HYDREX®

UNDERWATER TECHNOLOGY

NEWS

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KEEPING SHIPS IN BUSINESS

ISO 9001 certified

Underwater services and technology approved by:

Ultra large savings

There are two simple, easy and inexpensive steps that together can save you 10% of your fuel costs.

Propeller buffing is a new technique developed and delivered by Hydrex to keep your propeller in optimum condition. This is not conventional propeller polishing. Routine propeller buffing can save you 5% of your fuel bill, is very easy to schedule and carry out regularly, starting just as soon as you want to save 5% of your ship or fleet's propulsive fuel costs. This offers extraordinary Return on Investment (ROI) in terms of instant fuel savings. Very low outlay for very high returns and an extremely rapid payback.

Propeller boss cap fins (PBCF) can be installed by Hydrex divers anywhere, any time. This device is custom made for your ship's propeller. It can save an additional 5% of your fuel costs. There is a lead time of a couple of months for the PBCF to be made for your ship but Hydrex can install your new PBCF as soon as it's ready and you can start saving an additional 5% of your fuel bill immediately.

HYDREX PROPELLER BUFFING + PBCFs = 10% PROPULSIVE FUEL SAVINGS

Contact one of our offices today for more information and a quotation.

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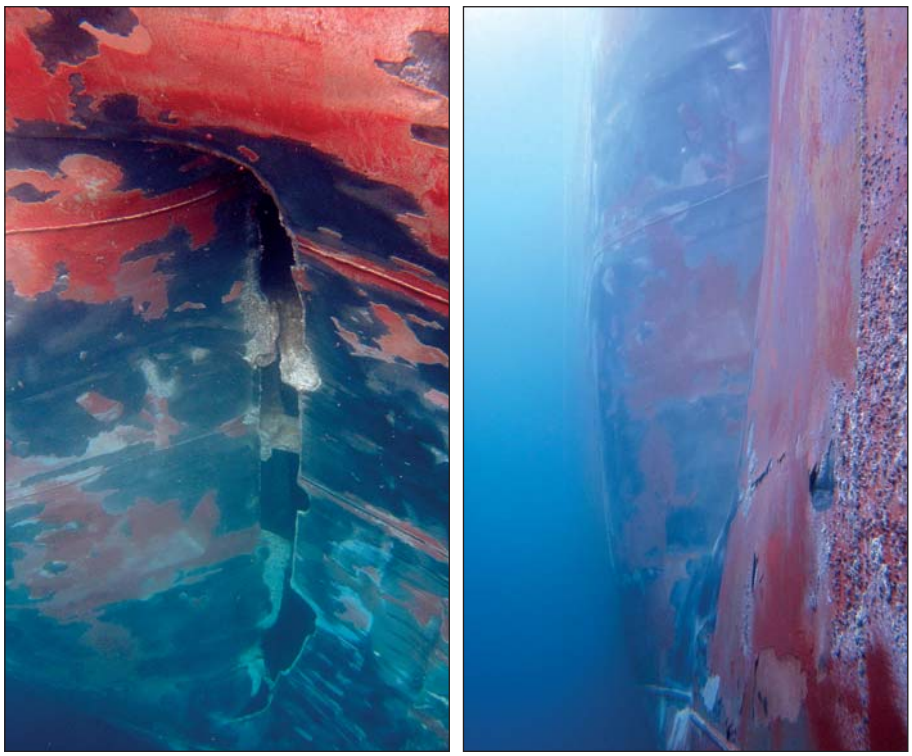
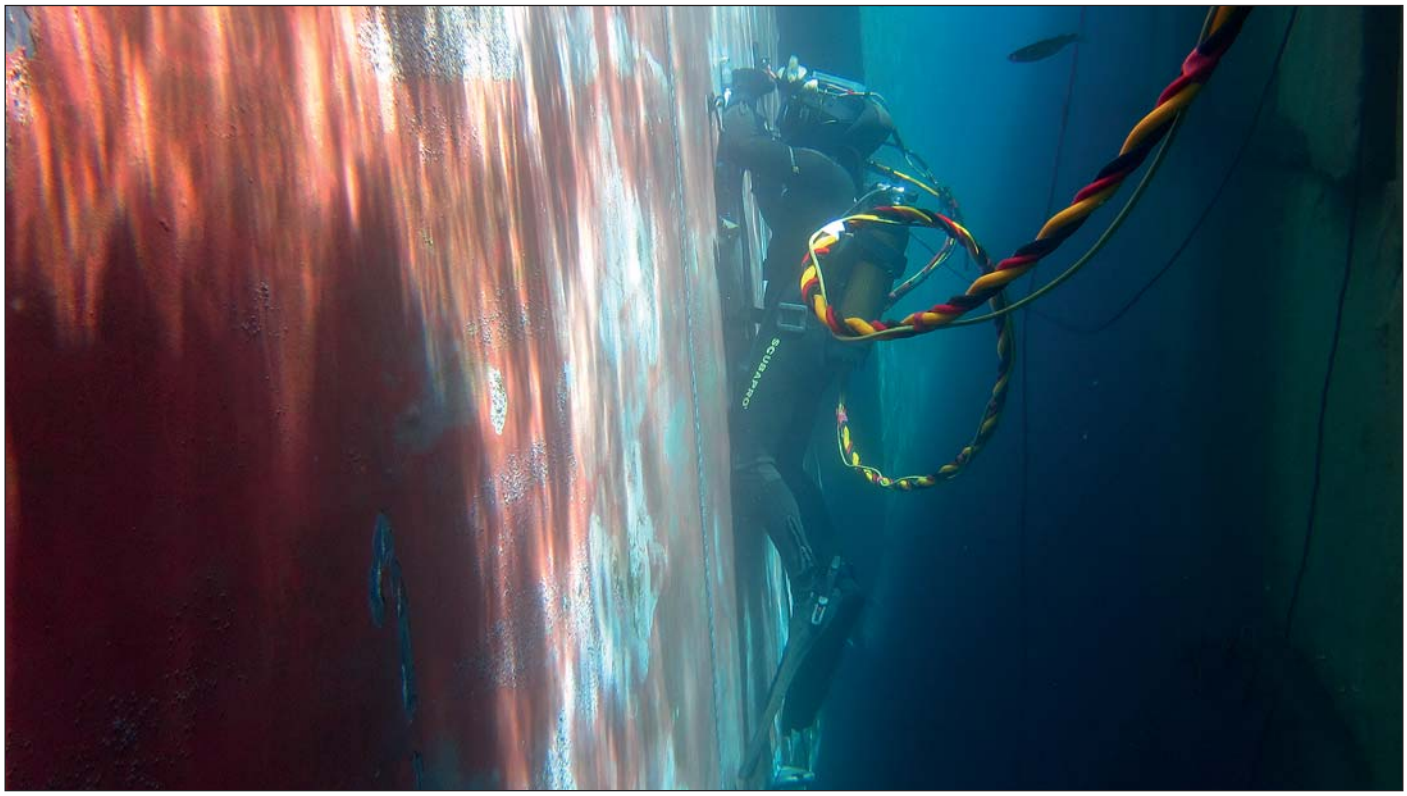
Permanent on-site collision damage repair in Greece at Neorion Syros Shipyards

In July Hydrex mobilized a team of diver/technicians to Syros, Greece, for a complex repair operation on a 118-meter, 8550 DWT chemical tanker. The vessel had suffered large cracks in her hull plating as the result of a collision. She was not allowed to sail any further. Hydrex proposed a permanent on-site repair using an open top cofferdam. This would enable the fully laden ship to continue her journey.

The tanker was berthed in Egypt when another vessel struck her portside hull. This caused a large hole, severe cracks and dented plating. The collision also pushed the vessel's starboardside hard against



Large hole in the hull and dented plating as result of a collision.



Hydrex diver performing initial inspection of the damaged hull.

The starboardside plating was dented, though not breached.

Neorion Syros Shipyards performed the dry welding work during this operation.

The cofferdam was constructed at the yard.

the fenders, denting the plating on that side as well. The owner of the vessel contacted Hydrex to find the best repair solution for the vessel. Because it was fully laden, going into drydock was not feasible. An on-site underwater solution was needed.

In consultation with Hydrex, the ship's owner opted to take his vessel to the Neorion Syros Shipyards, situated on the island of Syros in Greece. When the ship arrived, the classification society decided that the damage to the portside hull plating was too severe to let the tanker sail any further.

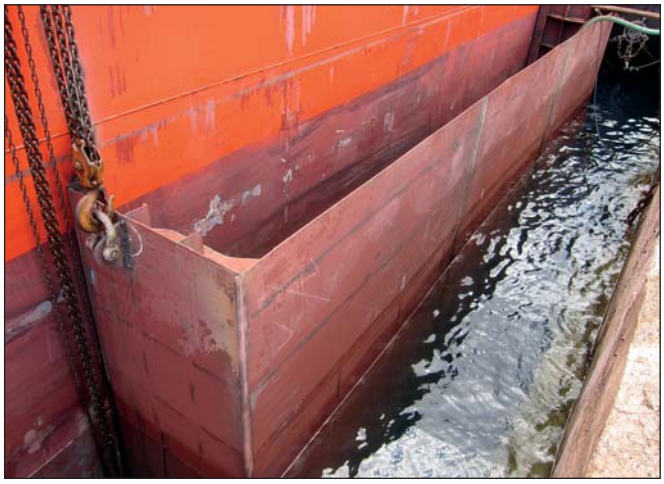
The vessel berthed in the yard, allowing for a close cooperation between Hydrex and Neorion during the entire operation.

Neorion Syros Shipyards was established in 1861. It is the oldest yard in modern Greece and the largest remaining industry in the Aegean area. The shipyard constructed some of the first steel and steam boats in the 19th century. Starting in 1994 the yard underwent a technological evolution. An ambitious investment plan was implemented. One of the most important investments was the creation of infrastructure aimed at the construction of mega yachts or small cruise ships. The yard soon became famous for the quality of its services, provided by some of the most experienced craftsmen in the Mediterranean.

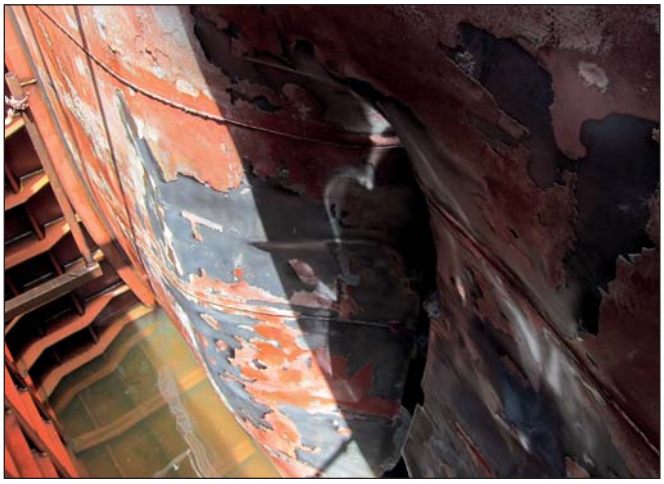
Getting the right measurements for the perfect solution

"After arriving on-site we first performed a detailed underwater inspection of the damage," the Hydrex team leader says. "We used the information we collected to

Open top cofferdam arriving and being lowered into the water.



All water was emptied from the cofferdam.



The damaged plating inside the emptied cofferdam.

come up with the best possible option for the repair. This was done in communication with the technical department at the Hydrex headquarters." He then had a meeting with the superintendent of the vessel and representatives of the classification society and the yard to discuss the scope of work.

A permanent repair would be performed to the extensive damage to the portside plating. The less severe damage to the starboardside plating would be temporarily repaired. This would allow the tanker to sail to Hamburg, unload her cargo and then quickly drydock for a permanent repair to the starboardside plating.

The damaged area on the portside would be closed off with an open top cofferdam. This allowed the Hydrex team to create a dry environment in which the shipyard could perform permanent repairs in drydock-like conditions. "Using a special frame, exact measurements were made of the area that needed to be covered," the team leader explains. "With these measurements a custom cofferdam was designed by the Hydrex technical department. The cofferdam was then constructed by the shipyard."

Creating the same conditions as in drydock, underwater

"The vessel was loaded with paraffin wax," says Mr. Andrew Anagnostis, Business Manager at Neorion Syros Shipyards. "So the cargo had to be kept in constant 70° C temperature to stay in a liquid state. In order to enable the yard to carry out the repair to the main damage in workable conditions, the crew of the vessel emptied the adjacent cargo tank."

Hydrex under-water 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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The affected shell plating was removed by the yard.

Welder working on the web frames, inside the cofferdam.

Once the open top cofferdam was ready, the Hydrex team installed it over the damaged hull plating in no more than two hours. All water was removed from inside the cofferdam. The yard then replaced the dented shell plating. The affected web frames were also replaced, using templates from the starboardside frames.

While the yard was performing the insert repair, the Hydrex diver/technicians installed temporary stiff-

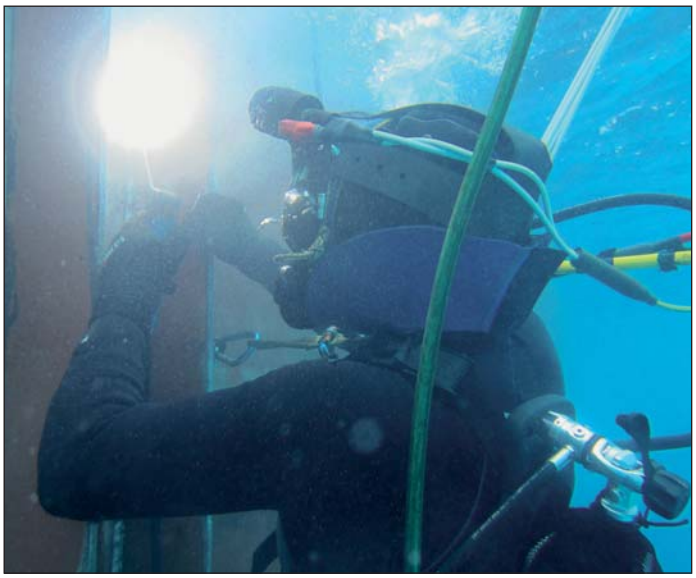
New web framing an partially installed new shell plating.

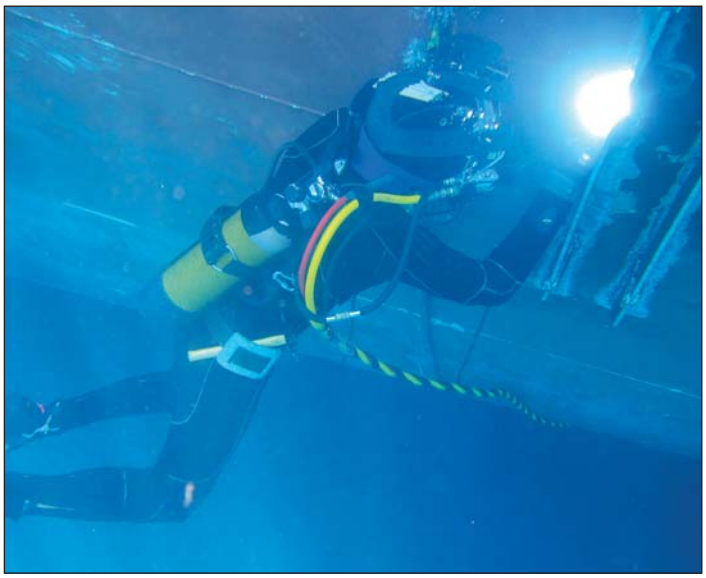
Fully repaired portside shell plating.

eners over outside of the dented starboardside plating. “The reason they could not renew the damaged frames on this side was because the cargo could not be shifted,” tells Mr. Anagnostis. “The temperature was around 70° on the bulkhead and about 45-50° in the other areas. So it was impossible for anybody to do any work, let alone weld.”

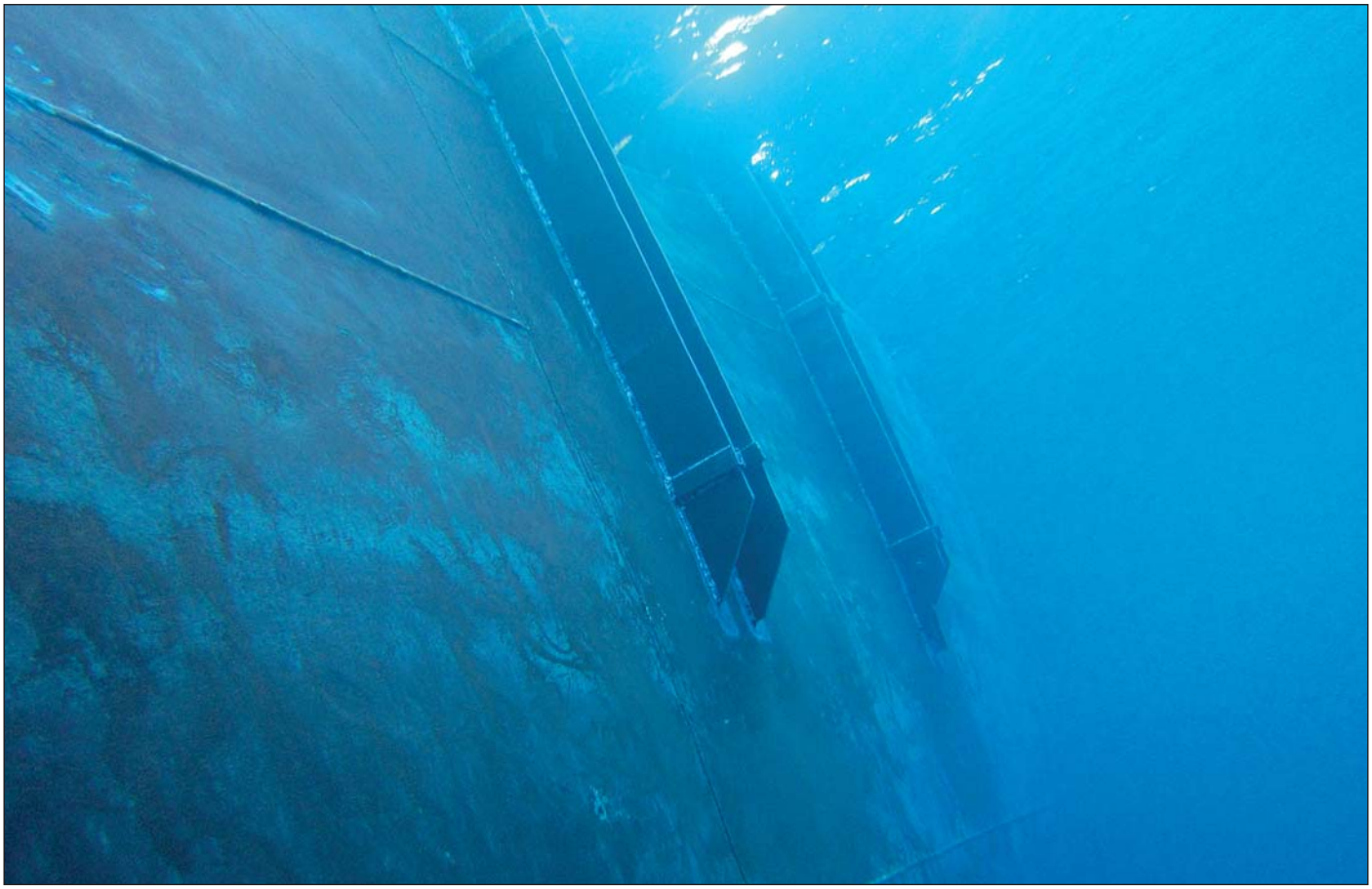
The repairs to both sides of the vessel were approved by the classification society. This allowed the vessel to sail from Syros. The tanker then made her way to Germany where she will be unloaded before paying a quick visit to drydock for permanent repairs to the starboardside hull plating. Because no further attention will be needed for the portside, the visit to drydock can be very short and economical.

Removal of the cofferdam.





Hydrex diver/technician welding temporary stiffeners on the starboardside plating.



Temporary stiffeners were welded over the dented starboardside shell plating.

The team leader told us that the co-operation with the shipyard went very efficiently. "Throughout the entire operation we worked closely together. The crew did an excellent job on their part of the repair, as well as assisting us whenever needed. The yard also provided us with any additional material we required." This was confirmed by Mr. Anagnostis, "The Hydrex team was very well-organized and we were very pleased. We have never dealt with a similar situation before, carrying out repairs underwater, inside a cofferdam," says Mr. Anagnostis. "Everything went smoothly. The vessel is owned by a long time customer of ours so we were pleased that we managed to help them out together with Hydrex." As a result of the cooperation the fastest and most cost-effective solution was realized for the owner. ■

KEEPING SHIPS IN BUSINESS

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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Dive support workboats offer many logistic possibilities for Hydrex customers

The Hydrex headquarters in Antwerp has two dive support workboats available for immediate mobilization. Both vessels can be used for a wide range of operations in Belgium, the Netherlands, the United Kingdom and France.

The catamarans are fully equipped as dive support stations with hydraulic cranes, hydraulic winches, nautical and communication equipment and a dive control room. A PDF document with details about the vessels can be found on our website (http://www.hydrex.be/case-story/89) or requested by contacting our office in Antwerp.

The workboats are usually docked right outside the Antwerp office,

Both workboats are fully equipped as dive support stations.

The workboats are stationed in Antwerp and Rotterdam, where a wide range of equipment is available.

Hydrex has experienced diver/technicians ready to mobilize together with the workboats.

Hydrex workboat during operation.

where a wide range of state-of-the-art equipment and tools is available at all times.

Hydrex has experienced and certified teams of diver/technicians ready to mobilize together with the workboats. They can carry out routine operations as well as highly technical repair work within a very short time frame and all to Hydrex's well-known high quality standards.

You can contact us 24/7 for more information about these vessels or the underwater services Hydrex offers. ■

KEEPING SHIPS IN BUSINESS

New generation cold straightening equipment

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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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.

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