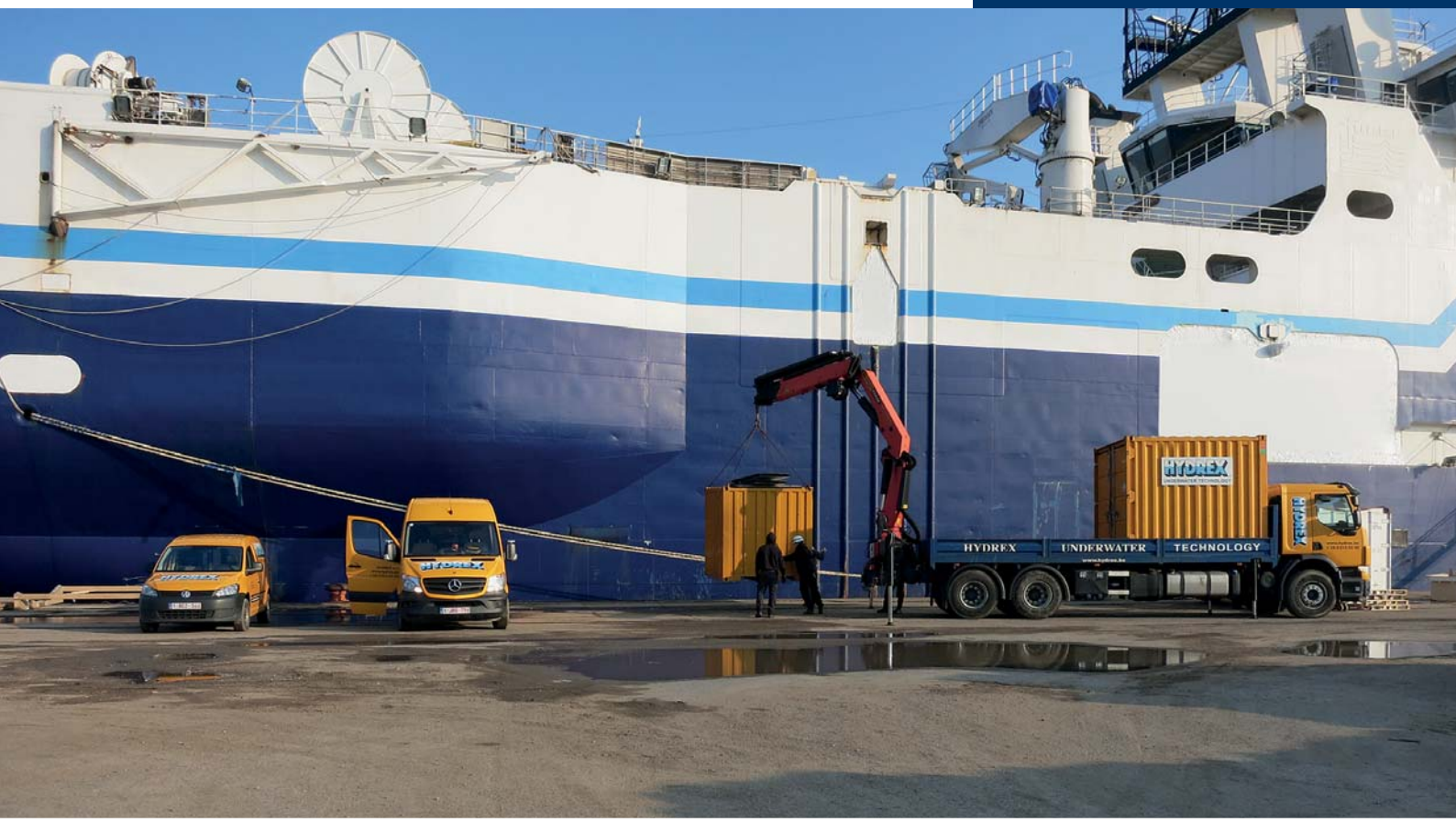
# HYDREX®
## UNDERWATER TECHNOLOGY

# NEWS
LETTER | 240




# Contents





# 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.

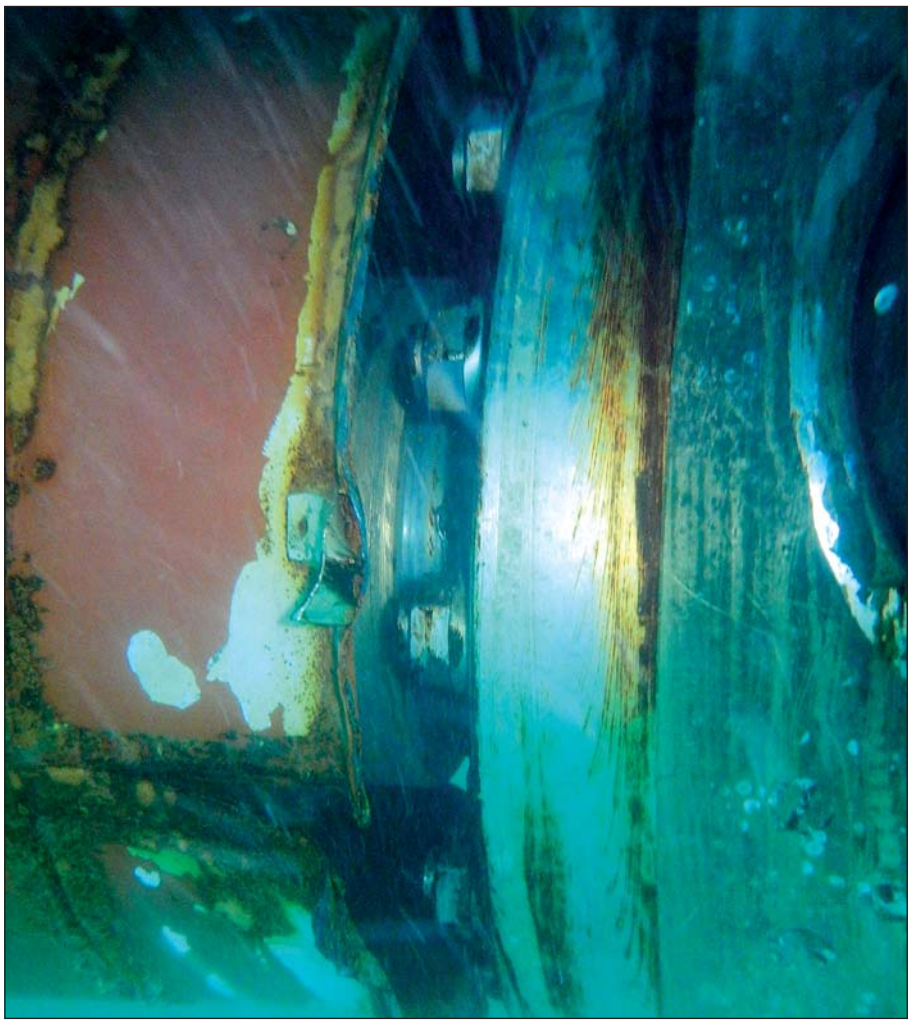
There is no need to send the vessel to drydock as all operations can be carried out in port or while the vessel is stationary at sea. Normal commercial activities can therefore continue without disruption.

# Complete renewal of stern tube assembly allows passage through Panama Canal

**When a steel wire got stuck in the stern tube seal assembly of a 156-meter Dutch vessel, it experienced a severe oil leak. The ship needed to pass through the Panama Canal to reach its next destination, but the leak had to be repaired before it was allowed to do so. We flew in a diving team immediately to carry out a fast underwater repair that would help the vessel continue its schedule.**

Our team arrived in Balboa, Panama, where the vessel lay at anchorage and sailed to the ship on a workboat loaded with all the equipment needed for the operation.

A thorough underwater inspection revealed that while the wire had been removed by a local diving company, the damage to the stern tube seal assembly was extensive. The rope guard was severely dented and the seal housing had been destroyed. Both needed to be completely replaced. Because the stern tube seal assembly consisted of a split type housing, our team could carry out the entire replacement underwater.



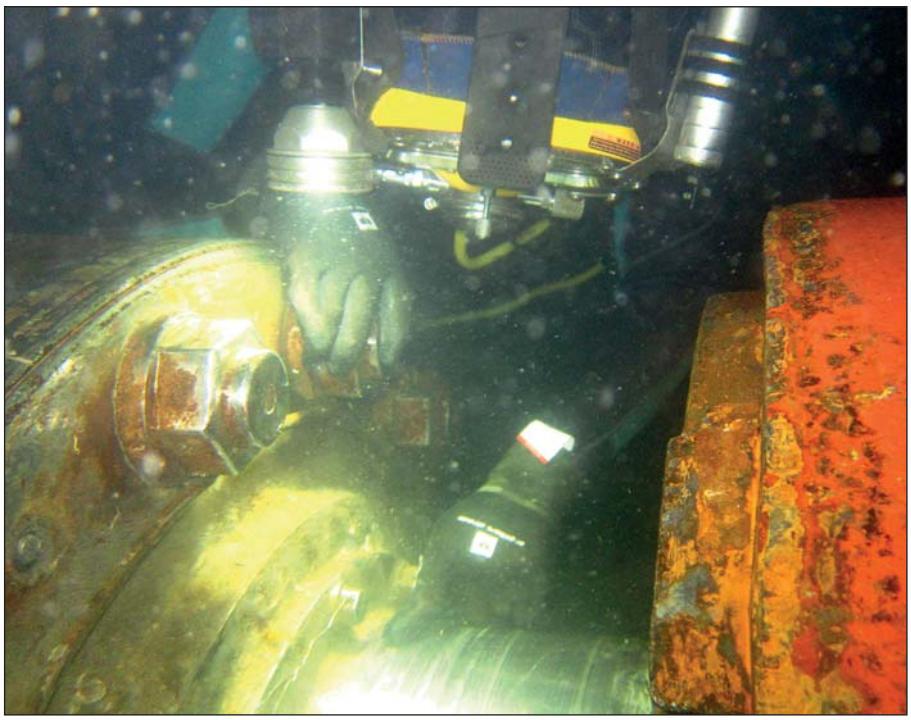
*Severely deformed rope guard prior to removal.*

*Oil leaking from the damaged seal housing.*

First they removed the affected parts. Because the seal assembly had already filled up with water due to the damage, the divers did this in the wet. Next they installed the flexible mobdock and created a dry working

*Damaged rope guard on workboat.*

*The liner needed to be replaced.*



*Hydrex diver inspecting damaged liner and running marks of the seals.*

environment around the stern tube seal assembly. The team could then start installing the new housing.

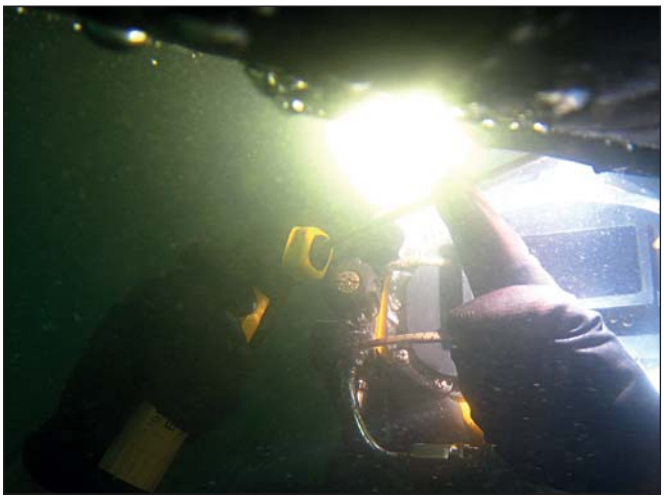
The liner was replaced first, as this had also suffered damage from the steel wire. The diver/technicians then bonded the four new stern tube seals and installed the new housing.

All remaining parts of the stern tube seal assembly were then reinstalled and secured, including a new rope guard. A leakage test was carried out with positive results, after which the divers removed the flexible mobdock.

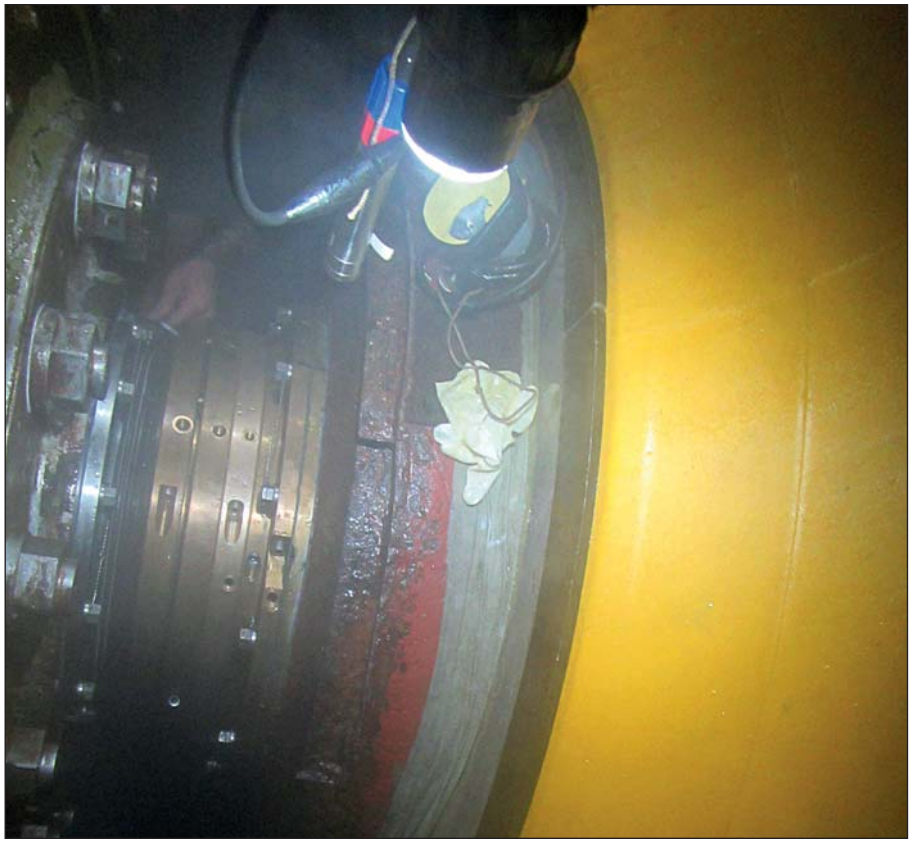
*Newly installed liner.*

*Hydrex diver/technician working on new stern tube seal housing inside our flexible mobdock.*

*New seals and housing after installation.*



*Hydrex diver performing welding on the new rope guard.*



*Finalizing the replacement in the dry working environment created by the flexible mobdock.*

## Conclusion

The operation was performed by our team in the same time frame as a regular stern tube seal replacement, despite the larger scope of work. Working together with our local support base, they worked in shifts to keep the down time to the absolute minimum for the vessel.

After the repair, the owner could sail his vessel through the Panama Canal free of oil leaks, towards the next stop on the schedule. ■

Hydrex has the technology that enables repairs to be done afloat and underwater on all types of seals. Using a Hydrex flexible mobdock, we create a dry underwater working environment around a stern tube seal assembly. This allows work to be performed in dry conditions. It offers shipowners a fast and hassle-free alternative to drydock, which was the only option prior to this technology.

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 with everything they need to successfully complete the job.

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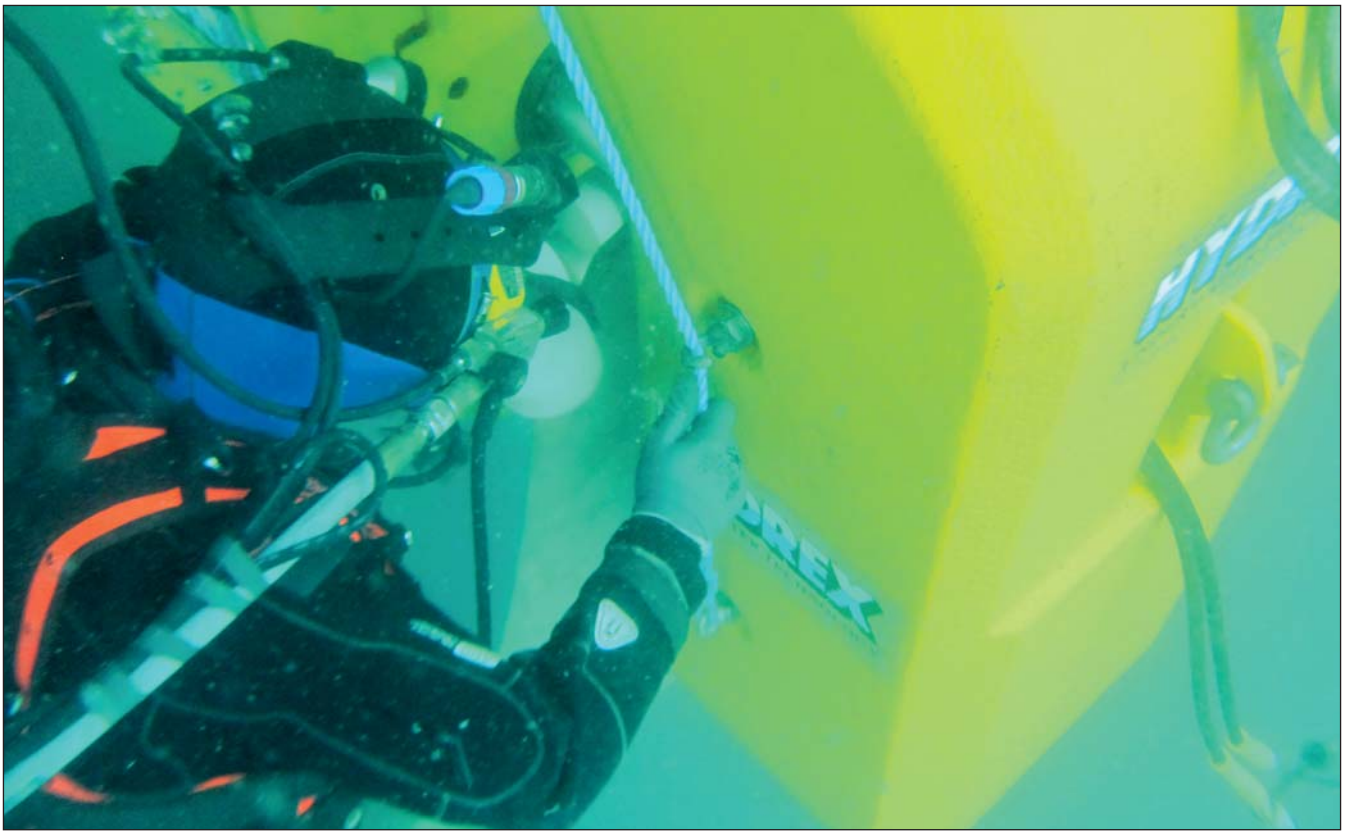
You can
contact us at:
**hydrex@hydrex.be**
or at
**+ 32 3 213 53 00**

# 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.

# Underwater rudder inspection and follow up repair steers owner clear of trouble

**Early on a Tuesday morning in November we received a call on our 24/7 emergency number from the owner of a tanker that experienced steering troubles with its rudder. The vessel was performing cargo operations in Antwerp and needed a fast on-site solution that would allow it to sail on after commercial operations were complete without losing time and with a fully functioning rudder. Offering fast underwater solutions is what we do best, so we immediately mobilized a team to the vessel's location to assist.**

*The rudder flap was almost completely detached from the rudder.*

To make an accurate assessment of the situation, our divers started with a thorough underwater inspection of the rudder. This allowed them to communicate the exact situation and the nature of the damage to the owner and our technical department.

During this survey the vessel could continue her cargo operations without any hindrance.

The inspection revealed that the rudder's Becker flap was almost completely detached from the rudder. This caused serious troubles during steering. The top hinge had come loose completely. The weight of the flap had severely bent the pin that attached it to the rudder at the bottom hinge and was just barely keeping it from falling off. The edge of the rudder was also cracked and deformed next to the lower hinge.

*The edge of the rudder was cracked and bent.*

Because of this deformation, removal of the flap was not straightforward. Many years of experience and technical expertise allowed our technical department to come up with a repair plan within a matter of

# 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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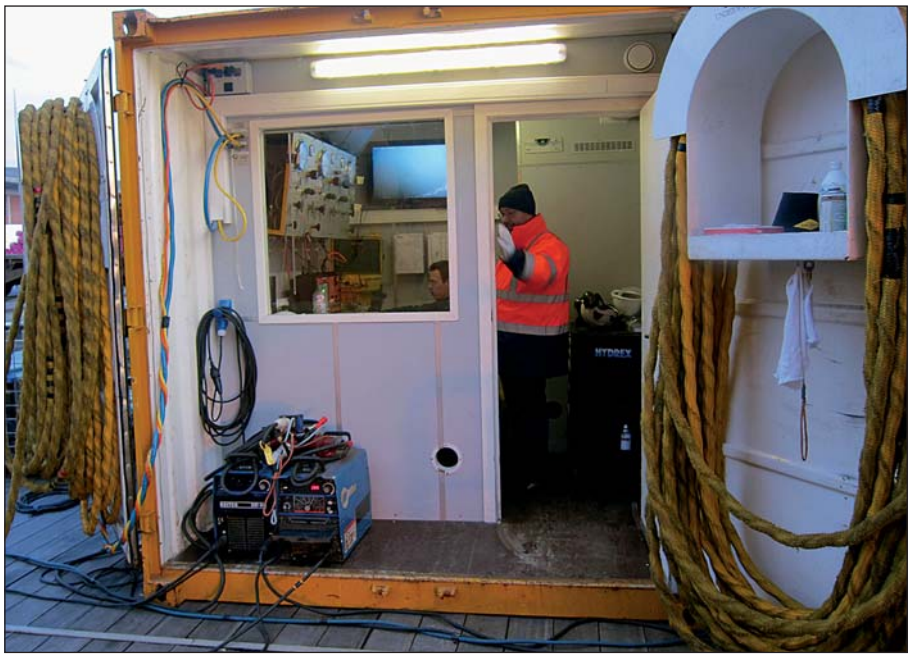
*Hydrex workboat next to tanker during rudder operation.*

hours. This solution would allow the owner to continue his vessel on its schedule without any noticeable delay, so he gladly accepted.

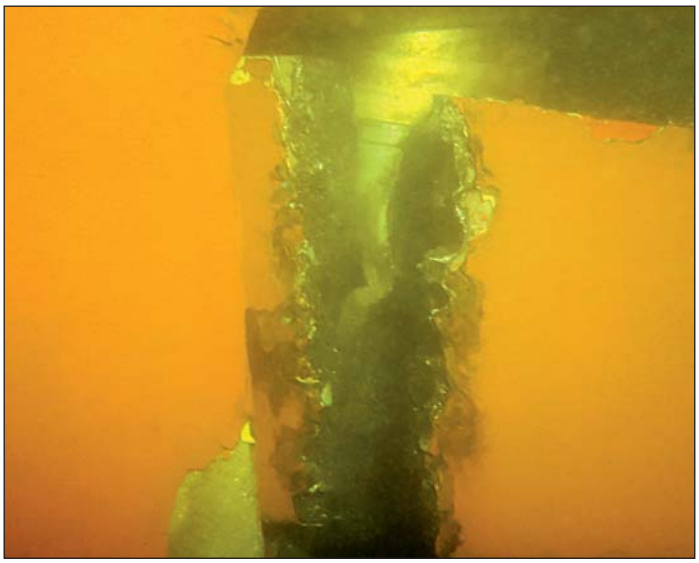
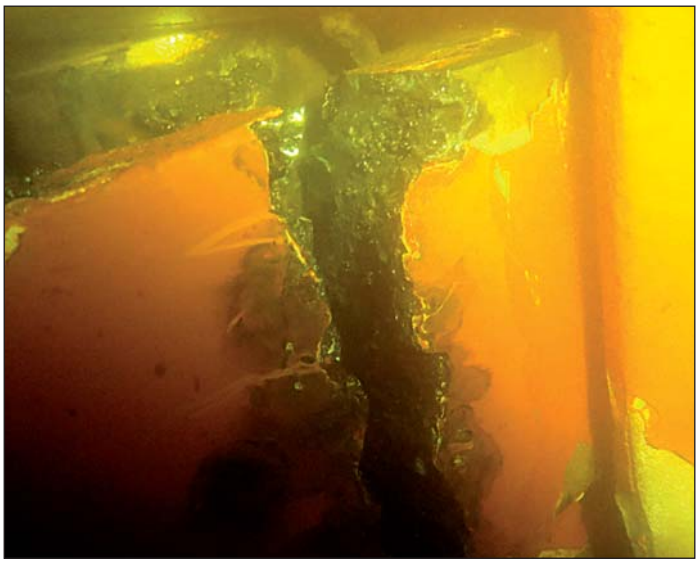
## Fast, high quality solution

We have a large stock of equipment available in our fast response center for our repair teams at all times. They could therefore load all the needed gear onto one of our workboats immediately after the repair plan was approved and mobilize to the tanker early in the afternoon of the same day.

After arriving next to the vessel, the diver/welders started the operation by securing the rudder flap with chains. Next they burned off the area of the flap that connected it to the bent pin. Once this was done, the divers left the water and the crew of



*Hydrex team members in monitoring station on workboat.*

*The part of the rudder flap that was still connected to the bent pin was burned off.*

*Rudder flap brought onto the workboat.*

*The rudder flap was brought to our workshop and later transported to the OEM.*

the tanker slowly moved the rudder's position until the flap disconnected from the rudder and came to rest completely on the chains.

The Becker flap was then lifted onto our workboat and brought to our workshop. By doing this the vessel could immediately sail on to her next scheduled stop. The flap was later transported to the OEM to be repaired. It will be ready to be reinstalled when the tanker will dock at a convenient time and location that fits the schedule of the owner.

In less than 24 hours we were able to mobilize a team to the vessel, perform a detailed inspection to assess to situation, devise a fast underwater solution and carry out the repair. This is a good example of the start-to-finish services we offer our customers. You can call us with any problem you have with your vessel and we will take the worries out of your hand and take care of every step of the operation. ■

**KEEPING SHIPS IN BUSINESS**

# Hydrex Sales Officer keynote speaker at ship maintenance conference in Rome


*The conference was attended by representatives of shipowners, the Italian Navy and other marine professionals.*

**On November 15 Hydrex Sales Officer Steven De Keyzer gave the keynote speech at a conference on the advantages of underwater technology for ship maintenance. The event was organized by the Rome branch of Italian naval engineers society ATENA.**

ATENA (Associazione Italiana di Tecnica Navale) was founded in 1947 on the initiative of a group of Italian marine engineers. Its members give competent professional contributions in the field of design, construction and operation of ships, with a focus on transport safety and the marine environment.[1]

The event was a great success with a large turnout of representatives of shipowners, the Italian Navy and other marine professionals. Those present were very interested in the wide range of operations Hydrex can carry out on-site and underwater.

"The event was organized to create the opportunity to inform our audience of the technical possibilities of underwater work," said Ing. Massimo De Domenico, the President of the Rome division of ATENA. "The conference reached its goal, because it demonstrated that shipowners can avoid going to drydock, both for everyday maintenance operations and challenging repairs."

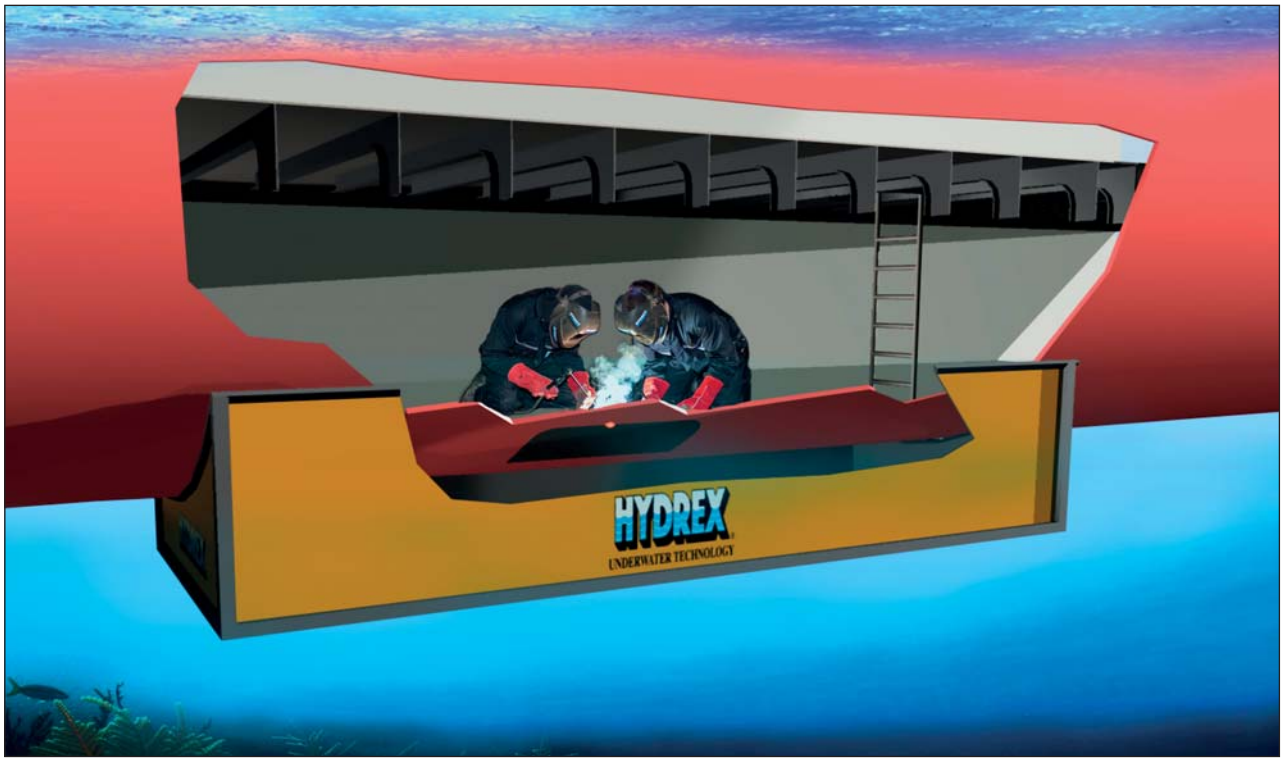
Also present was Mr. Dario Cacciottoli, representing Hydrex' Italian agent Marine EQ. He stated that "it was a very interesting and well organized event that made it possible to show the wide range of jobs which can be done underwater today." Mr. Cacciottoli was very pleased that a diverse audience attended the event. "I believe they were happy with the presentations and the interesting discussion at the end," he said. "We are very thankful to ATENA and especially Mr. De Domenico to give us this opportunity."

Keynote speaker Mr. De Keyzer shared the same opinion. "Some people were surprised at the scope of what we can do for their ship without having to go to drydock," Mr. De Keyzer said. "I encouraged everyone to contact us with any problem they might experience with their vessel. We can give you fast and clear answers and will offer you a solution. Whether you need a simple maintenance operation or a complex tailor-made repair, we can help you." ■

1 Source: http://www.atenanazionale.it/

ATENA roma
ASSOCIAZIONE TECNICA NAVALE

# Hydrex hull repairs save time and money




**Hydrex 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, with tailor-made cofferdams. Normal commercial activities can therefore continue without disruption. These operations follow the Hydrex procedure for welding cracks in the vessel's shell plating and they are approved by all major classification societies.**

Hydrex diver/technician teams carry out these on-site hull repairs all over the world. In most cases the damaged area can be replaced with a permanent insert and no condition of class is imposed. On the rare occasions where the damage does not allow such a repair, a temporary doubler plate is installed over the affected area. This allows the owners to keep to their schedule and have a permanent repair carried out during the next scheduled drydock visit.

To offer the fastest possible service to customers, Hydrex offices have fast response centers where an extensive range of state-of-the-art tools and diving support equipment is available at all times for the repair teams to mobilize to your location.

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**Phone: + 32 3 213 5300 (24/7)**
**Fax: + 32 3 213 5321**
**hydrex@hydrex.be**

# www.hydrex.be


# 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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**Headquarters Hydrex N.V. - Antwerp**
Phone: + 32 3 213 5300 (24/7)
E-mail: hydrex@hydrex.be

**Hydrex Rotterdam**
Phone: +31 10 313 25 19 (24/7)
E-mail: info@hydrex.nl

**Hydrex Spain - Algeciras**
Phone: + 34 (956) 675 049 (24/7)
E-mail: info@hydrex.es

**Hydrex LLC - Tampa, U.S.A.**
Phone: + 1 727 443 3900 (24/7)
E-mail: info@hydrex.us

**www.hydrex.be**