

Underwater hull repairs save time and money	3
Thriving and in constant search of new technology	8
New agent for the Netherlands.....	10

Contents

Page 3 - 6

Underwater hull repairs save time and money

Page 8 - 9

Thriving and in constant search of new technology

Page 10

New agent for the Netherlands

KEEPING SHIPS IN BUSINESS

ISO 9001 certified

Underwater services and technology approved by:



ClassNK



Scrubber pipe repairs and lasting protection



Exhaust scrubbers filter out all harmful toxins from exhaust gasses of marine diesel engines. These hazardous pollutants can severely corrode the pipes of the scrubber. Using the experience we have accumulated over the years allows us to assist you at moment's notice if this happens.

We offer a full package to owners that are experiencing similar damage. Not only can we replace the

corroded exhaust pipe while your vessel stays on schedule, but we can make sure that you will not have to call us again in a few months time for the same problem.

Contact us for more information on scrubber pipe replacements or other underwater repairs. We are at your disposal 24/7.

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HYDREX
UNDERWATER TECHNOLOGY

Underwater hull repairs save time and money

Our teams can mobilize immediately to perform a wide range of hull repairs on any type of vessel. In this article we give you a summary of a few operations to illustrate the diversity of shell plating repairs our diver/technicians are trained for.

Seachest insert repair in Rotterdam

A tanker suffered leakage in the star-board side seachest of its engine room. We were asked by the owner to provide an on-site solution and sent a team to the ship's location in Rotterdam to carry out an insert repair.

On request of the class surveyor, an NDT specialist was arranged to take thickness measurements of the star-board seachest within the engine room. These measurements showed that the damage inside the seachest was wider spread than expected.

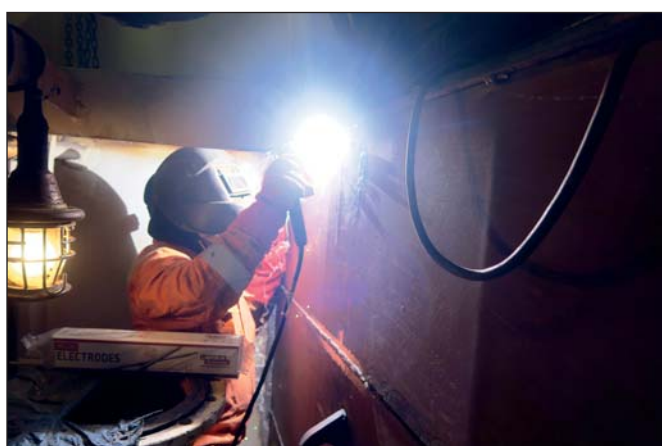
With the result of this inspection, a complete repair plan was devised in



Workboat next to tanker during operation.



Positioning one of the new inserts.



Securing the new inserts with full penetration welds.



New inserts seen from inside the seachest.

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.

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.



cooperation between our teamleader, the ship's crew and the classification society.

The seachest was emptied of water and opened. All objects, including the water coolers and piping work, were removed from inside the seachest by the crew. The affected plating was then cut away. Our diver/welders worked in shifts to fit and weld the two insert plates. This was done with class approved full penetration welds.

When the installation was complete, a successful MPI test was carried out by an independent surveyor. As a result, the class representative gave his green light for the repair.

Crack repair Zeebrugge

We were contacted by the representative of a 163-meter ro-ro vessel to carry out a crack repair during the ship's stop in Zeebrugge. Because our fast response centers have a large stock of state-of-the-art equipment ready, mobilization for smaller operations like this can be almost immediately.

When the work area was certified gas free, our divers started the operation with an inspection of the damaged area and this on both sides of the hull. This allowed the team to take the exact measurement of the crack: 600 mm on the outside. Next a blank was installed over the area. The diver/technicians could then perform work on the crack inside the engine room without water ingress.

The team removed the frames, bulkheads and a cement box to get access to the crack. Inside the engine room it measured 700 mm. To prevent it from spreading, crack arrests were drilled at its extremities. Next our diver/technicians ground out the crack over its entire length. It was then filled with our class approved full penetration welding.

As a result of this temporary repair the owner of the vessel did not have to go off schedule for an emergency visit to drydock but could make arrangements for a follow up repair at a more convenient time and location.



Hydrex diver/technician preparing the hull for installation of doubler plate.



Diver getting ready for underwater operation.



Drilling of crack arrests to prevent crack from spreading.



Crack filled with full penetration weld.

Emergency grounding damage repair in Phuket, Thailand

A cruise ship suffered grounding damage while on its way to Phuket. When our technical department heard about the incident, they contacted the owners of the vessel and proposed to have our team inspect the vessel when it arrived in Phuket and perform any needed repair on-site.

Because the damage was too severe a permanent repair was not an option. A drydock visit in Singapore had therefore already been scheduled. The ship could however not sail that far on its own anymore.

First the divers performed a detailed underwater inspection of the damage. This revealed a large gap in the portside shell plating in the location of the freshwater tank. The bilge keel in this area was also severely deformed. Four smaller hull penetrations were discovered in front of the gap as well as large scraping marks and indents behind it.

After a meeting with the superintendent of the vessel and the attending class surveyor our proposed repair plan was accepted. The repair itself consisted of the installation of a doubler plate over the gap in the hull and patches over the smaller holes.

The doubler plate was designed to follow the contours of the deformed hull. Together with the patches it was fabricated by our men on-site and installed underwater. A stiffener was welded over the plate and part of the hull for extra protection. The repair was then inspected and approved by the class surveyor.





A cruise vessel had suffered a large gap and smaller hull penetrations after a grounding.



The bilge keel of the cruise ship was also deformed.



The doubler plate was secured with screw dogs.



A stiffener was installed over the doubler for extra protection.

The cruise ship could sail safely to drydock in Singapore for extensive permanent repairs.

Conclusion

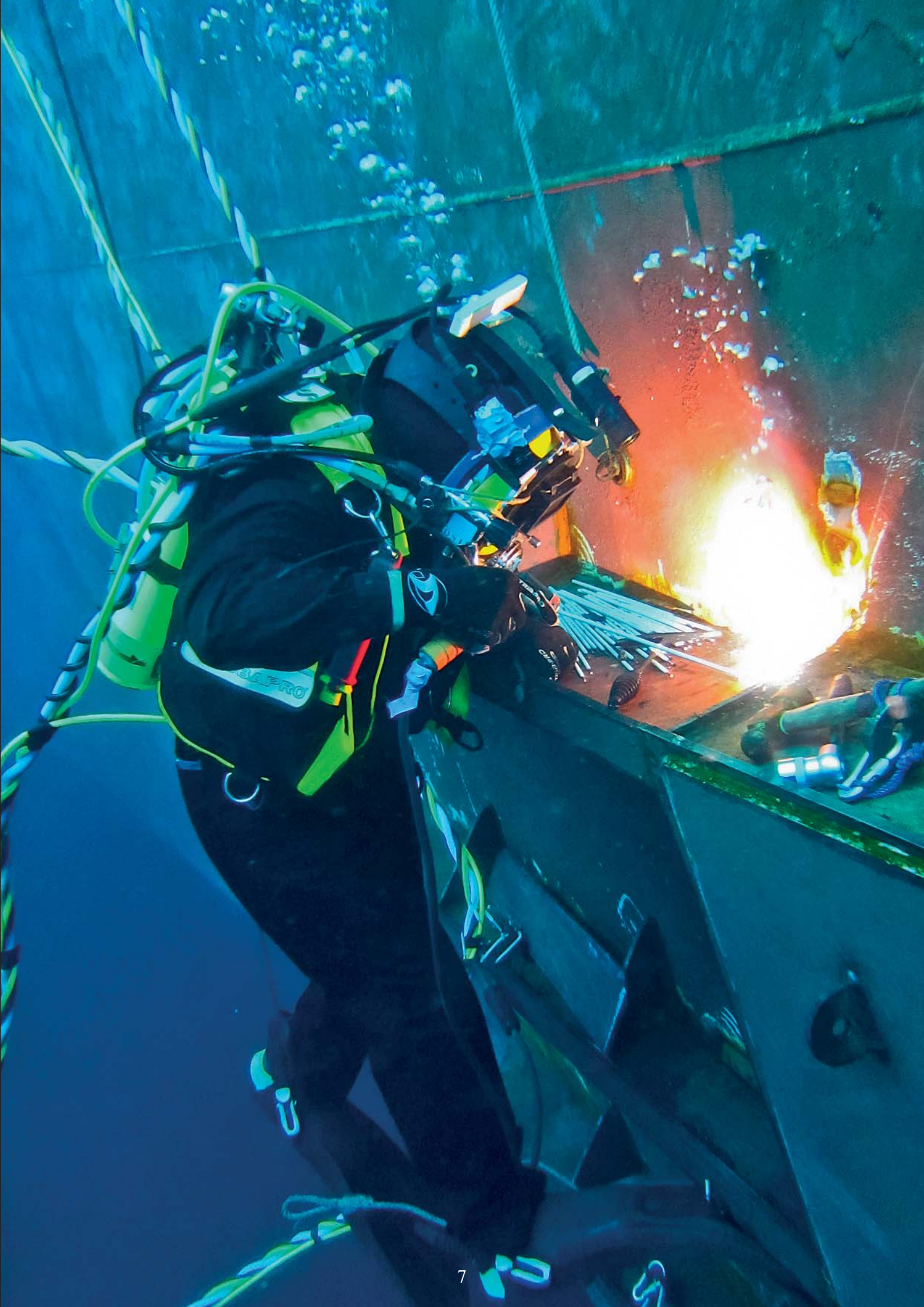
We have the know-how and experience needed to find the best solution for any problem you might encounter with your ships. This can be a simple routine repair or a unique complex one, as illustrated by these case studies.

All repairs are performed at the highest technical standards by our teams following in-house developed procedures. These operations are approved by all major classification societies.

Our goal is to keep you sailing with no delay. ■

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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or at
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Thriving and in constant search of new technology

Since the company was founded in 1974, we have never stopped looking for new ways to assist ship owners. Our constantly growing range of services needs an equally full range of capable staff members. From the technical department doing the planning, over the R&D department handling the engineering aspect to the diver /technicians who carry out the class-approved operations.

A swift reaction remains one of the most important elements of our services. Our fast response centers are designed for immediate action whenever needed. They feature a diver training center with three diving tanks, a workshop for constructing equipment and tools or replacement items for underwater repairs.



Part of our fleet, ready for immediate mobilization.

Being located in the port has always made the Hydrex headquarters ideally suited to mobilize our workboats to operations. Our boats, vans and trucks are fully accommodated to serve as dive support stations and can mobilize at moment's notice to

emergency operations. A wide range of additional state-of-the-art equipment and tools is available at all times in our fast response center and can be loaded onto the boats or vans immediately.



Hydrex premises in Antwerp.



Hydrex equipment ready for immediate mobilization and diving tanks for in-house training.



Hydrex workboat leaving the headquarters for underwater operation. Winter weather does not affect the speed of our teams' mobilization.

Every few years our entire fleet of vehicles is refurbished or replaced if needed. Trucks and vans are repainted and new vehicle graphics are applied. The inside of the vans is also updated regularly to turn them into state-of-the-art mobile monitoring stations.

The combination of our offices size and advanced warehouses allows us to offer you the highest quality services. We want to provide our

customers with the fastest and most cost-effective solutions, providing a long-lasting product.

We invite you to call us 24/7 and get advice on any problem without cost or obligation. We always deliver what we promise.

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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 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.

HYDREX
 UNDERWATER TECHNOLOGY

New agent for the Netherlands

Hydrex has a new agent for **The Netherlands: Propulsion & Maritime Services**. They will represent and support services throughout their country.

A full list of our worldwide network of agents can be found on our website: www.hydrex.be/contact

The services that we offer are highly specialized underwater and in water

repairs. These include bow thruster repairs and replacements, stern tube seal repairs, hull shell plating repairs and replacements, in water surveys and various maintenance work. All our offices have fully operational fast response centers where an extensive range of state-of-the art equipment is available at all times for immediate deployment with our skilled diver/technician teams to wherever they are needed.

For more information, please contact your local agent directly or drop us a line:

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Propulsion & Maritime Services

The Netherlands

Propulsion & Maritime Services

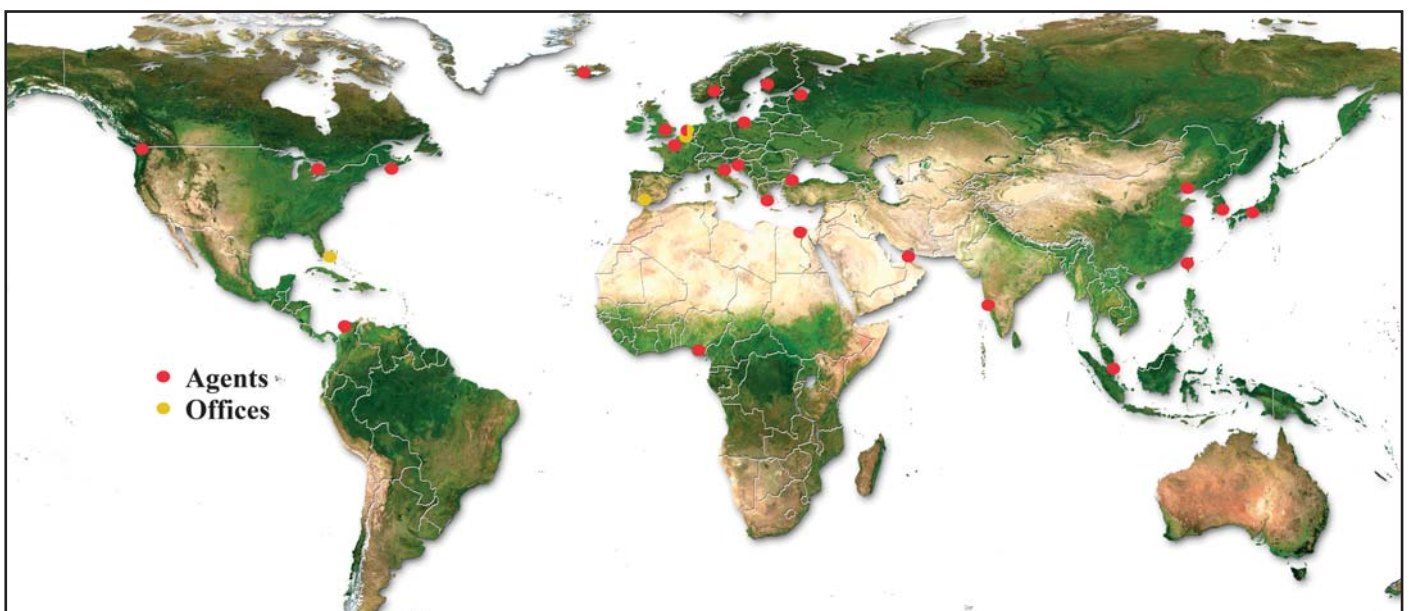
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Stern tube seal repairs



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.

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HYDREX
UNDERWATER TECHNOLOGY



Sail safe with Hydrex



*This drawing was made in 1979
and symbolizes our care and
attention for ships.*

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