



UNDERWATER TECHNOLOGY

NEWS

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Emergency repairs allow
vessels to stay in business

**KEEPING SHIPS
IN BUSINESS**

**ISO 9001
certified**

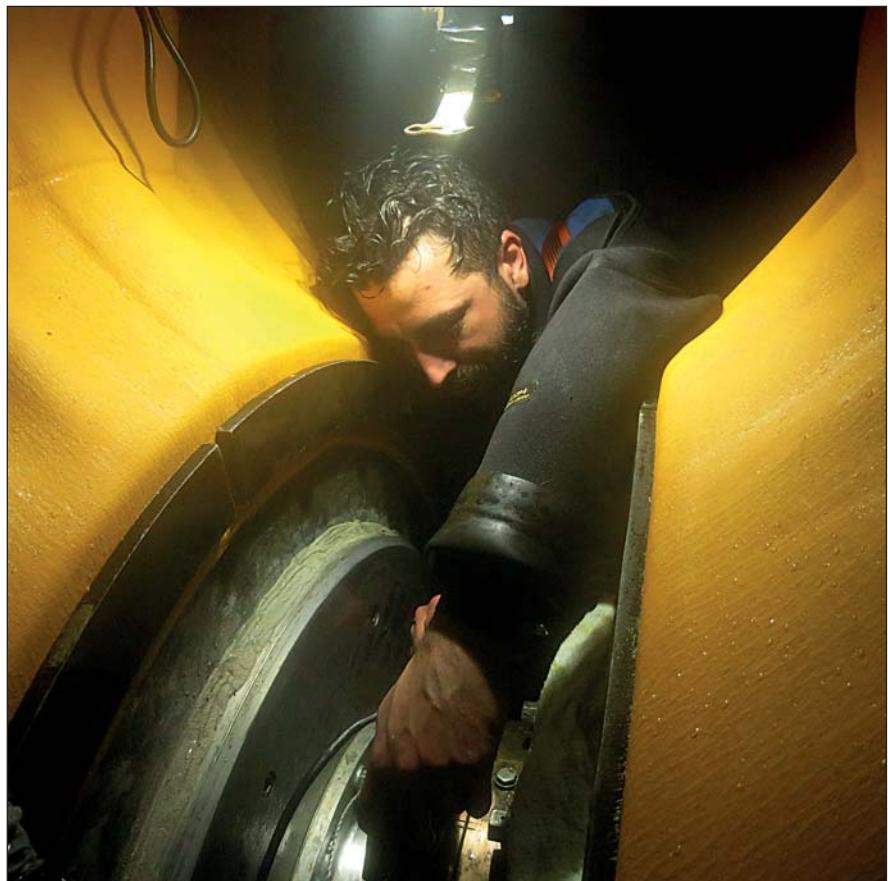
**Underwater services and
technology approved by:**



ClassNK



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.

HYDREX®
UNDERWATER TECHNOLOGY

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Hull repairs in Antwerp and Dubai

Our diver/technician teams carry out on-site hull repairs all across the globe. In most cases the damaged area can be replaced with a permanent insert. On the rare occasions where the damage does not allow such a repair, a temporary doubler plate is installed over the affected area.

The following recent case studies gives an account of two such doubler plate repairs performed by our teams. Despite the relative size of such operations they can be vital for a ship owner nonetheless if he wants to keep his ship operational without loss of time or money.

Doubler plate installations save time and money

We were contacted to perform an inspection of the damaged stern thruster area of 195-meter roro vessel during her stop in Antwerp and



Hydrex is ready to assist you 24/7, all around the world.

carry out any needed follow-up repair.

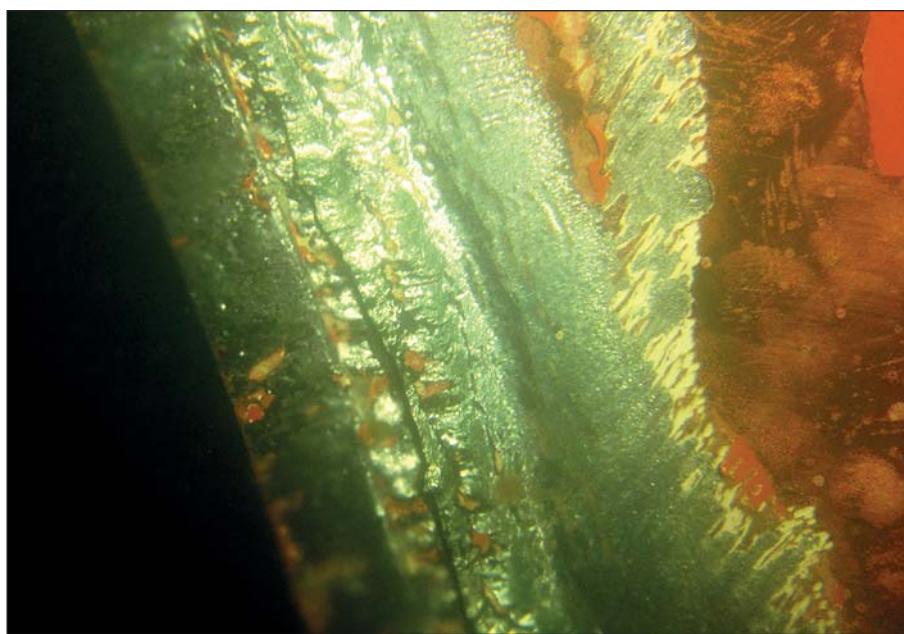
Shortly after arriving at the location, our diver/technicians performed the underwater inspection and made a full assessment of the damage. This revealed a large crack in the welding

seam on the edge between the hull plating and the thruster tunnel. A doubler plate measuring 600 x 300 mm was then constructed on-site by the team using the measurements taken during the inspection.

The area around the crack was then prepared for the installation of the doubler and the plate was welded in place by one of our certified diver/welders.

While this was a fairly simple operation, the repair performed by our divers in the United Arabian Emirates was a lot less straightforward.

We were contacted by the representative of a tanker to carry out an emergency repair while the vessel was berthed in Dubai. A team of our diver/technicians therefore mo-



Crack in thruster tunnel of roro vessel.



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.

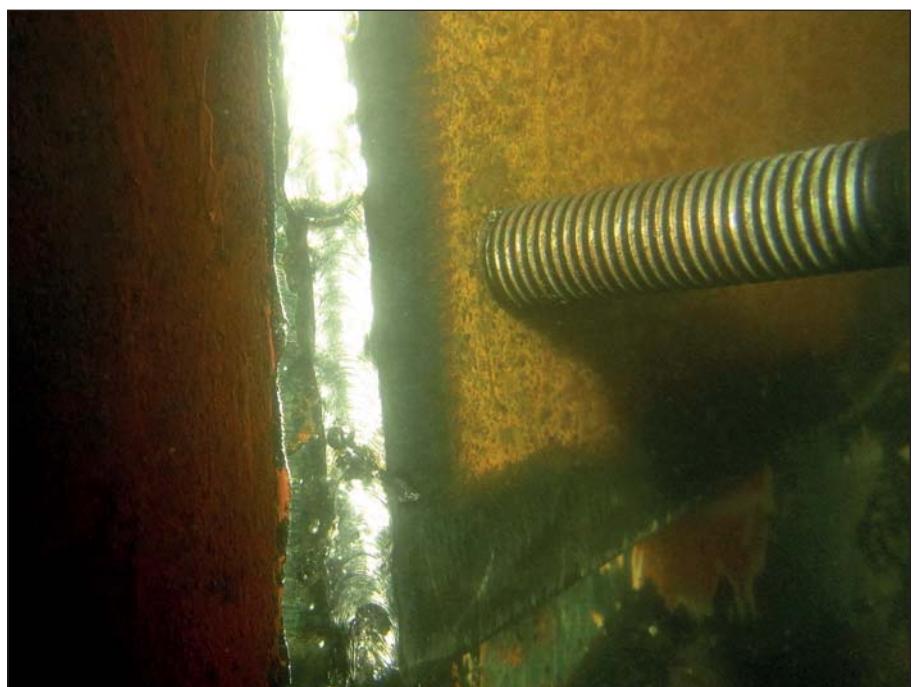
Major defects on Rudders very often cause unscheduled drydocking of ships. The new method designed by our technical department allows engineers, welders and inspectors to perform their tasks in dry conditions. Class approved permanent repairs on-site, without moving the ship, are now possible and commercial 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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The doubler plate was constructed on-site in Antwerp by our team.



The doubler was welded in place.

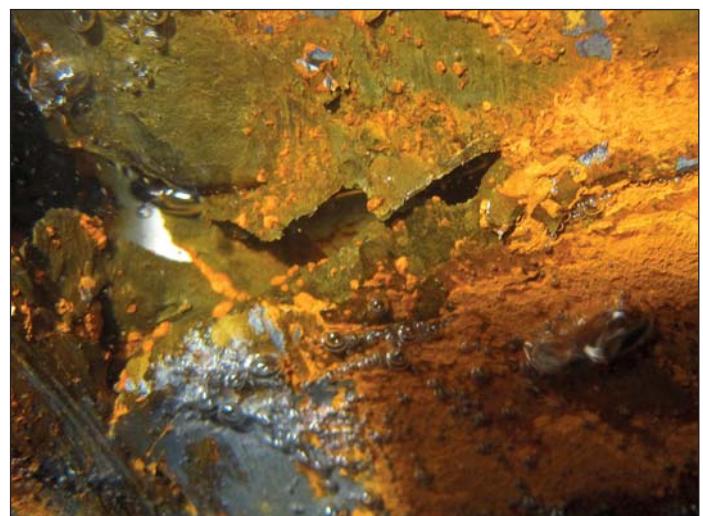
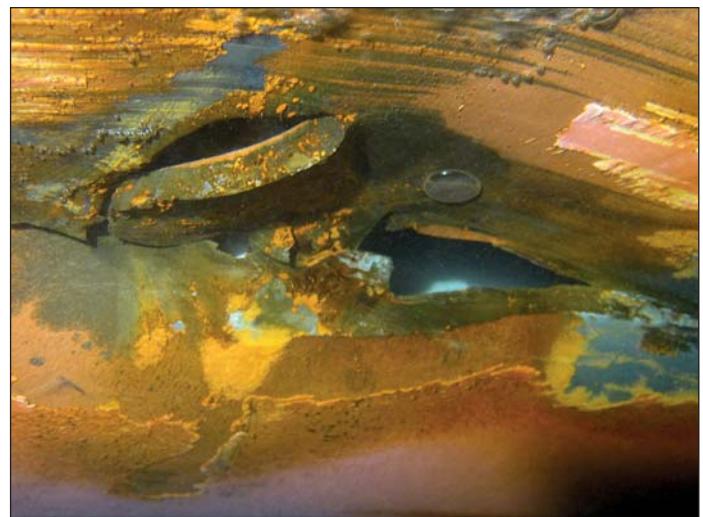
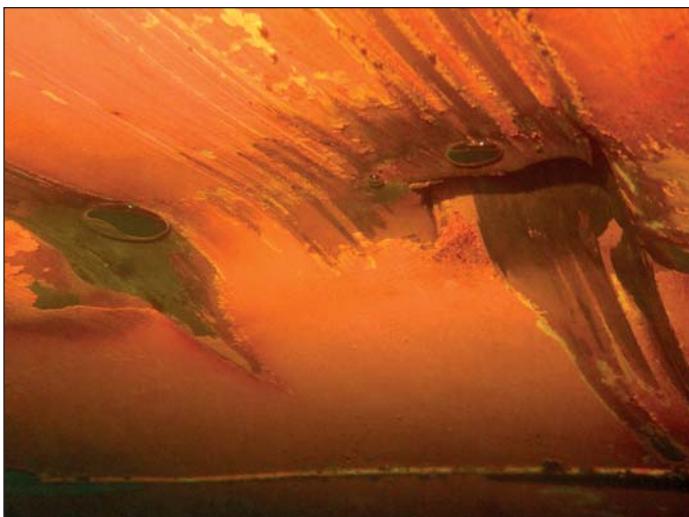


Hydrex diver getting ready for underwater operation.

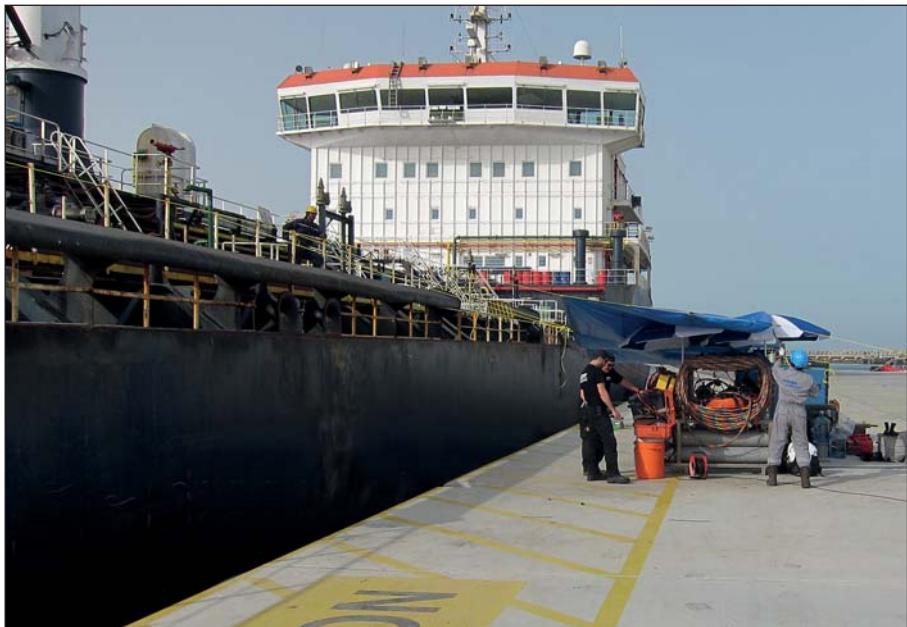
bilized from our headquarters in Antwerp with all the required equipment. Because our fast response centers have a large stock of state-of-the-art equipment ready, mobilization for operations like this can be almost immediately.

After arriving on-site, the team set up their equipment while the team leader discussed the scope of work with the superintendent of the ship. Our divers then started the operation with an inspection of the affected area. This revealed large indents, many cracks and several punctures in the flat bottom shell plating.

In total twelve cracks were found. Crack arrests were drilled at their extremities to prevent these from spreading.



An underwater inspection revealed large indents, many cracks and several punctures in the flat bottom shell plating of the tanker.



Hydrex team members discussing the operation in Dubai.

The repair proposal also included the installation of two doublers that would cover the punctures in the shell plating: one measuring 700 x 600 mm, the other 1000 x 700 mm. Both plates were constructed using the measurements taken during the inspection to perfectly fit the dented shape of the hull. They were then fitted and secured by our certified diver/welders.

As a result of our intervention the owner could keep his schedule and have a permanent repair carried out at a more convenient time and location.

As with all operations we carry out, the highest professional standards were upheld during both repairs to ensure the future safety of the ships.

Permanent class approved insert repair

Our 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. Normal commercial activities can continue with-

out disruption. These operations follow our procedure for welding cracks in the vessel's shell plating and they are approved by the major classification societies.

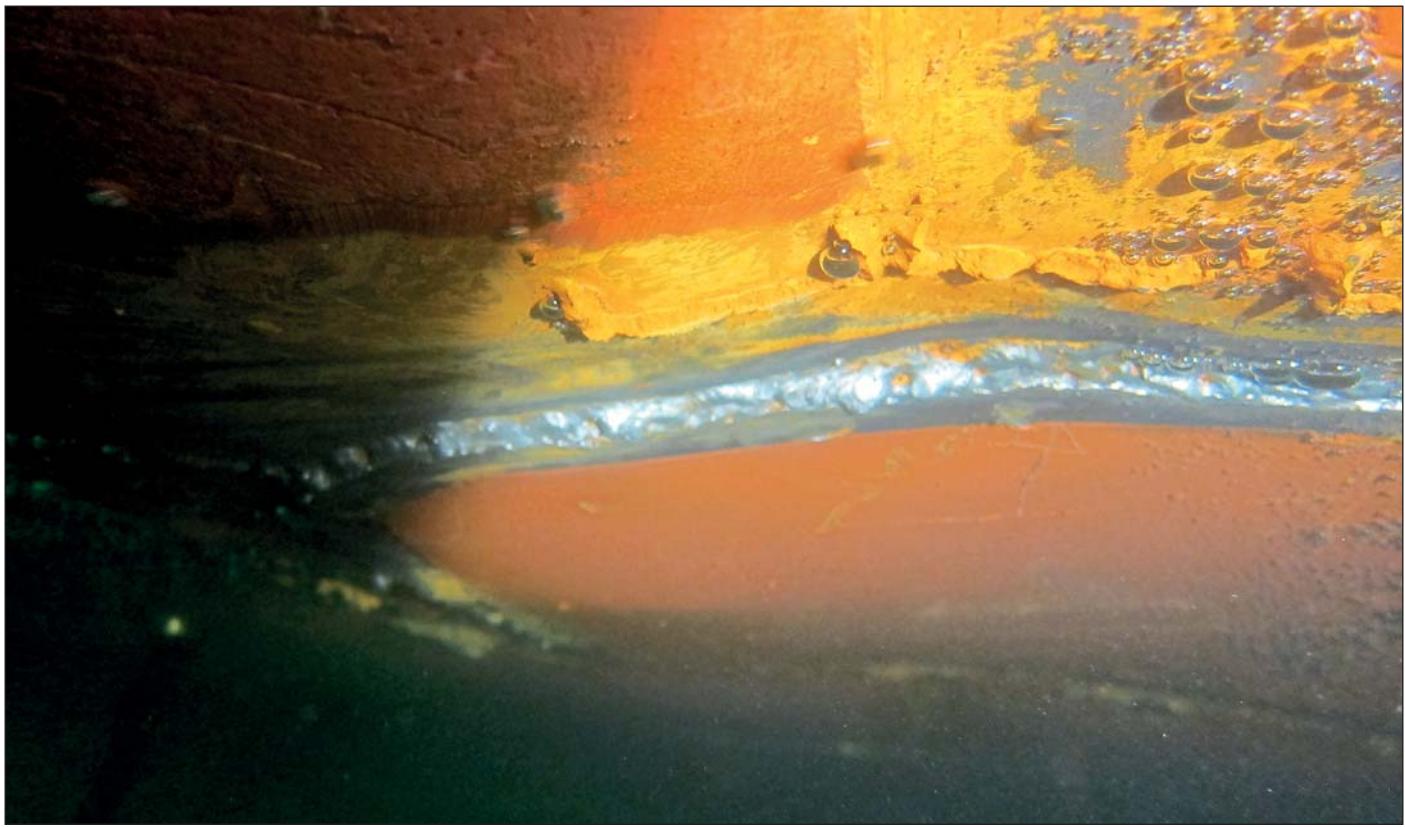
Building on an ever-expanding worldwide network of offices and support bases, we can provide these repairs at reasonable costs across the globe. All our offices are fully equipped and can mobilize immediately. As part of the Hydrex Group they can take advantage of the company's many years of experience.



Crack arrests were made on the extremities of all twelve cracks.



One of the two doubler plates installed on the tanker.

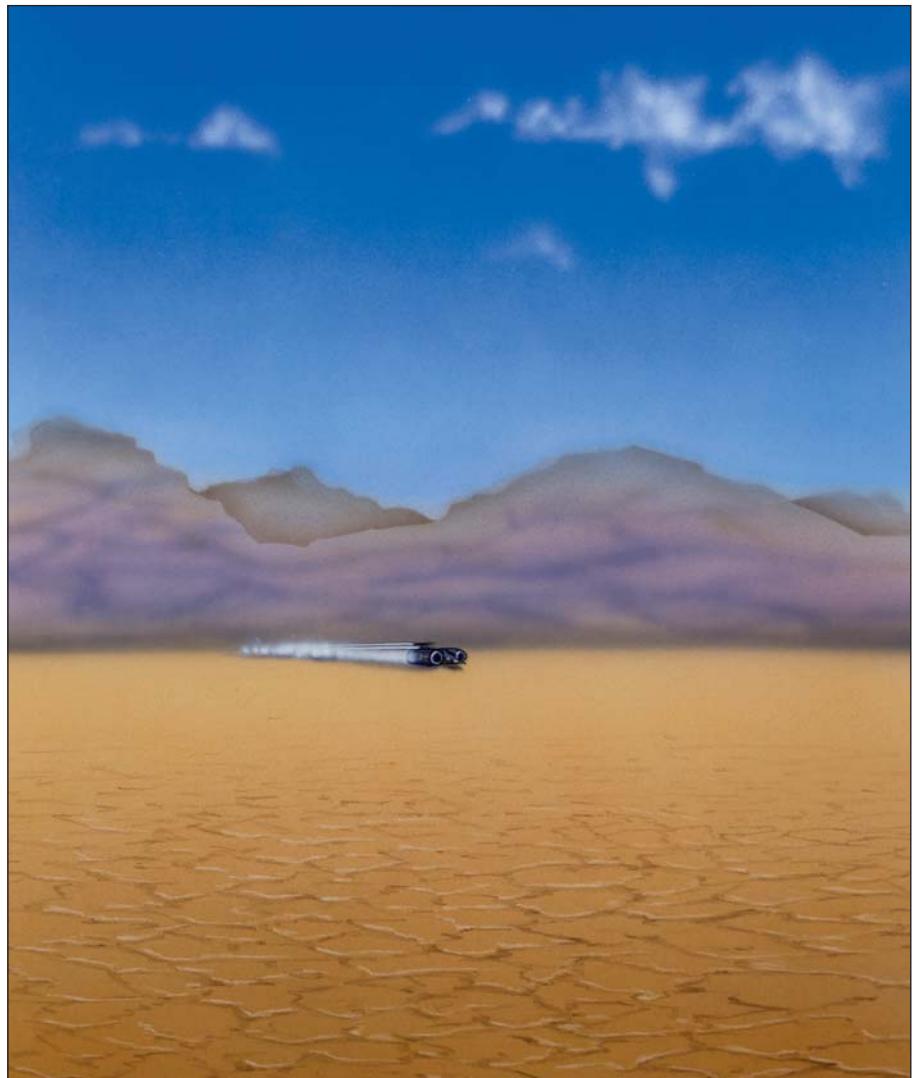


Both doubler plates in Dubai were constructed to perfectly fit the dented shape of the hull.

Repairs of this kind can only be done successfully by trained diver/technicians who have the relevant know-how and experience to resolve all of the technical difficulties encountered during underwater operations. This is why all our technical staff from all offices undergo stringent training after which they are able to perform a wide range of operations. They can achieve the same high quality without unnecessary loss of time. ■

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:
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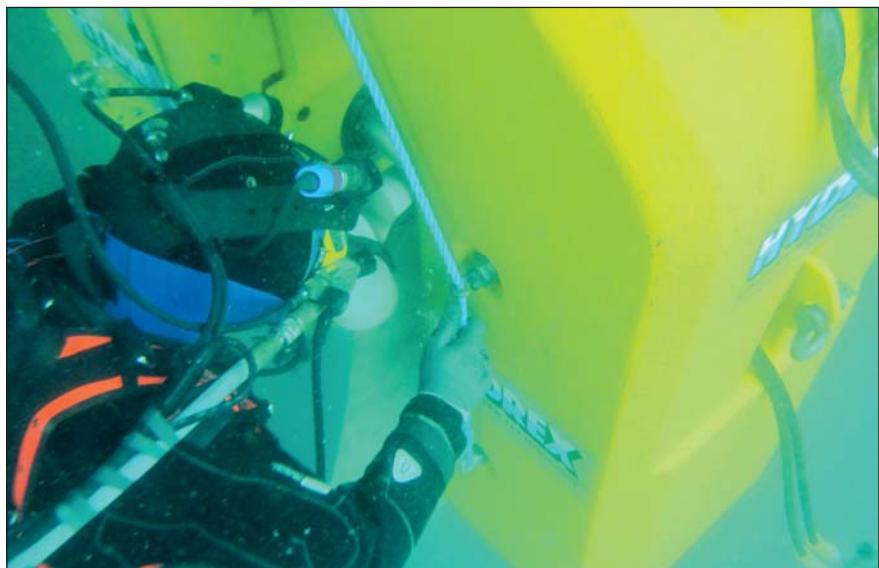


Fast underwater propeller blade straightening

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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Hydrex will be present at Posidonia 2018 together with our agent for Greece: N. Bogdanos Marine Bureau. We would like to welcome you at booth 2.102 in hall 2.

If you would like to learn more about how Hydrex can assist you, please visit our booth at Posidonia. Our team will be happy to give you the information you need. You can also contact one of our offices if you would like to make an appointment for the exhibition or if you need assistance.

Posidonia **Ποσειδώνια**
The International Shipping Exhibition
4-8 June 2018

Emergency repairs allow vessels to stay in business

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.

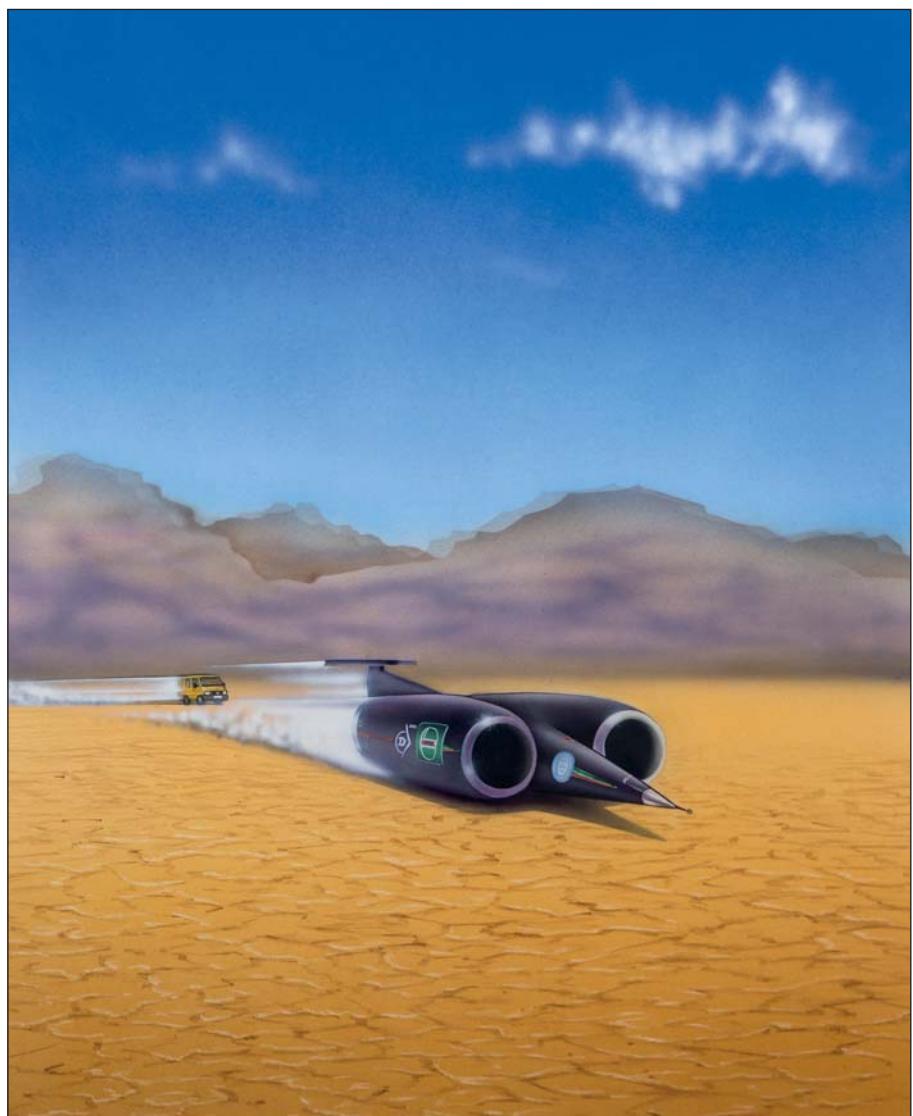
There are many unfortunate events that can stop a ship from sailing. Ships with a leaking stern tube are often not allowed to enter ports. A vessel can be tied up after a collision or a malfunctioning rudder can prevent safe maneuvering. Going to drydock is obviously not an option in such cases. Arranging 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.

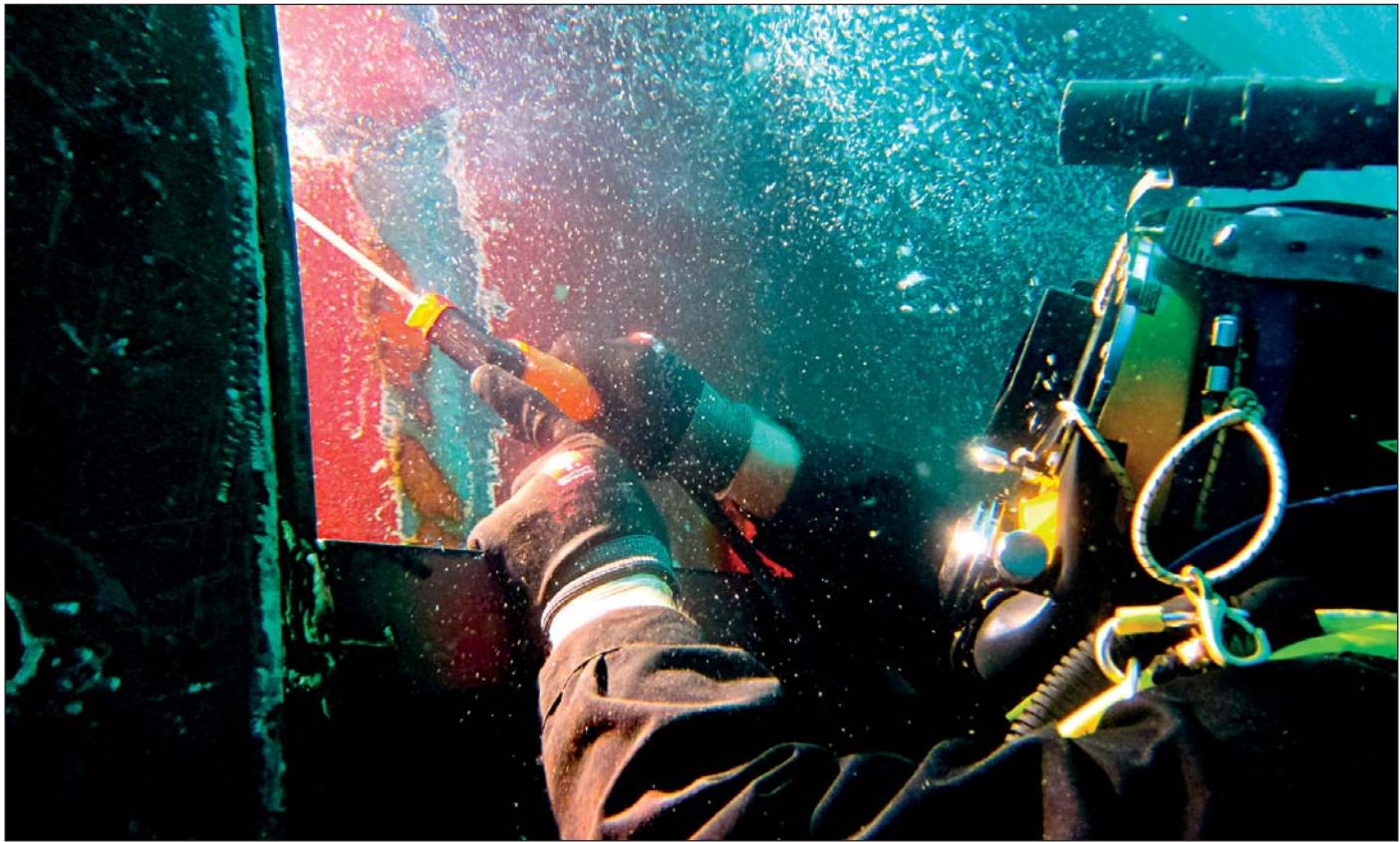
Hydrex can perform routine as well as more complex underwater repairs to thrusters, propellers, rudders, stern tube seals and damaged or corroded hulls. Our divers create drydock-like conditions around the affected area so they can carry out these operations on-site and within the shortest possible time 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.





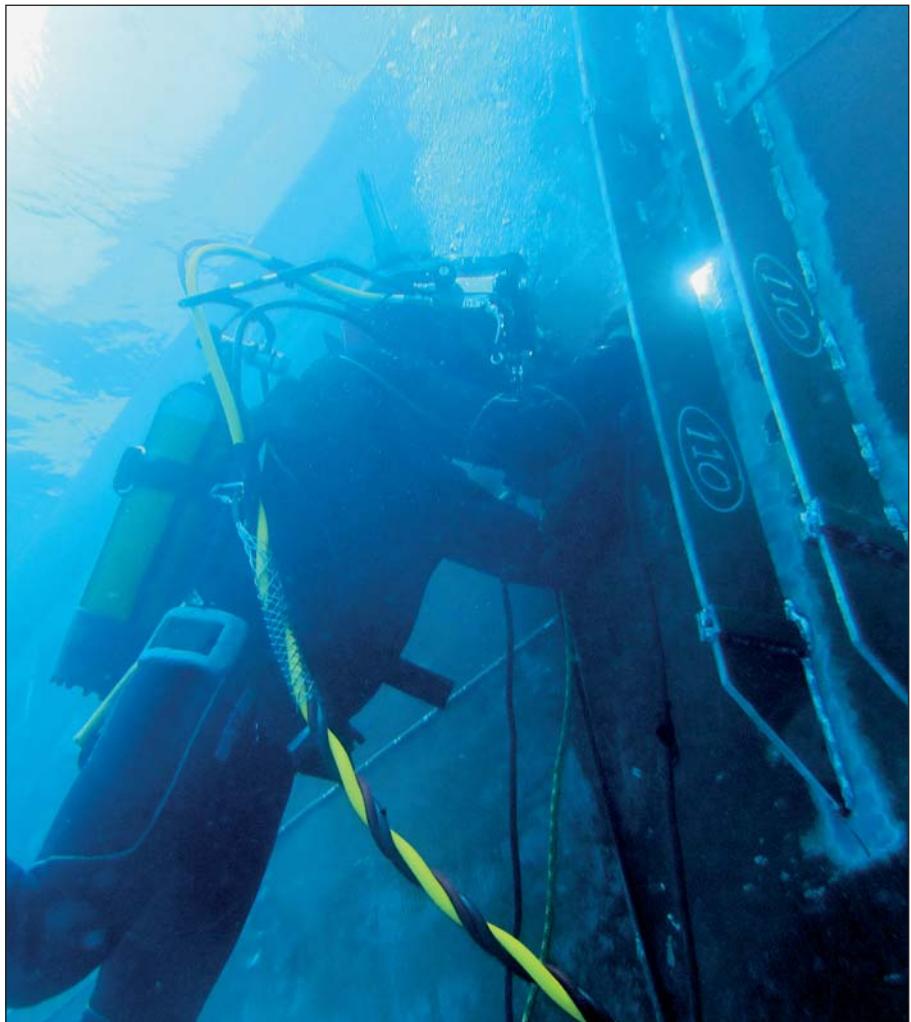
Hydrex divers are trained and certified for both dry and wet welding.

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.

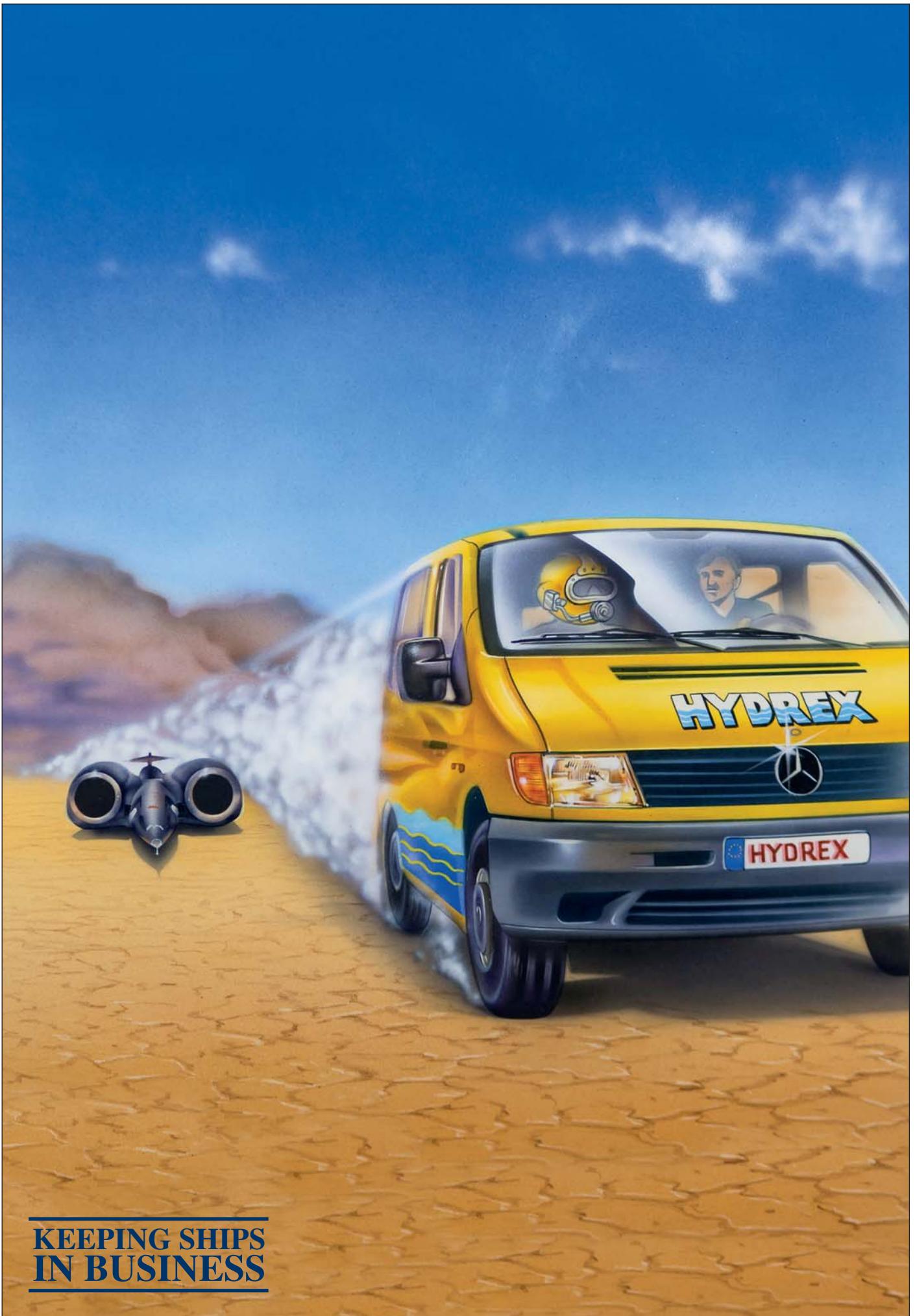
Contact us 24/7 if you need immediate assistance. Our technical department is ready to create a tailor-made solution for your specific needs. ■



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**

Always on time



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 dry-dock.

Hydrex performs 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

we 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.



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