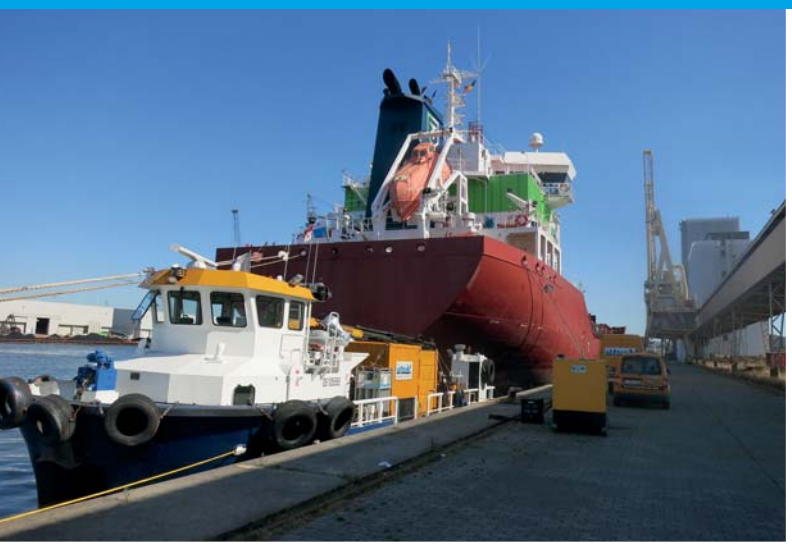
HYDREX®

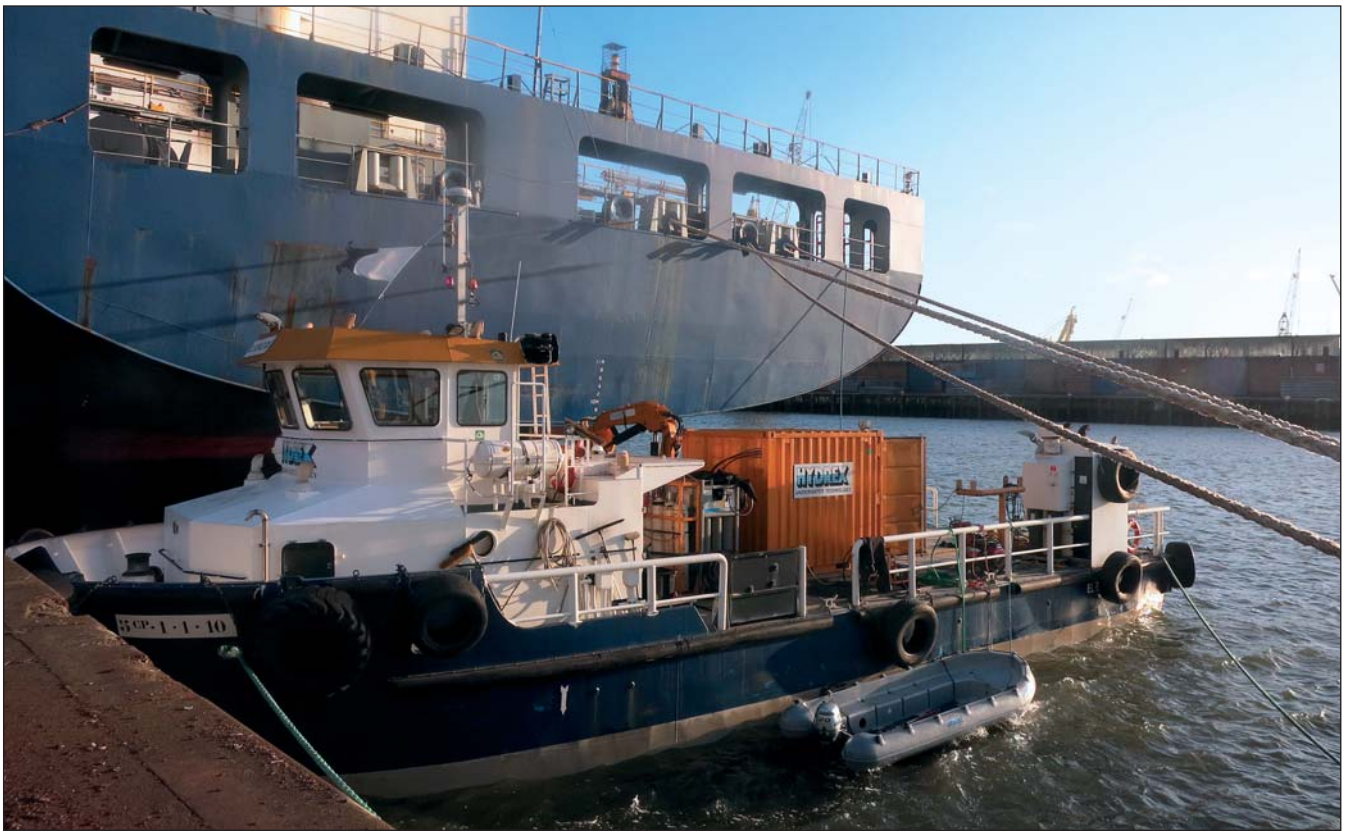
UNDERWATER TECHNOLOGY

Magazine

Number *237*



Hydrex Rotterdam ready to assist you



To enable a fast mobilization throughout the entire Rotterdam port without delaying a ship's commercial operations, Hydrex dive support vessels are stationed in Rotterdam.

Since the opening of our Rotterdam office these workboats have proved to be a valuable asset during a variety of operations in the port. They are fully equipped with hydraulic cranes, winches, a dive spread and control room.

This allows Hydrex to offer simple maintenance operations as well as repairs on all parts of the underwater ship propulsion system and the hull. Hydrex operations are class approved and carried out alongside or at anchorage while commercial activities continue without disruption.

Feel free to contact the Rotterdam office if you want to find out how we can assist you and your vessel.

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Editorial

In the beginning of September we took part in two very important events, while at the same time we carried out several emergency repair operations. It was a very busy period for us and typical for the way 2016 has been going so far.

As always the four days at SMM were an ideal opportunity to meet old friends and get to know new ones. Business relationships were strengthened and formed. We are looking forward to working closely together with all of them.

The weekend before, from September 2 until 4, one of our workboats was stationed in the heart of the World Port Days in Rotterdam. This was an excellent chance to demonstrate to the public the many benefits we can bring to Rotterdam and its maritime community.

In Antwerp we organized an emergency stern tube seal operation from start to finish for a chemical tanker that suffered an oil leak. The vessel was not allowed to sail on until an on-site repair had been performed. Thanks to our many years of experience we were able to arrange a diver/technician team, the needed equipment, spare parts and an engineer from the OEM in less than 48 hours.

This is a good illustration of how we can take the worry out of your hands if you have a problem with your vessel. If speed is of the essence, call us and we will prevent any unwanted loss of time.

Hydrex founder
Boud Van Rompay

HYDREX N.V.
On Time Worldwide High Quality Underwater Services

ISO 9001 certified

Underwater services and technology approved by:

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Table of contents

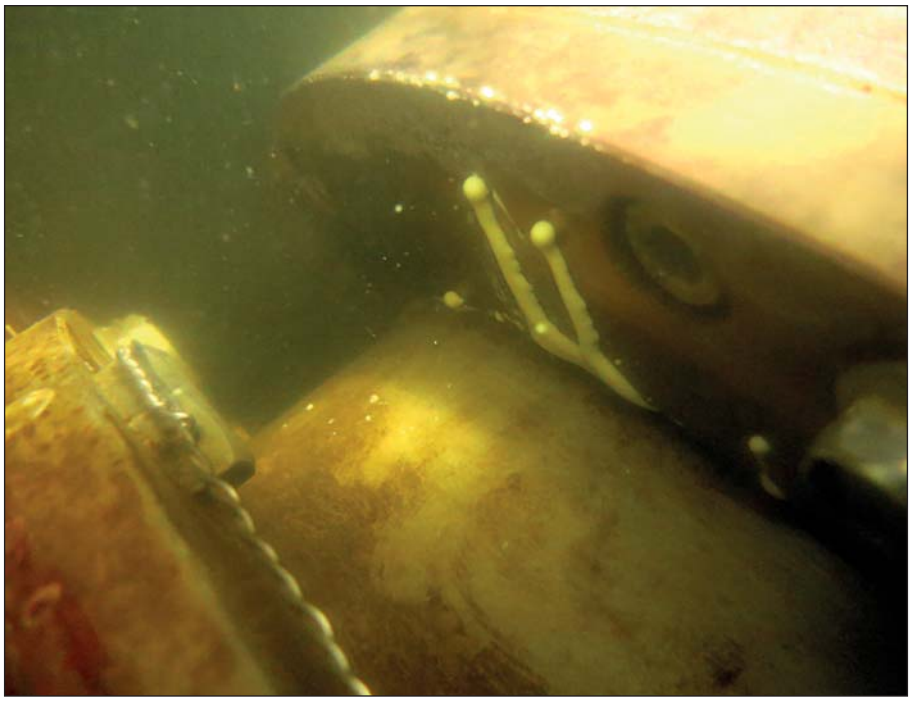
Ultra-fast response allows for emergency underwater seal repair in record time

A 134-meter chemical tanker suffered a leak to its stern tube seal assembly while berthed in Antwerp. The Port Authority demanded that an underwater inspection was carried out and an on-site solution was found before the vessel would be given the green light to sail again. We were contacted by the owner of the ship to perform the inspection and follow up repair in the absolute minimum amount of time.

Hydrex workboat and equipment next to chemical tanker.

The crew of the vessel had been able to temporary halt the leakage, but the Port would not let the ship continue on her schedule before an inspection had been done. We therefore mobilized a team from our headquarters to the chemical tanker immediately after the call came in.

The underwater survey revealed that the temporary fix had not stopped the oil leak completely. A replacement of all four stern tube seals was needed. Because the vessel had just been fully loaded in Antwerp, trimming the vessel was not an option. The repair would therefore have to be performed underwater and on-site.



An oil leak prevented the ship from sailing on.

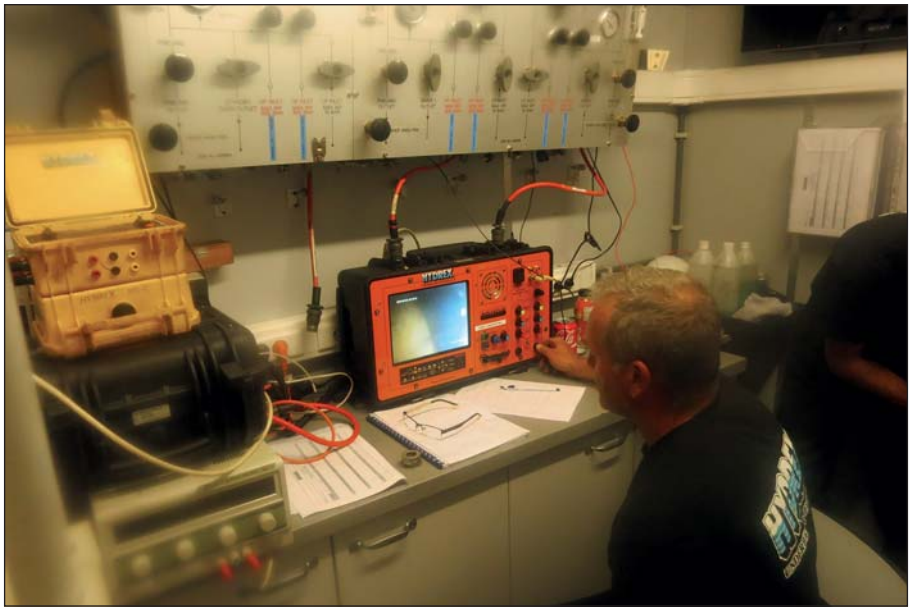
We have been replacing seals underwater for 15 years with our award winning flexible mobdock technique. This allowed us to devise a repair plan very quickly after the inspection. The owner gladly accepted the proposal as it would give him the opportunity to continue on his schedule with only a minimal of delay.

A to Z repair package

Because of our many years of relationships with OEMs, we were able to arrange for spare parts to be sent

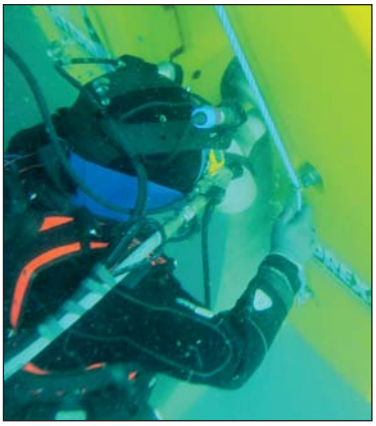
Hydrex diver getting ready for underwater operation.

Hydrex diver handling one of the damaged seals prior to removal.



Team leader monitoring the operation.

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.

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Diver/technician working inside the flexible mobdock.

Cleaned split ring ready for reinstallation.

One of the damaged seals that caused the oil leak.

to Antwerp immediately. An engineer of the stern tube seal manufacturer mobilized at the same time.

We have a very large stock of seal repair equipment stored in our fast response centers for a wide range of operations. As soon as the repair was confirmed, a team of diver/technicians loaded everything they needed on one of our dive support workboats and sailed to the tanker.

While the new seals were prepared for installation by the engineer of the manufacturer, the team dismantled the vessel's rope guard. Next the divers installed the flexible mobdock around the stern tube seal assembly, creating a dry underwater environment. Because the tanker had a smaller liner than most vessels, the mobdock was adapted to accommodate this. This was easily done by the team.

The split ring was then disconnected and brought to the surface to be cleaned. After cleaning the entire assembly, the team removed the damaged seals one by one and replaced them with new ones.

All parts of the stern tube seal assembly were then reinstalled and secured. Leakage tests were carried out, to the satisfaction of the representative of the OEM. Finally, the divers removed the flexible mobdock and reinstalled the rope guard.

Conclusion

By organizing everything from start to finish and in record time, the owner did not have to worry about making any arrangements for the repair. He could sail his vessel to her next stop without any unnecessary delay to the schedule.

The team was congratulated by the Technical Superintendent of the vessel for the "very professional job", as well as by the Fleet Director who called the operation "an additional success for Hydrex!" ■

KEEPING SHIPS IN BUSINESS

Swift on-site bow thruster operations

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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Underwater propeller cone fin installation offers immediate fuel savings

Over the last few months Hydrex installed propeller cone fins on several general cargo vessels. We can carry out these operations all over the world.

A direct result of this underwater operation is that an owner can instantly start benefitting from the fuel savings a propeller cone fin brings. He does not have to wait until the next scheduled drydocking for the installation.

Propeller caps like these can recover energy loss of a propeller hub vortex in the propeller's slipstream. This decreases fuel consumption from 3% up to 5% according to the manufacturers and reduces cavitation on rudders and hulls. Hydrex can install propeller cone fins underwater on any size and make of propeller, on both new build or in-service vessels.

Installation afloat prevents a long wait for fuel savings

We carry out these operations following the specific procedures required by the involved OEM,

Hydrex equipment next to general cargo vessel.

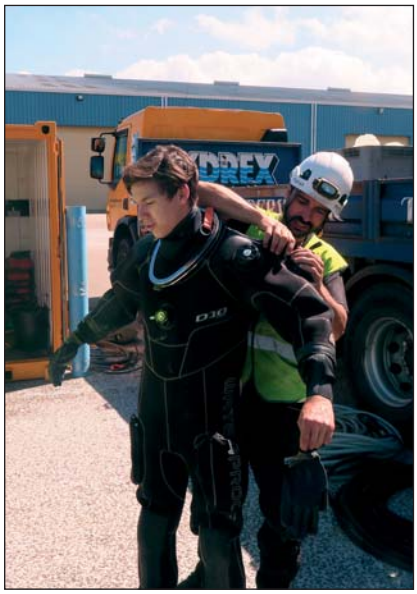
Propeller cone fine ready for installation.

Hydrex technician lowering the propeller cone fin into the water.

adapted for an underwater installation.

After a preliminary inspection the divers remove the propeller cap and clean the flange where the device is to be installed. They then lower the propeller cone into the water and position it on the propeller. The bolts are put on the correct torque and secured. Hydrex teams can work in shifts around the clock to finish the operation as quickly as possible.

The owner of the vessel can start enjoying the fuel savings the propulsion improving device creates right away. Not having to wait for the next scheduled drydocking to have the propeller cone fin installed can win him up to four years of fuel savings. In contrast, he will have earned back the cost of the underwater installation in only a few months. The savings are considerable. ■



Diver getting ready for the installation.

Installed propeller cone fin.

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You can contact us at:
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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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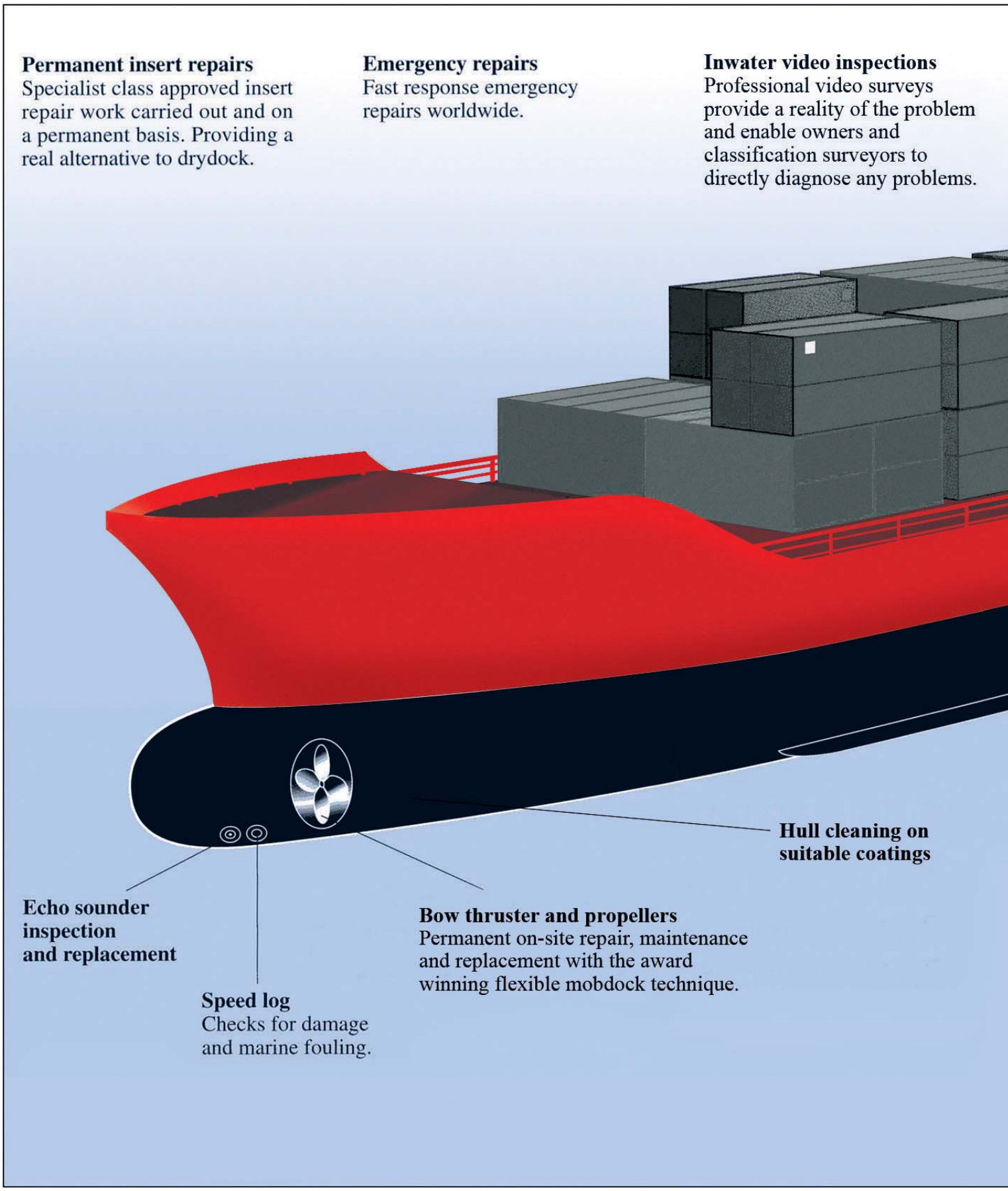
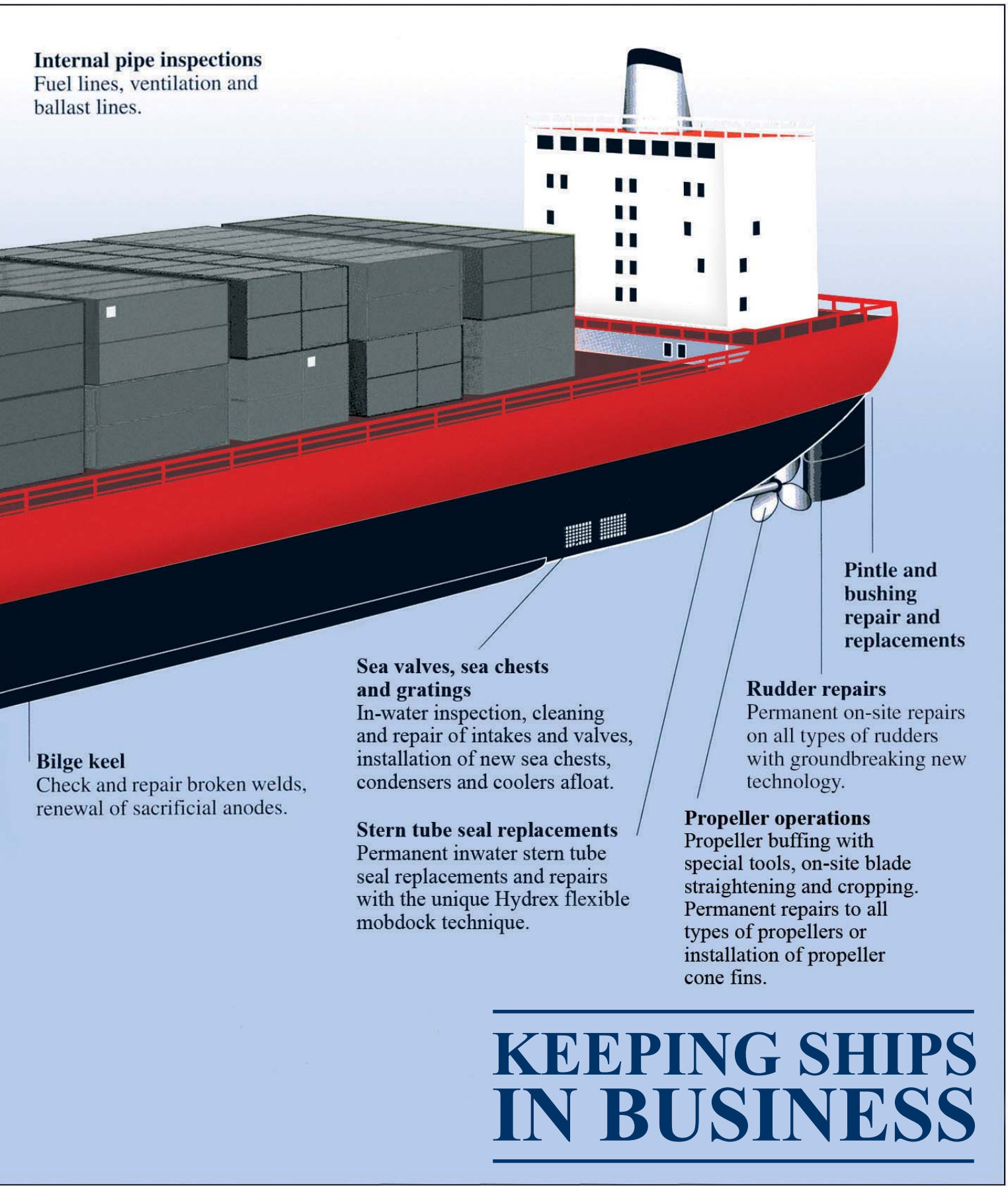
High quality in-water ship rep



air and fuel saving services



Permanent underwater repairs keep vessels out of drydock

Hydrex teams carried out underwater insert repairs on vessels in Zeebrugge and Antwerp. Both vessels had suffered cracks in the shell plating. In Zeebrugge a 600mm x 300mm plate was installed in the flat bottom of a 203-meter ro/ro vessel. A similar operation was carried out with a 300mm x 300mm plate on a 144-meter tanker in Antwerp. Despite the relative small scale of both operations, they were vital for the shipowners. It allowed them to keep their vessels out of drydock and avoid having to go off hire.

The plating and frames that needed to be removed were first marked.

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 external mobdocks. Normal commercial activities can therefore continue without disruption. These operations follow the Hydrex procedure for welding cracks and inserts in the vessel's shell plating and they are approved by the major classification societies.

Class approved underwater crack repair

The team started the operation with a detailed inspection of both the onboard as well as the water side of the affected plating of the ro/ro vessel in Zeebrugge. This revealed a 500mm crack that needed to be removed. Next the divers installed a cofferdam over the area.

This allowed the team to remove the longitudinal frame covering the damage. The diver/technicians could then cut away the damage and the surrounding area. Next they positioned a new insert plate, measuring 600 x 300 mm. The insert was then welded following our class-approved procedure for insert plates, using a full penetration weld.

An independent inspector carried out ultrasonic testing and the repair was approved by the classification surveyor who was present during the operation. The diver/technicians then refitted the frame and removed the cofferdam, concluding the repair.

Removal of the frame covering the damage.

Cutting away the required area around the crack.

Preparing the edge of the hull plating to have a perfect fit for the new plate.

Fitting of the new insert.

Fully welded insert plate.

Ultrasonic testing by independent inspector.

Reinstalled frame covering the new insert.

Permanent class approved insert operation

The same procedure was followed during the operation in Antwerp. The only differences being that the gas tank adjacent to damage needed to be gas free before the team could begin the operation and that, besides the framework, a pipe needed to be removed and reinstalled afterwards.

Because the crack was slightly smaller, a 300mm x 300mm plate was enough to replace the damaged area. The affected area was situated right next to the sea chest in the turn of bilge. It was therefore essential

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 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.

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Crack in the bottom plating of tanker in Antwerp.

that the cofferdam was modified to fit perfectly over the rounded shape of the hull.

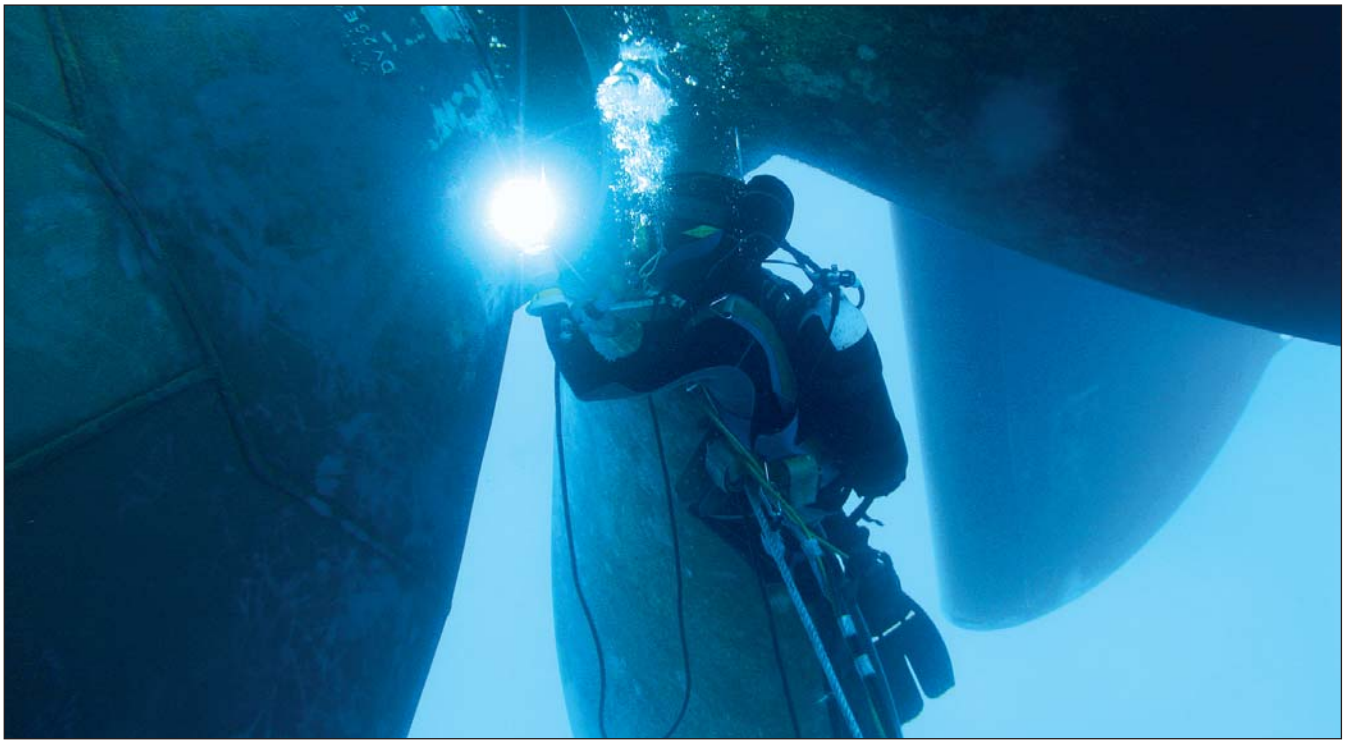
Conclusion

All operations were performed to the highest quality standards by in house trained diver/welders. We have a wide range of cofferdams at our disposal as well as certified plating which we can mobilize immediately to any location around the world. ■

Securing new insert plate in Antwerp.

Illustration showing cofferdam covering the affected area.

Hydrex US ready to mobilize immediately



Hydrex has an office located in Clearwater in the Tampa Bay area that is ready to mobilize immediately. The office has a fast response center that is equipped with an extensive range of state of the art logistics, trucks, tools and diving support equipment. This enables Hydrex US to efficiently service vessels and offshore units calling on ports in Canada, North, Central and South America as well as the Caribbean.

All staff members of the Hydrex office in Clearwater undergo stringent training at the Hydrex headquarters in Antwerp. They can carry out both simple and complex high quality jobs even in the harshest of circumstances.

Repairs to thrusters, propellers, rudders, stern tube seals, damaged or corroded hulls and all other underwater repair as well as maintenance services are done while the vessel is afloat. This eliminates the need to drydock.

All used methods are fully approved by all major classification societies.

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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 Rotterdam, 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.

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