HYDREX®

UNDERWATER TECHNOLOGY

Magazine

Number *285*

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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Editorial

When we send a team to an operation, any operation, we have one goal in mind: to get the job done in the shortest possible time and to the highest standards. This has been our policy since Hydrex was founded in 1974. Our track record proves this.

Over the years we have not only built long-lasting relationships with our customers, but also with classification societies and OEMs. Correct and direct communication is an essential factor in establishing and maintaining a network you can rely on. This allows us to quickly arrange spare parts, an engineer from the OEM or any external equipment needed for an operation.

On our website (www.hydrex.be) you can find a more comprehensive overview of the services we offer to our customers. If you need more information on any these, do not hesitate to contact me. I am always available to answer your questions.

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ISO 9001 certified

Underwater services and technology approved by:

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Scrubber overboard pipe repairs in Rotterdam

Last month our diver/technicians carried out several scrubber overboard pipe repairs in Rotterdam. On both a 140-meter roro vessel and a 200-meter container ship the corroded areas of the scrubber pipes were grinded out and rewelded. In both cases the pipes were protected with Ecospeed, a chemically resistant coating produced by Subsea Industries. The same protection was given to the three new pipes that were installed on a 400-meter container ship.

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

One of the corroded scrubber overboard pipes on container vessel.

Scrubber pipe replacement

This was the case for one of the three overboard pipes of the 400-meter container ship. The owner asked us to replace the leaking pipe and to perform an inspection of the other two pipes. This revealed that they were also heavily corroded.

In communication with the owner it was decided to replace these scrubber pipes during the same operation to prevent new leaks in the near future.

Three cofferdams were constructed at our workshop based on the drawings sent by the customer. The team installed these over the outlets of the pipes. This allowed them to perform work inside the engine room without water ingress.

Next the team cut away the old pipes. The shell plating was then prepared for the installation of the replacement part. The new pipes had also been constructed at our warehouse in Antwerp with a diffuser and flange already in place. The pipes were then positioned and secured with a full penetration weld. Next and independent inspector carried out NDT testing of the welding work.

To prevent the new pipe from corroding, the inside was coated with Ecospeed. This product is produced by Hydrex sister company Subsea Industries. Ecospeed is highly chemically resistant. Taking into account the nature of the process taking place inside a scrubber, this is essential for a lasting protection of the pipe. Ecospeed can also be used to

Hydrex welder during installation of one of the new pipes.

Preparing the hole for installation of the new pipe.

protect a newly installed scrubber system from day one.

Lasting corrosion protection

The corrosion on the scrubber overboard pipes of the other two ships was less severe. It was situated on the flange weld seams. A full replacement of the pipes was not needed.

In both cases our diver/welders grinded away the affected area before rebuilding it back to its original thickness with clad welding.

When the welding was complete the surface was polished and a MPI was carried out by an independent inspector.

The inside of the pipes was then coated with Ecospeed to keep them safe from further corrosion.

Scrubber pipe secured and ready for full penetration weld.

One of our diver/welder during operation in Rotterdam.

NDT testing of the welding work on one of the pipes.

To prevent the new pipes from corroding, the inside was coated with Ecospeed.

Fully installed scrubber overboard pipe on container ship in Rotterdam.

Filling up the affected area with clad welding.

Corroded flange weld seam of overboard pipe on 200-meter ship.

Scrubber overboard pipe ready to be assembled again.

Conclusion

We offer a full package to owners that are experiencing similar damage. 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 in a few months' time for the same problem.

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. ■

Contact us to find out how we can assist you. We are available 24/7.

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You can contact us at:
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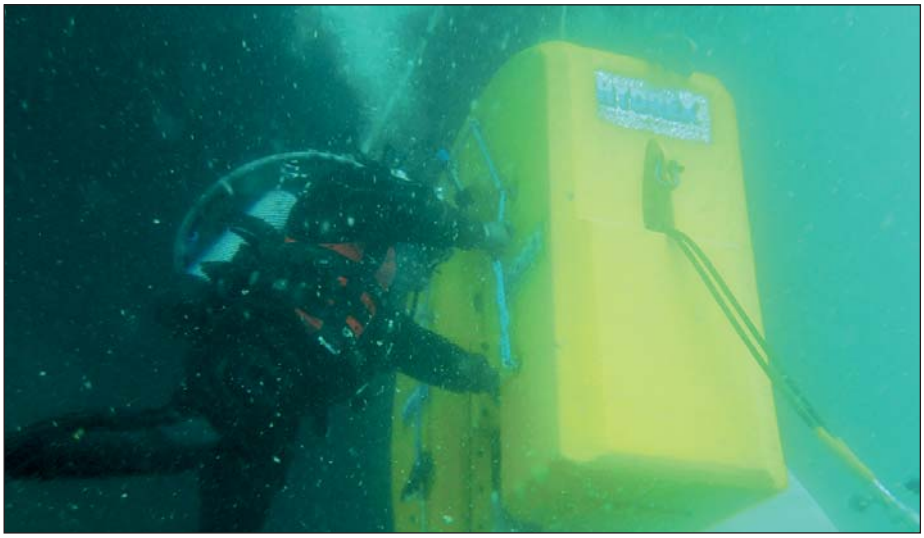
KEEPING SHIPS IN BUSINESS

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 ar

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 an
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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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).

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

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The real value of underwater inspections

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 their ship's hull condition and consequently its performance, with only a minimum of work on their part.

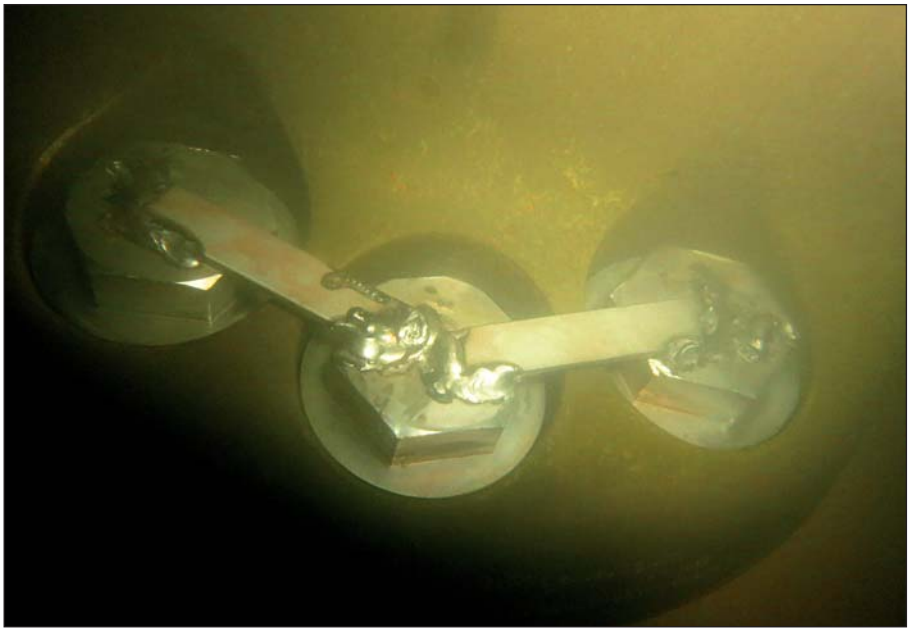
Hydrex diver/technician during the inspection of a stern tube seal assembly.

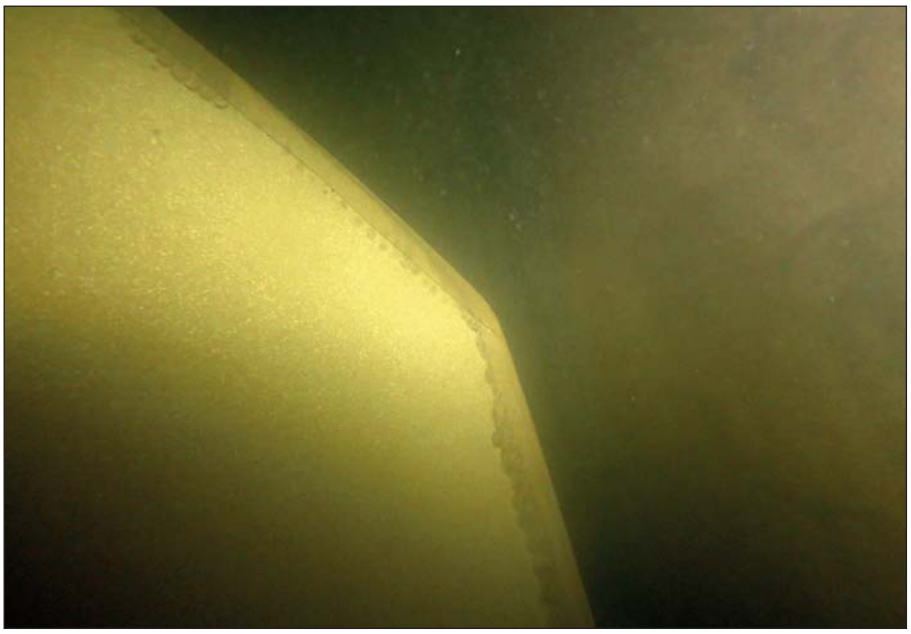
Underwater inspections represent a small investment and, if properly done, have the potential to save an owner a great deal of money.

Competent underwater inspections, particularly if carried out regularly can detect

- Problems with the propeller such as bent or damaged blades (which can put undue strain on bearings), roughness due to fouling, cavitation damage or bad polishing which can reduce the propeller's efficiency.
- Anodes which have wasted away, rendering the cathodic protection system unworkable, leading to corrosion and added hull friction.
- Hull cracks or other damage which, if not rapidly arrested, can worsen and increase the cost of any subsequent repair.
- Ropes inside the stern tube assembly which may cause seal problems if neglected.
- Leaking stern tube or thruster seals which can cause an environmental problem in port and lead to costly changes to a ship's schedule if not caught quickly and repaired.
- Clogged sea chest grids (preventing proper cooling of the ship's engines), or loose or damaged grids.
- Loose or broken grids on thruster tunnels which can result in damage to thruster propellers.
- Damaged, bent, broken or detached bilge keels which again can become much worse if not caught early.
- A damaged rudder which will continue to deteriorate if not addressed rapidly, resulting in the need for much more costly repairs and representing a safety hazard in extreme cases.

Hydrex team arriving next to a ferry in Calais for a bow thruster inspection with a very short window.





All three bow thrusters were inspected in the short time before the ferry had to sail again.

Hydrex divers are experienced in both maintenance and repair operations.

Regular inspections carried out by competent divers and followed by comprehensive and accurate reports can detect any of these or other problems so that they can be corrected early and prevent the more costly repair which neglect and further damage would incur.

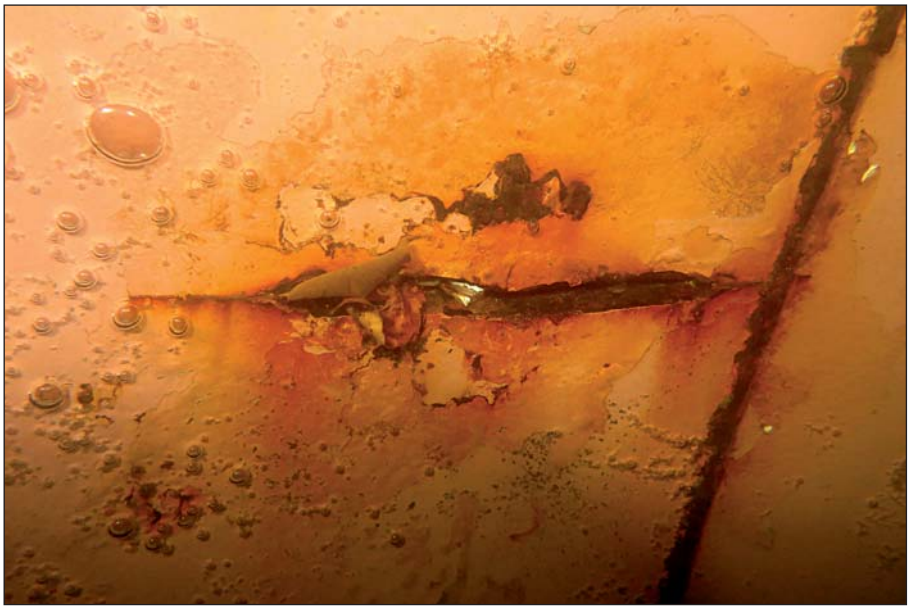
Because we have 45 years of experience in both maintenance and repair services, we can carry out any required follow up repair very fast without any unnecessary loss of time. Planning in a new slot is not needed as all our diver/technicans are skilled to perform the repair work as well.

If the damage found during an inspection can be anticipated, the required equipment can be mobilized in advance. Otherwise it can be transported to the location of the vessel immediately from one of our fast response centers where a large stock is available for our teams at all times.

This was demonstrated when a rope guard had come loose, which was revealed during an underwater inspection. The Hydrex team secured the rope guard without any delay for the owner.

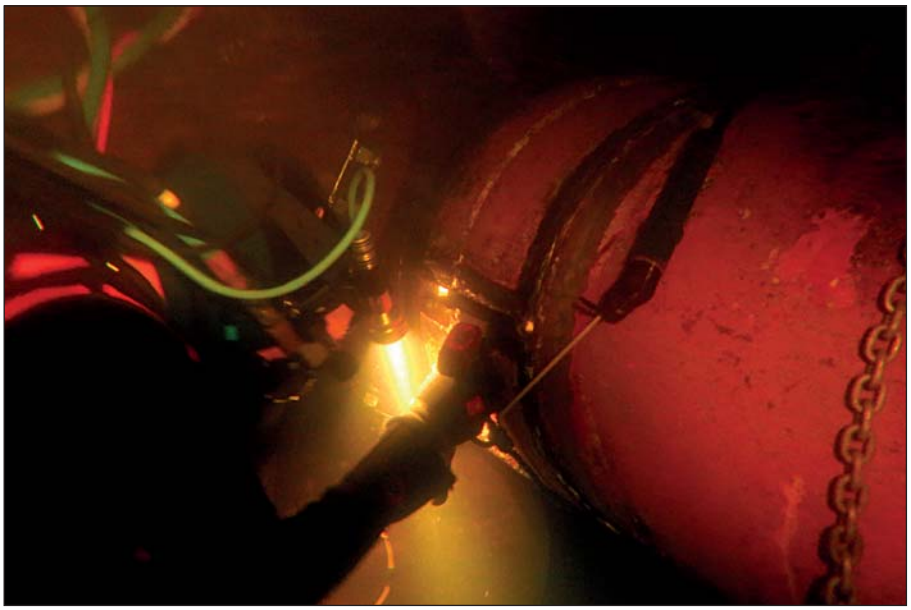
Inspections before drydocking

There is another important way for underwater inspections to be used to save costs. A thorough inspection carried out a week or two before a ship is due to go to drydock can save a great deal of money in drydock. An accurate estimate of work required can lead to efficient scheduling. If thrusters are to be repaired in drydock they can be removed prior to the ship's drydocking and can be repaired and ready for reinstallation when the ship is in dry-



If damage is found during an inspection, our team can perform the required follow up repair.

We can carry out repairs for the shipping as well as the offshore industry.



Hydrex diver working on the rope guard.

dock, rather than waiting until the docking to find out and then having to extend time in drydock in order to repair and replace the thruster.

An accurate report on the state of the rudder can lead to effective repair and recoating of the rudder so that it does not suffer further damage.

The all-too-frequent scenario of a low estimate for drydocking which grows exponentially once the dry-dock gate has closed and the ship is out of the water can thus be avoided.

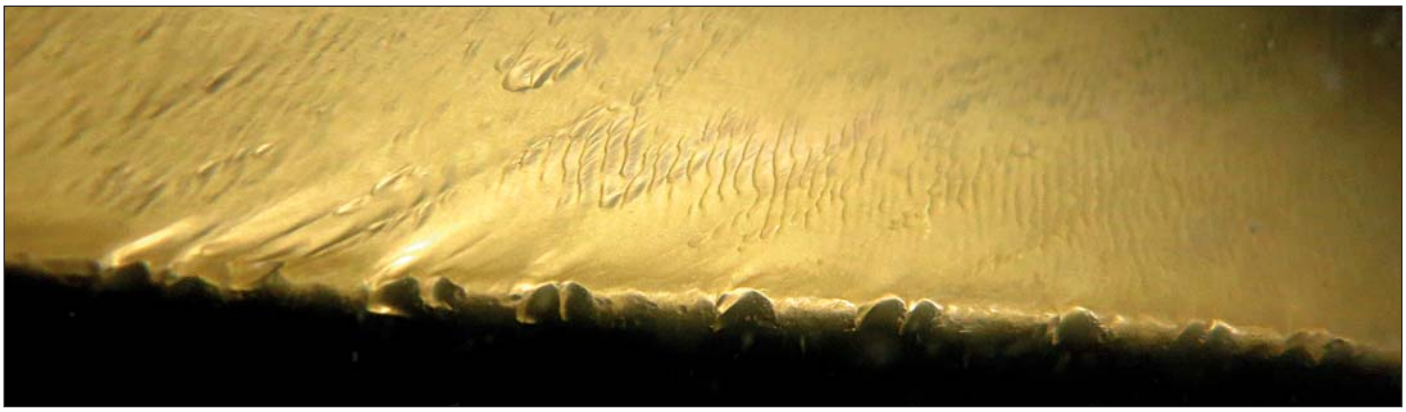
Easy to combine with other operations

Because an underwater inspection is a small operation, it can be combined with one or more other operations very easily. This can be another maintenance operation like a propeller buffing or any type of repair job.

By doing this, the shipowner is saved the hassle and cost of multiple mobilizations and possible delays to his vessel's sailing schedule.

Speed is of the essence

Hydrex diver/technicians can carry out inspections underwater and on-site very swiftly without disturbing the vessel's sailing schedule. A good example of this are the inspections of the bow thrusters carried out on two ferries in Calais. Because of the nature of these vessels, the time frame was extremely short. Both times all three bow thrusters needed to be inspected in the small window available. A change to the schedule was out of the question as it would do great harm to the reputation of the owner.



An inspection will give a shipowner a perfect assessment of any damage, so that he can take an informed decision on what to do.

Hydrex team leader monitoring an underwater operation.

We have always put great effort into minimizing the impact of our services to the schedule of a vessel. Our teams are trained to adapt themselves to the agenda of the ship and not the other way around. ■

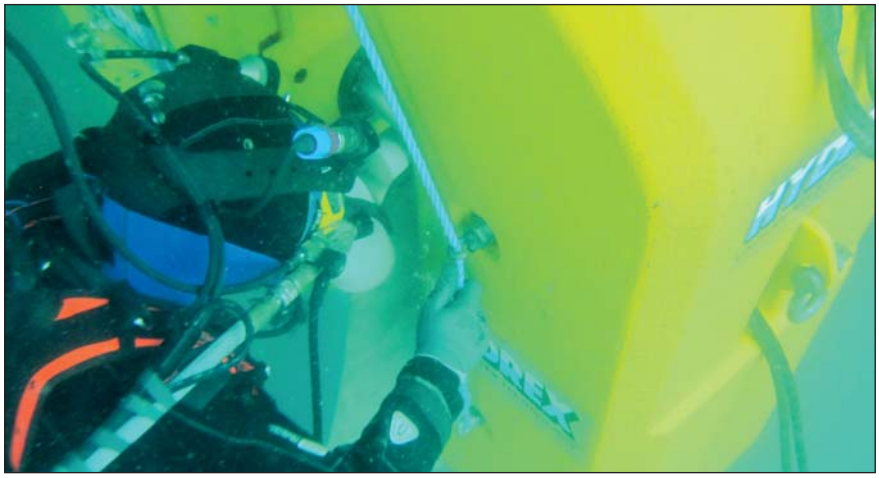
KEEPING SHIPS IN BUSINESS

Fast underwater propeller blade straightening

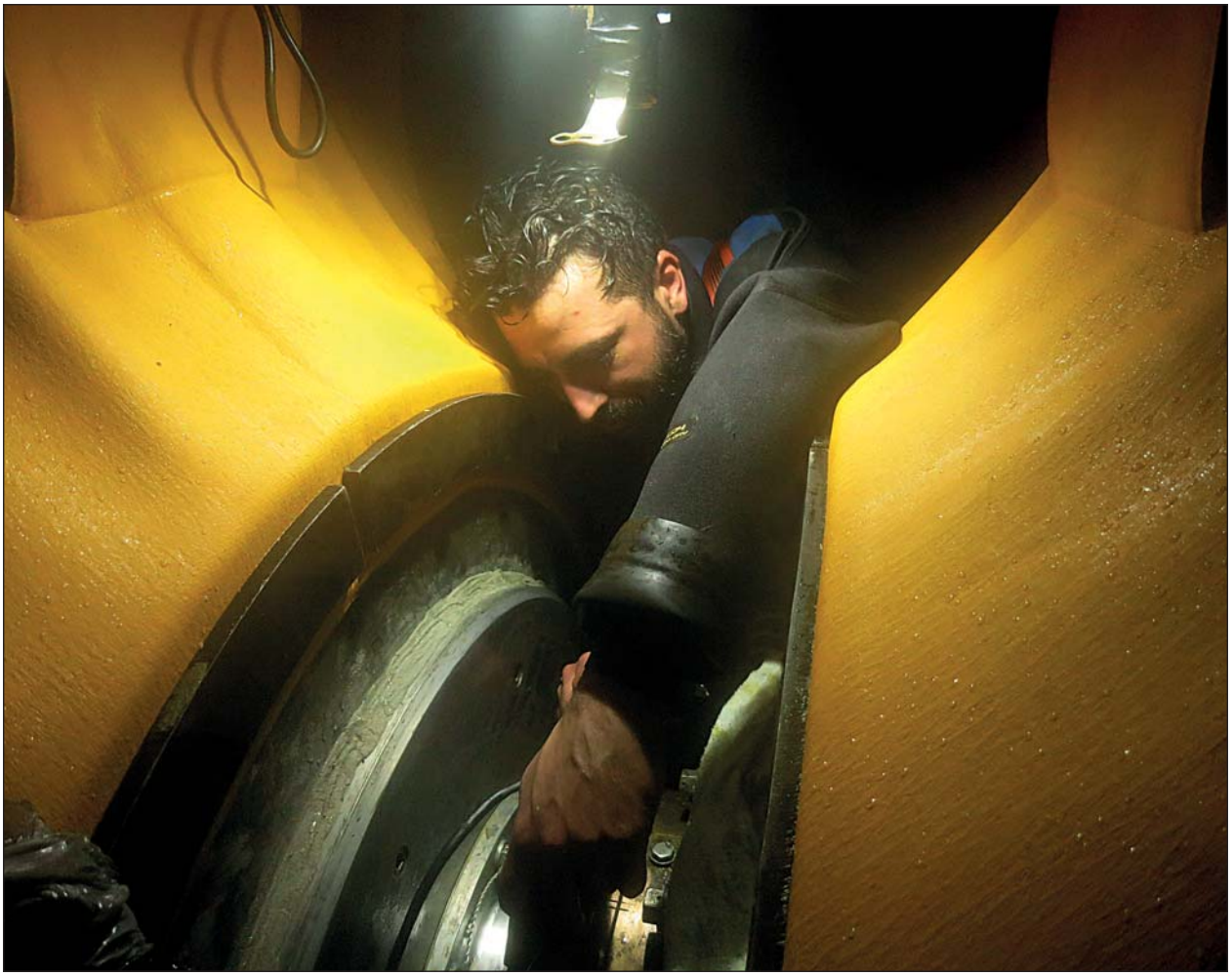
In its quest to provide cost effective services to customers, Hydrex developed procedures to address different kinds of damage to propellers. This research led to the design of the Hydrex cold straightening machines first used in 2002.

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.



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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