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## KEEPING SHIPS IN BUSINESS

### ISO 9001 certified

Underwater services and technology approved by:



BUREAU  
VERITAS



ClassNK



## Scrubber pipe repairs and lasting protection



**E**xhaust 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 dam-

age. 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.

**HYDREX**  
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# Wide range of underwater operations across Europe

**A**t Hydrex we are available at all times. We know how important it is to have a resource you can rely on at all times. Therefore, our teams are ready to mobilize to locations across Europe on an immediate basis. In recent weeks we carried out a wide range of underwater repairs in this area.

These operations include a rope-guard installation, a rudder repair and transducer replacement in Antwerp, an insert repair, several scrubber overboard pipe replacements, a seal repair and a thruster operation in Rotterdam, a rudder crack repair in Zeebrugge, a scrubber repair in Flushing, an insert repair in Dunkirk, two echosounder replacements in Eemshaven, a blanking in Saint Nazaire, a stern tube gasket repair and a bow thruster installation in Algeciras and a bilge keel removal in Frederikshavn.



*Hydrex diver/technician during bow thruster operation in Algeciras.*

In this article you can read about some of these operations. Please contact us if you want further information on the repairs described or any other kind of underwater service you require.

## **Bow thruster and stern tube repair in Algeciras**

We were contacted by the owner of a 300-meter container vessel to carry out two operations simultaneously.



*Hydrex van and equipment arriving next to workboat in Frederikshavn.*



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*Reinstalled bow thruster unit inside closed off thruster tunnel.*

Both repairs would be performed during the ship's stay in Algeciras, Spain.

The bow thruster unit of the ship was reinstalled by our divers. It had been removed during a visit to a shipyard. Instead of having to wait for the thruster to be overhauled, the vessel could already leave the yard and sail to Spain. The repaired unit was then sent to Algeciras

directly where our team installed it underwater using our flexible habitat.

The reverse procedure is also possible. We can remove the unit while the ship is still afloat so it can already be brought to the manufacturer for the overhaul. When the vessel enters drydock the overhauled unit is ready for reinstallation without any delay.



*Rigging the seal housing prior to installation of new gasket.*

## Permanent in-water rudder repairs now possible without drydocking



**H**ydrex 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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## Hydrex under-water inspections



**U**nderwater 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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*Preparing new ropeguard of container ship for installation.*



*Ropeguard after installation.*



*Sailing on workboat in Frederikshavn to start bilge keel removal.*



*Removed section of bilge keel of oil tanker.*

During the same stop, our diver/technicians also removed the leaking stern tube gasket of the vessel and replaced it with a new one.

Both repairs were performed underwater without any unnecessary delay for the owner. Not only did the thruster installation allow him to leave drydock earlier, but the gasket replacement saved him the hassle of scheduling in a new visit right after leaving.

### **Bilge keel removal in Frederikshavn**

Both the port side and starboard side bilgekeels of a 249-meter oil tanker had gotten severely deformed. The owner of the ship asked us to remove the affected parts while the vessel was at anchorage in Frederikshavn, Denmark.

One of our teams traveled to its location with one of our vans loaded

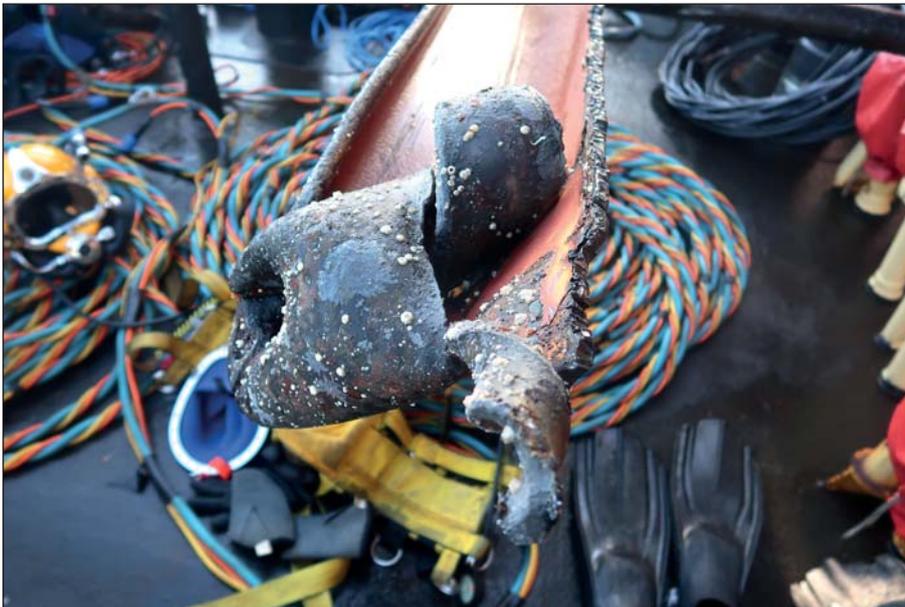
with all the needed material. We have a fast-response center stocked with a wide range of state-of-the-art equipment and a large fleet consisting of trucks, vans and dive support vessels. This allows us to mobilize immediately to operations like this.

Both bilge keels consisted of six sections that needed to be removed. This was done very quickly by our divers to make sure that the ship suffered no unnecessary delay.

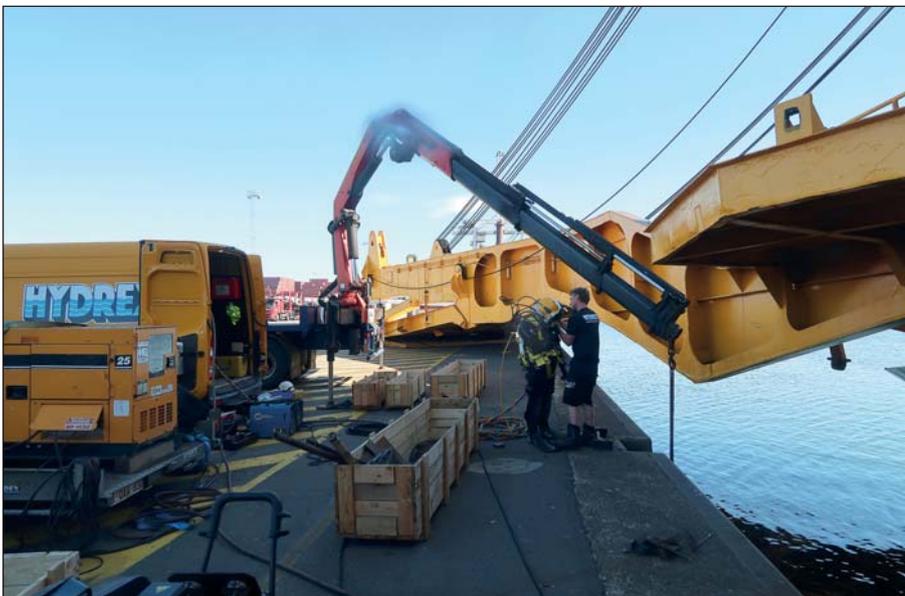
### **Ropeguard installation in Antwerp**

During an inspection of the stern tube seal assembly earlier this year, our divers discovered that the ropeguard of a 214-meter roro vessel was missing. The owner asked us to install a new one during the ship's next stop in Antwerp.





*Deformed part of the bilge keel.*



*Hydrex diver getting ready for ropeguard installation in Antwerp.*



*One of the blanks on container vessel in Rotterdam.*

After arriving on-site our team performed a preliminary underwater inspection of the stern tube seal assembly. At the same time, the new ropeguard was prepared by one of our technicians for installation. It was then lowered into the water, positioned and secured by our diver/welders.

### **Scrubber overboard blanking in Rotterdam**

Our diver/technicians installed blanks on the five scrubber overboards of a container ship while the vessel was in Rotterdam. This allowed the crew to have internal repair work carried out while the vessel was sailing.

When the ship returned to Rotterdam we once again mobilized a team to its location. Our men removed the blanks. This operation prevented a costly trip to drydock for the owner.

### **Conclusion**

This article illustrates the continuing need for underwater services.

We offer maintenance services and repairs on all parts of the underwater ship's propulsion systems and the hull. Operations are class approved and carried out at lay-by berth or alongside while commercial activities continue. All this is done with qualified and experienced diver/technicians, state-of-the-art equipment and advanced techniques.

Please feel free to contact us if you would like to have more information on any of our services or if you want to find out how we can assist you and your vessel. ■

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# Training programs result in exceptional safety and efficiency

**H**ydrex can offer its customers the high quality of service they deserve while guaranteeing the safety of the divers at all times. This can only be done successfully by staff who have experience with a wide range of operations as well as the relevant know-how. Our diver/technicians are trained and qualified to perform all required class-approved repair procedures in even the harshest conditions.

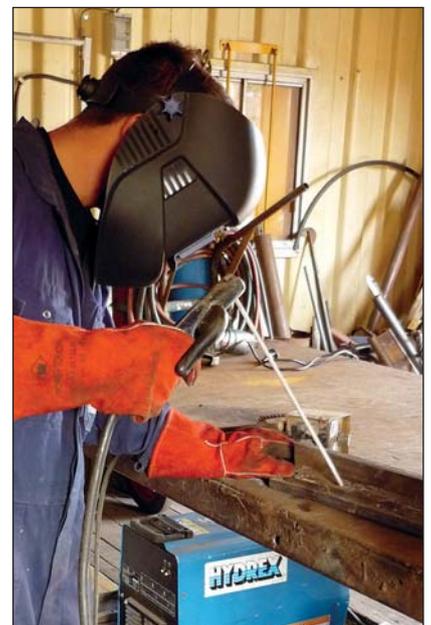
This is a result of the stringent training all divers go through. Whether they work for the Hydrex main office in Antwerp or for one of the other offices. Besides being required to have official international commercial diver certificates and taking high standard external courses, including safety and offshore courses, they also receive comprehensive in-house training.



*Diver ready to enter one of the training tanks at the Hydrex headquarters in Antwerp.*



*Offshore safety training.*



*Dry welding practice.*



*Hydrex team members preparing to mobilize from the fast response center in Antwerp.*



*In-house practicing of wet welding.*



*Training tanks and equipment in fast response center.*

Training consists of both theoretical classes in the course room and practical drills on the Hydrex premises. There they have access to a wide range of underwater tools and various other equipment, including three dive tanks in which to practice underwater welding and other repair work.

In addition to these classes, new divers also get the opportunity to assist experienced Hydrex diver/technicians during operations. The training enables them to become experienced divers and technicians themselves and to take advantage of the technical know-how and practical knowledge Hydrex has accumulated over the last 45 years.

When their training is completed, Hydrex divers can carry out both simple and complex jobs even in harsh circumstances and achieve this uniformly without unnecessary loss of time, quality or safety. This has led to an outstanding safety record, with no significant accidents occurring since the company was founded in 1974. This results in the extraordinary dependability that our customers deserve. ■

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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# Underwater propeller repairs



**W**hen damage to propellers occurs due to impact with ice and other debris we can help you, even if the damage is quite extensive. Our teams can restore the propeller's balance and efficiency.

By taking advantage of the in-house developed cold straightening technique, damaged blades can be straight-

ened underwater, allowing the ship to return to commercial operations without the need to drydock.

If straightening is not an option, the affected area of the blade will be cropped. This is done to achieve the greatest possible efficiency. Cropping is carried out using our propeller blade cutting equipment.

Our teams can also carry out any other repair work on the propeller. Examples of this are the removal and reinstallation of entire propeller blades or replacement of the propeller seal ring.

Contact us for more information on underwater propeller repairs. We are at your disposal 24/7.



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# We fix ships worldwide



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

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