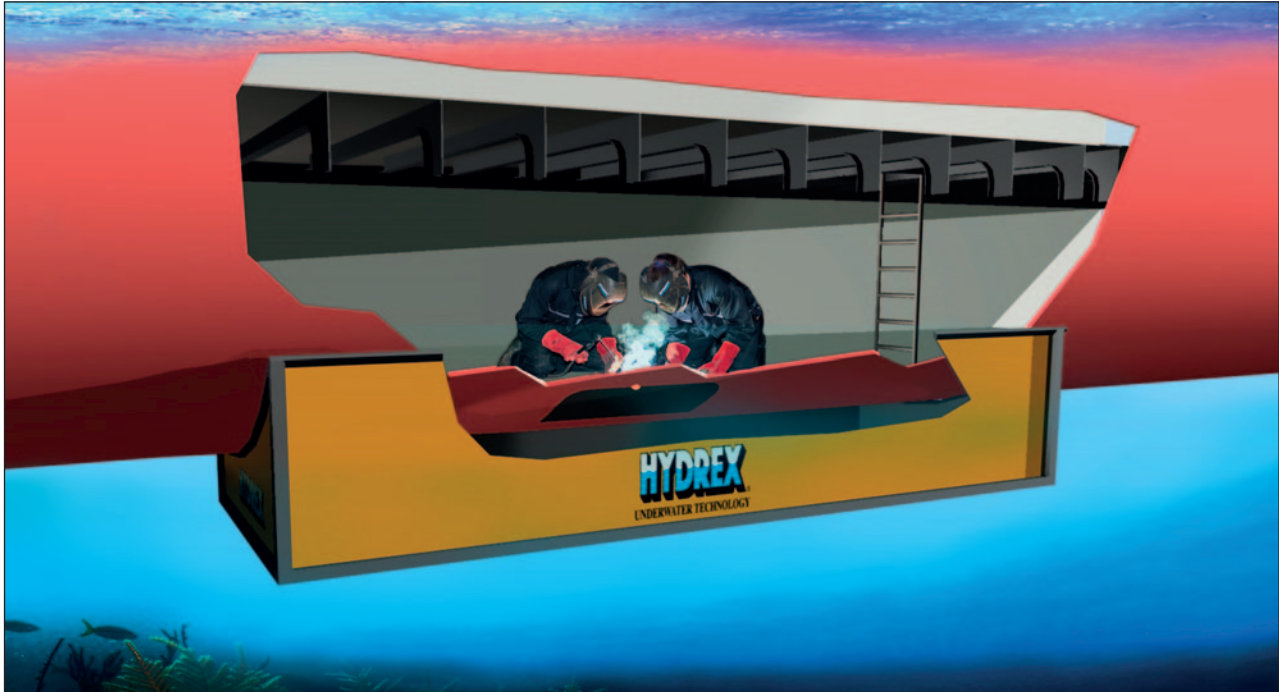
This award-winning surface treatment technique justifies having the propeller cleaned every time it calls a port.

Please contact us for more information, we will gladly discuss the benefits of this new technology with you. ■



Our workboats are equipped to deliver this service at very short notice.

Hydrex hull repairs save time and money



Hydrex on-site hull repair services include the renewal of both small and large areas of damaged hull plating. These repairs can be carried out above or below water, according to the circumstances, with tailor-made cofferdams. Normal commercial activities can therefore continue without disruption. These operations follow the Hydrex procedure for welding cracks in the vessel's shell plating and they are

approved by all major classification societies.

Hydrex diver/technician teams carry out these on-site hull repairs all over the world. In most cases the damaged area can be replaced with a permanent insert and no condition of class is imposed. On the rare occasions where the damage does not allow such a repair, a temporary doubler plate is installed over the affected area.

This allows the owners to keep to their schedule and have a permanent repair carried out during the next scheduled drydock visit.

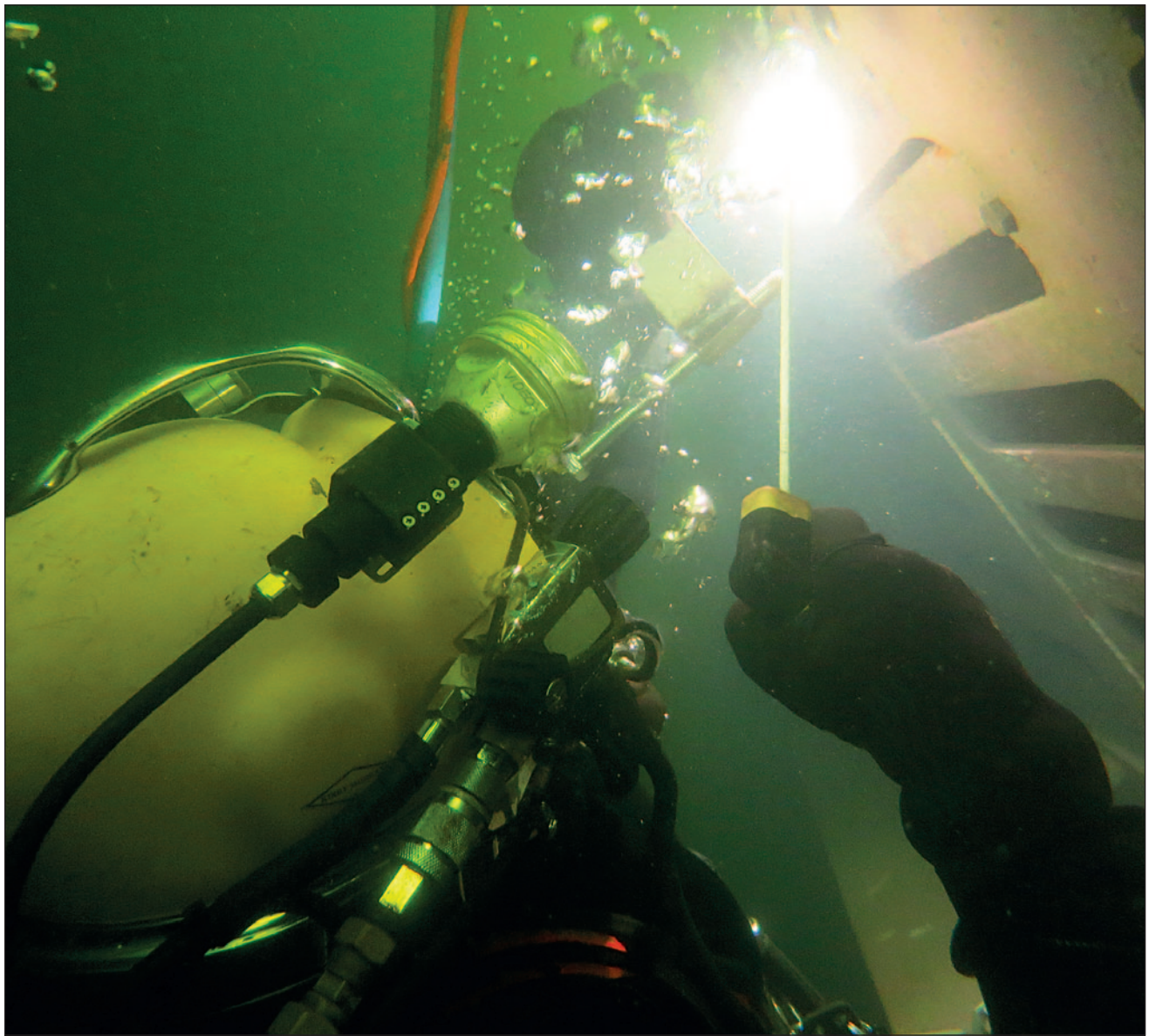
To offer the fastest possible service to customers, Hydrex offices have fast response centers where an extensive range of state-of-the-art tools and diving support equipment is available at all times for the repair teams to mobilize to your location.

HYDREX
UNDERWATER TECHNOLOGY

+ 32 3 213 5300 (24/7)
hydrex@hydrex.be
www.hydrex.be



Sail safe with Hydrex



Headquarters Hydrex N.V. - Antwerp

Phone: +32 3 213 5300 (24/7)

E-mail: hydrex@hydrex.be

Hydrex Rotterdam

Phone: +31 10 313 25 19 (24/7)

E-mail: info@hydrex.nl

Hydrex Spain - Algeciras

Phone: +34 956 675 049 (24/7)

E-mail: info@hydrex.es

Hydrex LLC - Tampa, U.S.A.

Phone: +1 727 443 3900 (24/7)

E-mail: info@hydrex.us

www.hydrex.be