

Bow thruster operations in Belgium and Spain .....	3
Hydrex permanent hull repairs out of drydock.....	7
Always high quality, no matter the job.....	8

# Contents

## Page 3 - 6

Bow thuster operations in Belgium and Spain

## Page 7

Hydrex permanent hull repairs out of drydock

## Page 8 - 10

Always high quality, no matter the job

## KEEPING SHIPS IN BUSINESS

### ISO 9001 certified

Underwater services and technology approved by:



# Scrubber pipe repairs and lasting protection



**E**xhaust 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.

+ 32 3 213 5300 (24/7)

[hydrex@hydrex.be](mailto:hydrex@hydrex.be)

[www.hydrex.be](http://www.hydrex.be)

**HYDREX**  
UNDERWATER TECHNOLOGY

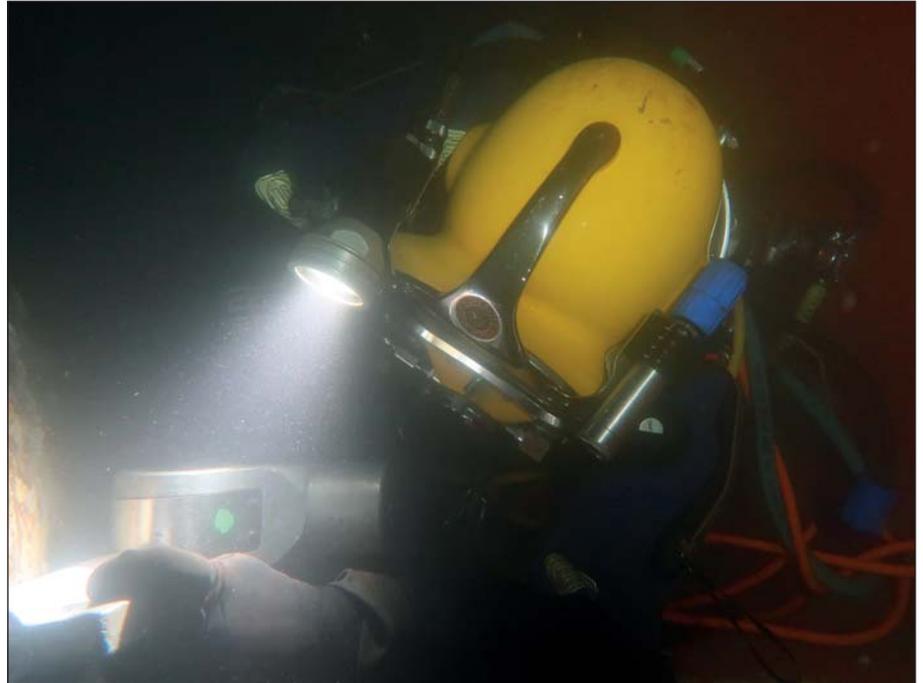
# Bow thruster operations in Belgium and Spain

**L**ast month our men performed afloat bow thruster operations on container ships in Belgium and Spain. In Algeciras a thruster was removed on a 306-meter vessel and in Zeebrugge a unit was reinstalled on a 135-meter ship.

All the necessary equipment was mobilized from our Algeciras fast response center for the operation in Spain.

After the team set up a monitoring station, our diver/technicians detached the blades one by one. In the meantime preparations were made in the bow thruster engine room for the underwater removal of the unit to avoid any ingress of water once it was taken out.

The next step was to secure the gearbox with hoisting equipment. The team then disconnected the unit from the bow thruster engine room



*Preparing the bow thruster for underwater removal.*

and lowered it onto a cradle. This cradle was designed especially for such operations. The bow thruster was then brought to the surface.

Simultaneously the team sealed off the tunnel from the bow thruster

room. Once the unit was lifted onto the quay it was prepared for transport to the workshop.

## **Trimmed reinstallation in Zeebrugge**

The ship in Zeebrugge could be trimmed enough to raise most of the bow thruster tunnel above the water. This allowed our team to maneuver the thruster unit inside the tunnel with the propeller blades already installed.

Next temporary metal plates were used to seal off the bottom of the tunnel. Our divers could then empty the remaining water and perform the required welding work on the thruster brackets and the tunnel grids in dry conditions.



*Hydrex diver during removal of bow thruster in Algeciras.*



## Permanent in-water rudder repairs now possible without drydocking

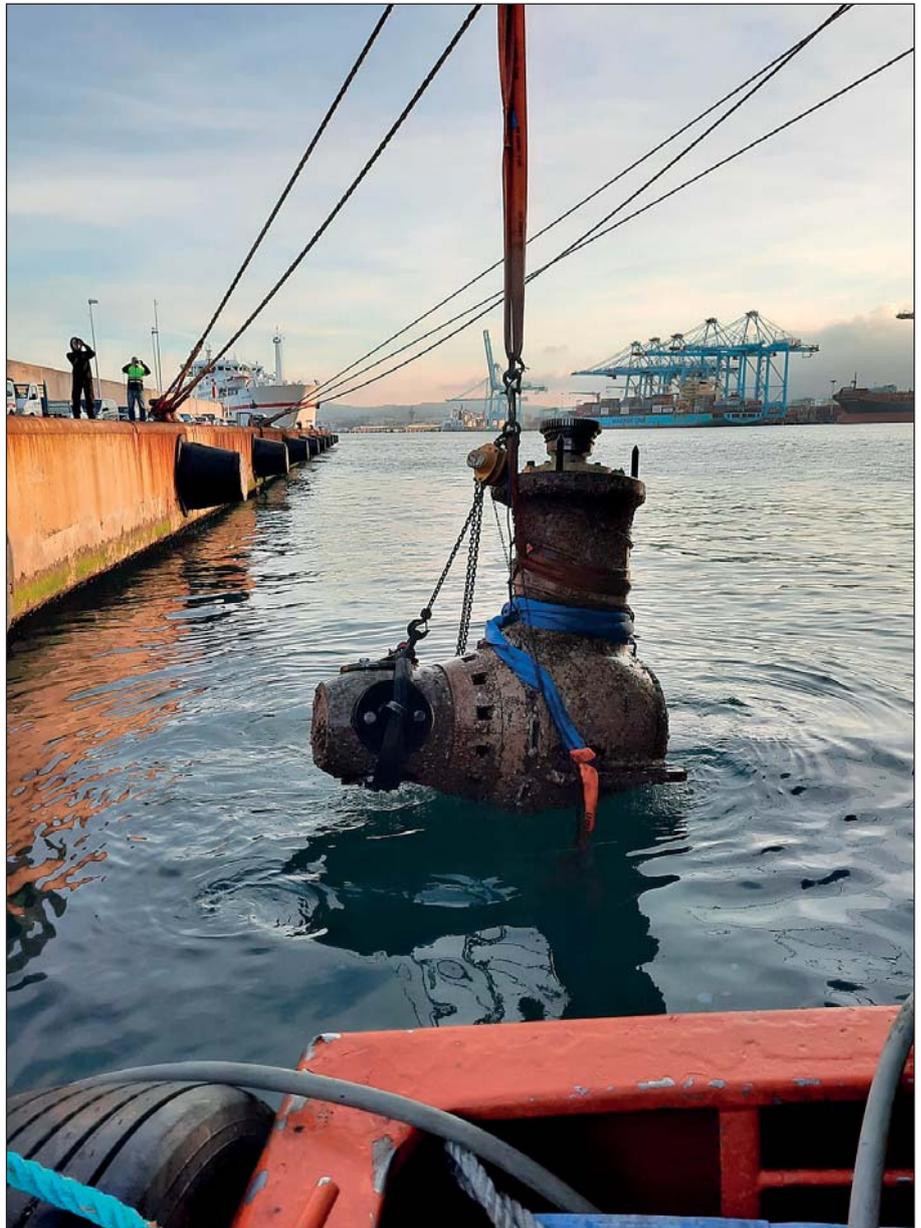


**H**ydrex has developed an entirely new method enabling permanent repairs of rudders without drydocking the ship. Permanent repairs were hitherto not possible and ships had to drydock in case a major defect was found. The newly designed equipment is light-weight and can be mobilized very rapidly in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



*Bow thruster unit brought to shore.*



*Preparing the bow thruster in Zeebrugge for reinstallation.*



*Hydrex team during nightshift in Zeebrugge.*

**Putting the customer's needs first**

Ever since Hydrex was founded in 1974 we have strived to keep the impact of our repairs for the owner as minimal as possible.

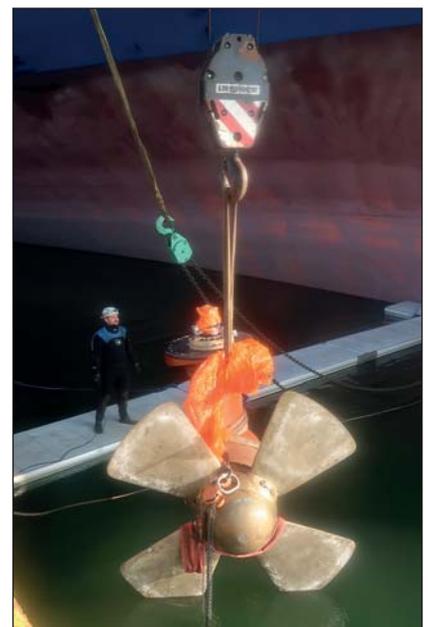
By performing these thruster operations afloat, our divers made it possible for the owners to keep their vessels out of drydock and avoid downtime.

We worked in shifts around the

clock and finished the jobs within the available time frames. This allowed the ships to sail on schedule, which was a key benefit for the customers.



*Reinstalling the bow thruster blades.*



*Lowering the thruster unit into the water.*

## Hydrex underwater inspections



**U**nderwater 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.

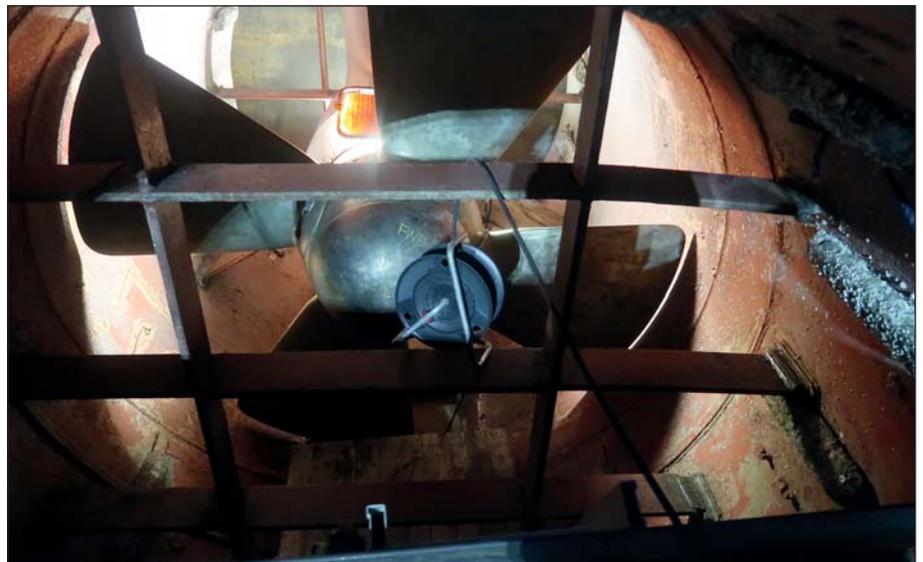
With fuel costs amounting to 40% of operational expenses and continuing to rise, reducing fuel consumption is a vital concern of ship owners. This is the reason why hull monitoring pays for itself. Underwater hull roughness, marine fouling, bent propellers and poor paint condition are all factors that 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



*Hydrex diver securing the bow thruster.*



*Bow thruster unit after reinstallation in Zeebrugge.*

### Conclusion

Performing jobs like this requires planning. This can only be done successfully by staff who have familiarity with such operations and have the relevant know-how and equipment.

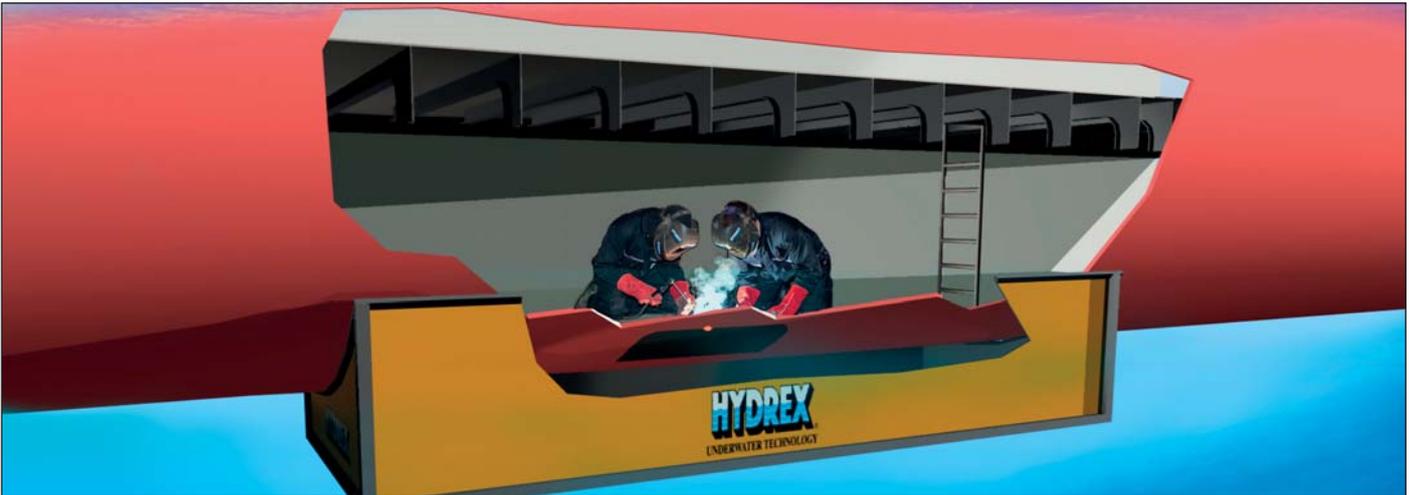
We can assist shipowners with almost any problem they encounter with their vessel's thruster. A wide range of underwater repair and maintenance work can be carried out to all types of thrusters. An entire unit can be overhauled, propeller blades or seals can be replaced or repair work on a specific part of a thruster can be performed on-site.

**If ever you would encounter a similar situation, give us a call. We can then tell you if the repair is feasible and start working on its handling.■**

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**

# Hydrex permanent hull repairs out of drydock



*Hydrex carries out permanent hull repairs without interruption of operations, approved by all major classification societies.*

**H**ydrex developed and delivers **permanent hull repairs on vessels afloat, fully approved by all the major classification societies. No need to go to drydock. No need to redo later in drydock. Gets your ship back in business fast, saving time and money.**

How is it done?

1. We start off with an inspection to determine extent of defect.
  2. Made-to-measure cofferdam secured on outside of hull to keep water out and create a dry environment during repair.
  3. Crack removal/defective plating cropped.
  4. Insert fitted.
  5. Insert tacked in place.
  6. Class approved full penetration welding from inside the ship and frame renewed as needed.
  7. Independent ultrasonic testing to verify the welding.
  8. The cofferdam is then removed.
- Each step is checked by class before proceeding.



*Cofferdam placed over crack.*



*Removing the damaged area.*



*Preparing the edge of the opening for the new insert.*



*Insert cut and fitted.*



*Insert tacked in place.*



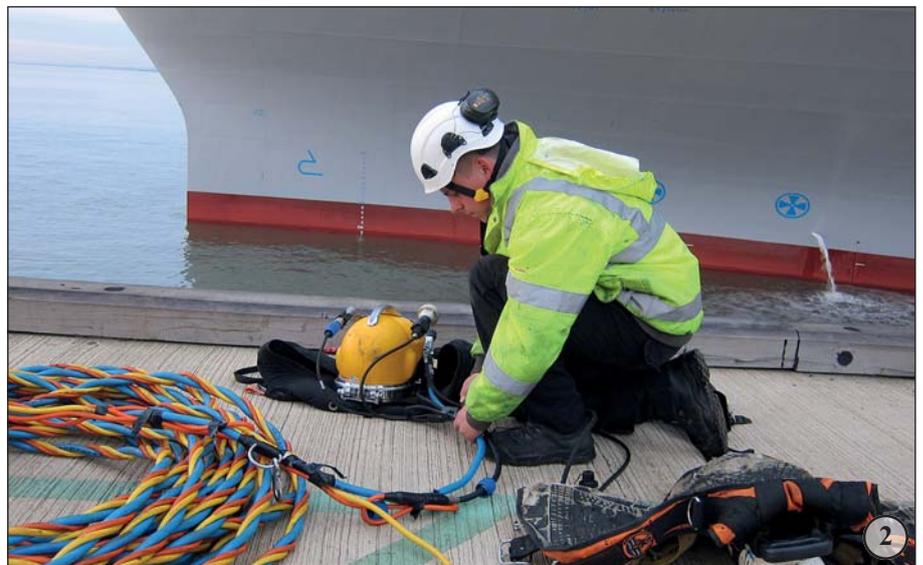
*Full penetration weld.*

# Always high quality, no matter the job

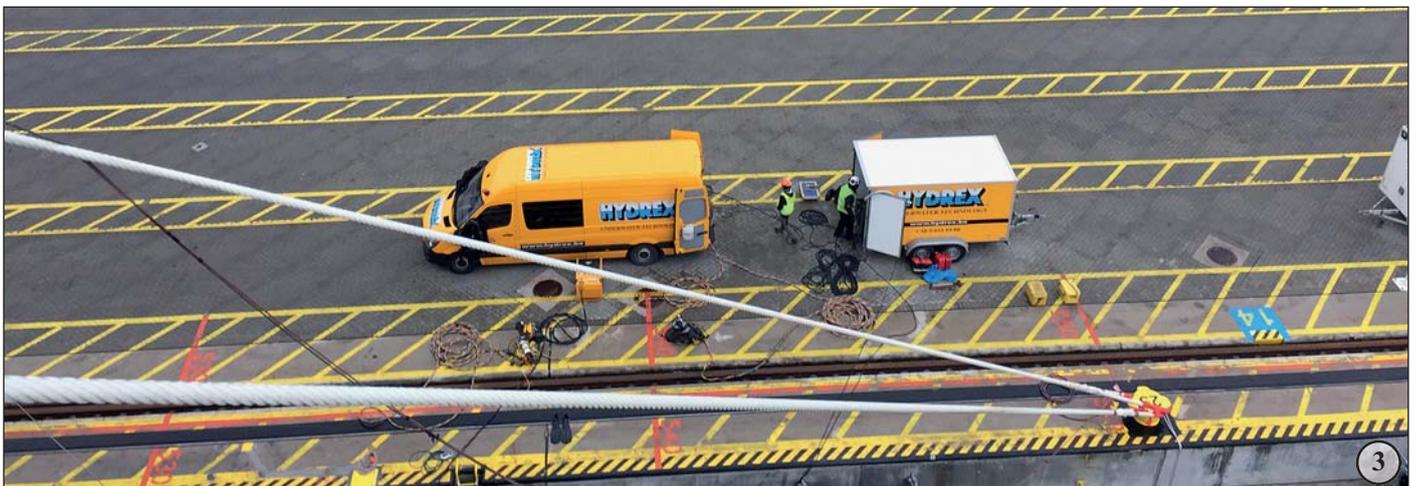
1. A swift reaction remains one of the most important elements of our services. Our fast response centers are designed for immediate action whenever needed. A wide range of additional state-of-the-art equipment and tools is available at all times in our fast response center and can be loaded onto our workboats or vans immediately.

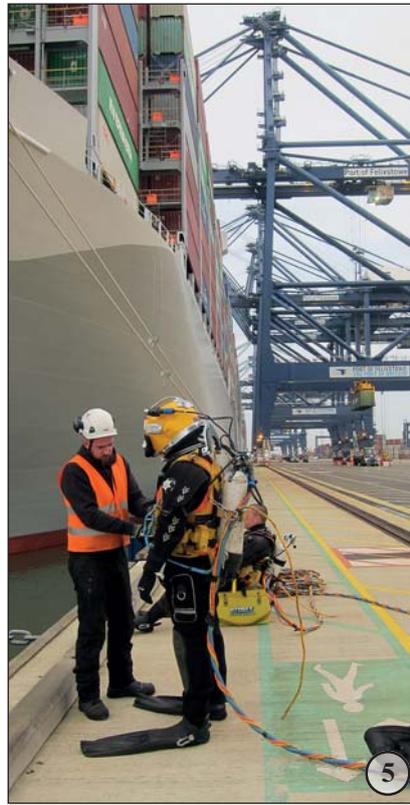


2. Hydrex team member making a final check of the diving equipment before an underwater operation. Safety is one of the most important elements of any job we carry out and making sure every piece of equipment is in perfect shape at all times is essential in achieving this.



3. Every few years our entire fleet of vehicles is refurbished or replaced if needed. Trucks and vans are repainted and new vehicle graphics are applied. The inside of the vans is also updated regularly to turn them into state-of-the-art mobile monitoring stations.





4. All underwater operations are followed from the shore by the team leader. All our vans and workboats are equipped as monitoring stations at all times. This allows us to mobilize immediately.
5. We want to offer the highest quality of service to our customers. To achieve this we need staff who are familiar with a

wide range of operations as well as the relevant know-how. Our diver/technicians are trained and qualified to perform all class-approved repair procedures.

6. When their training is completed, our diver/welders can carry out both simple and complex jobs and achieve this uniformly without loss of time, quality or safety.

## Fast underwater propeller blade straightening

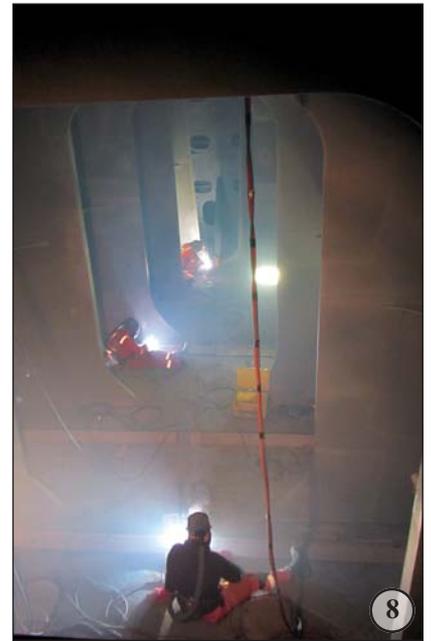


**I**n its quest to provide cost effective services to customers, Hydrex developed procedures to address different kinds of damage to propellers. This research led to the design of the Hydrex cold straightening machines first used in 2002.

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®



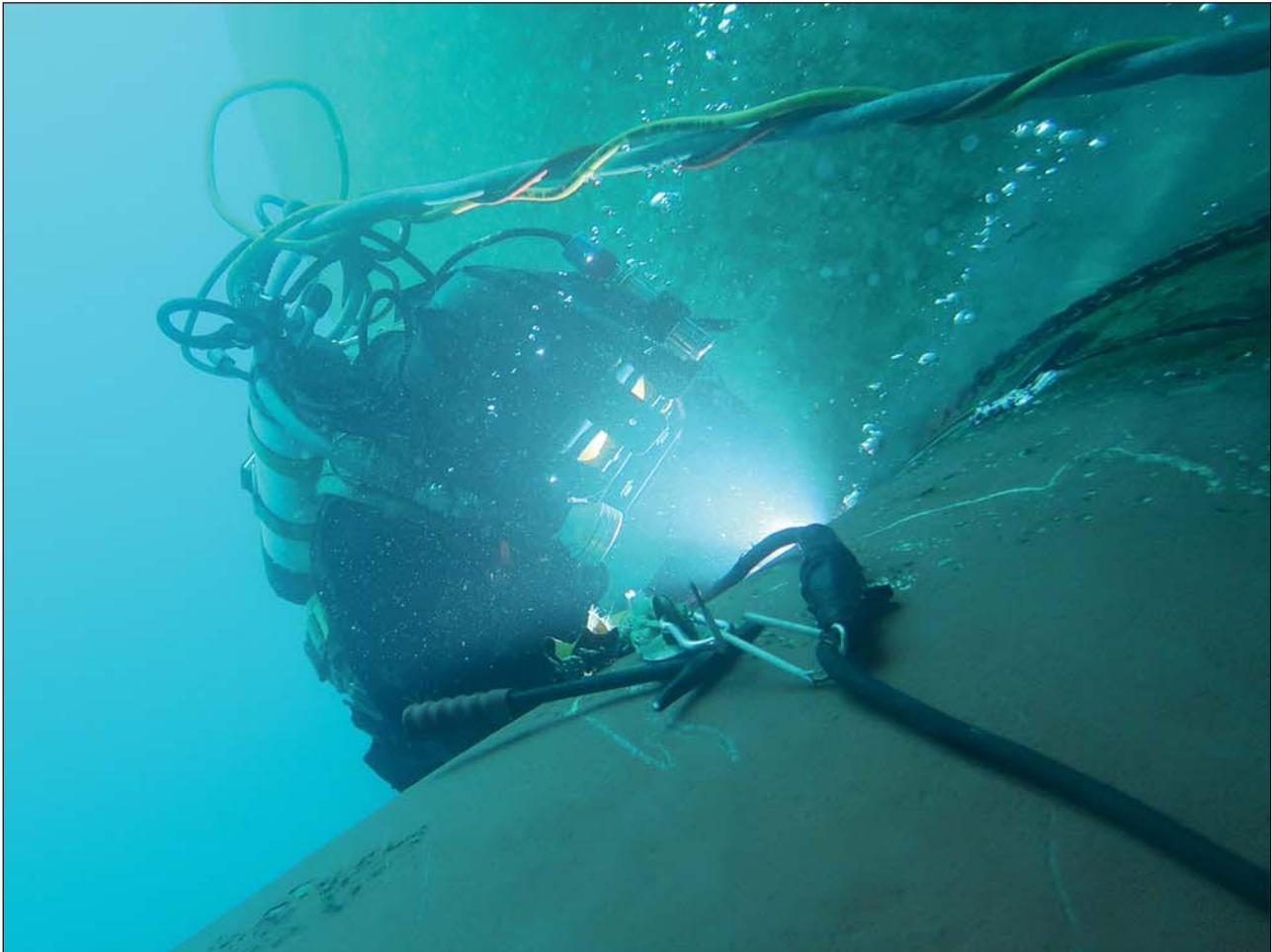
7. All welding work is carried out by certified Hydrex welders. They follow both external courses and in-house training. Underwater welding as well as dry welding can be trained at our fast response centers.

8. Our team members have to be flexible during an operation. They have to be able to respond to changes if the need arises. This is very important because they are the ears and eyes of our technical department during an operation.

9. Working in shifts is just one of the many ways in which we can adapt to a customer's needs. We know how important a schedule is for a ship and we make sure any operation is completed in the shortest possible time-frame.

10. One of our divers getting ready for underwater operation during a nightshift. By doing this our teams can work around the clock to save precious time for a ship owner.

# Stern tube seal repairs



**U**sing our flexible mobdock method to create a dry underwater environment, we have carried out stern tube seal repairs and replacements underwater for some years now in cooperation with OEMs.

This technology brings drydock

conditions to the ship rather than having to take the ship to drydock, saving a considerable amount of time and money in doing so.

This class accepted method is performed by our diving teams under our warranty. It can be used while the ship is carrying out its

usual cargo or other commercial operations in port.

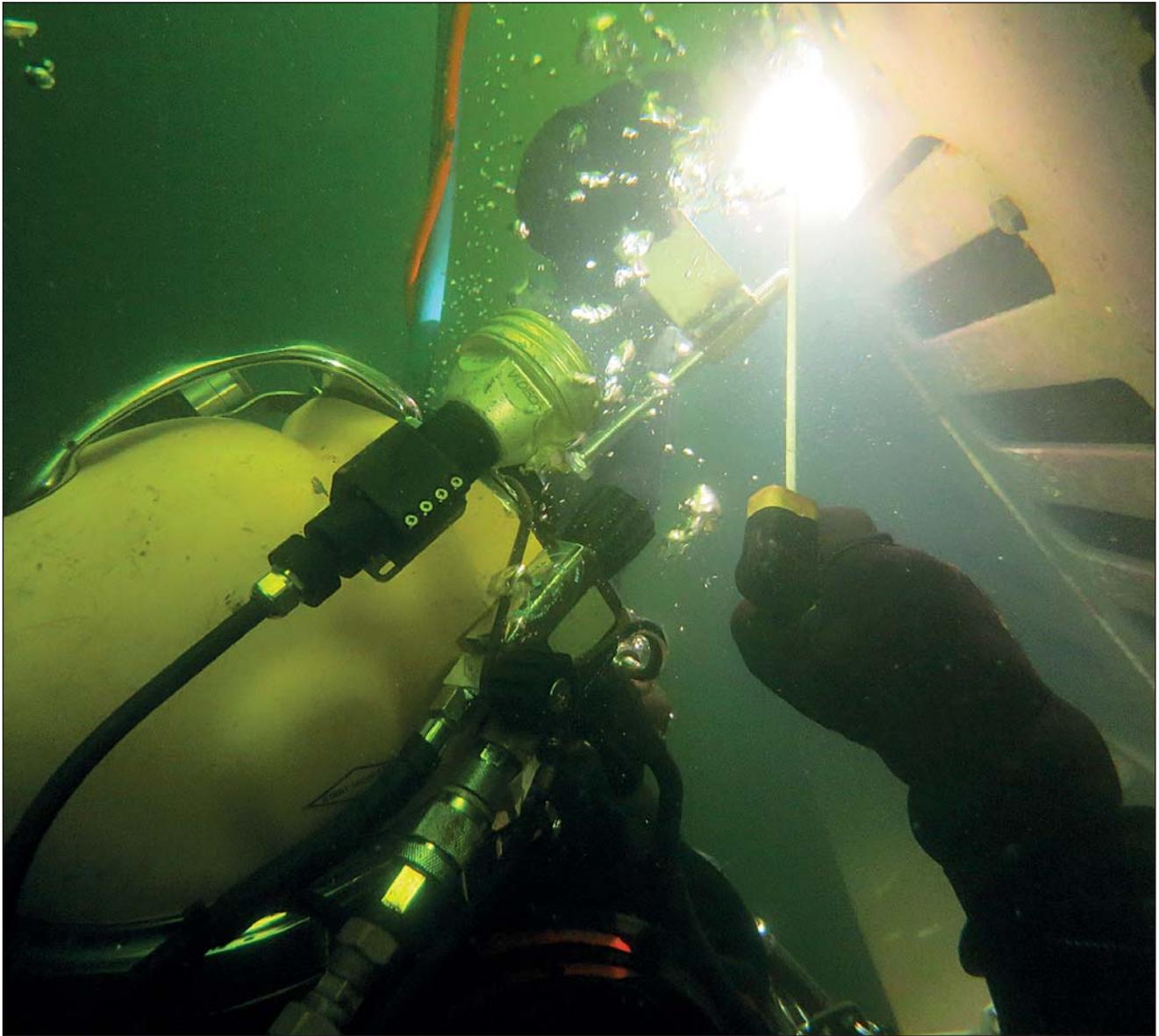
Visit the special stern tube seal repair section on our website for more information and examples of the many seal repairs we have performed in recent years.

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

**HYDREX**  
UNDERWATER TECHNOLOGY



# Sail safe with Hydrex



**HYDREX**  
UNDERWATER TECHNOLOGY

**Headquarters Hydrex N.V. - Antwerp**

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

E-mail: [hydrex@hydrex.be](mailto:hydrex@hydrex.be)

**Hydrex Rotterdam**

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

E-mail: [info@hydrex.nl](mailto:info@hydrex.nl)

**Hydrex Spain - Algeciras**

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

E-mail: [info@hydrex.es](mailto:info@hydrex.es)

**Hydrex LLC - Tampa, U.S.A.**

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

E-mail: [info@hydrex.us](mailto:info@hydrex.us)

[www.hydrex.be](http://www.hydrex.be)