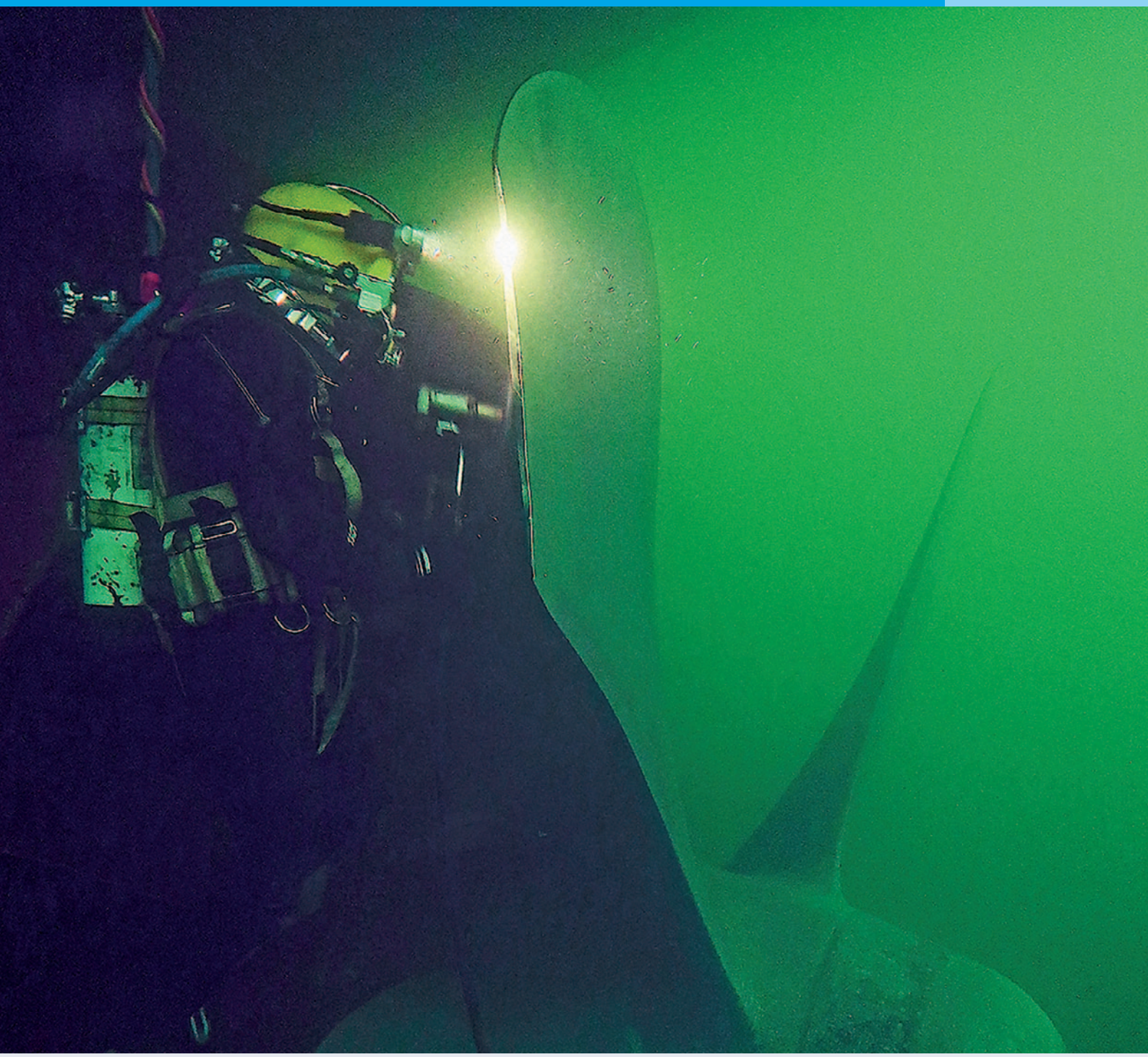
HYDREX®

UNDERWATER TECHNOLOGY

Magazine

Number *303*



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

The last couple of months have been very busy ones for our diving teams. They traveled far and wide for a broad range of operations, sometimes back-to-back. This was no problem for them as they are trained to adapt to all possible circumstances without losing the quality Hydrex is known for.

Among these operations were several large temporary and permanent hull repairs, scrubber pipe repairs, a bow thruster replacement, a range of propeller blade modifications and a stern tube seal repair.

In this magazine you can read about one of these jobs, but make sure to keep an eye out for the next issues as we will be covering some very interesting stories in the coming months about the other operations.

As always, don't hesitate to contact us if you need our assistance with any problem you might encounter with your vessel. We can help you find the best possible solution and keep the downtime to the absolute minimum.

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ISO 9001 certified

Underwater services and technology approved by:

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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 mid-winter to restore the propeller's balance and efficiency. They carried out modifications to the blades while the ship was at anchorage.

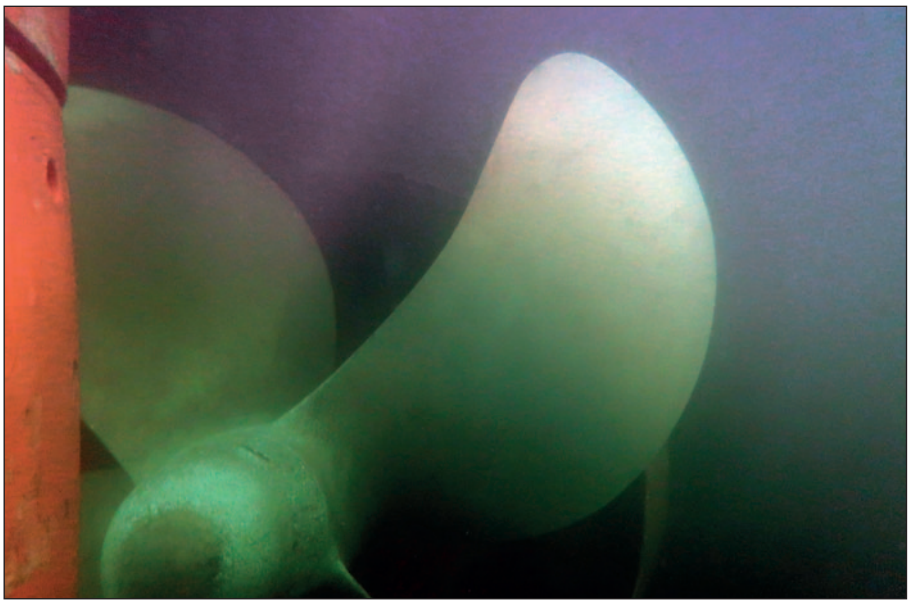
Hydrex diver positioning cold-straightening machine.

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.

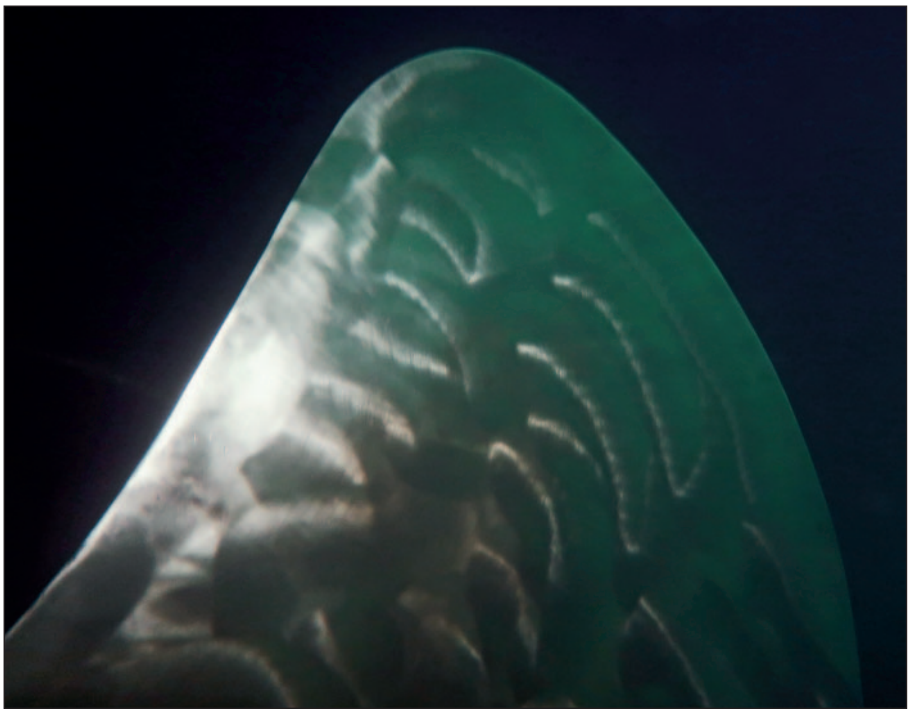
The other two blades were more severely bent, with blade D bent as much as 120°. This was unfortunately too much to be straightened. Cropping the blade was the only option. To keep the propeller's balance, the opposite blade also needed to be cropped using the same cropping line. This was done using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

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.

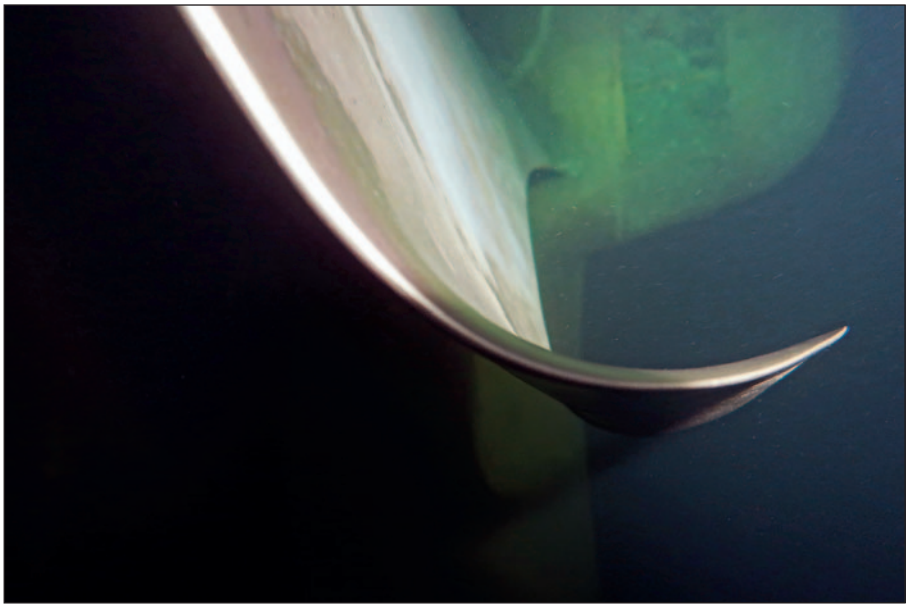
While our divers were working on the propeller blades underwater, the team leader ashore monitored video links from underwater cameras on the divers' equipment. The exact dimensions and position of the damage could then be communicated between the divers and the technical team supervising the operation.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



Propeller blade after straightening.



The blade was polished to restore its efficiency.



The two most severely bent blades. Cropping was the only option.

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.

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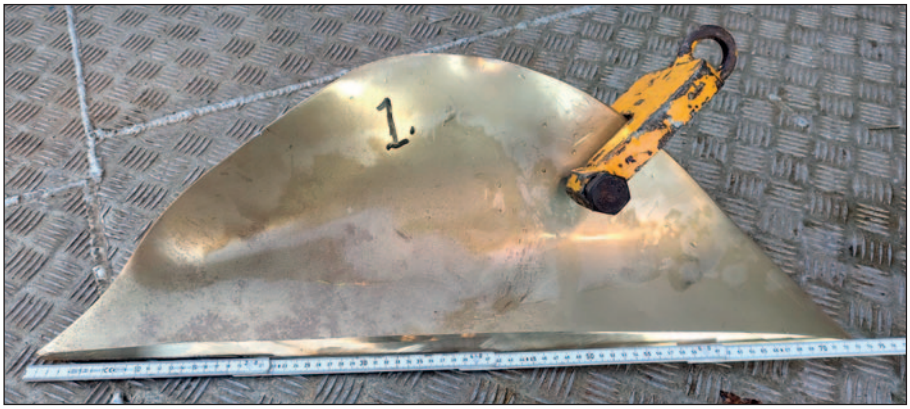
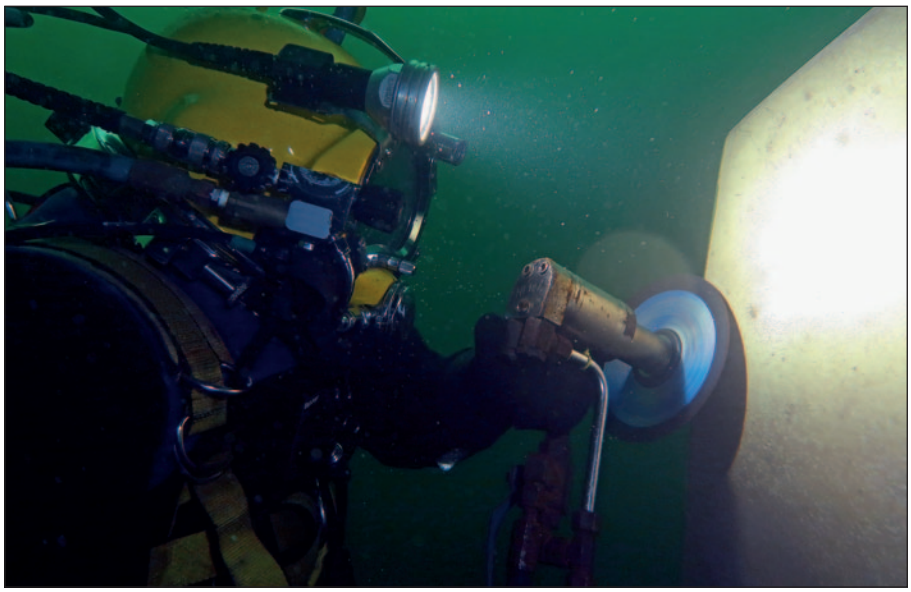
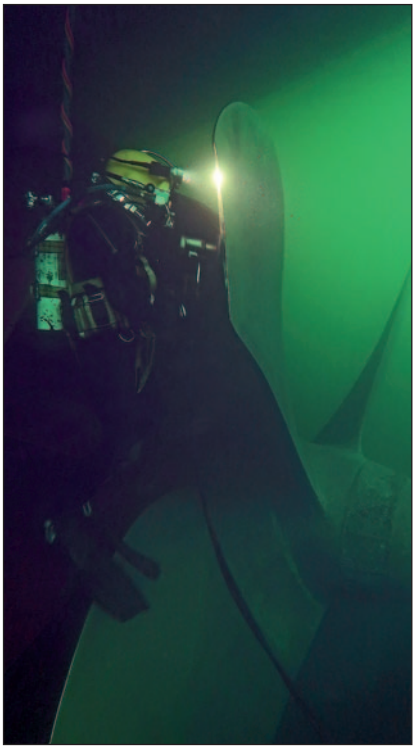


One of the two cropped pieces.



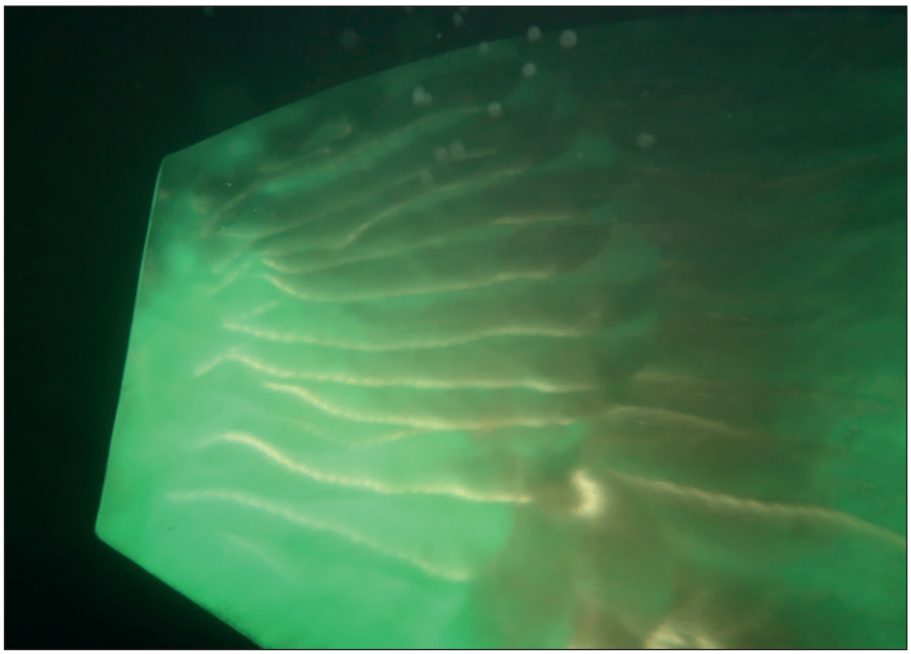
Polishing the cropped blades optimized their efficiency.



Hydrex diver polishing one of the cropped blades.

Conclusion

Close to 50 years of experience with propeller repairs has given us the tools and know-how to offer fast



Propeller blade after cropping and polishing.

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. ■

Wide range of propeller modifications

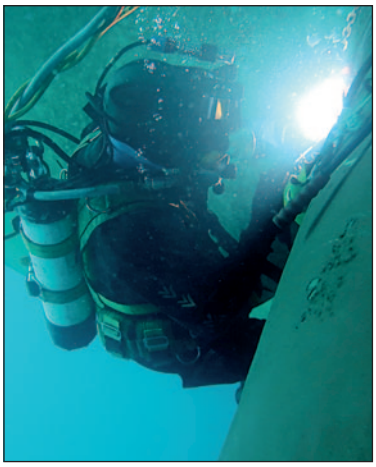
Our teams can also carry out any other repair work on the propeller. Examples of this are the removal and reinstallation of entire propeller blades or replacement of the propeller seal ring.

Another example is prescriptive propeller maintenance. When a container ship suffered propeller damage after a particularly severe winter, the owner wanted to find a way of preventing ice-damage to propellers on other vessels in the fleet. We strengthened the blades with modifications based on a specific design developed in cooperation with the original equipment manufacturer. The strengthening made them significantly less susceptible to ice-impact and debris, without decreasing the propellers' performance.

Detailed crack inspections can also be carried out on propeller blades. An informed decision can then be made concerning any required follow-up action. Catching problems early can save much time and money.

A propeller modification can easily be combined with any other maintenance or repair operation that needs to be carried out on the vessel. Thanks to the flexibility of our teams this allows a vessel to keep its schedule.

Stern tube seal repairs



Using 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.

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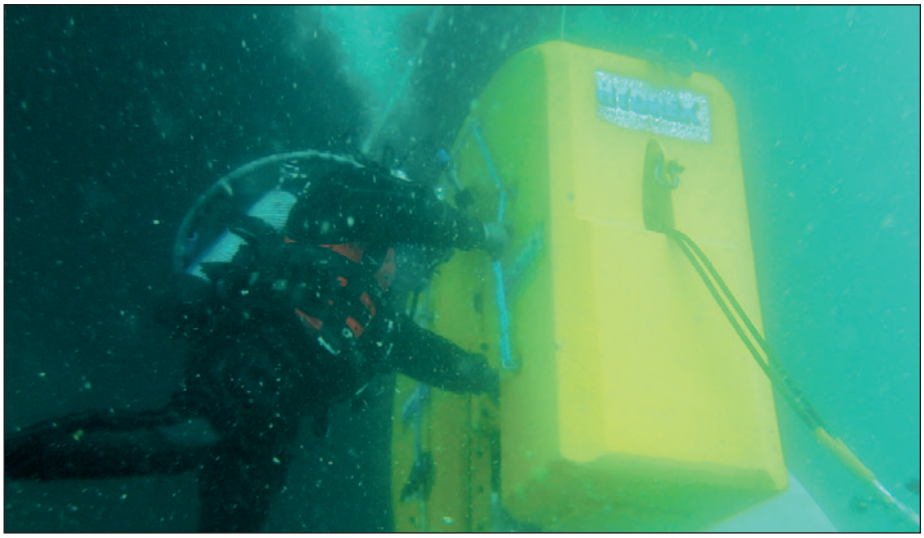
Underwater re

Seal repairs
We have developed a reliable technology that enables the underwater replacement of all types and sizes of shaft seals.

Thruster repairs
We can assist shipowners with almost an

Propeller repairs
When damage to propellers occurs due to impact with ice and other debris we can fix these, even if the damage is extensive.



Rudder repairs
We can perform permanent repairs on any at anchorage and cargo operations contin

Underwater maintenance

Inspections
We offer a full range of hull monitoring services including IWS and class inspections. This gives owners total control of their ship's hull condition.

Propeller buffing
We developed an efficient technology to enhance propeller blade surfaces underwater and achieve surface conditions never seen before.

Anode installation
We can install both ICCP and sacrificial anodes. If needed we can supply the anodes.

epair solutions

ny problem encountered with thrusters.

y type of rudder while the vessel remains
nue.

Hull repairs

Our on-site hull repair services include the renewal of both small and large areas of damaged hull plating.

Scrubber repairs

We can assist shipowners at moment's notice when a scrubber pipe corrodes and needs replacing.

Transducer installation

Our teams can very quickly replace or install speedlogs and echosounders without any hindrance to a ship's schedule.

Blanking

We can blank overboard valves, inlets, seachests or any other underwater opening to allow for onboard repairs. This is done very quickly and on-site.

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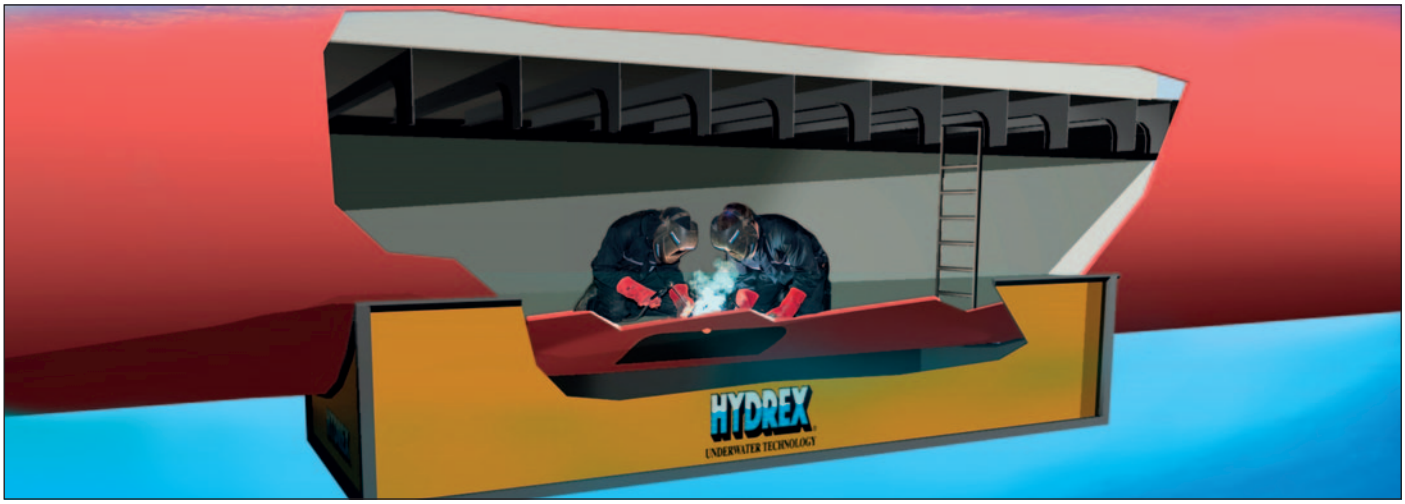
Hydrex permanent hull repairs out of drydock



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

Hydrex 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?

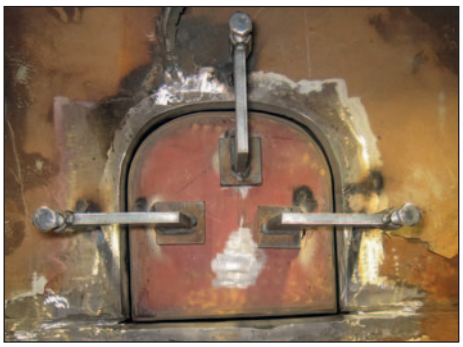
1. We start off with an inspection to determine extent of defect.
2. Made-to-measure cofferdam secured on outside of hull to keep water out and create a dry environment during repair.
3. Crack removal/defective plating cropped.
4. Insert fitted.
5. Insert tacked in place.
6. Class approved full penetration 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.

In-water bow thruster repairs

The Hydrex 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 them 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.

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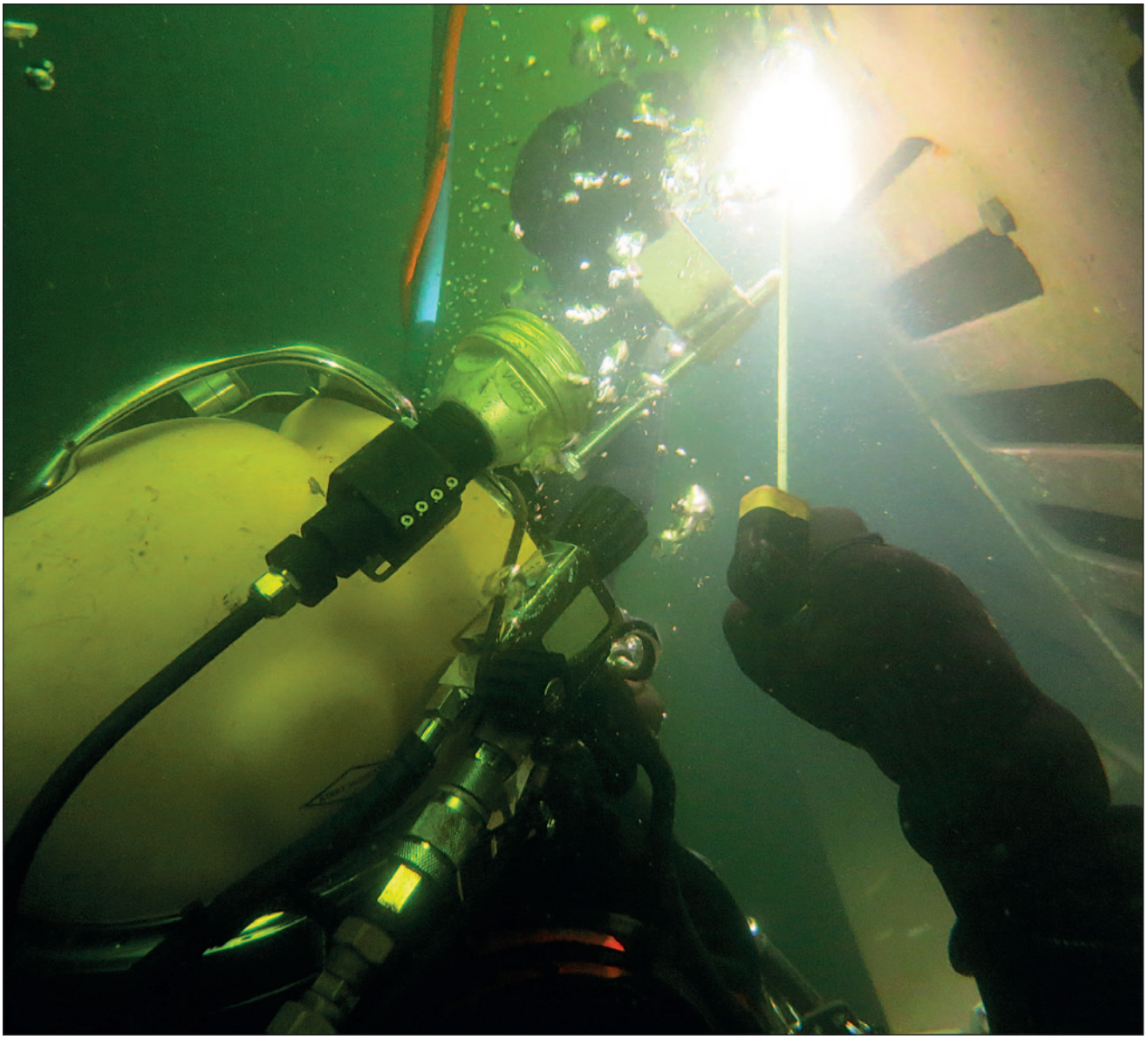
Sail safe with Hydrex



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