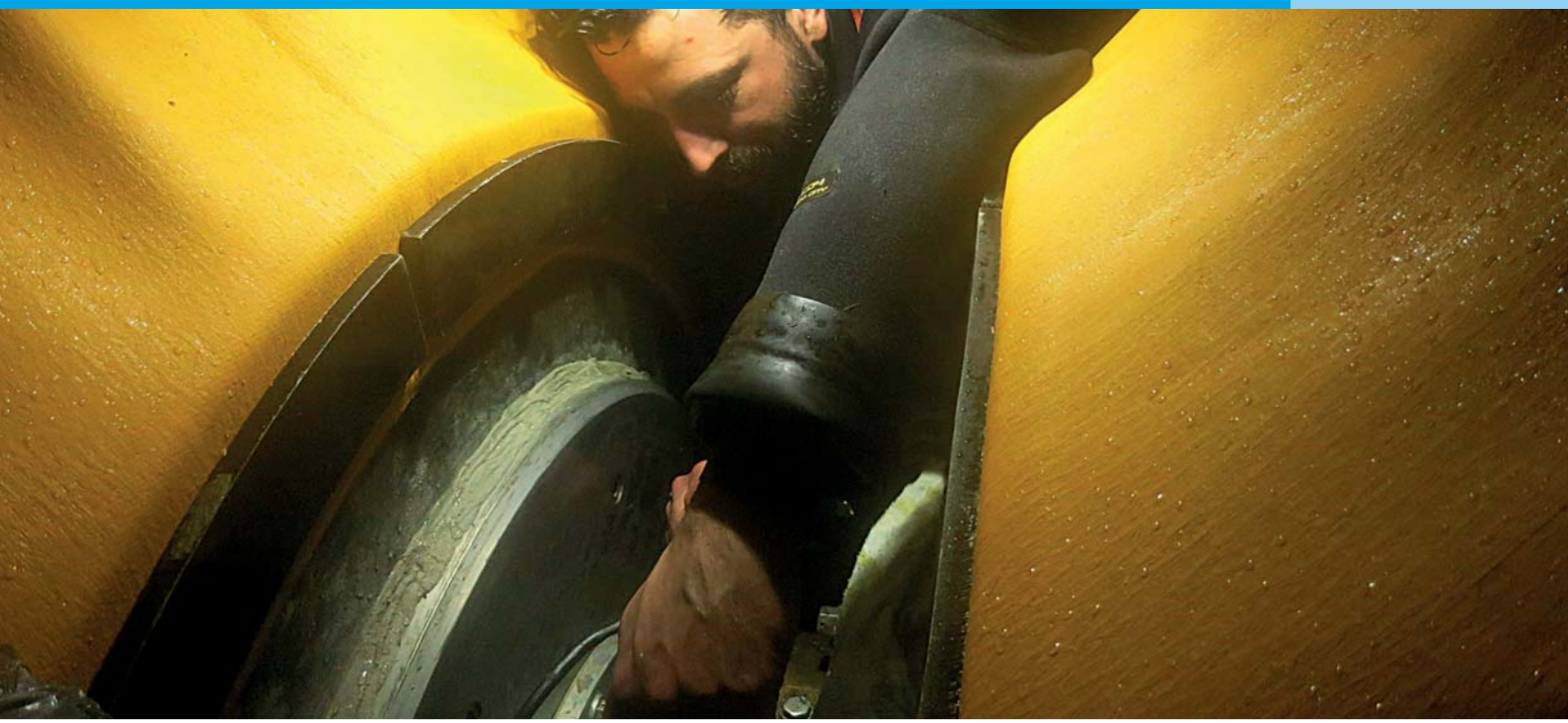
HYDREX®

UNDERWATER TECHNOLOGY

Magazine

Number *233*



Hydrex Rotterdam ready to assist you

On the 1st of March the Hydrex office in Rotterdam officially opened. Its purpose is to improve the delivery of our services and underwater expertise to the maritime industry of Rotterdam.

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

Readiness for all possible eventualities is essential for a company that provides repair services to ships and offshore structures around the world. No two repairs are the same in real life, even if they look the same on paper.

Our diver/technician teams are trained to smoothly adapt to constantly changing circumstances. This allows them to arrive on-site, start the operation and keep it going until it is finished without unnecessary loss of time for our customers.

Hydrex also takes the worst case scenario into account when setting up a repair plan. In those instances when it does occur, being prepared for it saves our customers a lot of time and money.

If you would like to learn more about Hydrex services, please visit our website (www.hydrex.be) or call us 24/7 with your underwater repair needs, routine or emergency.

Hydrex founder
Boud Van Rompay

Cover: Hydrex certified diver/ technicians in action.

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

ISO 9001 certified

Underwater services and technology approved by:

BUREAU VERITAS
ABS
ISO 9001
ClassNK
ADC International
RINA 1861
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DNV·GL

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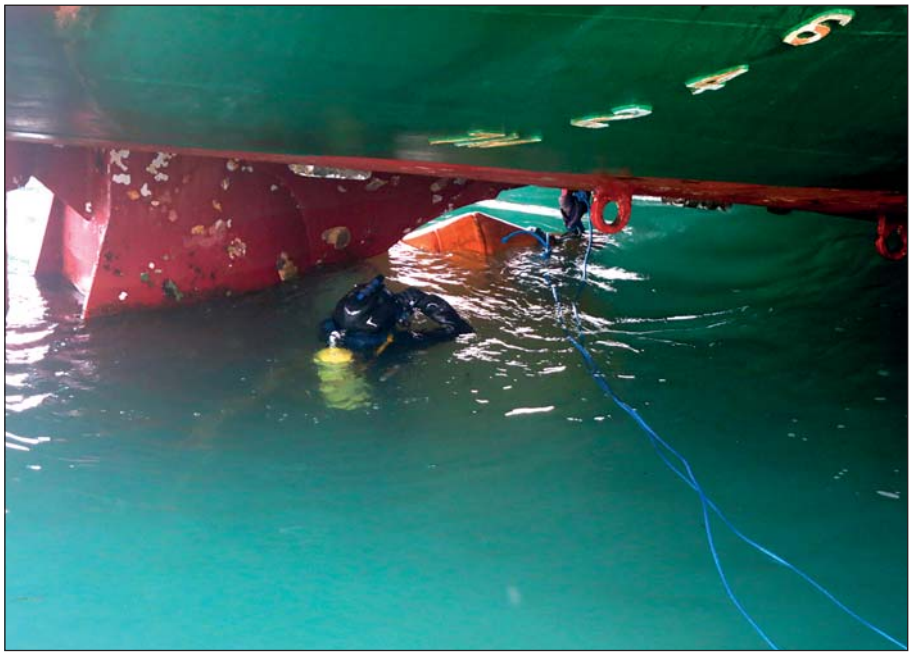
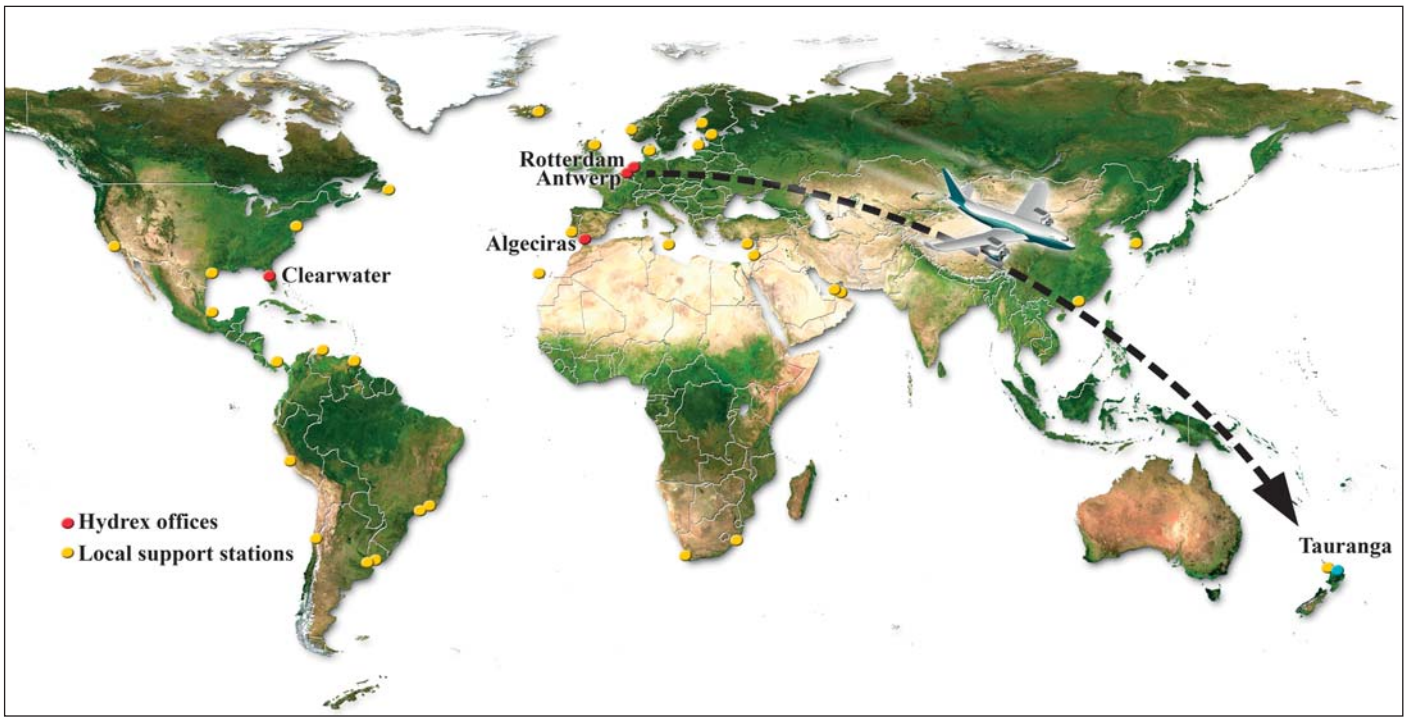
Seal renewal in New Zealand in tough underwater conditions

In April a Hydrex diver/technician team carried out underwater stern tube seal repairs on a container vessel in Tauranga, New Zealand. The ship was suffering from an oil leak and was not allowed to sail on. Because no drydock was available close by an on-site repair was necessary. Taking advantage of the Hydrex flexible mobdock technique the team was able to carry out the entire operation underwater.

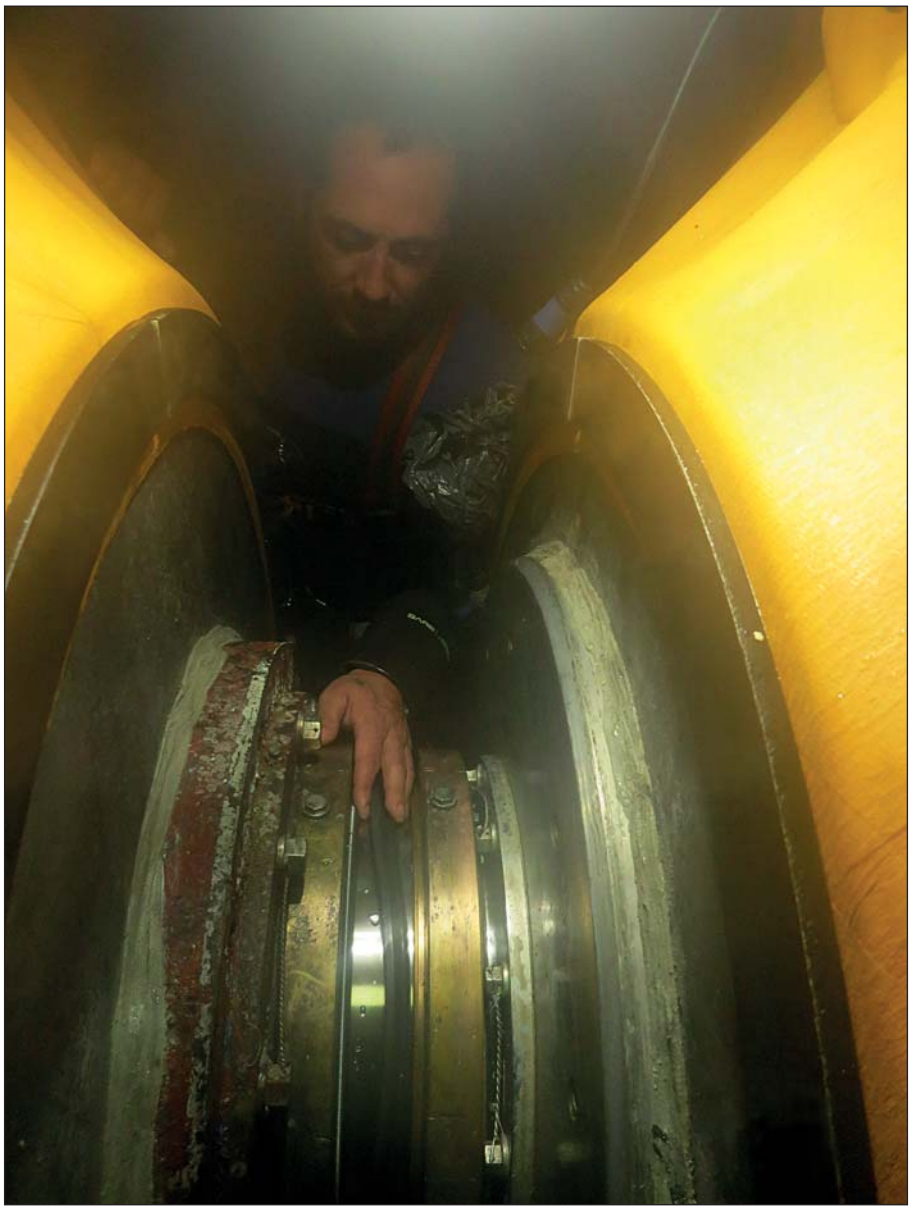


Hydrex diver preparing to enter mobdock.

A leaking seal is always an unpleasant experience for a ship owner. It will force him to go off-hire, costing him time and money. To avoid going to drydock and keep the loss of time to the absolute minimum, Hydrex has developed the technology that enables repairs or replacement of all types of shaft seals to be carried out afloat. The ship can keep its schedule as seal repairs can be performed during cargo operations. By creating a dry underwater working environment around the shaft, work on the seal assembly can be performed in dry conditions. This is done by using our flexible mobdocks which are designed specifically for this type of repairs. They fit all sizes of seal assembly.



Hydrex can swiftly mobilize teams to any location around the world.



Removal of damaged seal.

The following case study gives an account of a recent underwater stern tube seal repair performed by Hydrex.

Leaking stern tube seals repaired in New Zealand

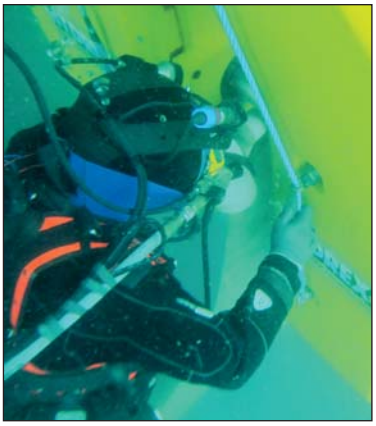
Immediately after the operation was confirmed our technical department arranged for a rapid mobilization of a team of Hydrex diver/technicians to the container vessel's location in New Zealand, together with all the needed equipment.

The diving team first set up a monitoring station. The operation then started with a thorough underwater inspection of the stern tube seal assembly. The inspection revealed that the rope guard had gone missing and that the bolts were broken off.

The divers installed the flexible mobdock around the stern tube seal assembly creating a dry underwater environment so that they could work in drydock-like conditions. 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

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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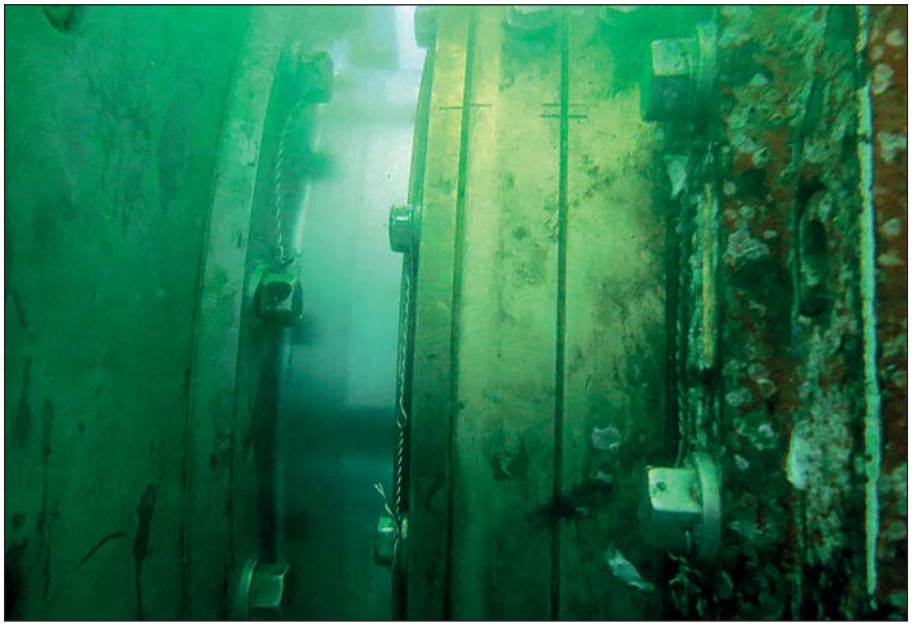
Cleaned split ring prior to reinstallation.

Hydrex diver/technician preparing new seal for bonding.



Reinstalled seal assembly after shaft seal replacement.

Hydrex diver working on the assembly.

secured. Leakage tests were carried out with positive results, after which the divers removed the flexible mobdock.

Fast worldwide response

Every Hydrex office has a fast response center equipped with all the latest facilities, equipment and tools. These centers were designed specifically to increase speed of service. The lightweight flexible mobdocks packed in flight containers allow for a very fast mobilization and a timely arrival of Hydrex teams on any location around the world. This combined with our network of local support bases provides us with everything we need to successfully complete any job, anytime, anywhere.

Damaged stern tube seals will cause an increasing amount of oil leaking or water ingress as the damage worsens. By replacing the seals when the damage is first discovered Hydrex keeps the down time low. ■

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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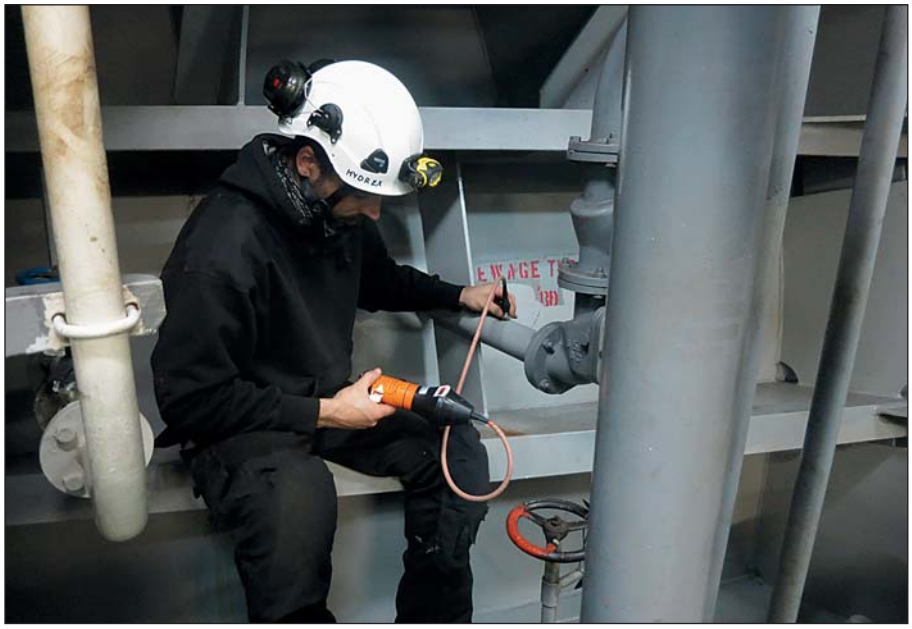
Double pipe repair carried out on tanker in Rotterdam

Last month Hydrex replaced two pipes on a 228-meter tanker while the vessel was berthed in Rotterdam. Both pipes were leaking and a fast on-site solution was needed to remove a condition of class. These repairs were performed afloat with our cofferdam technique. This gave the owner a cost effective alternative for dry-dock.

An overboard pipe needed to be replaced on both starboard and port side. This would stop the leaks and secure the integrity of the hull.

While preparations for the welding work were ongoing inside the engine room, two mobdocks were installed and secured underwater over the location of the pipes.



Inspection of one of the old pipes prior to removal.

The team first disconnected the old scrubber overboard pipe on the port side. The hull plating and the new pipe were then prepared for fitting.

Once the pipe was positioned, welding of the hot pass was done according to the Hydrex class approved welding procedures. This connected

Cutting the port side overboard pipe.

Connecting and fitting the new overboard pipe.

New port side overboard pipe secured and ready for welding.

Fully welded overboard pipe.

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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Removing the old starboard side pipe.

Preparing the edge for installation of new pipe.

Independent ultrasonic testing of weld seams.

the overboard pipe to the ship's hull. The same procedure was then repeated for the starboard side overboard pipe.

An ultrasonic test was carried out by an independent tester. This showed that the repairs had been performed successfully. Both cofferdams could then be removed. Finally a visual inspection was made on the outside by our team. The repair was approved by the representative of the classification society who had been present during the operation.

Securing the frames on the starboard side pipe.

Fully installed new starboard side pipe.

Conclusion

Overboard pipe repairs are vital for a vessel because there is a direct connection between the outside hull and the pipes. This means that any damage to the pipes can compromise the integrity of the hull. For this reason the classification society will very strictly monitor the condition of the pipes and will demand a fast and thorough repair of the damage.

Hydrex offers permanent afloat solutions for situations like this. We bring a high standard of care and professionalism to any operation to guarantee that a ship can sail safely afterwards. Our divers always strive to meet these standards and make sure that the service is delivered in as short a time period as is possible. By performing the two replacements in one operation our divers did exactly this and kept the downtime to a minimum. ■

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

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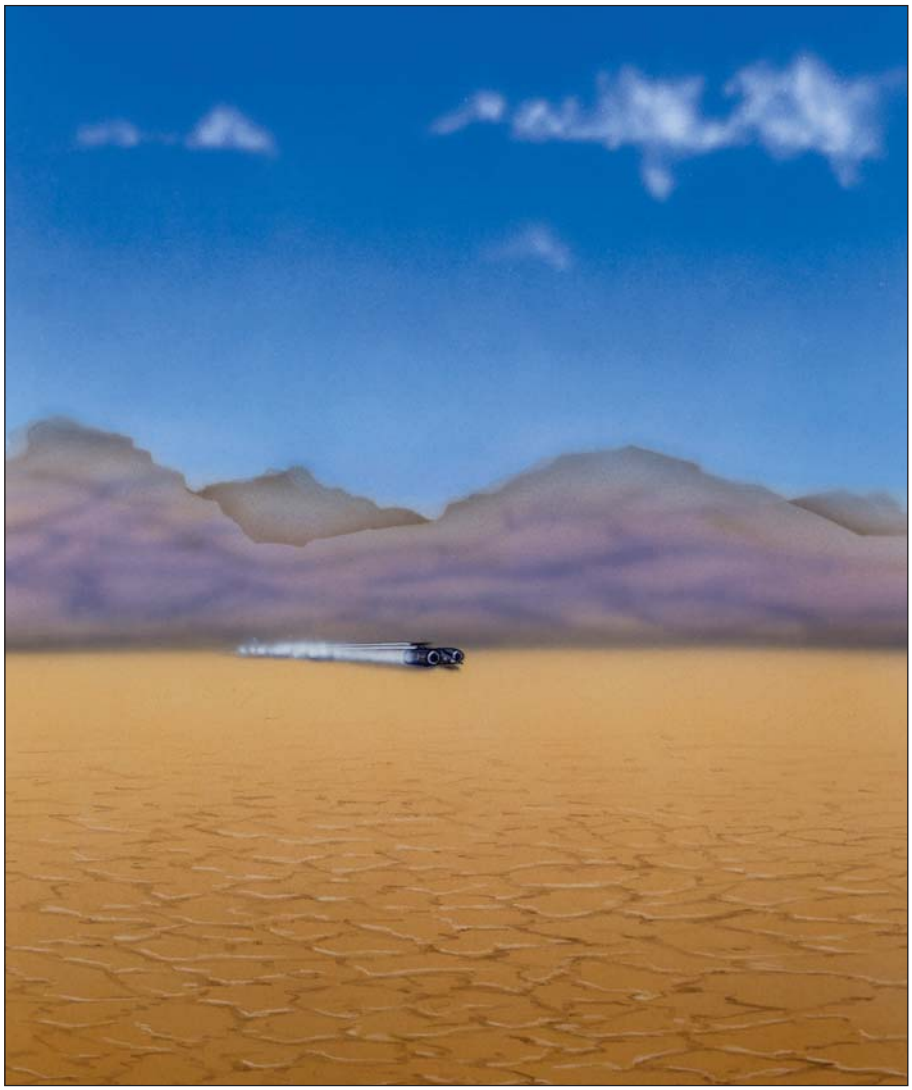
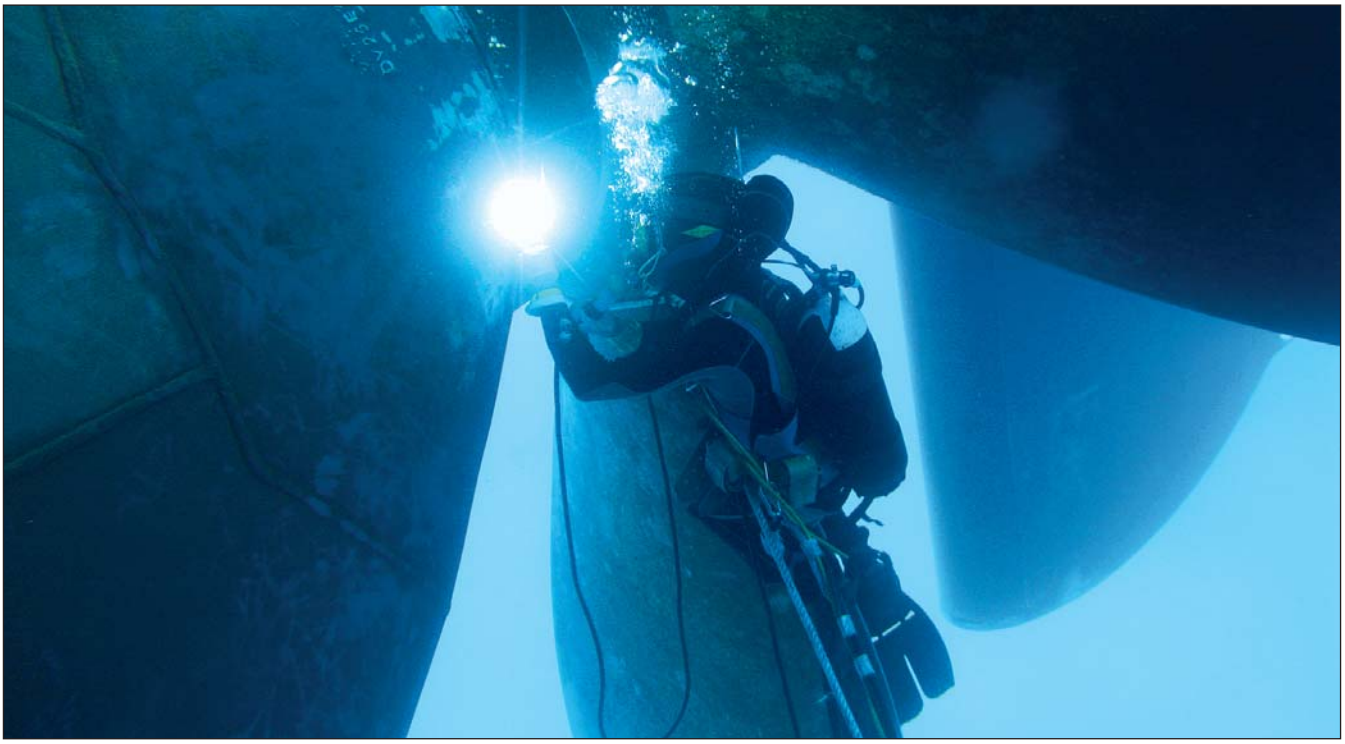


Hydrex US ready to mobilize immediately



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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Emergency repairs allow vessels to stay afloat and keep sailing

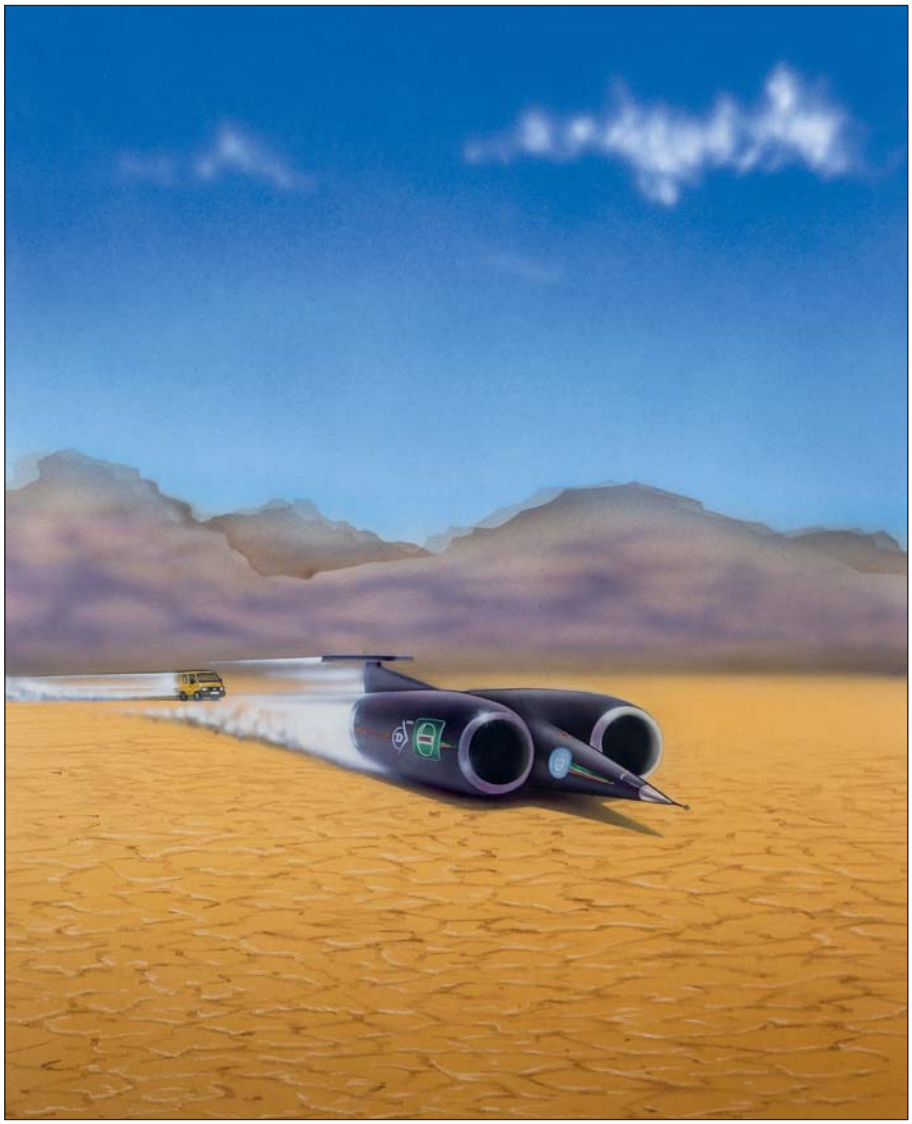
Hydrex offers fast on-site repairs in emergency situations. Our offices have fully operational fast response centers. This allows us to immediately mobilize teams to locations around the world for a wide range of operations.

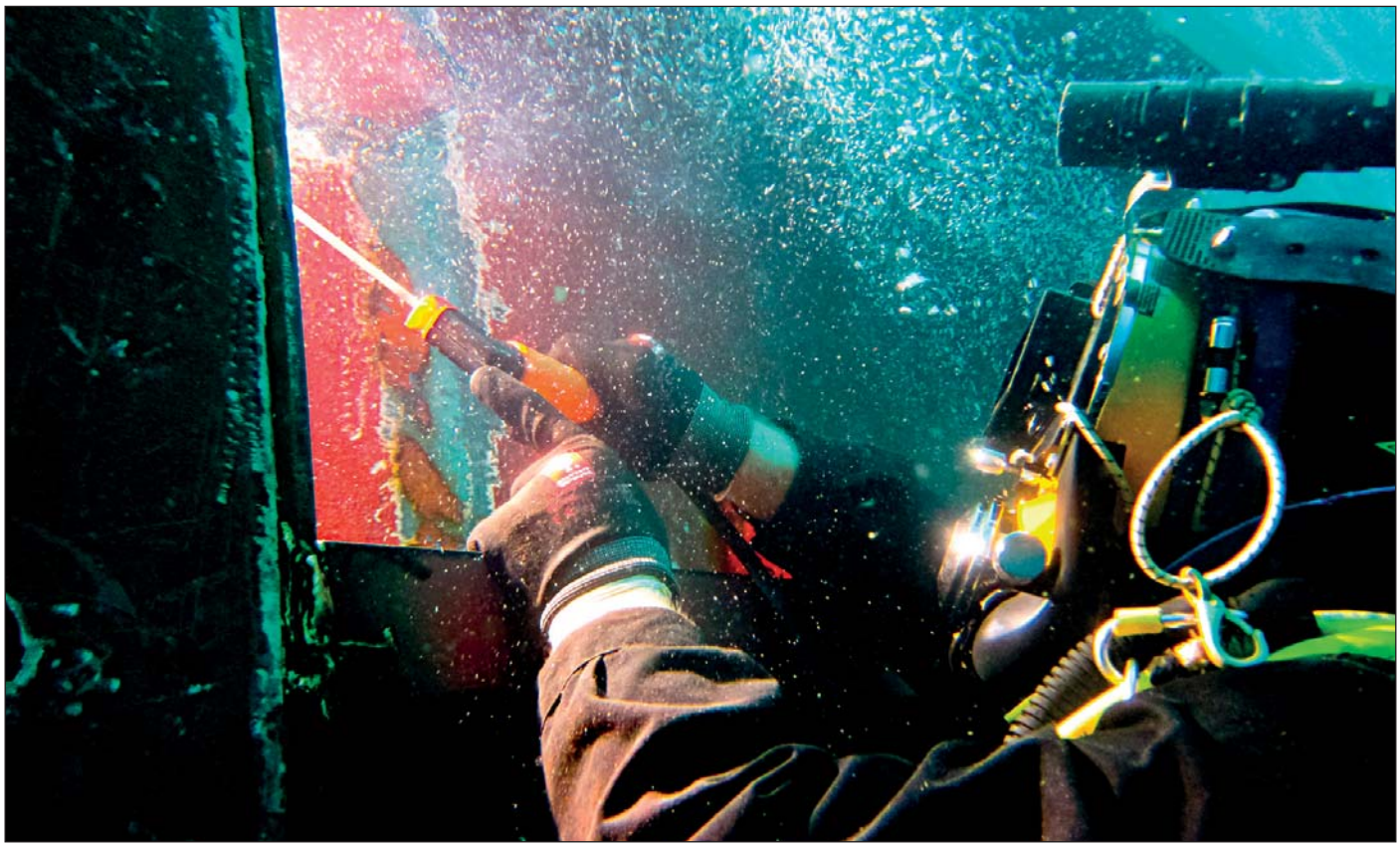
There are many unfortunate events that can stop a ship from sailing. Ships with a leaking stern tube are often not allowed to enter ports. A vessel can be tied up after a collision or a malfunctioning rudder can prevent safe maneuvering. Going to drydock is obviously not an option in such cases. Arranging the vessel to be unloaded at sea is an organizational and financial disaster for the owner. On top of this it does not solve the problem, because the damaged ship is still unable to leave its location.

Hydrex can perform routine as well as more complex underwater repairs to thrusters, propellers, rudders, stern tube seals and damaged or corroded hulls. Our divers create drydock-like conditions around the affected area so they can carry out these operations on-site and within the shortest possible time frame. This allows the vessel to sail again. In most cases a permanent repair can be performed and no follow-up is needed. If this is not possible, a class approved temporary solution is offered. The ship can then continue its schedule or can go to drydock at a more convenient time and location.

By their very nature, emergencies occur unexpectedly. However, being

Hydrex can perform routine as well as more complex repairs underwater.



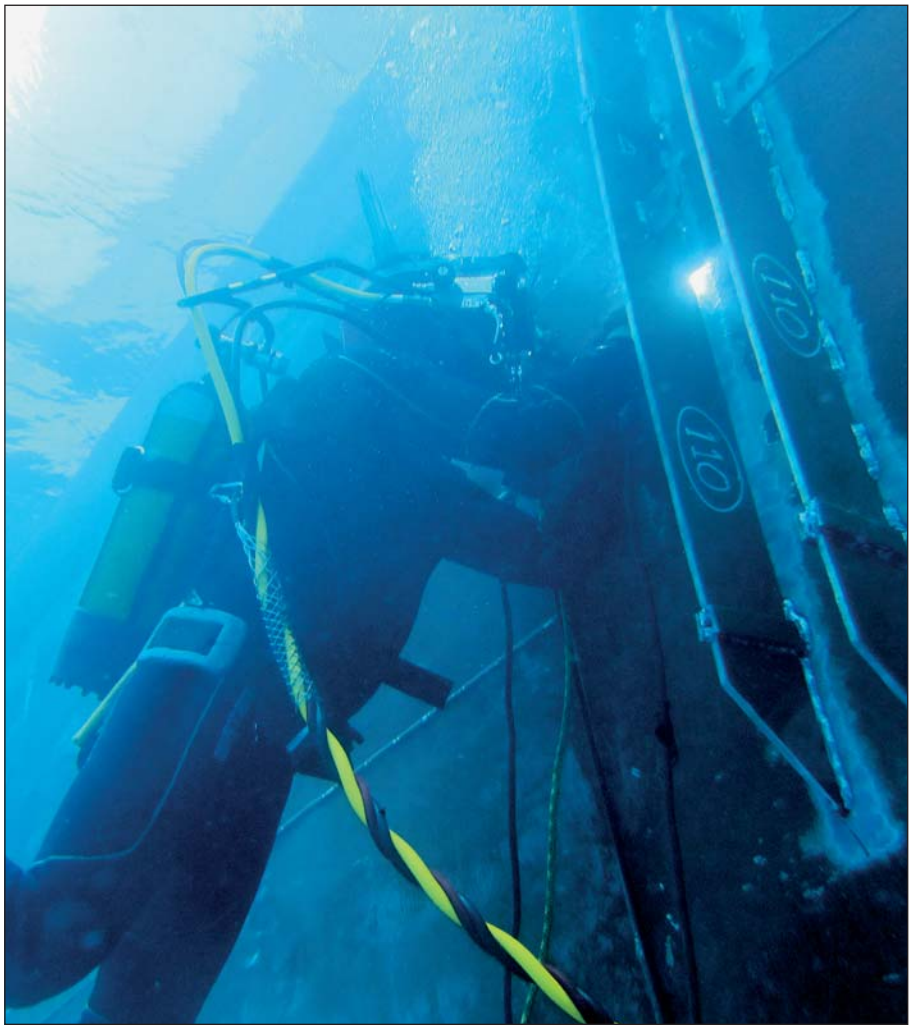


Hydrex divers are trained and certified for both dry and wet welding.

prepared for an emergency goes a long way in salvaging the situation when they do occur. We encourage you to get in touch with us, to find out what we can do and how quickly we can respond and then keep us on file as your first port of call in case an emergency does occur.

Contact us 24/7 if you need immediate assistance. Our technical department is ready to create a tailor-made solution for your specific needs. ■

Hydrex offers certified, class approved insert repairs.



Our network of offices and local support bases allows us to carry out fast and effective operations around the world.

KEEPING SHIPS IN BUSINESS

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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