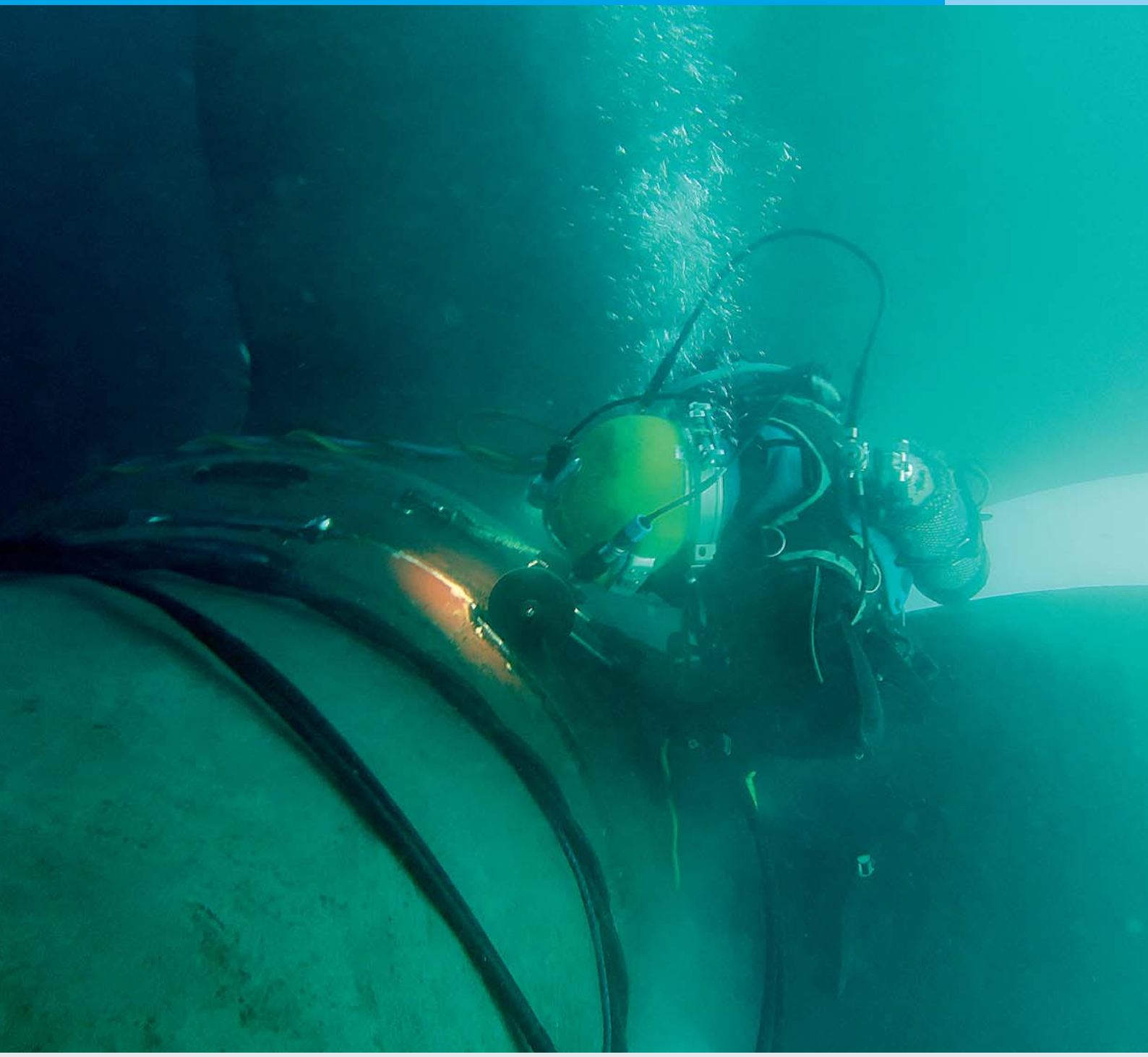
HYDREX®

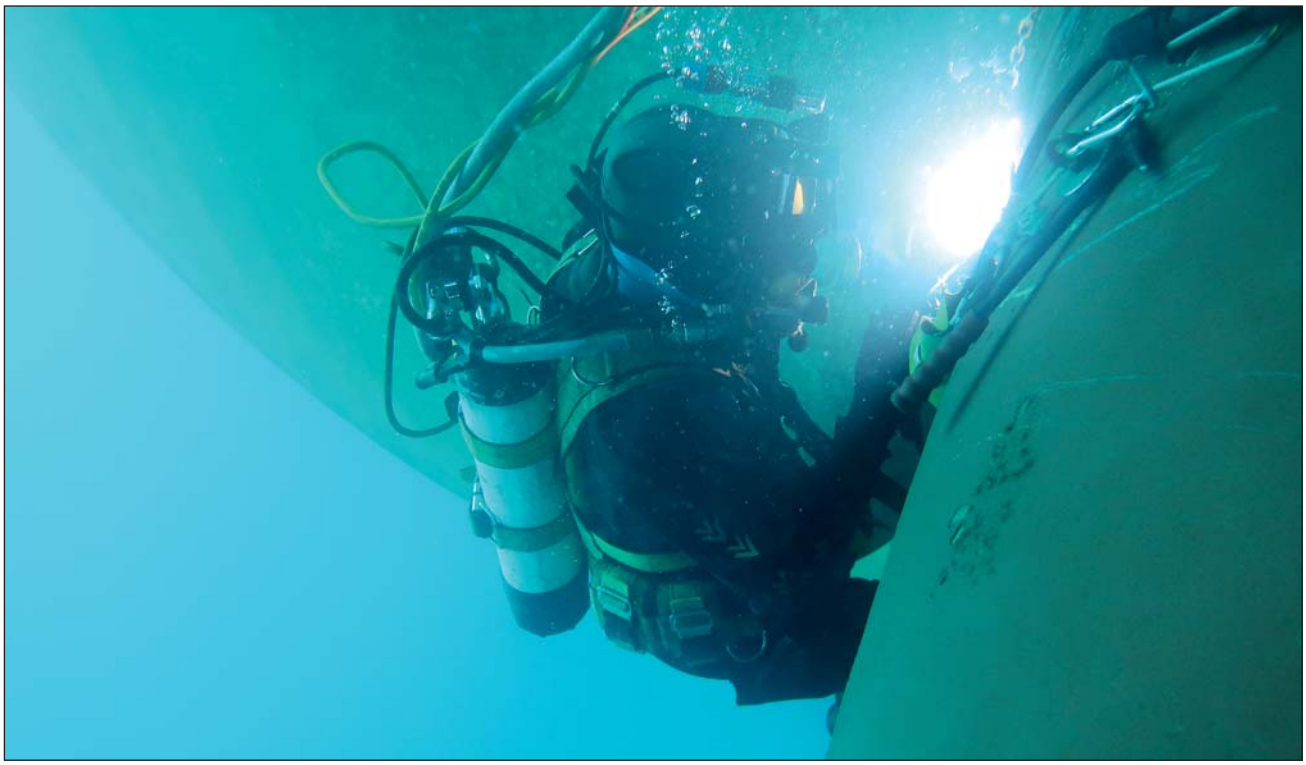
UNDERWATER TECHNOLOGY

Magazine

Number *277*



Hydrex is looking for representative agents



To support our continuous growth, we are expanding our worldwide network of Hydrex agents. This allows us to reach a much bigger public directly than would otherwise be possible.

All our offices have fully operational fast response centers where an extensive range of state-of-the-art equipment is available at all times for immediate deployment with our skilled diver/technician teams to wherever they are needed.

The services that we offer are highly specialized underwater and in water repairs. These include bow thruster repairs and replacements, stern tube seal repairs, hull shell plating repairs and replacements, in water surveys and various maintenance work. More information on our services can be found on our website.

Contact us if you are interested in joining our network and help us build a strong relationship with our prospects and customers. We look forward to hearing from you.

HYDREX®
UNDERWATER TECHNOLOGY

Phone: + 32 3 213 5300 (24/7)
Fax: + 32 3 213 5321
agents@hydrex.be
www.hydrex.be

Editorial

Our flexible mobdocks can be used worldwide to perform a wide variety of operations. The technology was developed by our in-house R&D department. It allows us to create a dry environment underwater for our divers to work in. In this magazine we write about two different types of on-site mobdock repairs.

The first article deals with a stern tube seal operation in Tasmania. During this repair we worked closely together with the OEM involved to prevent a costly unplanned drydock visit.

This was just one of several repairs we carried out in Southeast Asia and Australia in the last few months. After our team finished the seal replacement in Tasmania the ship changed place with its sister ship and our divers immediately started on a propeller blade replacement on this vessel.

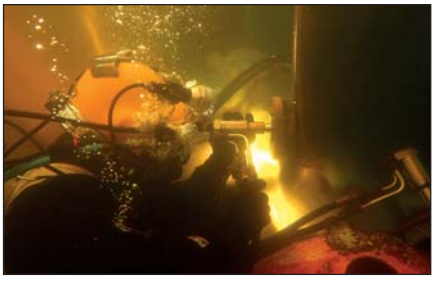
At the same time another team was in Phuket for an underwater bow thruster operation on a cruise ship, as you can read further on in this magazine, when we were asked to perform a hull repair on another cruise vessel at the same location. These two repairs were also done back to back by this team.

Make sure to read next month's magazine for articles on the second repairs in both Tasmania and Phuket.

Whether it is close to home or at the other side of the globe, if a shipowner needs assistance we can send a team to the vessel immediately without losing time. Our diver/technicians can carry out both simple and complex jobs uniformly without loss of time, quality or safety.

Hydrex founder
Boud Van Rompay
bvr@hydrex.be

Table of contents



ISO 9001 certified

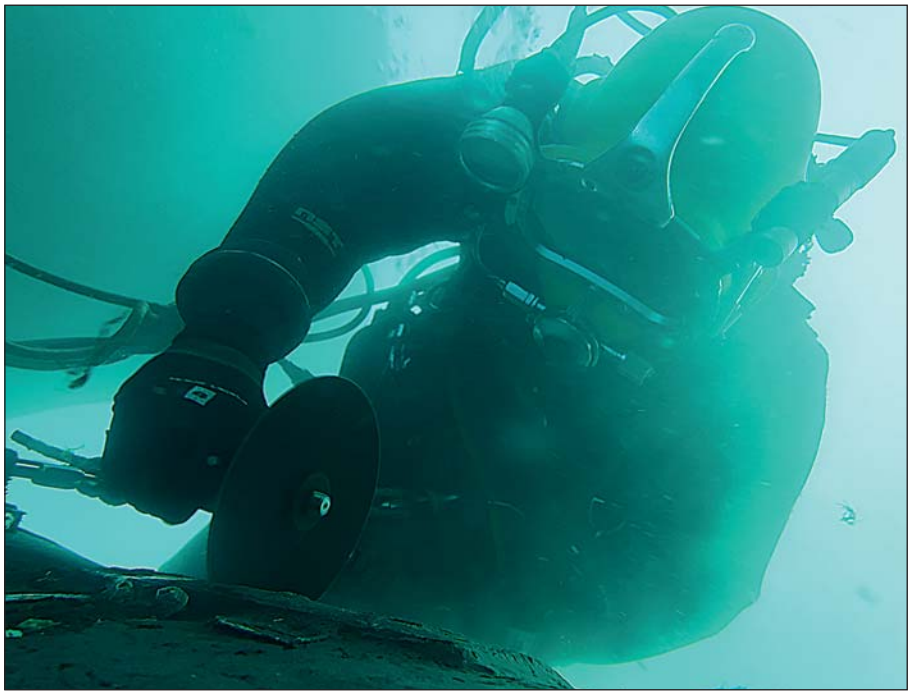
Underwater services and technology approved by:

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

HYDREX®
UNDERWATER TECHNOLOGY

Underwater stern tube seal repair in Tasmania

At the end of last year one of our diver/technician teams carried out an underwater stern tube seal repair on a roro ship berthed in Port of Burnie, Tasmania. The ship was suffering from an oil leak, making an on-site 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 drydock.



Hydrex diver during removal of the rope guard.

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 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 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.

One of our divers performing welding work on the seal assembly.

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

Despite the remote location of the 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 and Thailand, among which a propeller blade replacement on this roro ship's sister vessel and hull and bow thruster repairs on cruise vessels in Phuket.

APM ASIA PACIFIC MARITIME

Hydrex will be present at Asia Pacific Maritime (APM) in Singapore from March 18 until 20. We would like to welcome you at our booth E-K33, Holland pavilion.

If you would like to learn more about how Hydrex can assist you, please visit our booth at APM. Our team will be happy to give you the information you need. You can also contact us if you would like to make an appointment for the exhibition or if you need assistance.

+32 3 213 53 00
hydrex@hydrex.be

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

Phone: + 32 3 213 5300 (24/7)
Fax: + 32 3 213 5321
hydrex@hydrex.be

www.hydrex.be

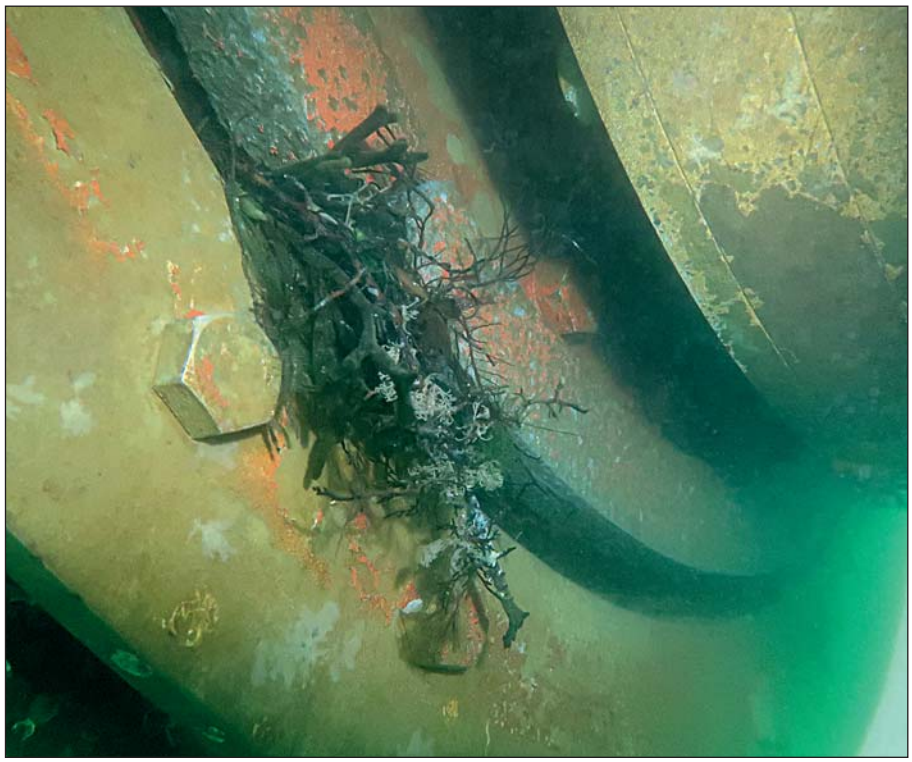
Permanent in-water rudder repairs now possible without drydocking

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. Therefore this new service is now available world-wide.

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



Our team removed marine growth from the assembly prior to the operation.

The same high quality, close to home or faraway

Taking advantage of our flexible mobdock technique the men were able to carry out the entire repair on-site and underwater. Because all the required material is ready to be transported at all times, no time is lost making preparations.

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 her next stop free of oil leaks.

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.

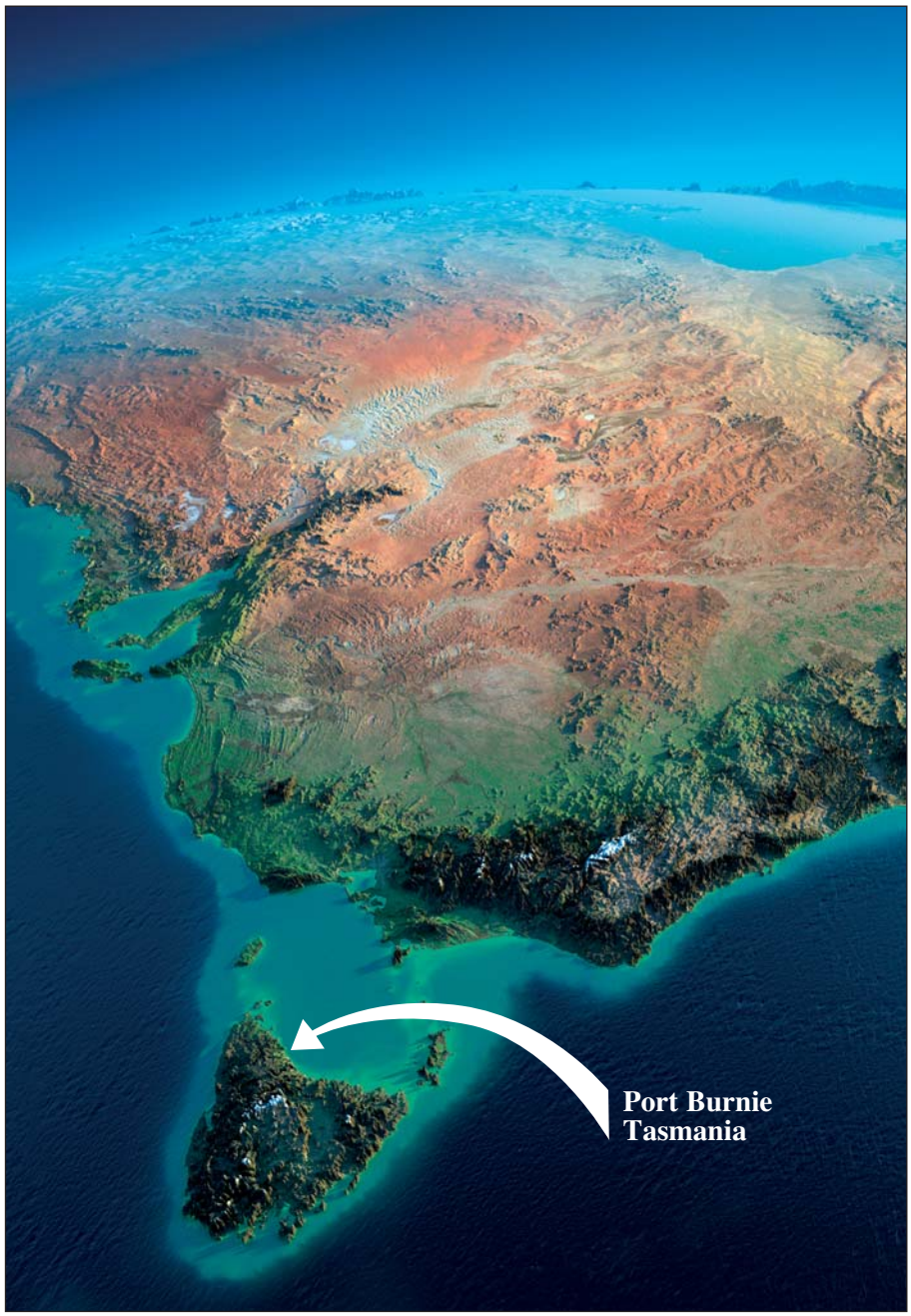
Damaged stern tube seals will cause oil leaks or an ingress of water. By replacing the seals as soon as possible we can keep the down time low. Because seal repairs can be performed during cargo operations the ship can keep its schedule.

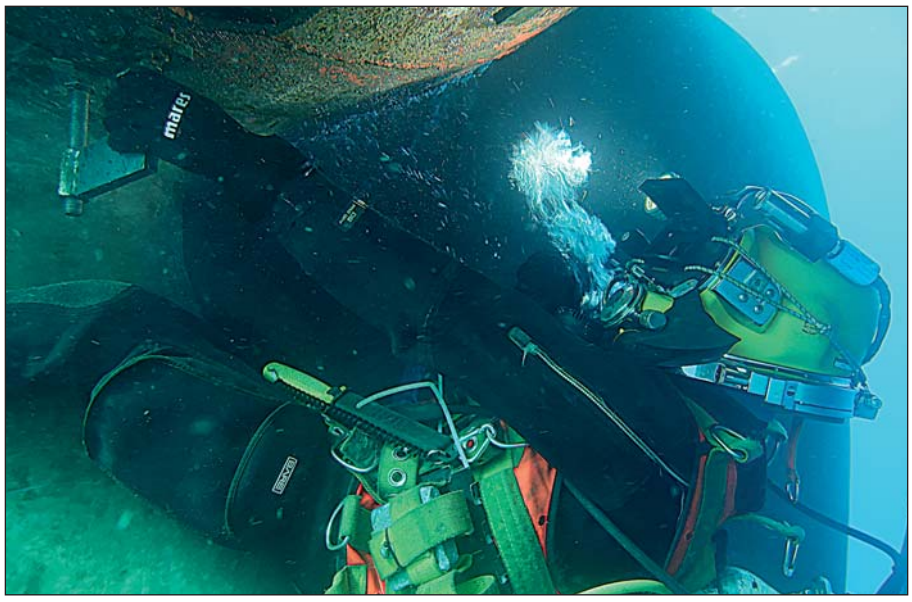
It is not always straightforward to replace seals. There can be quite a bit of variation in the size of the stern tube itself and for instance the liners can be worn down and show ruts. However, all this is routinely handled by our experienced teams.

All our offices are equipped with the latest facilities, lightweight equipment and tools. This allowed for a timely arrival of the team in Tasmania with everything needed to successfully complete the job. ■

Inside the flexible mobdock our divers can work in dry conditions.

Reinstalling a rope guard concludes a seal operation.





Performing stern tube seal operations on site allows a vessel to stay on schedule.

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

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

Thruster repair afloat in Phuket

A 200 meter cruise ship experienced a failure in the feedback system of its bow thruster. We therefore mobilized a team to Phuket, Thailand to perform the necessary underwater repairs with the use of our flexible mobdocks.

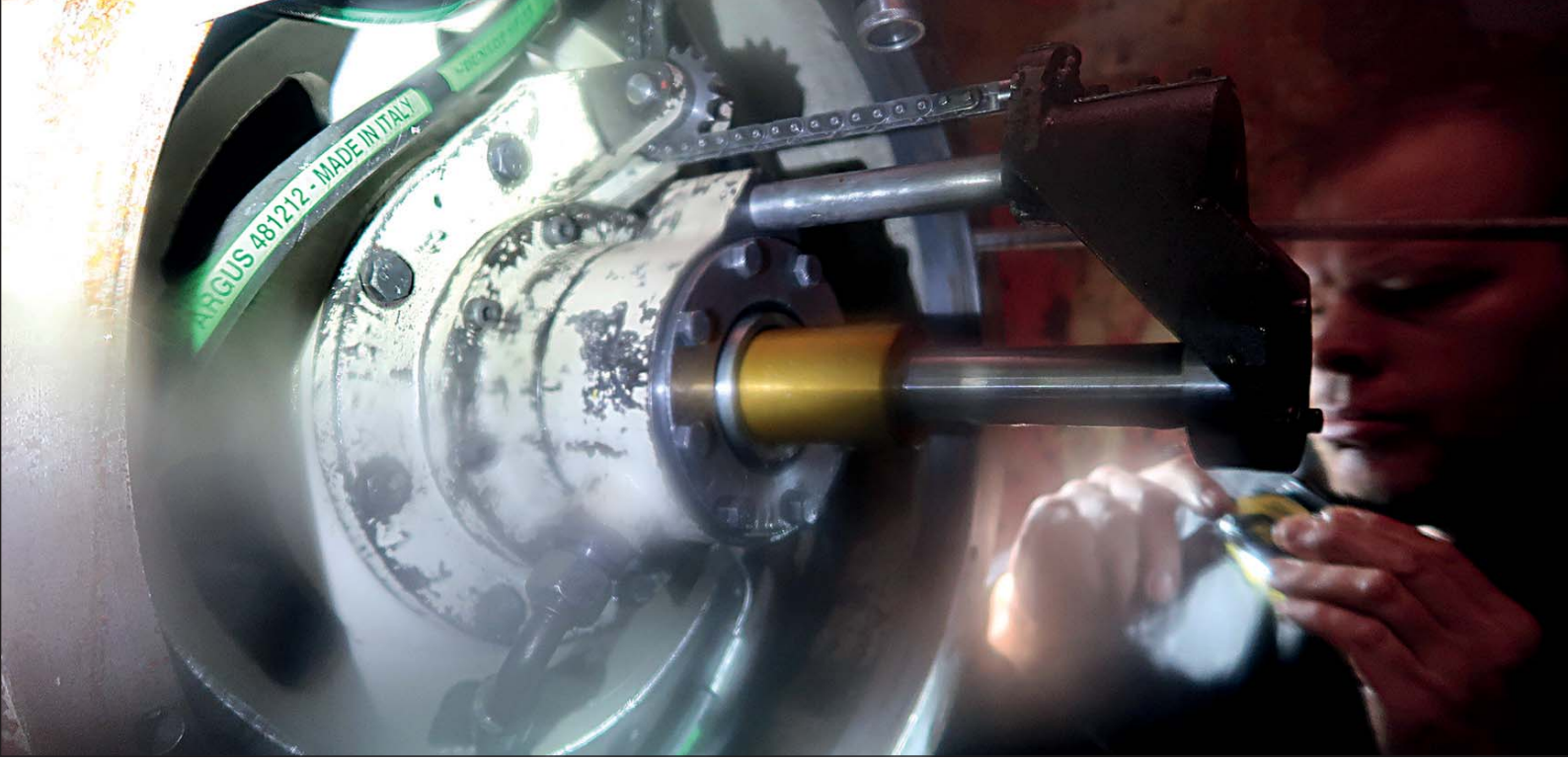
Removing the cover of the bow thruster gearbox.

These lightweight flexible mobdocks are easy to transport and are used to close off the thruster tunnel on both sides. This allows our divers to empty all water from the room and create a dry environment around the unit. In this way the required operation can be performed underwater in dry conditions, whether it entails the removal or installation of an entire unit or, as was the case with the operation described in this article, repair work on a specific part.

While on its way to Phuket, a breakdown occurred in the feedback system that specifies the position of the vessel's bow thruster blades. Taking into account the strict schedule of the cruise ship, keeping it sailing was essential. We were contacted by the customer and asked to find a fast, on-site solution

In cooperation with the manufacturer of the thruster, a plan was devised by our technical department. Our diver/technician team would carry out an inspection and any necessary repairs afloat without removing the unit from the thruster tunnel. The customer gladly accepted this proposal as it meant he did not need to take his ship into drydock. This saved him substantial time and money.

After installing our flexible mobdocks, all water was removed from the thruster tunnel.



Installing the repaired part of the feedback system.

After the essential preparations were made in our fast response center, all the lightweight equipment for the operation was mobilized to Thailand from our headquarters in Antwerp.

After arriving on-site our team set up a monitoring station next to the vessel. They then installed the flexible sheets and removed all water from the thruster tunnel. Lights and communication lines with the monitoring station onshore were also installed.

Next the bolts securing the cover of the gearbox were removed and it was opened. A video inspection of the internal part could then be performed. The feedback cable connection was broken. As a result, the chain indicating the position of the blades was not attached anymore.

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.

HYDREX®
UNDERWATER TECHNOLOGY

Gearbox after reinstallation of the cover.

Reflooded thruster tunnel after completion of the repair.

The broken part was removed and inspected by OEM technician and the superintendent of the ship. There was no possibility to replace the broken part by a new one. Instead it was repaired and reinforced on-site.

The cover was then put back into place and secured again. Tests confirmed the repair to be successful. It ended with the removal of the flexible mobdocks and the performance of final tests with a fully loaded thruster.

Conclusion

Our team had a very pleasant and smooth cooperation with the crew of the ship, the manufacturer of the thruster and all other parties involved. This helped us to perform the operation as fast as possible.

By using the mobdocks the customer was able to have the damage repaired without the removal of the thruster. This allowed him to keep his vessel out of drydock and maintain the sailing schedule of his cruise ship. ■

Underwater scrubber sea chest installation

Our wide range of maintenance and repair services includes the installation of additional sea chests required for the intakes and outlets of scrubber systems. These afloat installations are performed by installing a cofferdam on the hull.

We can help you when going to drydock is not an option, if the scrubber equipment is not available yet during docking or if the scrubber system needs to be installed before the next scheduled docking. We are able to carry out the installation of sea chests while your vessel stays afloat and in most cases during cargo operations.

If you would like to discuss this possibility of in-water scrubber system installation, please contact us at +32 3 213 53 00 or hydrex@hydrex.be

HYDREX®
UNDERWATER TECHNOLOGY

Phone: + 32 3 213 5300 (24/7)
Fax: + 32 3 213 5321
hydrex@hydrex.be

www.hydrex.be

Large fuel savings with new propeller surface treatment technique

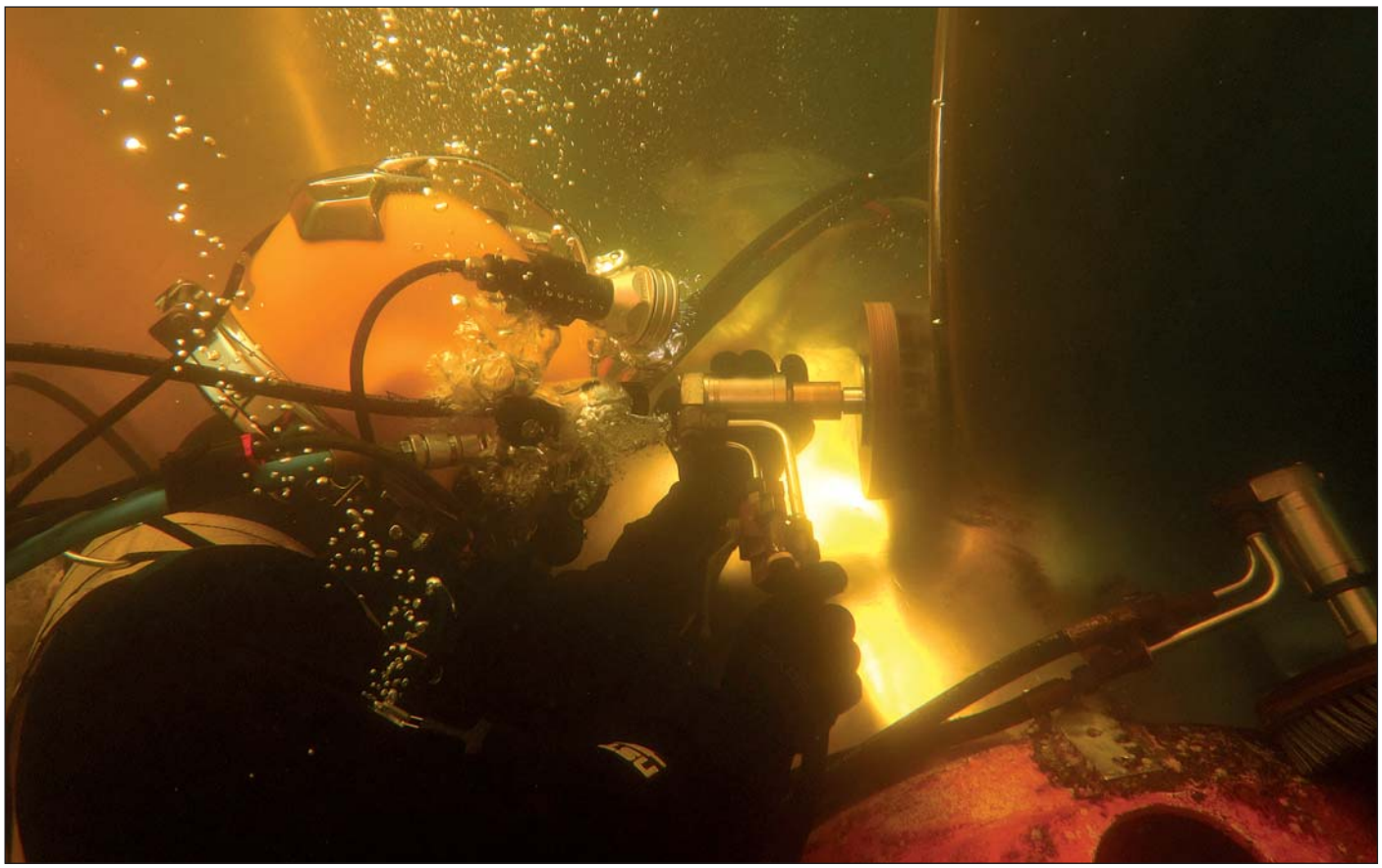
We discovered an unsophisticated but very efficient technology to enhance propeller blade surfaces. With this method we can achieve surface conditions that were never seen before. This can only be done underwater.

We have four workboats equipped to deliver this service on a very short notice in the Rhine-Scheldt delta from Antwerp to Rotterdam.

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).

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

Regular maintenance is easy to schedule and results in ultra-smooth propeller surfaces. Continuous and



Regular maintenance is easy to schedule and results in ultra-smooth propeller surfaces.

large fuel savings are now possible.

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

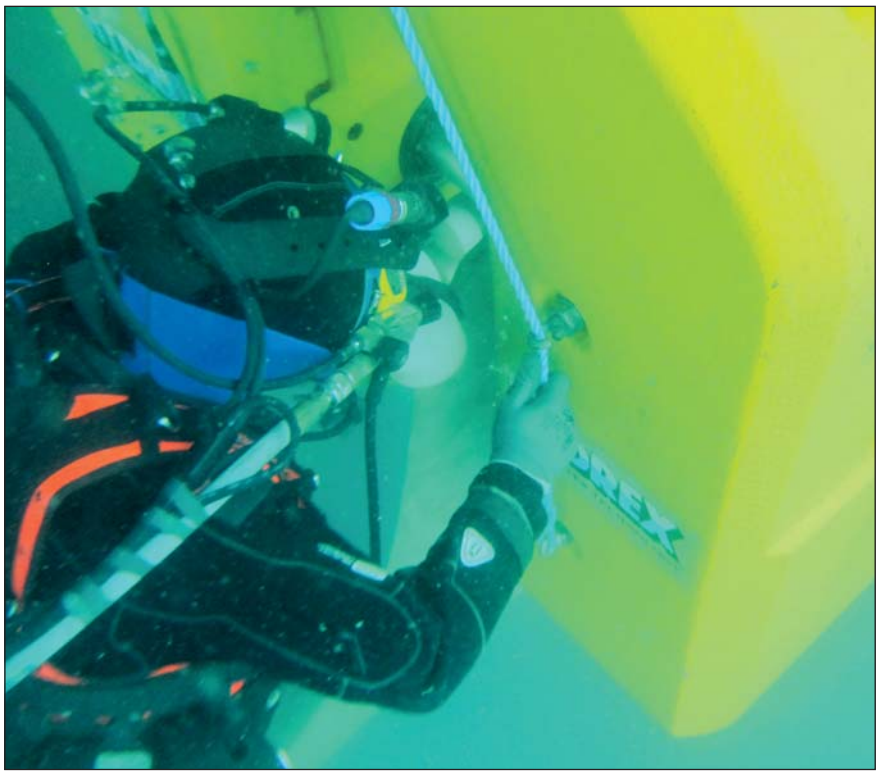
Please contact us for more information, we will gladly discuss the benefits of this new technology with you. ■

HYDREX®
MAINTENANCE AND REPAIRS

We have workboats equipped to deliver this service at very short notice.

Fast underwater propeller blade straightening and repairs

In its quest to provide cost effective services to customers, Hydrex developed procedures to address different kinds of damage to propellers. This research led to the design of the Hydrex cold straightening machines first used in 2002.



By taking advantage of this technique damaged blades can be straightened underwater, allowing the ship to return to commercial operations without the need to drydock. Blades can be brought back close to their original form, restoring the propeller's optimum efficiency.

The cold straightening machines have been in use for quite some time now but the Hydrex research department has been looking into ways to expand the technique even further to improve our services. A new version of the straightening machine was recently put into practice. It is compatible with the existing models and is used to restore more severely bent propeller blades to their original condition.

HYDREX®
UNDERWATER TECHNOLOGY

Phone: **+32 3 213 5300 (24/7)**
Fax: **+32 3 213 5321**
E-mail: **hydrex@hydrex.be**
www.hydrex.be

We fix ships

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