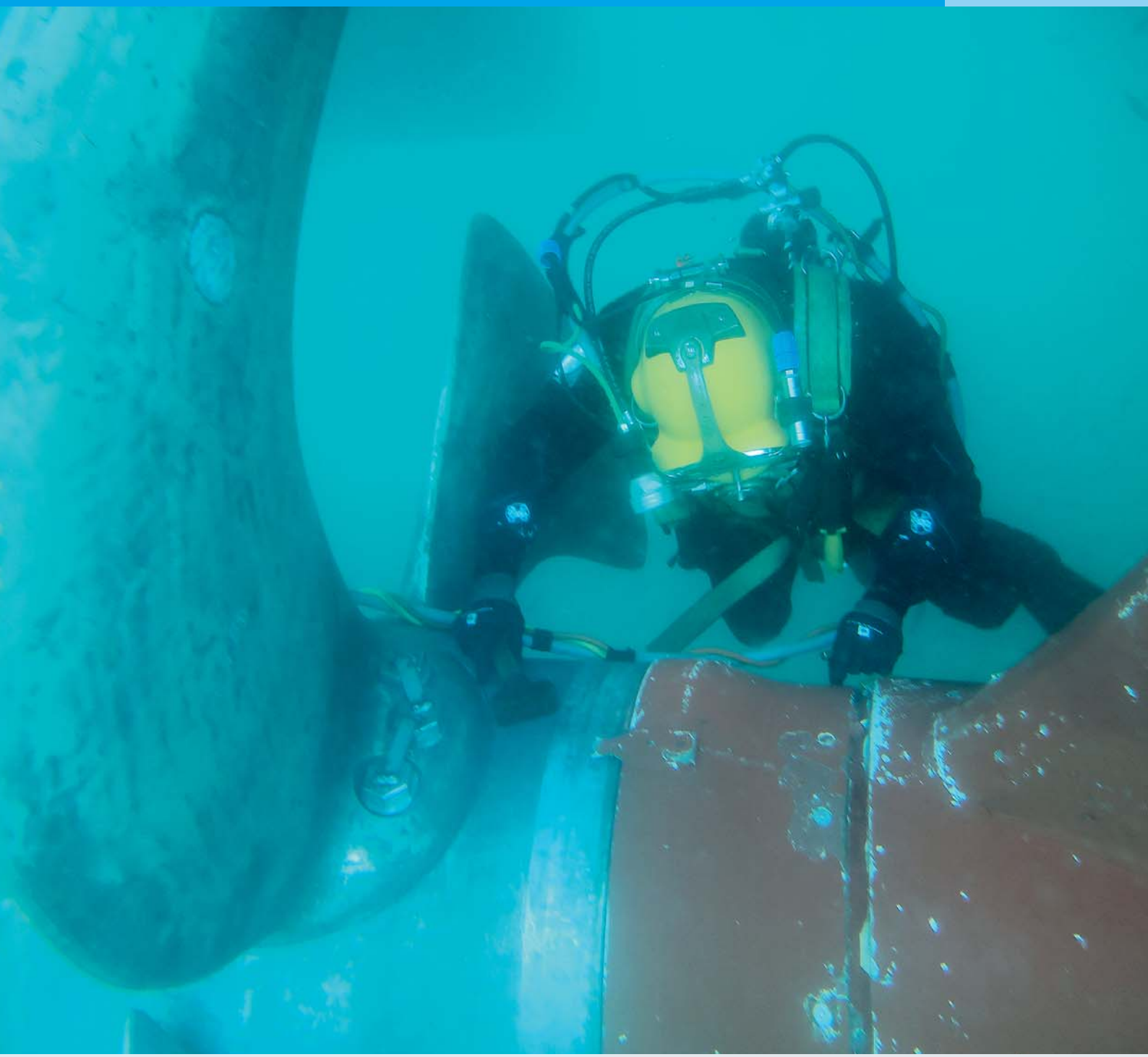
HYDREX®

UNDERWATER TECHNOLOGY

Magazine

Number *269*

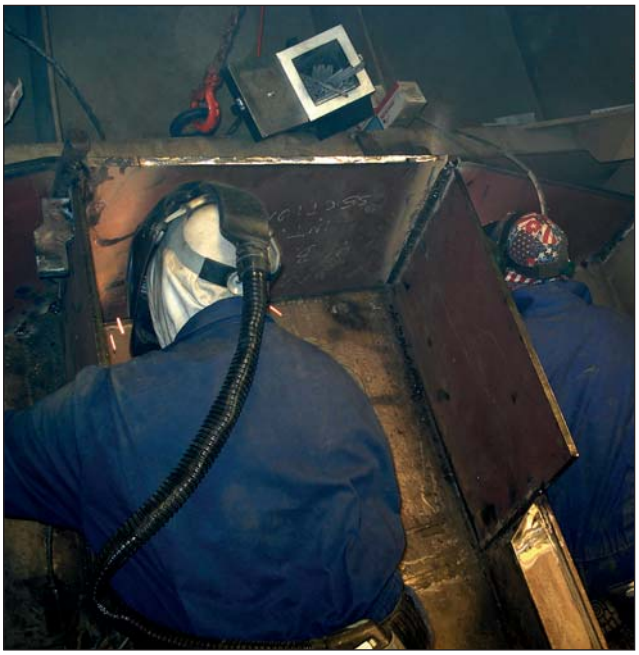


No drydock available - Underwater stern tube seal repair vital for tanker in Algeciras **4**

45 years of paving the way in underwater technology **8**

Looking back on Hydrex' rich history **10**

Underwater scrubber sea chest installation



Our wide range of maintenance and repair services includes the installation of additional sea chests required for the intakes and outlets of scrubber systems. These afloat installations are performed by installing a cofferdam on the hull.

We can help you when going to drydock is not an option, if the scrubber equipment is not available yet during docking or if the scrubber system needs to be installed before the next scheduled docking. We are able to carry out the installation of sea chests while your vessel stays afloat and in most cases during cargo operations.

If you would like to discuss this possibility of in-water scrubber system installation, please contact us at +32 3 213 53 00 or hydrex@hydrex.be

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Editorial

Welcome to this special anniversary issue. I founded Hydrex 45 years ago. Since that time the company has considerably expanded both its size and the services it offers. I am proud to say that we have grown into one of the market leaders in our field.

Throughout our history we have been at the forefront of technological developments in our field of expertise. We always found more and better ways to deal with maintenance, repairs and replacements underwater. Quality of work and service has always been our guideline. We do this because our customers deserve the best possible solution when they are faced with a problem.

During these last 45 years we have shown that this is what our teams provide during every single operation.

We will be here for many more years to come and will continue to invest in the research required to keep evolving the techniques available to our divers.

Hydrex founder
Boud Van Rompay
bvr@hydrex.be

ISO 9001 certified

Underwater services and technology approved by:

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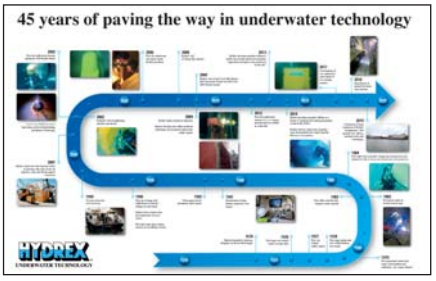

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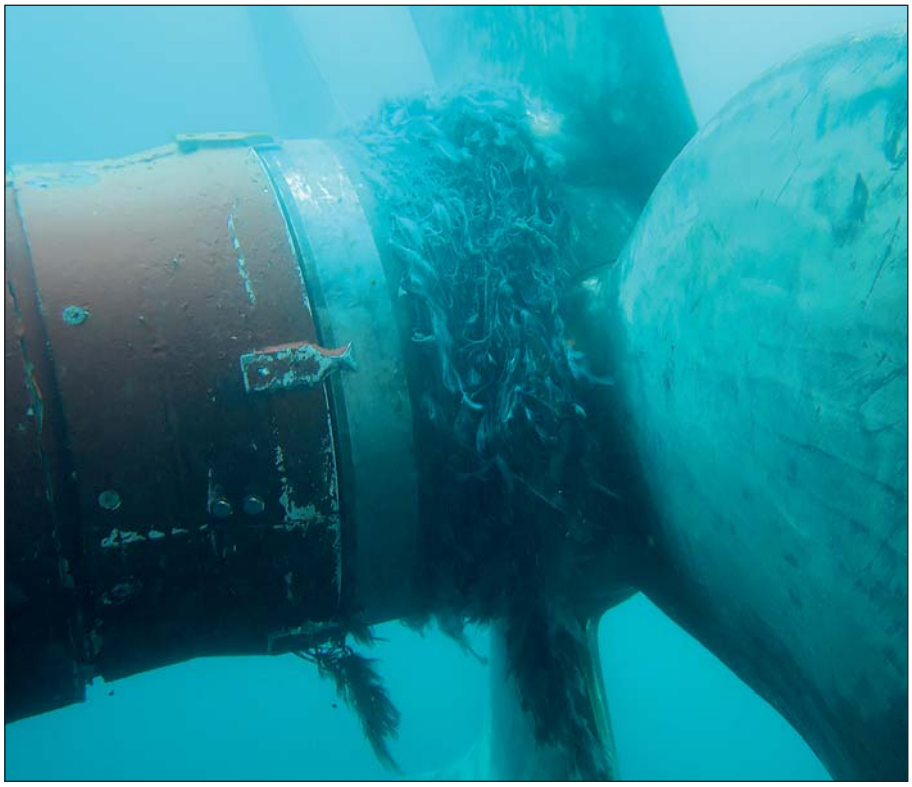
No drydock available

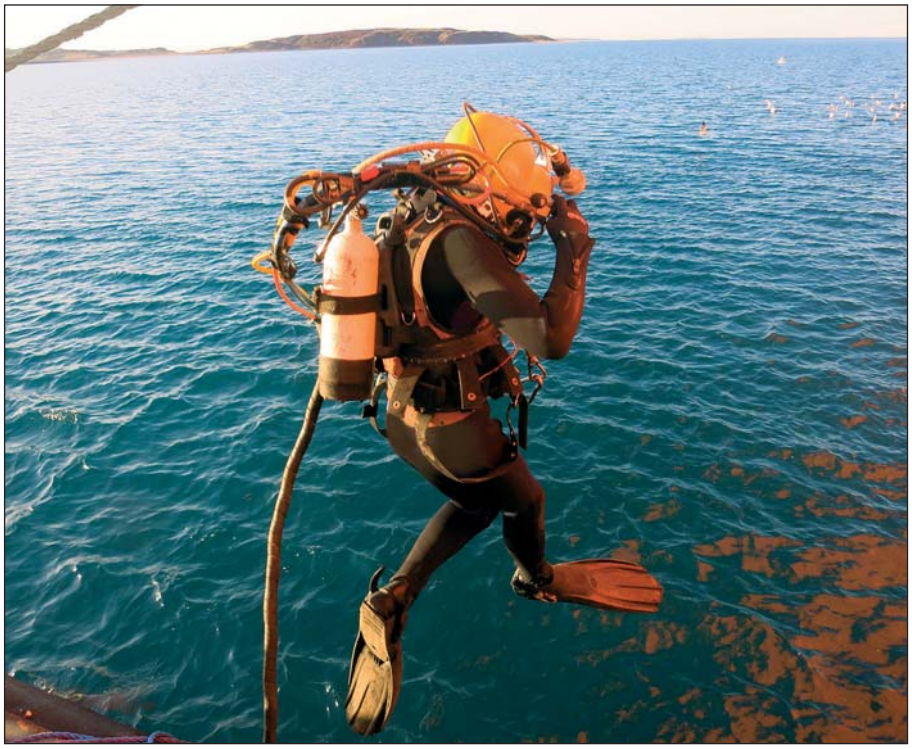
Underwater stern tube seal repair vital for tanker in Algeciras

Last month one of our teams carried out an underwater stern tube seal repair on a tanker berthed in Algeciras. The ship was suffering from an oil leak and no drydock was available close by. Our men replaced the damaged seals underwater using one of our flexible mobdocks. This saved the owner an expensive and time-consuming trip to a drydock further away.

Once the operation was ordered all preparations were handled swiftly and the lightweight equipment was mobilized almost immediately. Our team was on-site and ready to start the seal replacement when the vessel arrived in Algeciras.



Fishing net entangled around the seal assembly.



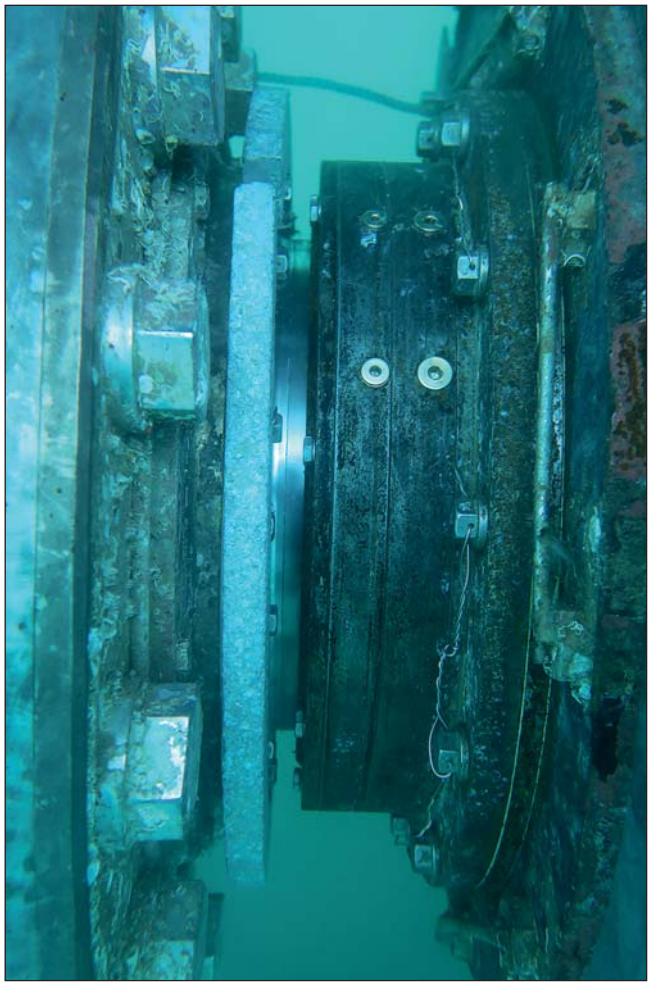
Hydrex diver taking the plunge, ready for underwater operation.

The operation began with a thorough underwater inspection of the stern tube seal assembly. This revealed that a rope had gotten entangled around the assembly. Our divers removed the rope but unfortunately it had already damaged the seals and caused an oil leak.

The team then removed the rope guard and installed the flexible mobdock. This allowed them to work in dry conditions.

During the operation our divers removed the three damaged seals and replaced them with new ones. Working together with the OEM allowed us to provide our customer with original spare parts which

Dry working environment around assembly created with our flexible mobdock.



Closed up assembly after replacement of the seals.

Hydrex diver reinstalling the rope guard.

Hydrex van during underwater operation in Algeciras.

guarantees the best quality material. A technician of the seal manufacturer was also present during the operation.

Stay on schedule and out of drydock

Our team was able to carry out the entire repair on-site and underwater with our flexible mobdock technique. Because all the required material is ready to be transported at all times, no time was lost making preparations.

We organized everything from start to finish for the owner. He did not have to worry about making any arrangements for the repair. After the seals had been successfully replaced, he could sail his vessel to her next stop free of oil leaks. ■

The same high quality, close to home or faraway

We have developed a flexible mobdock repair method that enables the underwater replacement of all types and sizes of shaft seals. It allows ship owners to keep their vessels sailing, saving precious time and money.

Damaged stern tube seals will cause oil leaks or an ingress of water. By replacing the seals as soon as possible we can keep the down time low. Because seal repairs can be performed during cargo operations the ship can keep her schedule.

It is not always straightforward to replace seals. There can be quite a bit of variation in the size of the stern tube itself and for instance the liners can be worn down and show ruts. However, all this is routinely handled by our experienced teams.

All our offices are equipped with the latest facilities, lightweight equipment and tools. This allowed for a timely arrival of our team in Algeciras with everything they needed to successfully complete the job.

In-water bow thruster repairs

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.

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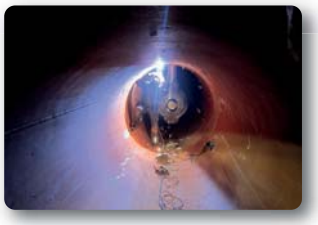
45 years of paving the way

2002
First dry underwater thruster operations with flexible sheets



Lloyd's List SMM Award for Innovation in Naval Shipbuilding and Marine Technology

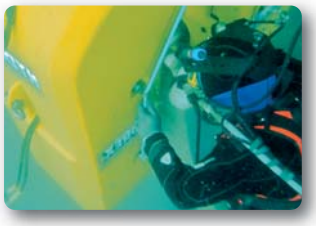
2006
First dry underwater seal repair inside flexible mobdock

2008
Hydrex LLC in Tampa Bay opened

2009
Hydrex wins I
and Conversio
2009 Global A

2005

2002
Propeller cold-straightening machine introduced



2009
Hydrex Spain opened in Algeciras

Hydrex develops the rudder mobdock technology for permanent underwater rudder repairs

2000

2001
Hydrex opens new fast response center in Antwerp with state-of-the-art logistics, tools and diving support equipment

1995

1999
25 years of service and experience

1996
First use of large steel cofferdams for thruster change-out and repair

Hydrex divers replace face seal underwater on ro/ro vessel

First ultra large insert repairs carried out on offshore vessels

1992
Class approvals for permanent crack repairs

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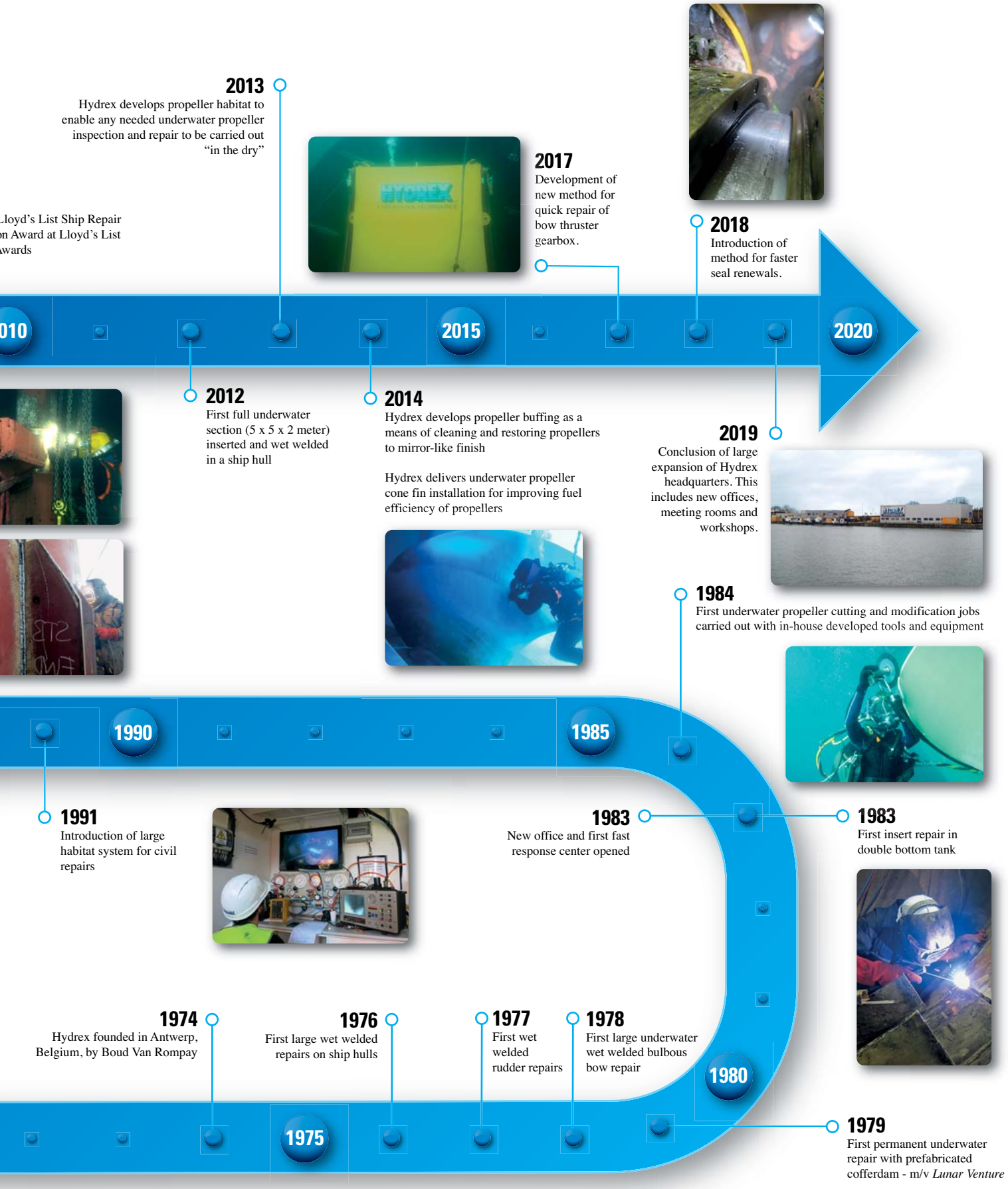
1970

y in underwater technology



Looking back on Hydrex' rich history

This year marks the 45th anniversary of Hydrex. To celebrate this, we will be looking back at some of the many key operations we performed since the company was founded in 1974. We will do this by republishing one or two articles from the vault of the Hydrex Magazine each month.

For our first trip down history we will be revisiting two very different operations, both carried out on drill ships.

In 2004 we were contacted by the Norwegian owner of a large vessel that had recently broken all the records on drilling and was scheduled to start on a new, long term project. The owners wanted to overhaul the vessel's two bow thrusters before starting the contract. The article below deals with the meticulous planning of this complex operation. During the weeks before the thruster exchange our technical department worked closely together with all parties involved to make sure that the job could be carried out to the highest possible safety and quality standards.

In 2015 we provided a fast solution that prevented a damaged transit flap from swinging dangerously and causing further damage to the aft bulkhead and ballast tank of a vessel about to start a contract in Grand Isles, Gulf of Mexico.

Who better suited for these jobs than a company that even in 2004 had over 30 years of experience in finding underwater solutions? ■

The article below was first published in March 2004.

Major thruster exchange operation carried out on large drill ship

The operation was to be done in Algeciras, Spain. However, the first question was whether doing such an operation, to change the thrusters "in the wet", not in dry dock, was routine or not. We confirmed that it certainly was not "routine" to change and/or carry out maintenance work on thrusters in this way, because every ship is different and requires different specifications for the equipment that is needed for the work. However, we were able to confirm that we had already performed similar operations on a number of other vessels

The drilling vessel.

Equipment leaving the Hydrex warehouse.

Placement of secondary mobdock.

Work continued throughout the night.


Connecting entry shaft to the mobdock.

and we were confident that we would be able to do the job.

We entered into negotiations and worked out the detailed requirements necessary to be able to pull off the operation. New mobdock adapters had to be constructed and the main chamber and access trunk needed to be modified to fit the shape and size of the vessel and thruster tunnel.

The initial order we received was to deliver and install the mobdock system allowing the thruster manufacturers to overhaul the thrusters themselves, in-situ. However, as we approached the installation date a number of coordination meetings were required with all parties involved and it was decided that Hydrex should not only install the mobdocks but also take care of the internal operations of removing the thrusters and then, once reconditioned or new ones were obtained, we would also reinstall the new overhauled thrusters. This had to be done on two different thruster tunnels.

Because this work was being done on an offshore unit, the procedures for the job to be done and their safety aspects need to be worked out in detail, in advance, before any operation could start. It took one week of

Mobdock being lowered to seal off thruster tunnel.

meetings on board with all the parties involved to agree on the scope and assignment of the projects to be done. With this change in assignment, a lot more procedures were diverted to Hydrex because of our expertise in the area. This in turn required more detailed planning on our part which was fully approved by Germanischer Lloyd.

The location of the vessel was also initially planned to be on anchorage but a location was found alongside the berth which reduced the amount of problems that would be created by potential bad weather and extended communication time between ship and shore.

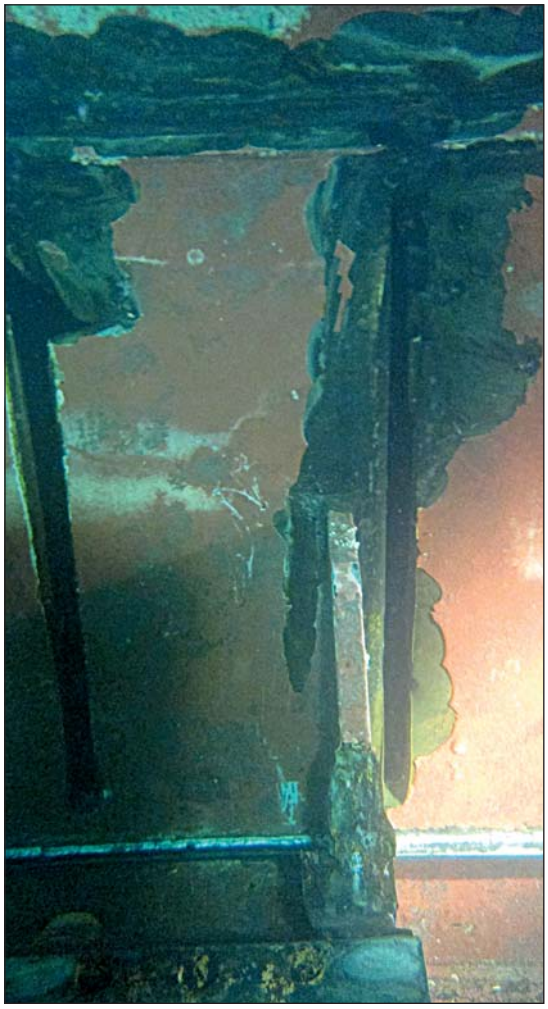
From an operational perspective we provided a project engineer, responsible for all communication and cooperation between our project, the captain and ship's superintendent and other members of the vessel, owners and other representatives. We were also able to provide the workforce on a shift schedule and carry out the work 24 hours a day, 7 days a week over a 6 week period. For this there were two supervisors of the project, one overall in charge and operating during the day and a second supervisor taking the night shift.

All the mobdock adaption constructions and operations were witnessed by Germanischer Lloyd.

The specifications for mobdock adapters were worked out and ordered to be constructed in Spain. Meanwhile, existing equipment was transported from our storage at our Antwerp headquarters in Belgium through to Algeciras. Once all the equipment had been brought together and the detailed planning agreed upon, our diving and engineering teams were flown in and they started the job of putting together the mobdock into place underwater against the ends of the thruster tunnels. ■


Final stages of placing the entry shaft.

Hull repair on drill ship in Gulf of Mexico



Damage to the moonpool hull of drill ship, caused by loose transit flap.

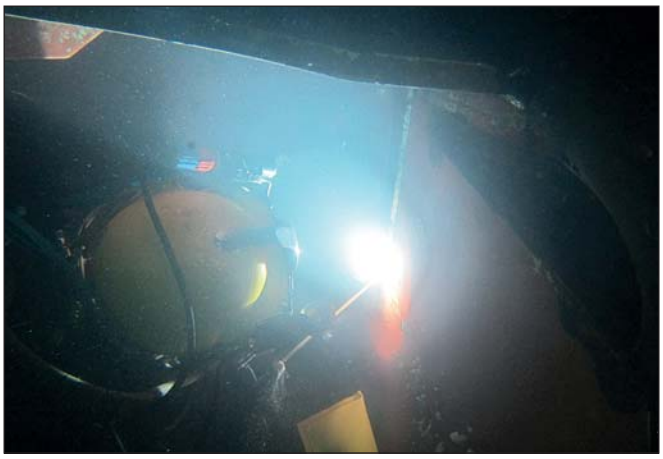
The transit flap of a 225-meter drill ship came loose and started swinging dangerously. This caused damage in the aft bulkhead and a leak in the ballast tank situated behind the moonpool hull. The vessel was located in Trinidad but was about to start a contract in Grand Isles, Gulf of Mexico. A fast solution was needed to prevent further damage and allow the ship to arrive in Grand Isles on time.

Hydrex mobilized a team of diver/technicians to Trinidad. After an inspection of the damage, they disconnected the transit flap. It was then lowered and towed away. In Trinidad the divers also took all the measurements needed to design a repair plan for the second phase. Because of the instable condition of the flap, it was essential to keep to the highest safety standards, especially during this first part of the operation.

The drill ship then sailed to the Gulf of Mexico. The limited time frame did not allow for a permanent repair to be carried out at that point, so a temporary solution was proposed and accepted.

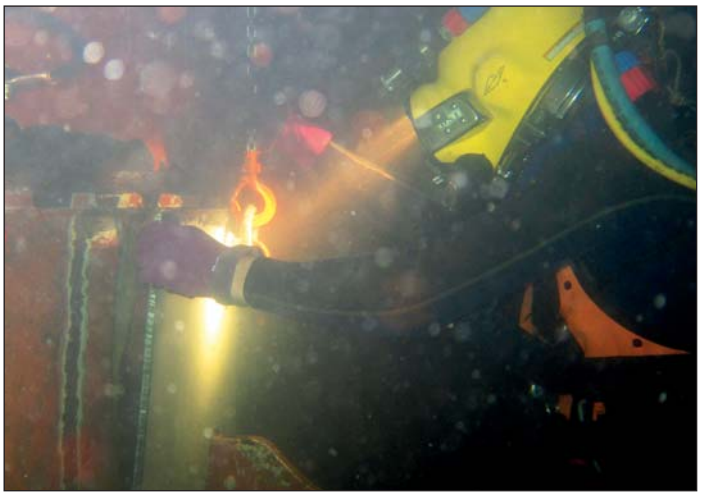
The vessel once again met up with a

Three of the doubler plates used to cover the damaged areas.



Hydrex diver/welder during operation in the Gulf of Mexico.

Hydrex divers getting ready for underwater operation on drill ship.



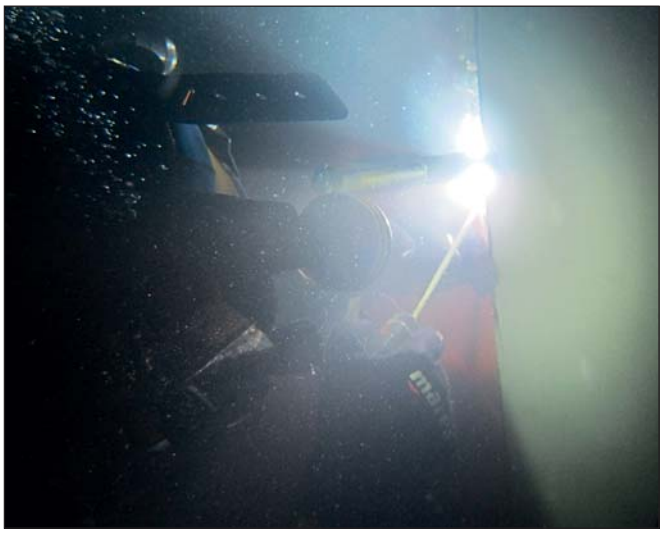
One of the doubler plates being positioned and secured.

Diver inspecting one of the doubler plates.

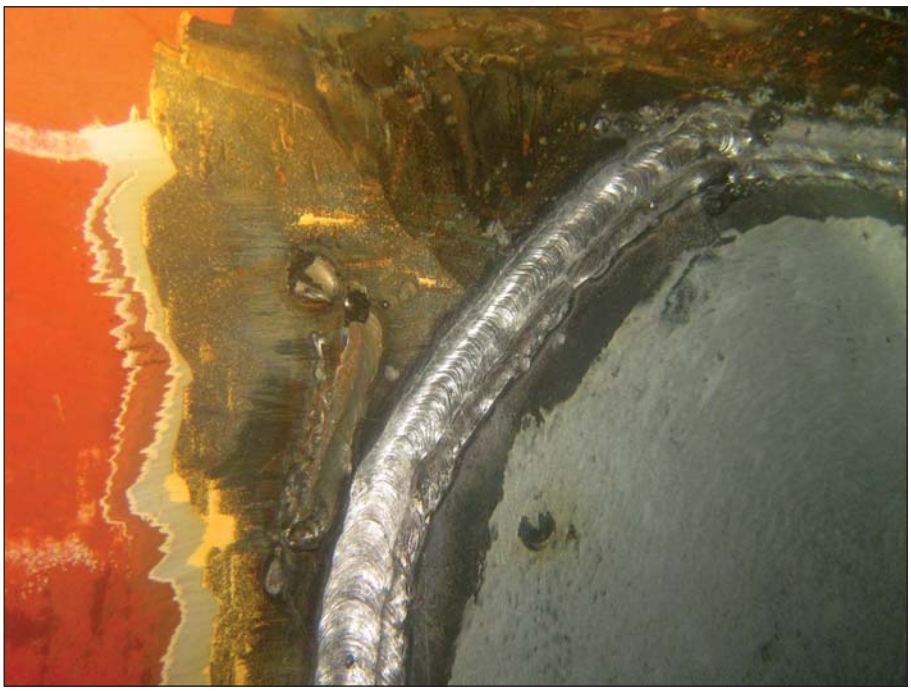
Hydrex team. All the equipment was put on board the vessel before it sailed on to Grand Isles to start its contract.

This part of the operation consisted of the installation of five doubler plates over the damaged areas in the aft bulkhead. Constructed with the exact measurements taken during a detailed inspection, they were positioned and secured underwater by our certified diver/welders. All water was then emptied from the damaged ballast tank. The crew of the drill ship performed an inspection of the tank and confirmed that the compromised hull was once again fully sealed. According to one of the crew members "the team did a fantastic job and the final welds amazed everyone on how clean they turned out."

Hydrex team leader supervising the operation inside monitoring station.



Welding one of the doubler plates.



Weld seams of doubler plates installed over damaged hull areas.

Hydrex can offer its customers the high quality of service they deserve while guaranteeing the safety of the divers at all times. Our diver/technicians are trained and qualified to perform all required repair procedures in even the harshest conditions.

Thanks to the installation of the doubler plates the ship could safely start its contract. A permanent solution can now be planned at a more convenient 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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or at
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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 drydock.

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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