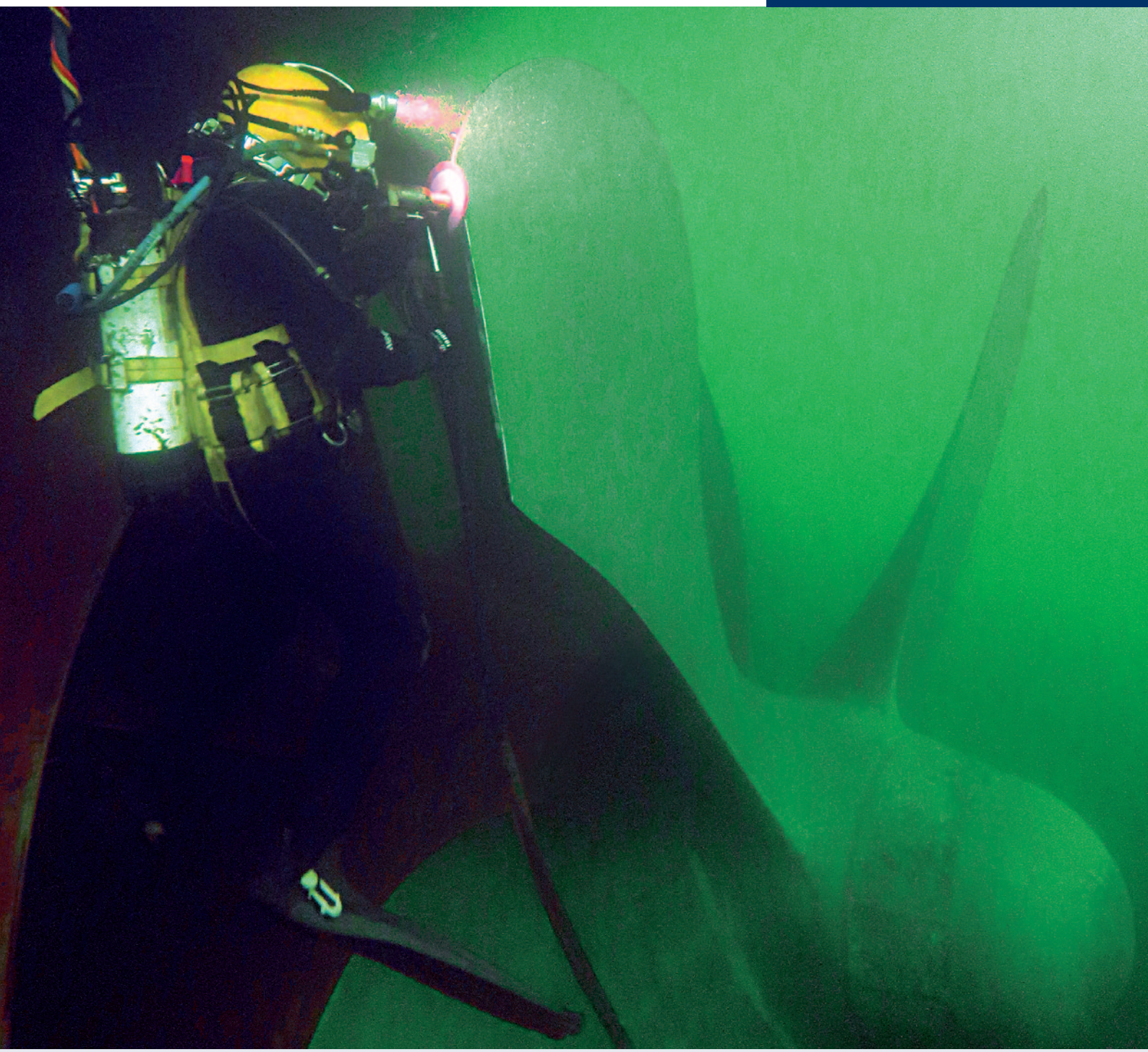
HYDREX®

UNDERWATER TECHNOLOGY

NEWS

LETTER | 344



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KEEPING SHIPS IN BUSINESS

ISO 9001 & 45001 certified

Underwater services and technology approved by:

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.

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

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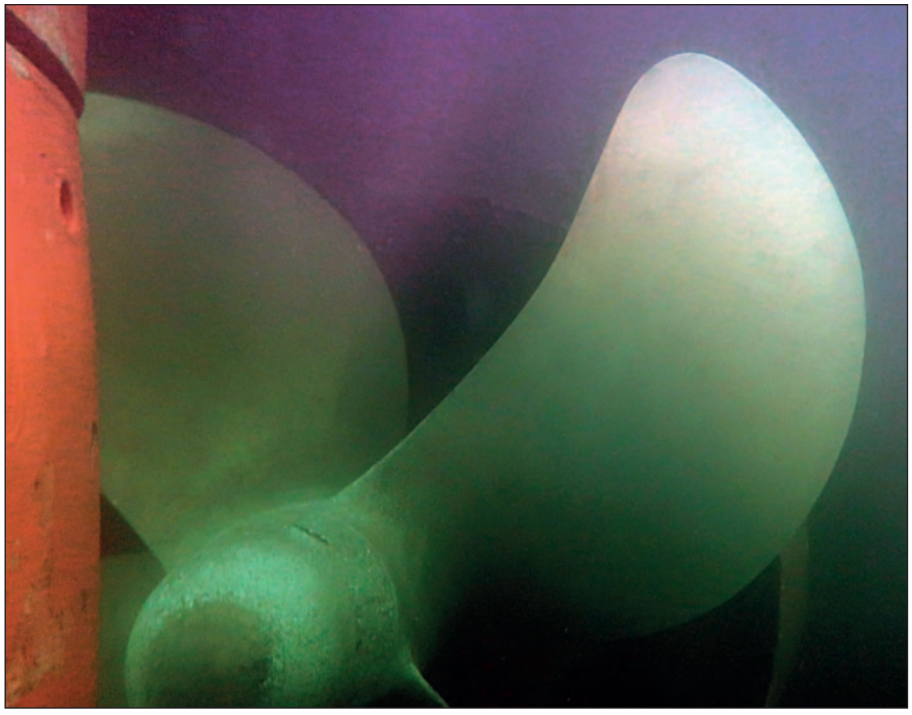
Propeller blade modifications in Estonia

With three of the four blades of its propeller severely bent due to impact with ice, a 189-meter bulker needed a fast, on-site solution. We sent a team to Tallinn, Estonia to restore the propeller's balance and efficiency. They carried out modifications to the blades while the ship was at anchorage.

Hydrex diver positioning cold-straightening machine.

Our men first performed a detailed underwater inspection of the damage. This showed them that blade A had suffered no damage while the opposite blade C was bent over an angle of 30°. This meant that the original shape of the blade could easily be restored with our in-house developed, cold-straightening machine.

The other two blades were more severely bent, with blade D bent as much as 120°. This was unfortunately too much to be straightened. Cropping the blade was the only option. To keep the propeller's balance, the opposite blade also needed to be cropped using the same cropping line. This was done using our propeller blade cutting equipment, which was also designed by our R&D department.

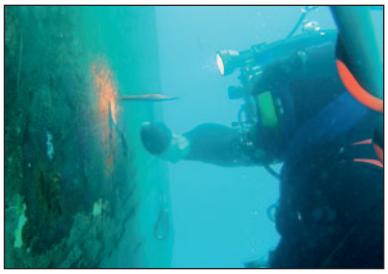


Propeller blade after straightening.

After both blades were cropped, the cutting lines were polished to minimize the chance of cavitation and optimize the blades' efficiency. Our team made sure they left enough material so that the removed blade tips could be easily welded back onto the rest of the blade during the next drydock visit.

While our divers were working on the propeller blades underwater, the team leader ashore monitored video links from underwater cameras on the divers' equipment. The exact dimensions and position of the damage could then be communicated between the divers and the technical team supervising the operation. This is essential because the calculations need to be perfectly accurate to achieve the best results in terms of propulsion efficiency.

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 shipowners 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 shipowners. 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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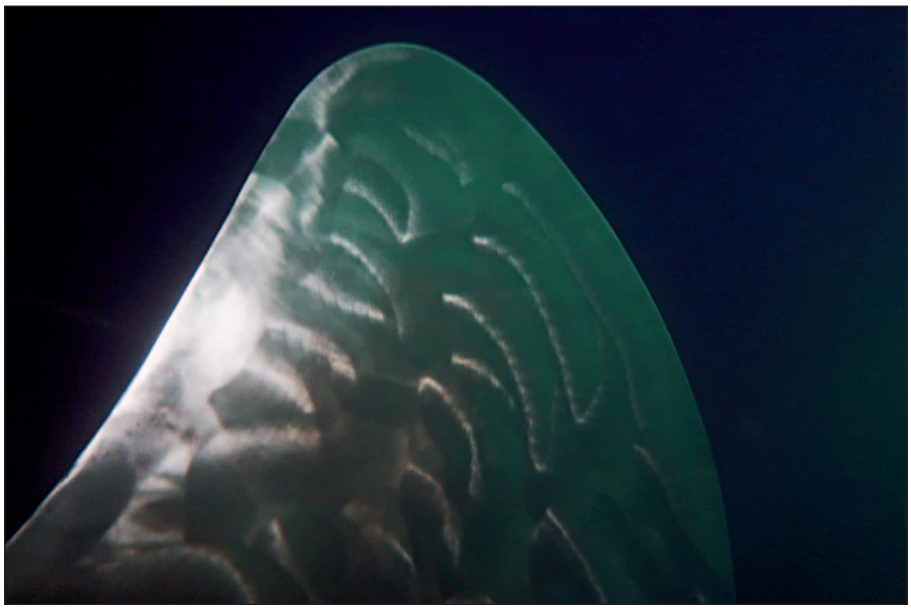
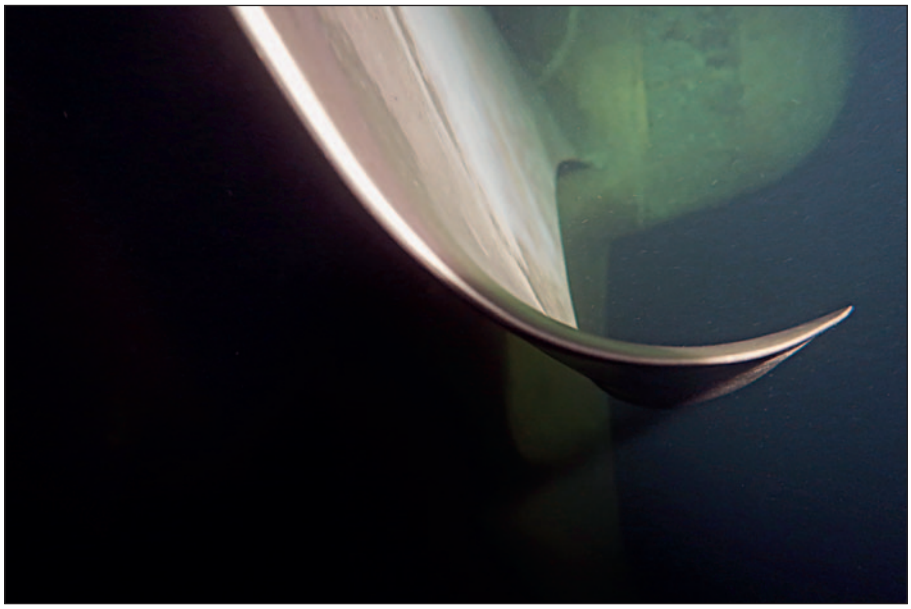
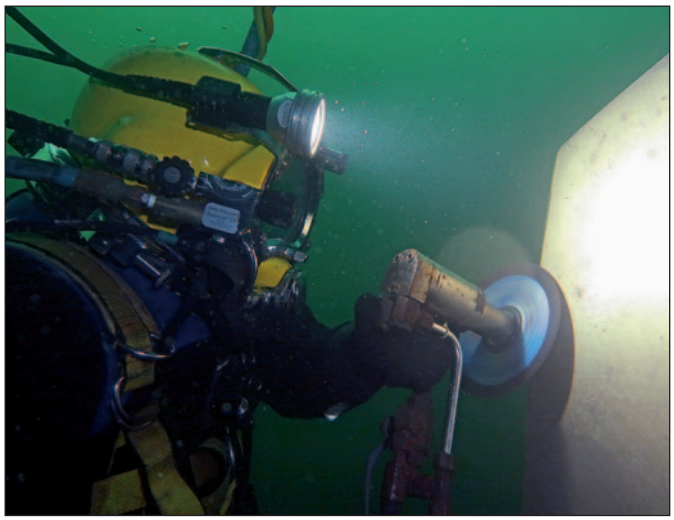


The blade was polished to restore its efficiency.

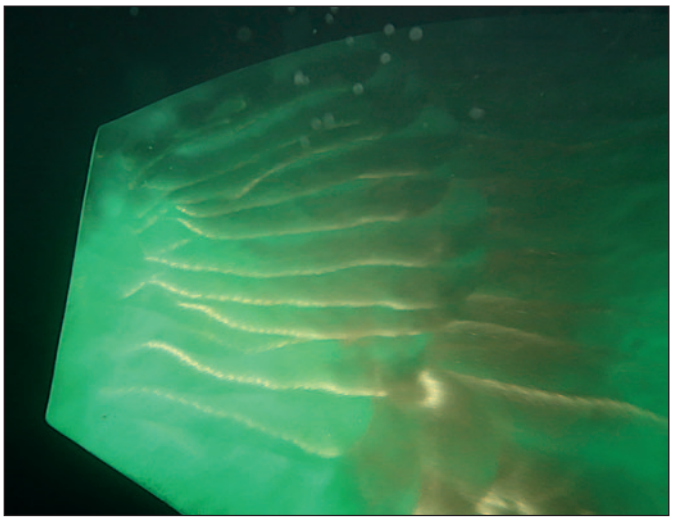


One of the most severely bent blades. Cropping was the only option.

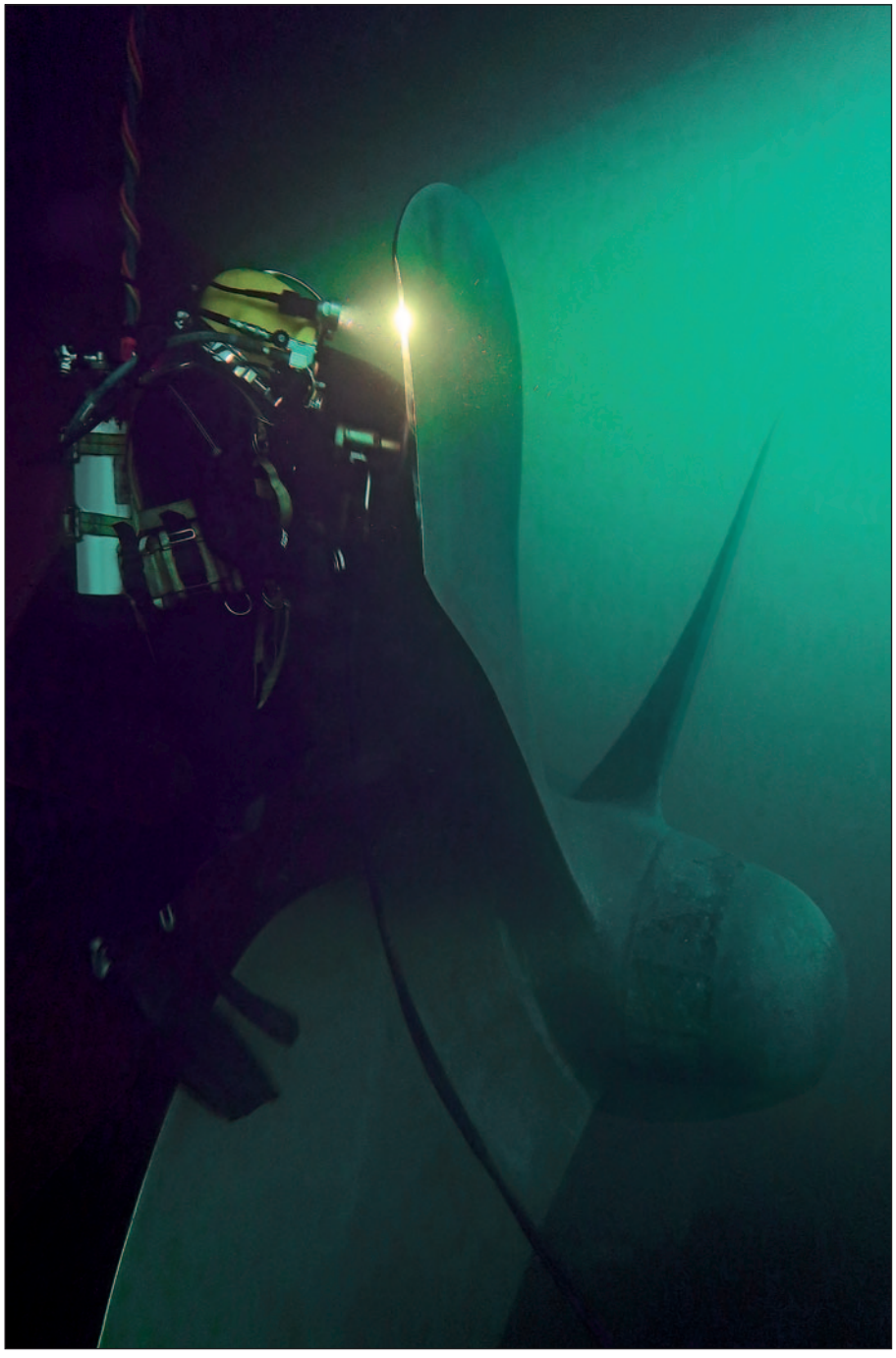
Hydrex diver getting ready to polish cropped propeller blade.



Polishing the cropped blades optimized their efficiency



Propeller blade after cropping and polishing.



Hydrex diver polishing one of the cropped blades.

Conclusion

Over 50 years of experience with propeller repairs has given us the tools and know-how to offer fast repair and modification services to vessels around the world. All types of operations can be carried out fast and efficiently afloat and underwater.

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

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

Hyd
Real savings ar

In the shipping industry, cost savings are vital. But true savings don't come from simply choosing the cheapest service provider—they come from choosing the most cost-effective solution that ensures repairs are done properly and last long enough to avoid repeat interventions. That's the Hydrex approach.

Accurate estimates that match reality

At Hydrex, our first service to you is entirely **free**: we evaluate your problem to determine if it can be solved while the ship is still afloat. We review drawings, photos, videos, and consult your engineering officers—all at no charge. If we can repair underwater, you avoid dry-dock entirely. If not, then it's the only option—and at least you'll know. That clarity alone can be a major cost saver right from the start.

Once we confirm an afloat repair is feasible, we provide a precise estimate based on decades of experience and rigorous on site training. Our technical teams regularly drill procedures in-house to ensure our estimates align with actual execution time and cost – rare in this industry, but standard at Hydrex.

The bigger picture

It's easy to compare the hourly rates of underwater service providers and assume the lowest price will save money. Hydrex knows from experience that this isn't the full picture. What matters is the final invoice, the quality of the repair, and how long it remains effective.

If a new insert is installed but it starts leaking again after a few months, no money has been saved. A repair that fails early costs more in the long run—both in money and downtime.

rex:
e in the results

Savings through afloat repairs

One of the biggest cost advantages Hydrex offers is the ability to carry out high-quality repairs underwater, allowing vessels to avoid drydock whenever possible. Drydockings are not only expensive but also cause substantial loss of operational time. By offering solutions that let ships remain afloat and in service, we significantly reduce these costs without compromising on the repair's durability or safety.

50 years of expertise

With five decades of experience, we have perfected methods and developed tools that ensure our underwater work meets the same standards as drydock repairs. This expertise is key to delivering sustainable savings:

- Accurate diagnostics prevent unnecessary or incorrect interventions
- Proven techniques ensure lasting results
- Specialized equipment and training guarantee repairs are performed to the highest standards.

The result is no repeat jobs and minimized operational disruption, both of which are essential to controlling long-term maintenance costs.

Planning and execution that save

Every project we undertake is carefully planned to deliver value. Our teams combine detailed assessments with efficient logistics to ensure work is completed swiftly, correctly, and only once. From the moment we receive an inquiry, we focus on identifying the most effective, time- and cost-efficient solution for the vessel owner. ■

With 50 years of expertise, Hydrex delivers lasting solutions that protect your bottom line.

Hydrex R&D: pioneering underwater repair solutions

Headquartered in Antwerp, Belgium, we have been at the forefront of underwater maintenance and repair services for the maritime industry since the company was founded in 1974. Central to this success is our R&D department, which continually innovates to provide efficient, cost-effective, and environmentally-friendly solutions that minimize the need for drydocking.

We continue to invest in the research required to keep evolving the techniques available to our teams. These teams consist of diver/technicians who cooperate closely with our R&D department and adapt to difficult or changing circumstances. It is vital that they adhere to the highest quality and safety standards during any operation.

Hydrex has introduced new welding techniques.

Innovative repair technologies

One of Hydrex's most notable contributions to underwater repair technology is the development of the flexible mobdock system. This mobile mini drydock creates a dry working environment around specific areas of a vessel, allowing for permanent repairs to be conducted underwater. This technology has been instrumental in performing repairs on seals, thrusters, and other underwater components without the need to bring the vessel to a traditional drydock, saving time and reducing operational disruptions.

Our teams consist of diver/technicians who cooperate closely with our R&D department.

Advances in propeller maintenance

Hydrex's commitment to innovation is further exemplified by the development of the propeller blade cold straightening machine. First introduced in 2002, this technology allows for the underwater straightening of bent propeller blades, a problem that previously required cropping. By preserving the original

Underwater welding practice in the dive tank makes it easier for our teams to operate on the job.

blade length and shape, this method maintains the propeller's efficiency and balance. The R&D department continues to refine this technology.

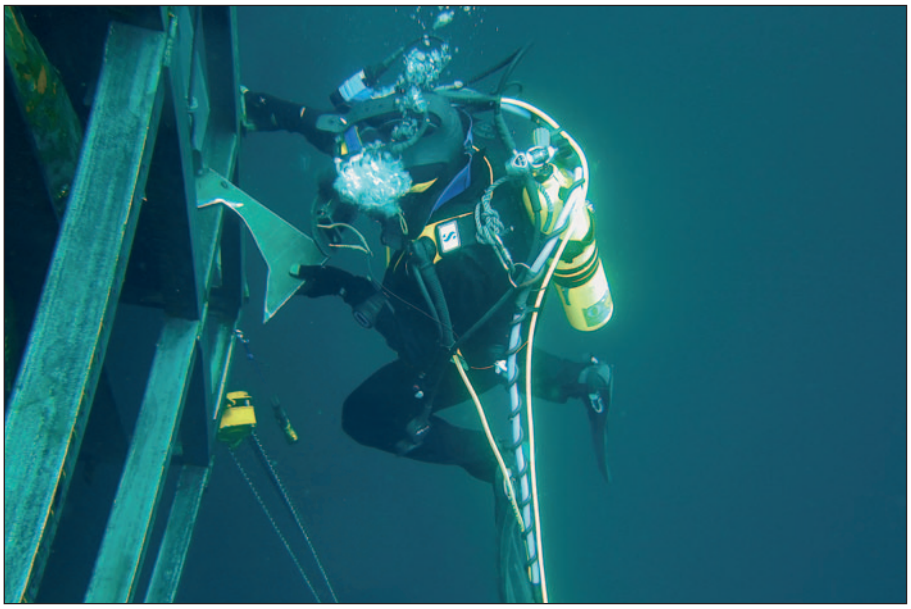
Customized solutions and global reach

Understanding that each vessel and situation is unique, our R&D team collaborates closely with clients to design and implement tailor-made solutions. From evaluating the feasibility of underwater repairs to designing and constructing specialized equipment, the department ensures that each project meets the specific needs of the client. This approach has been successfully applied in many complex repairs, such as the installation of permanent thruster repair systems on offshore support vessels, the replacement of corroded hull plating in a dredger, a method for extending the drydocking interval of a semi-submersible to 15 years, and many others.

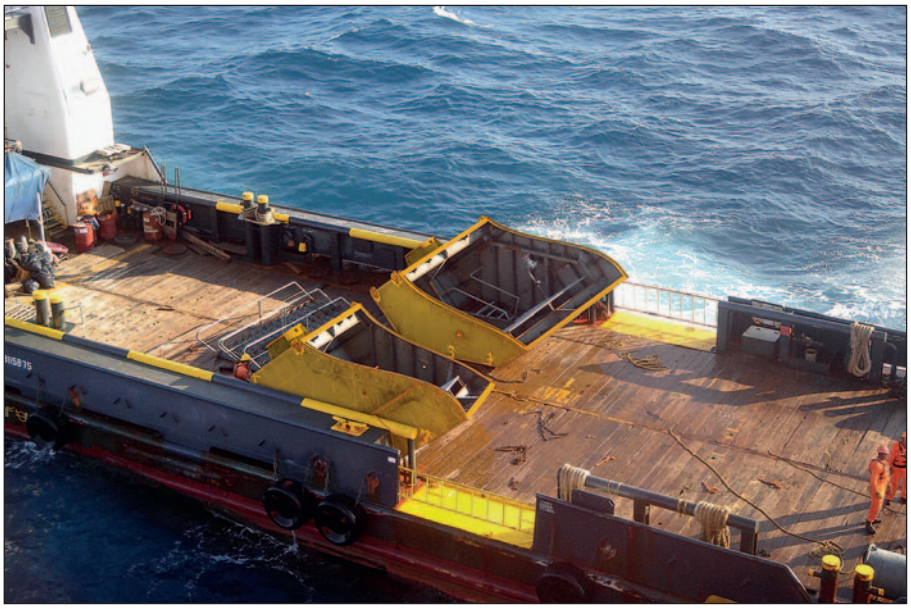
Our global network of offices and agents, combined with our fast-response centers, allow for rapid deployment of our technologies and

A special cofferdam was constructed to replace spinner cone bolts without going to drydock.

Over the years our in-house R&D department has kept improving the flexible mobdock technology.



Special cofferdam designed to cover a 1.5 meter crack.



Permanent thruster repair and replacement system.

teams worldwide. The repair systems we have developed are designed for quick assembly and can be transported by air, ensuring that vessels receive timely assistance regardless of their location.

Commitment to continuous improvement

The R&D department's dedication to continuous improvement enables us to remain a leader in underwater repair technologies. By investing in research and staying abreast of the latest advances, our team develops new techniques and equipment that enhance the efficiency and effectiveness of underwater repairs. This commitment not only benefits customers by reducing downtime and costs but also contributes to the broader goal of sustainable maritime operations.

Conclusion

We keep evolving the repair techniques available for our diver/technicians. Along with the continual training of our entire staff this is done with the customer's benefit in mind. Our goal is to offer you the most efficient solution. In all cases the research and development are aimed at reducing cost and off-hire time for customers while maintaining the highest safety and quality standards of repair and maintenance.

If you have a problem, any problem, with a vessel give us a call or send us an e-mail. We will evaluate the situation and let you know whether an underwater solution is feasible. ■

+ 32 3 213 53 00 (24/7)
hydrex@hydrex.be

Stern tube seal replacement in Rotterdam

Hydrex prepared for diving at the quayside in Rotterdam.

Hydrex very recently received a call for an emergency stern tube seal repair on a 170-meter tanker in Rotterdam, Netherlands.

After the inquiry was received in the morning, we provided a quotation within two hours which was accepted almost immediately. The operation was scheduled to start Thursday August 7th.

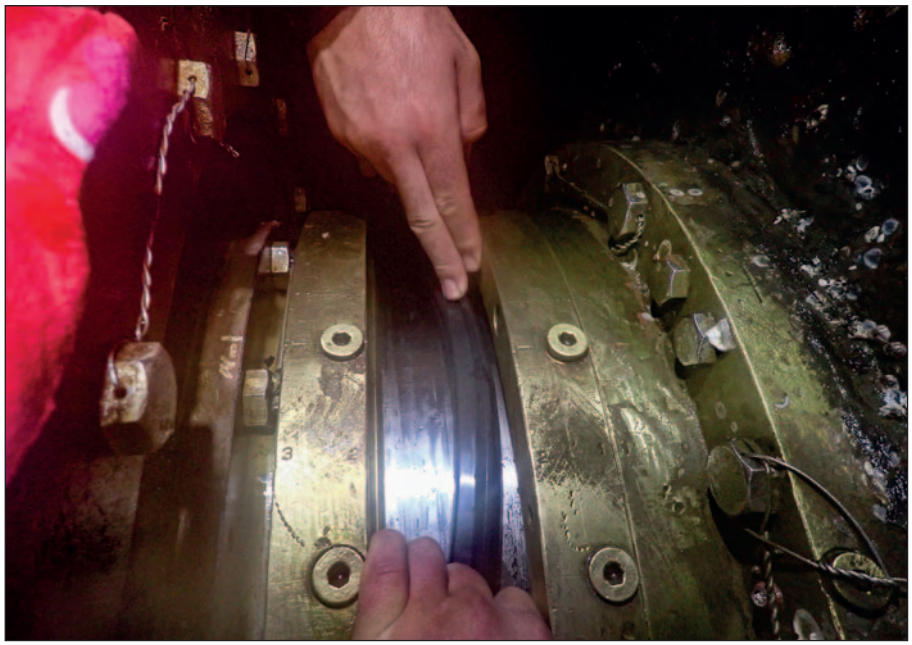
Two teams of five diver/technicians each (day and night shifts) mobilized to Rotterdam. The night shift started the job late on August 7th. They went on board to carry out safety procedures, then began diving, starting with an inspection, removing the rope guard, taking wear down measurements and then assembling the habitat ready for the day shift to begin the seal replacement in the morning of the 8th.

All four seals were replaced. The stern tube assembly was reassembled and tested.

The job was completed on Sunday, August 10th early in the morning with the ship ready to sail.

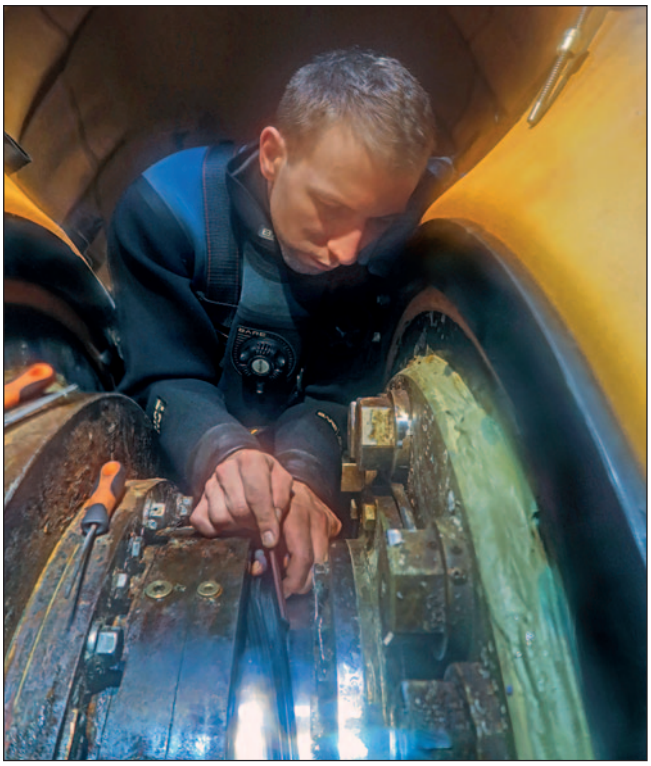
The total time our team needed for the job was several hours less than the estimate.

The customer was very pleased with the results and with Hydrex's performance throughout. ■



End result after correctly bonding a seal.

The most cost-effective stern tube seal repair/replacement available anywhere



- Immediate response to minimize vessel downtime
- Accurate estimates with final invoices that match
- Typical stern tube seal repair/replacement by Hydrex: Two (2) days start to finish
- All major brands repaired/replaced

We're here when you need us

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hydrex@hydrex.be

For more information visit www.hydrex.be