HYDREX®

UNDERWATER TECHNOLOGY

NEWS

LETTER | 214

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KEEPING SHIPS IN BUSINESS

ISO 9001 certified

Underwater services and technology approved by:

Underwater stern tube seal repairs with new generation flexible mobdocks

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 top specialist suppliers.

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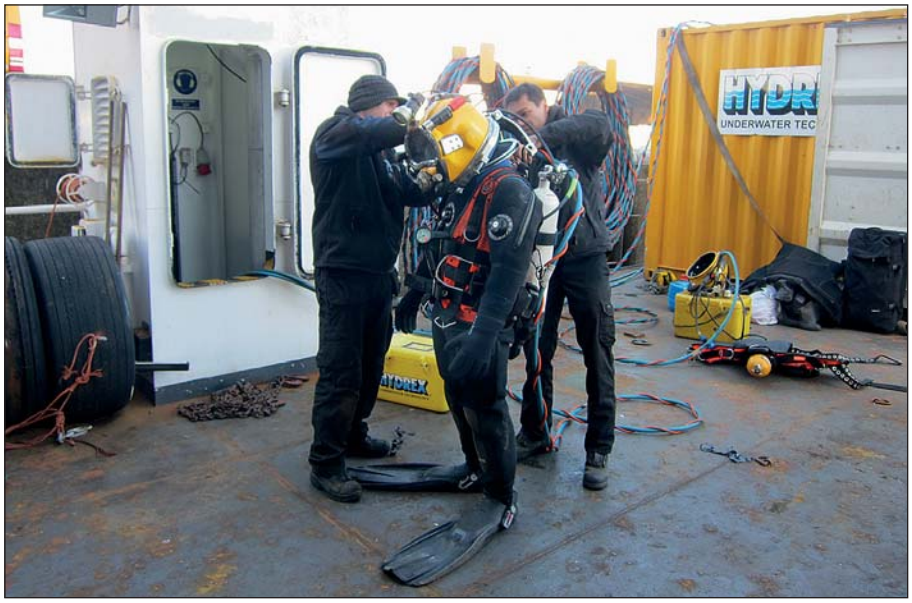
Phone: + 32 3 213 5300 (24/7)
Fax: + 32 3 213 5321
hydrex@hydrex.be

www.hydrex.be

Immediate fuel savings from underwater PBCF installations

Recently Hydrex installed PBCFs on two container vessels belonging to the same owner during the vessels' stop in Antwerp. As a result of the underwater operation the owner can instantly start benefitting from the fuel savings the PBCF brings.

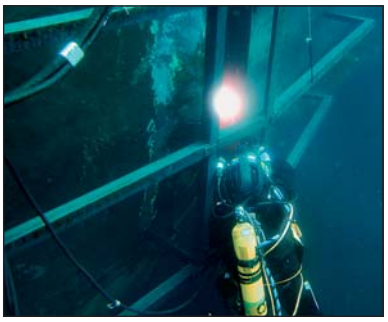
The Propeller Boss Cap Fins (PBCF) can recover energy loss of a propeller hub vortex in the propeller's slipstream. This decreases fuel consumption by 5% when operating at the same speed, or boosts speed by 2% with the same fuel consumption.



Hydrex diver ready for underwater operation.

PBCF on Hydrex workboat, prior to installation.

Fast underwater ship 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 mobdocks. 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 the 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.

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Hydrex workboat next to container vessel in Antwerp.

PBCF is a product of MOL Techno-Trade, Ltd., and a clear explanation of the benefits of installing a PBCF can be found on their web page: http://pbcf.motech.co.jp/english/principle.html

On-site installation prevents a long wait for fuel saving benefits

Both operations were carried out following the same procedure. A team of diver/technicians mobilized to the vessel's location with one of the company's workboats, loaded with all necessary equipment. After a preliminary inspection the divers removed the propeller cap and cleaned the area where the spinner cone was to be installed. They then lowered the PBCF into the water and positioned it on the propeller. Grease was inserted in the space underneath the propeller cone for lubrication and finally the bolts were torqued and secured with wire. The Hydrex team worked in shifts around the clock to finish the operation as quickly as possible.

The owner of the container vessel is already enjoying the fuel savings the propulsion improving device creates. Having to wait for the next scheduled drydocking to have the PBCF installed, would have lost him up to two years of fuel savings. He will have earned back the money of the underwater installation in about eight weeks. The savings are considerable. ■

Old propeller cap being lifted out of the water with the hydraulic crane of the Hydrex workboat.

KEEPING SHIPS IN BUSINESS

Rapid underwater bow thruster removal avoids drydocking

Early in July a Hydrex diver/technician team removed a bow thruster unit which needed to be overhauled from a 160-meter dry cargo vessel. The operation was carried out in Antwerp, close to the company's headquarters. Hydrex performed the operation underwater in a very short time frame. This made it possible for the owner to keep his vessel out of drydock.

Together with all the necessary equipment, the team mobilized from the Antwerp fast response center to the vessel's location. After they set up a monitoring station, the divers started the operation with a detailed inspection of the bow thruster unit and tunnel.

The diver/technicians then detached the blades one by one and replaced them with blind flanges to prevent oil from leaking from the thruster. In the meantime, initial preparations were made in the bow thruster engine room for the removal of the unit so that there would be no ingress of water once it was taken out.

The next step was to secure the gearbox with hoisting equipment. The team then disconnected the bow thruster unit from the engine room and lowered it onto a cradle. This cradle was designed especially for such thruster operations.

Simultaneously the team installed a blind flange to seal off the thruster tunnel from the engine room. Once the unit was lifted onto the quay, the team prepared it for transport to the manufacturer.

Hydrex truck and equipment next to general cargo vessel.

One of the bow thruster blades lifted out of the water.

Performing a job like this on a tight schedule takes a lot of planning. This can only be done successfully by staff who have familiarity with such operations and have the relevant know-how and equipment. Hydrex has a technical department capable of executing all the required planning. Our diver/technicians are trained and qualified to perform the full range of required class-approved repair procedures in even the harshest conditions.

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 much time and money.

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 for a wide range of actions.

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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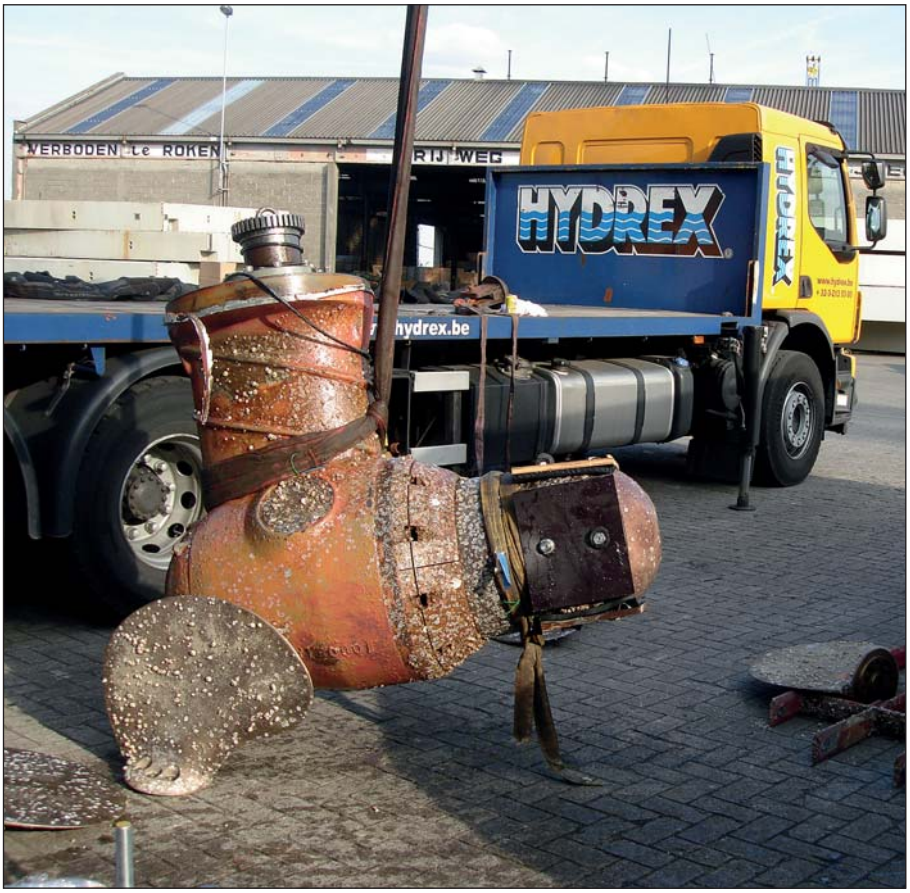
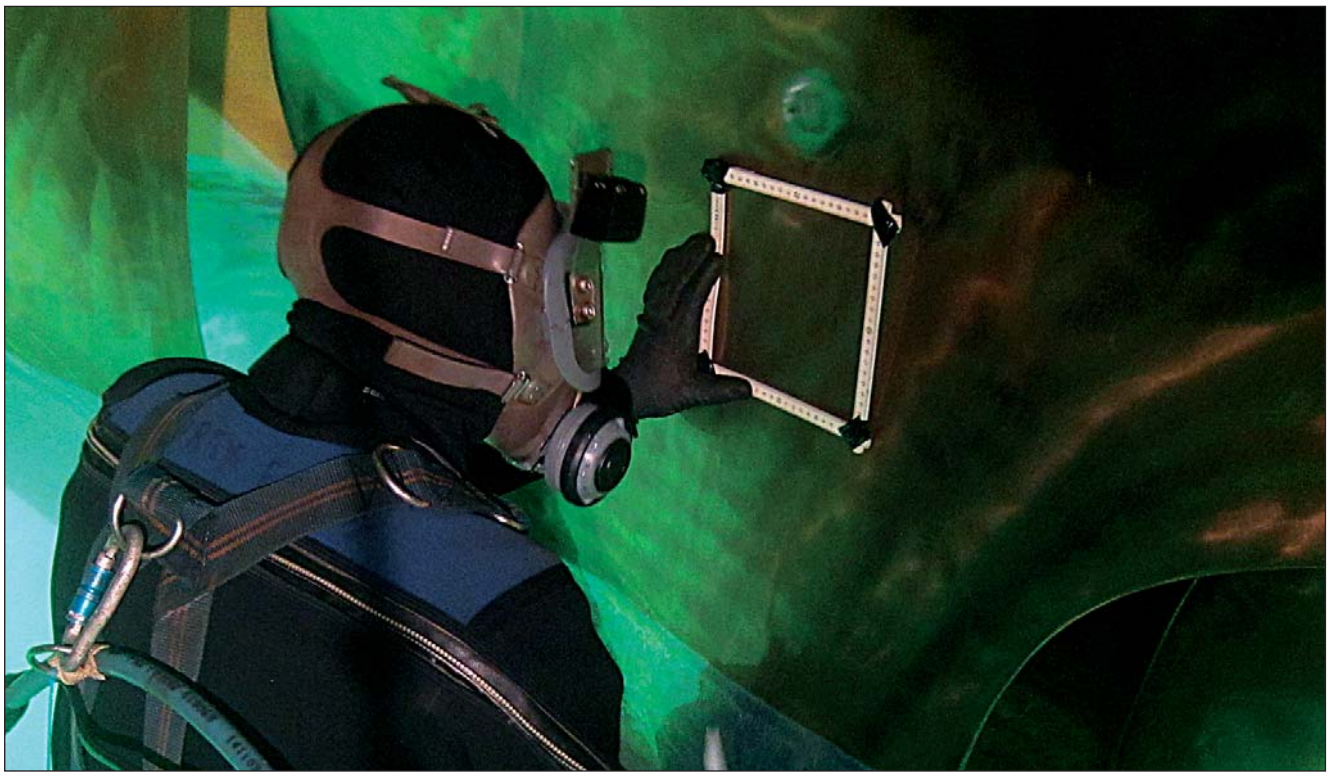
Guiding the bow thruster unit during removal.



Bow thruster unit and blades ready to be transported to manufacturer.

Off-hire time causes a substantial loss of money. The teams therefore worked in shifts to perform the bow thruster removal within the shortest possible time frame. This saved the owner the time and money which going to drydock would have entailed. ■

World premiere: permanent underwater repairs to all types of propellers now possible



Over the years the Hydrex R&D department has continuously improved underwater repair techniques to make it possible for Hydrex diver/technicians to perform permanent repairs on seals, thrusters, rudders and almost any other part of the underwater vessel without the ship needing to go to drydock.

The final step has now been taken by the development of a repair system that allows Hydrex to perform permanent underwater repairs to every type of propeller in dry conditions. All kinds of repair or maintenance work can be carried out to propellers, twin propellers, variable pitch propellers, azipod and collapsible thrusters.

This is especially important news for supply vessels, navy ships or any vessel under contract or on a location far away from available drydock possibilities. Staying on hire for underwater repairs will save precious time and money.

This new repair system can be transported by air transport to any location around the world from the Hydrex fast response centers within a very short time frame. It can be assembled very quickly (12 hours) on-site.

With the implementation of this technique our diver/technicians can now perform permanent repairs to all parts of the underwater ship propulsion system in drydock-like conditions. ■

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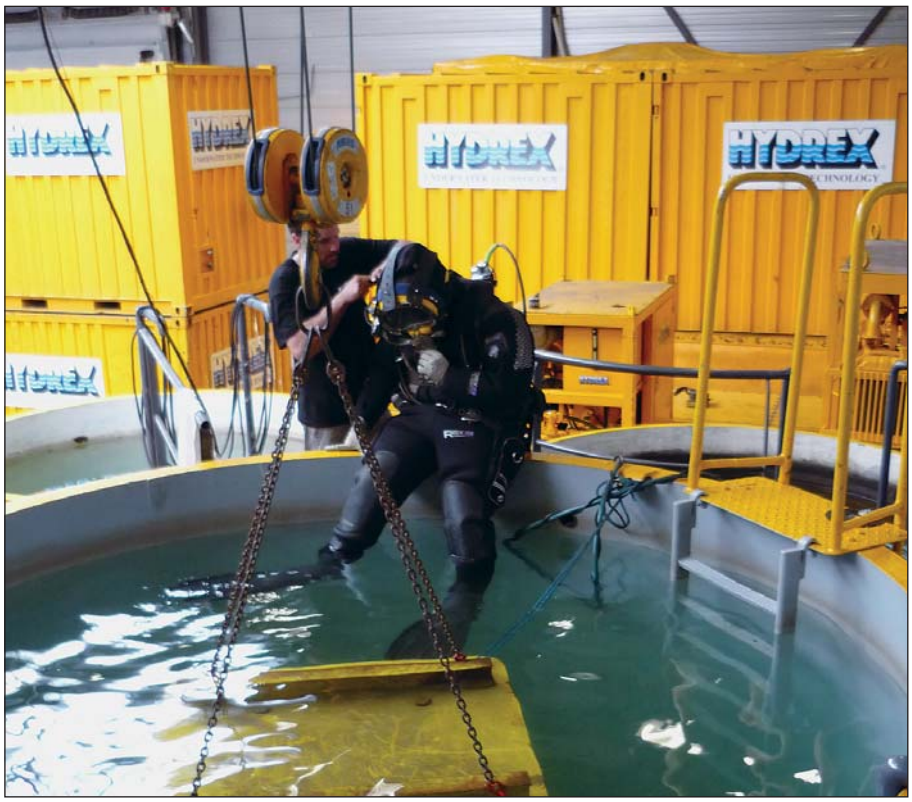
Phone: + 32 3 213 5300 (24/7)
Fax: + 32 3 213 5321
hydrex@hydrex.be

www.hydrex.be

Hydrex diver training programs result in exceptional safety and efficiency record

Hydrex can offer its customers the high quality of service they deserve while guaranteeing the safety of the divers at all times. This can only be done successfully by staff who have familiarity with a wide range of operations as well as the relevant know-how. Our diver/technicians are trained and qualified to perform all required class-approved repair procedures in even the harshest conditions.

This is a result of the stringent training all divers go through. Whether they work for the Hydrex main office in Antwerp or for one of the other offices. Besides being required to have official international commercial diver certificates and taking high standard external courses, including safety and offshore cour-

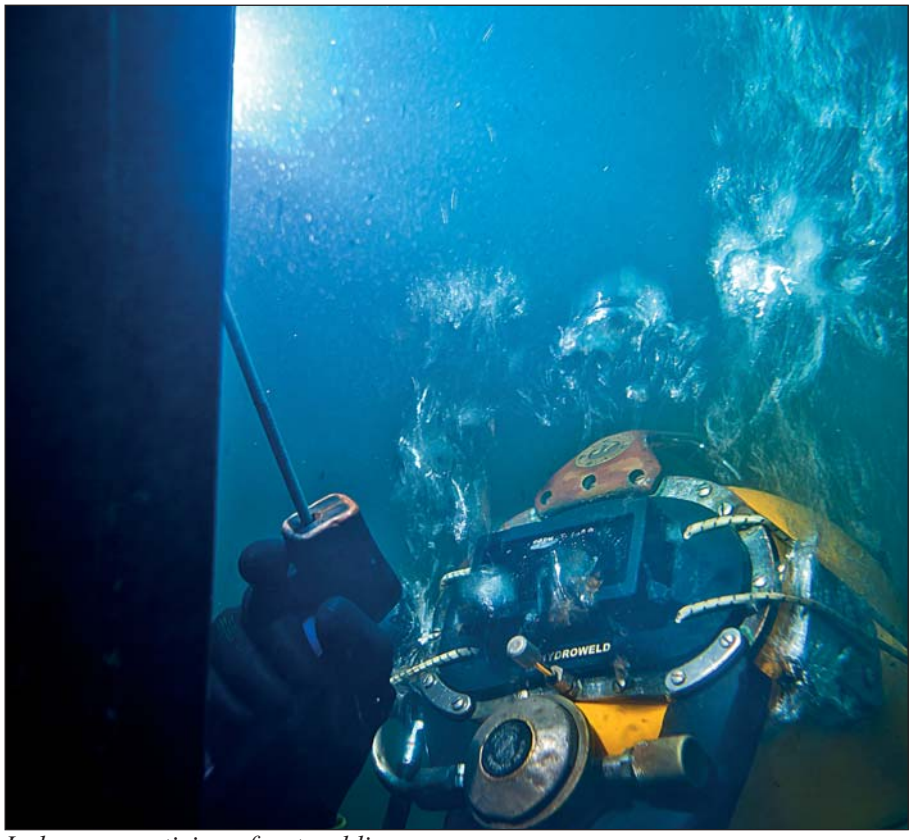


Diver ready to enter one of the training tanks at the Hydrex headquarters in Antwerp.


Tank training during offshore course.

Dry welding practice.

Student divers on course in the in-house academy.


In-house practicing of wet welding.

Training tanks and equipment in fast response center.

ses, they also receive comprehensive in-house training.

Training consists of both theoretical classes in the course room and practical drills on the Hydrex premises. There they have access to a wide range of underwater tools and various other equipment, including three dive tanks in which to practice underwater welding and other repair work.

In addition to these classes, new divers also get the opportunity to assist experienced Hydrex diver/technicians during operations. The training enables them to become experienced divers and technicians themselves and to take advantage of the technical knowhow and practical knowledge Hydrex has accumulated over the last 40 years.

When their training is completed, Hydrex divers are skilled to perform a wide range of operations. This means that if a shipowner needs assistance, we are able to send a team to the vessel immediately without losing time by having to send our divers for training first. They can carry out both simple and complex jobs even in harsh circumstances and achieve this uniformly without unnecessary loss of time or quality or safety. ■

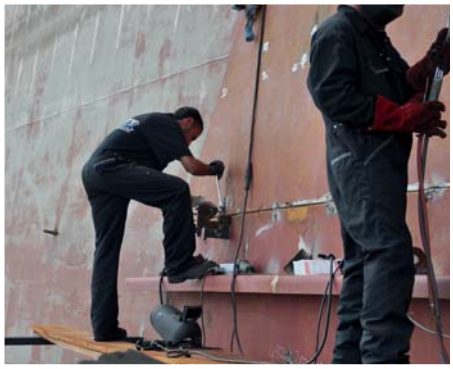
If you have received this magazine at the wrong address or if your company is going to move, please let us know.

You can contact us at:
hydrex@hydrex.be
or at
+ 32 3 213 53 00

Workboats available for afloat and underwater repairs

Hydrex has dive support workboats available at the company's headquarters in Antwerp. The boats can be used for a wide range of operations in Belgium, the Netherlands, the United Kingdom and France.

- afloat ship repairs alongside the vessel
  - o stern tube seal replacements
  - o thruster operations
  - o propeller repairs
  - o stabilizer fin repairs
  - o shell plating repairs
  - o ballast tank repairs
  - o overhaul of winches
  - o welding repairs
  - o anchor chain replacement
- ideal for operations in hard to reach areas on ship hulls
- equipped for maintenance or repair work
- available with crew and repair technicians
- fully equipped as dive support with hydraulic cranes, hydraulic winches, nautical and communication equipment and dive control rooms.
- based in Antwerp and Rotterdam.
- available for fast mobilization to
  - o Rotterdam
  - o Antwerp
  - o Ghent
  - o Zeebrugge
  - o Flushing
  - o Terneuzen

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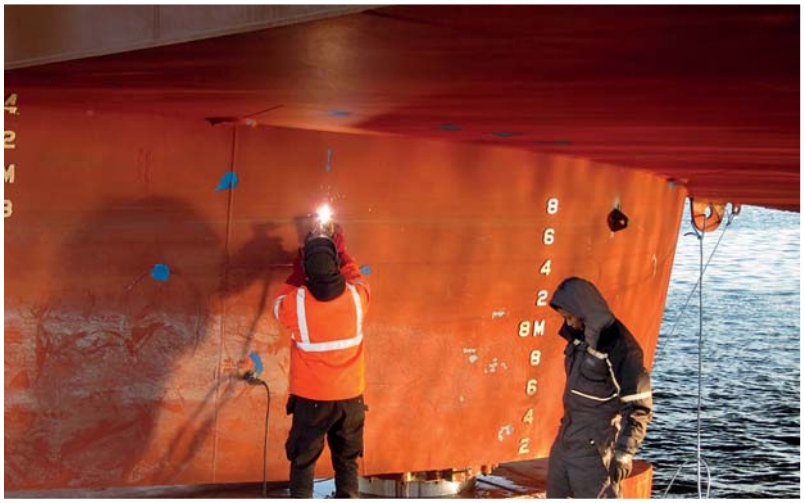


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Keeping ships in business

Hydrex offers turnkey underwater repair solutions to shipowners wherever and whenever they are needed. Hydrex's multidisciplinary team will help you find the best solution for any problem encountered with your ship below the water line. We will immediately mobilize our diver/technicians to carry out necessary repair work without the need to drydock.

Hydrex has a long track record of performing complex permanent underwater repairs to thrusters, propellers, rudders, stern tube seals and damaged or corroded hulls. By creating drydock-like conditions around the affected area, our diver/technicians can carry out these operations in port or at anchor.

All the projects we undertake are engineered and carried out in close cooperation with the customer and any third party suppliers, relieving the customer of all the hassle of coordination, planning and supervision.

Headquartered in the Belgian port of Antwerp, we have offices in Tampa (U.S.A) and Algeciras (Spain).

All Hydrex offices have fully operational fast response centers where an extensive range of state-of-the-art equipment is available at all times.

HYDREX®
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Headquarters Hydrex N.V. - Antwerp
Phone: + 32 3 213 5300 (24/7)
E-mail: hydrex@hydrex.be

Hydrex Spain - Algeciras
Phone: + 34 (956) 675 049 (24/7)
E-mail: spain@hydrex.be

Hydrex LLC - Tampa, U.S.A.
Phone: + 1 727 443 3900 (24/7)
E-mail: info@hydrex.us

www.hydrex.be