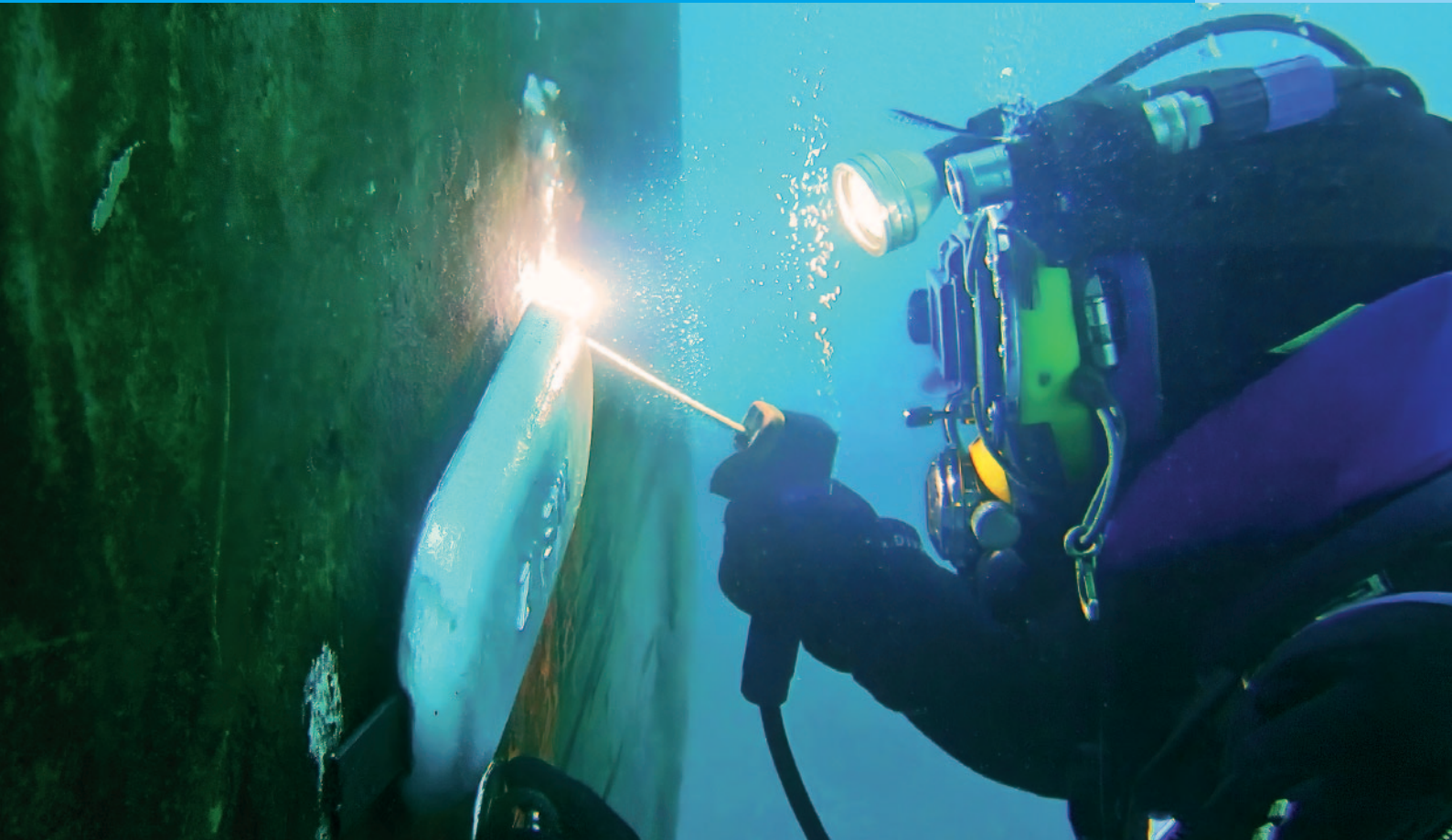


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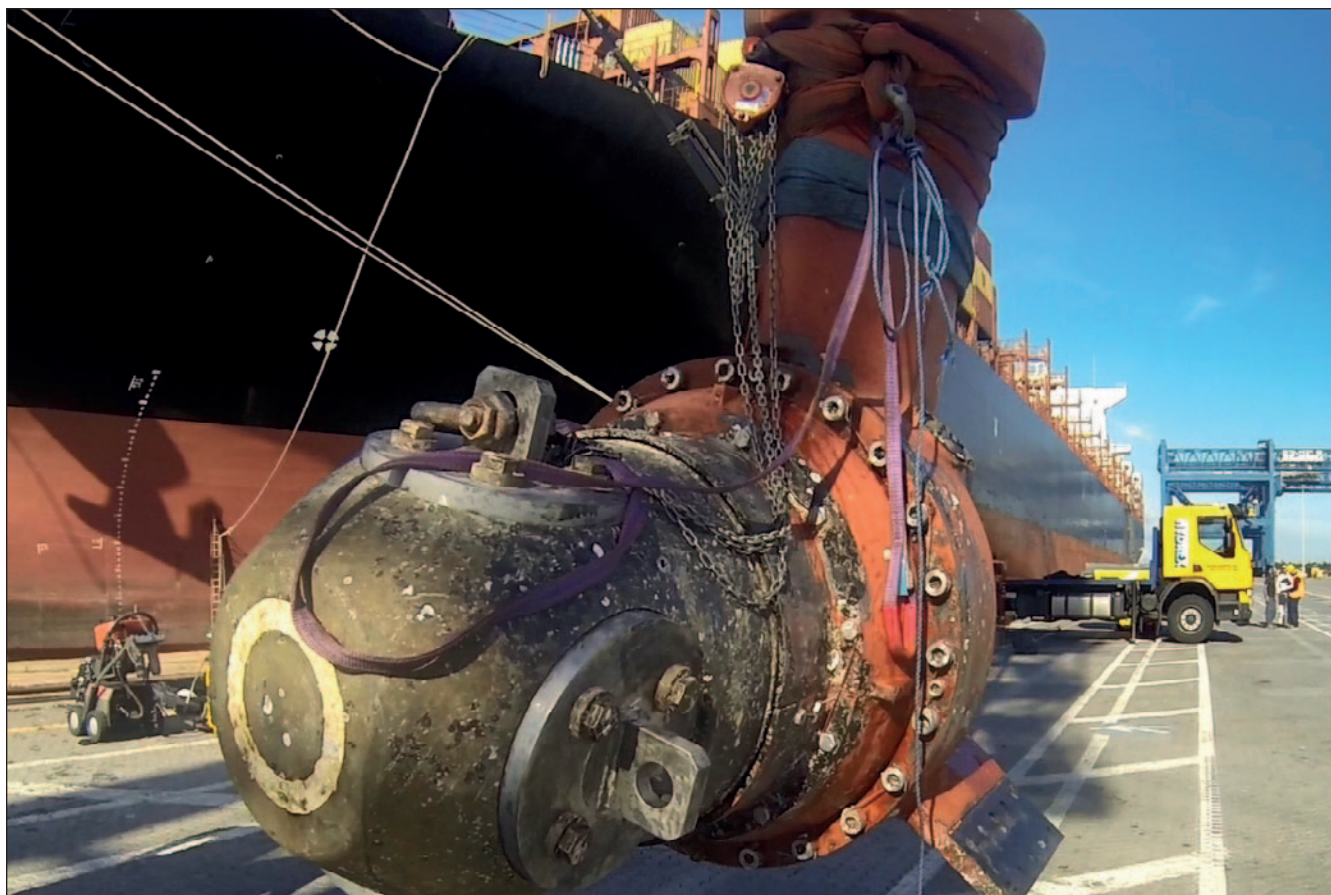
Magazine

Number 309



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In-water bow thruster repairs



Our 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 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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Editorial



In the beginning of September, we took part in SMM 2022. Around the same time we carried out several large repairs, including some emergency ones. It was a very busy period for us and typical for the way 2022 has been going so far.

As always, the four days at SMM were an ideal opportunity to meet old friends and to make new ones. Business relationships were strengthened and formed. We are looking forward to working closely together with all of these contacts.

In the first article in this magazine, you can read about one of the operations our divers performed on distant shores. In Trinidad we organized, from start to finish, an underwater stern tube seal replacement for a

general cargo ship that had suffered an oil leak. During this job we discovered that one of the propeller blade seals also needed to be replaced. This additional repair was performed by the same team without having to demobilize and remobilize again.

This is a good illustration of how we can take the worry out of your hands if you have a problem with your vessel. If speed is of the essence, call us and we will help you avoid any unwanted loss of time.

Hydrex founder
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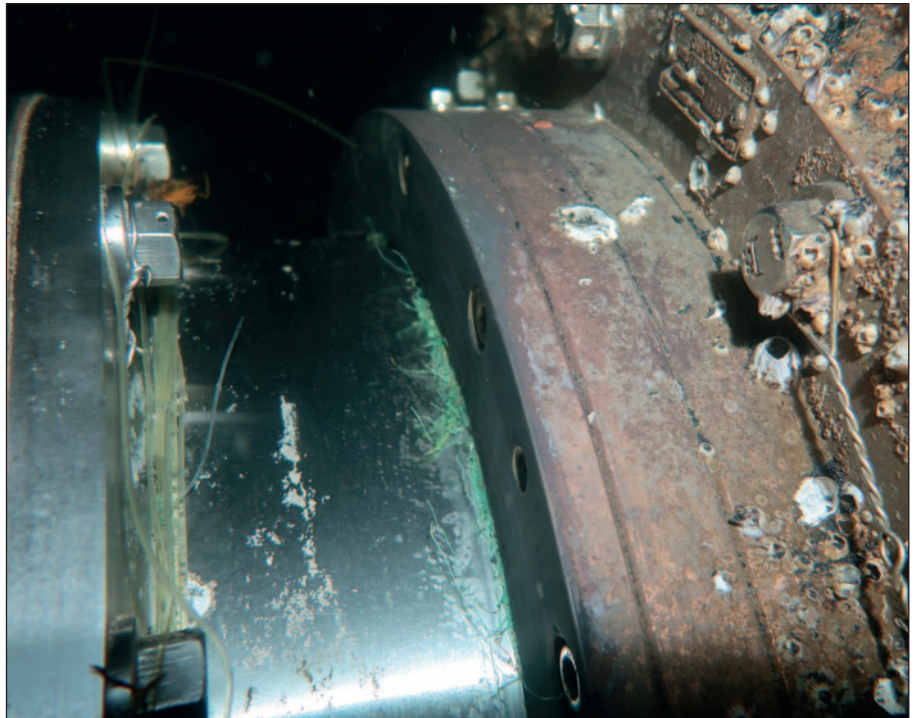
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Underwater repair of leaking seal assembly in Trinidad

One of our diver/technician teams carried out an underwater stern tube seal repair on a 140-meter general cargo ship at anchorage in Port of Spain, Trinidad. The ship was leaking oil, making an immediate repair necessary. Using a Hydrex flexible mobdock the team was able to carry out the entire operation on-site and underwater, saving the owner an expensive and time-consuming trip to drydock.

Once the operation was confirmed, all preparations were handled swiftly and the lightweight equipment was mobilized immediately from our headquarters in Antwerp. After arriving on-site, the diving team first set up a monitoring station on a workboat next to the vessel. The operation then started with the removal of the rope guard and a



Fishing line entangled around stern tube seal assembly, causing an oil leak.

thorough underwater inspection of the stern tube seal assembly.

This revealed that a rope had become entangled around the stern tube seal causing the oil leak. Our divers removed the rope during the inspection. They then cleaned the assembly and installed the flexible mobdock. By doing this they created a dry underwater environment so that they could work in drydock-like conditions.

The split ring was then removed and brought to the surface to be cleaned. After cleaning the entire assembly, the divers removed the first seal and replaced it with a new one which was bonded. The procedure was repeated with the other seals.

A successful operation was concluded with leakage tests, the removal of the flexible mobdock and the reinstallation of the rope guard.



Hydrex diver making preparations for installation of mobdock.



Stern tube seal assembly after mobdock installation.



One of our diver/technicians working inside our flexible mobdock.



Damaged stern tube seal on general cargo vessel in Trinidad.

Hydrex under-water inspections



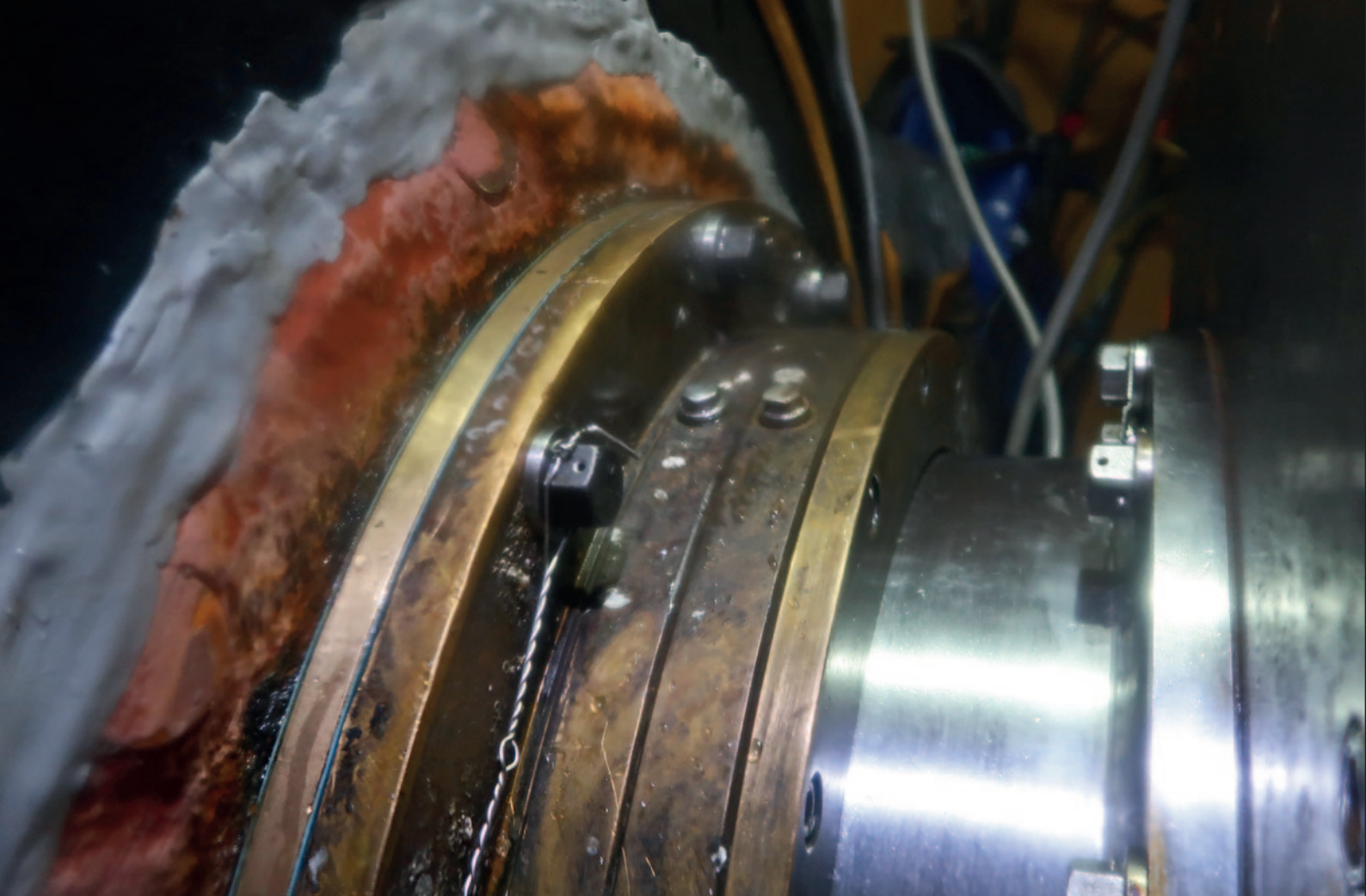
Underwater inspections are an essential aspect of ship repairs. Building upon conventional technical skills and know-how while also taking advantage of the latest technology, Hydrex offers a unique hull monitoring service to its customers. This gives ship owners total control of the underwater hull and 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 seal assembly after the repair.

Additional repair with same team

The tests at the end of the stern tube seal repair had revealed a leak on one of the blade seals of the propeller which the owners asked us to

repair immediately. A team of four of our diver/technicians therefore stayed on standby until the spare parts for the propeller blade had arrived.

During this time the ship had shifted

to a layby-berth. The blade was trimmed above the surface and a pontoon and equipment was set up. This allowed the team to start the blade seal renewal as soon as the spare parts arrived.

After the blade was lifted and the seal renewed, the bolts were put on torque and secured. A follow-up leakage test confirmed that the work had been successful, finalizing the operation.

Changing circumstances, constant service

Working together with the OEM allowed Hydrex to provide the customer with original spare parts which guarantees the best quality material. A technician from the seal manufacturer was also present during the operation.



Hydrex diver reinstalling the rope guard.

Because Hydrex organized everything from start to finish, the owner did not have to worry about making any arrangements for the repair.

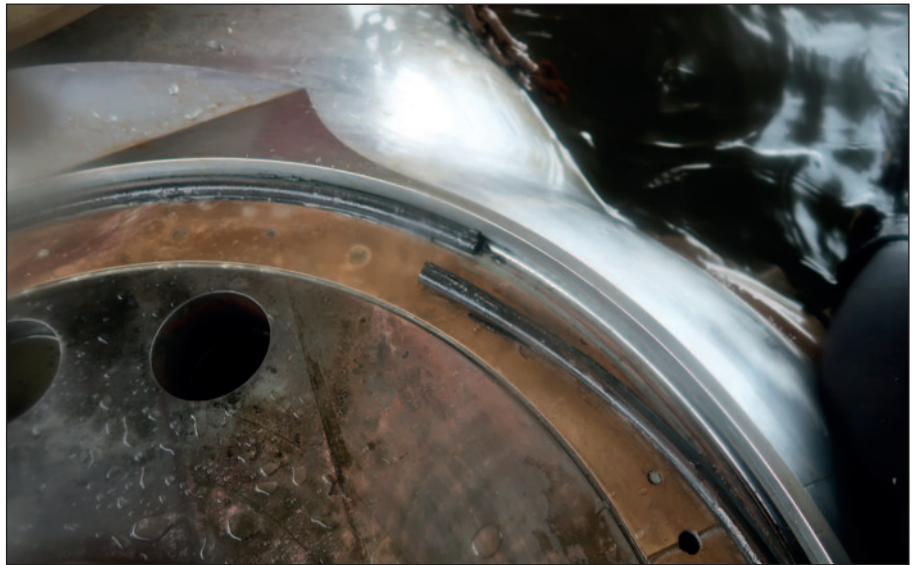
Combining the initial operation with an additional repair is a good example of the flexibility we offer to our customers. Our teams know how to handle unexpected circumstances and adapt to changing situations.

After all damaged seals had been successfully replaced, the owner could sail his vessel to its next stop free of oil leaks.

If you have any questions regarding a possible seal repair or any other underwater repair or maintenance, do not hesitate to contact us. We are at your disposal 24/7 and ready to mobilize almost immediately. ■

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Broken propeller blade seal.



One of our technicians working on the propeller blade seal.

The same high quality, close to home or faraway

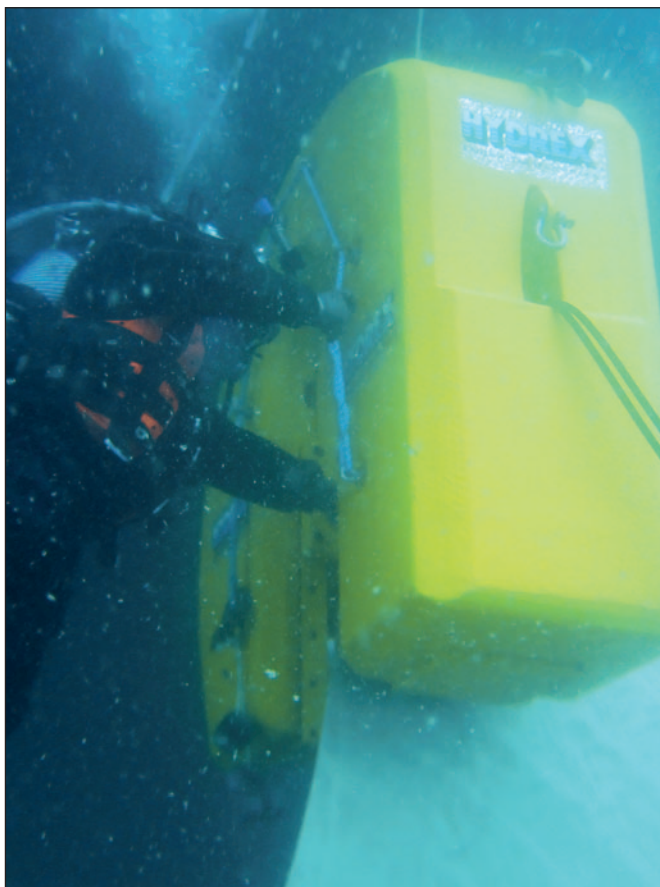
We have developed a flexible mobdock repair method that enables the underwater replacement of all types and sizes of shaft seals. It allows ship owners to keep their vessels sailing, saving precious time and money.

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 its 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.



Inwater propeller repairs



When 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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Hydrex and Subsea Industries at SMM 2022

Last month Hydrex and sister company Subsea Industries took part in SMM 2022 in Hamburg, together with 2.000 other exhibitors. This year's event was attended by 30.000 trade visitors from more than 100 countries, once again highlighting SMM's importance as the leading international maritime trade fair.

“With about 80 speakers at the conferences, more than 160 speakers on the Transition Stages, and 16 start-ups pitching for the new SMM Maritime Start-up Award, the supporting program has never been so popular,” the organizers said. “Once again, we’ve seen that it takes joint efforts to drive the maritime transition – and as organizers, we’re grateful to know that SMM continues to be your platform of choice to connect with the industry’s game changers.”

As part of the Dutch pavilion, the Hydrex/Subsea Industries booth was a popular spot. Representatives of both companies were ready to give detailed information and knowledgeable advice to visitors.



The Hydrex and Subsea Industries team ready for another busy day at SMM.

Many existing customers, Hydrex and Subsea Industries agents, technical people from all phases of shipbuilding and many interested newcomers to Hydrex and Subsea Industries dropped by to enjoy the friendly, comfortable but business-like and informative atmosphere. Much new business was conducted.

SMM 2022 was a great success and we would like to thank all of you

who visited us there for coming. We look forward to working with you on an ongoing basis. If you require assistance with a vessel or want to find out how our products or services can benefit you, feel free to contact us. We will gladly help you in any way we can. ■

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The booth maintained a friendly, busy atmosphere throughout the four-day show.

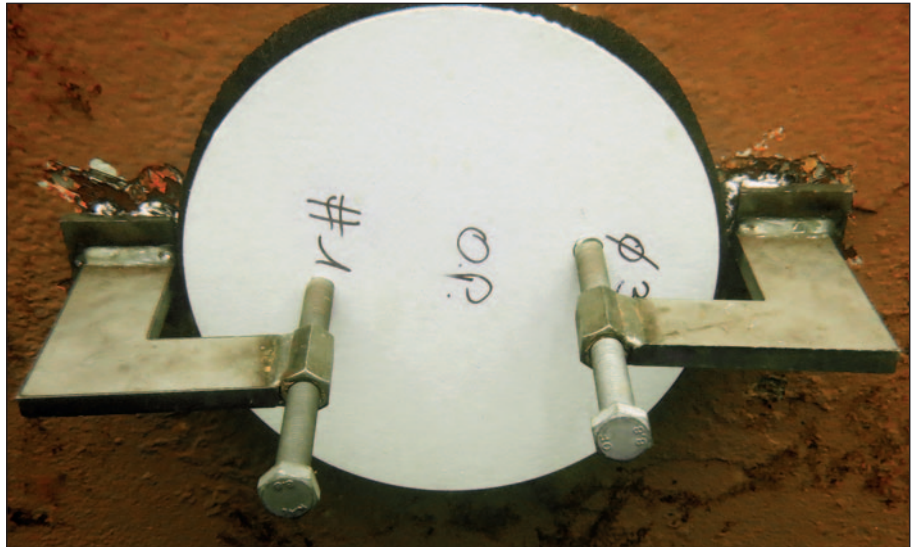


Martijn van Ruiten from our Rotterdam office giving a presentation for a group of visitors during a tour of the Holland Pavilion.

Maintenance

Same care and professionalism for all jobs large or small

We tend to publicize the more major underwater operations we do: stern tube seal repairs; thruster repair or replacement; propeller cropping and straightening; hull repairs. They are often quite heroic, requiring larger teams and special equipment. But on a daily basis we are also undertaking the smaller ship husbandry jobs that are just as important to the continued safe and efficient running of the ship. They all receive the same level of care and professionalism.



Typical blanking for internal valve repair.



Hydrex workboat alongside a container ship where a class UWILD will be conducted.

What are these maintenance jobs?
Here is a brief outline.

Inspections

We perform several different kinds of inspections. Some require the presence of a class inspector. Others do not.

Quite often we are asked to carry out a general hull inspection and report on fouling and any damage. This does not require class presence.

Where class is definitely involved and directs the activities is the underwater inspection in lieu of dry-docking (UWILD). This is videoed and the class inspector oversees the diver's progress from the dive control center on our workboat or the quayside.

We also carry out inspections where a ship has grounded or touched the quayside and needs to be checked. There are also presale inspections

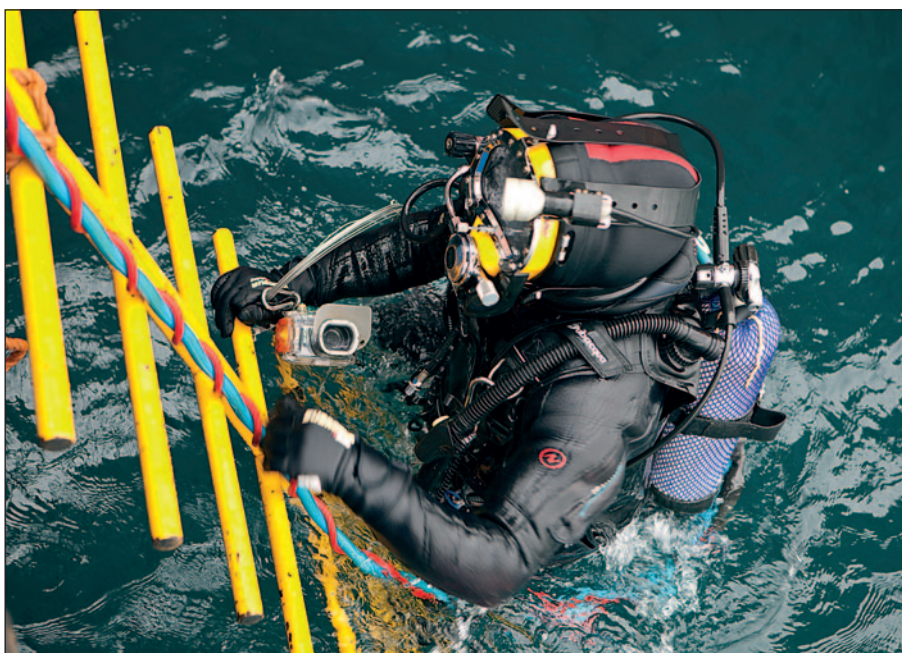


Class inspector directing an inspection from the onboard dive station.

where a ship is being sold. These can be requested by buyer or seller, and class is usually present to witness the inspection.

Sometimes a paint inspection is required. This is usually when the shipowner or operator feels that the antifouling coating is not working as advertised or that the ship is losing paint. This can often be a warranty issue, so careful photo and video documentation of the state of the paint on the hull is required.

“A well-conducted inspection, thoroughly documented with high quality photos and video can save an owner or charterer a great deal of expense and trouble,” explains Yannick Wyckmans, in charge of Technical Estimations at Hydrex. With many years of experience as a diver, Yannick is well qualified to provide accurate estimates as well as practical guidance to the customer. “We follow definite procedures and train our divers so that they conduct thorough and useful inspections,” he adds.



Diver on his way to inspect the hull of the ship.

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 US ready to mobilize immediately



Hydrex has an office located in Clearwater in the Tampa Bay area that is ready to mobilize immediately. The office has a fast response center that is equipped with an extensive range of state of the art logistics, trucks, tools and diving support equipment. This enables Hydrex US to efficiently service vessels and offshore units calling on ports in Canada, North, Central and South America as well as the Caribbean.

All staff members of the Hydrex office in Clearwater undergo stringent training at the Hydrex headquarters in Antwerp. They can carry out both simple and complex high quality jobs even in the harshest of circumstances.

Repairs to thrusters, propellers, rudders, stern tube seals, damaged or corroded hulls and all other underwater repair as well as maintenance services are done while the vessel is afloat. This eliminates the need to drydock.

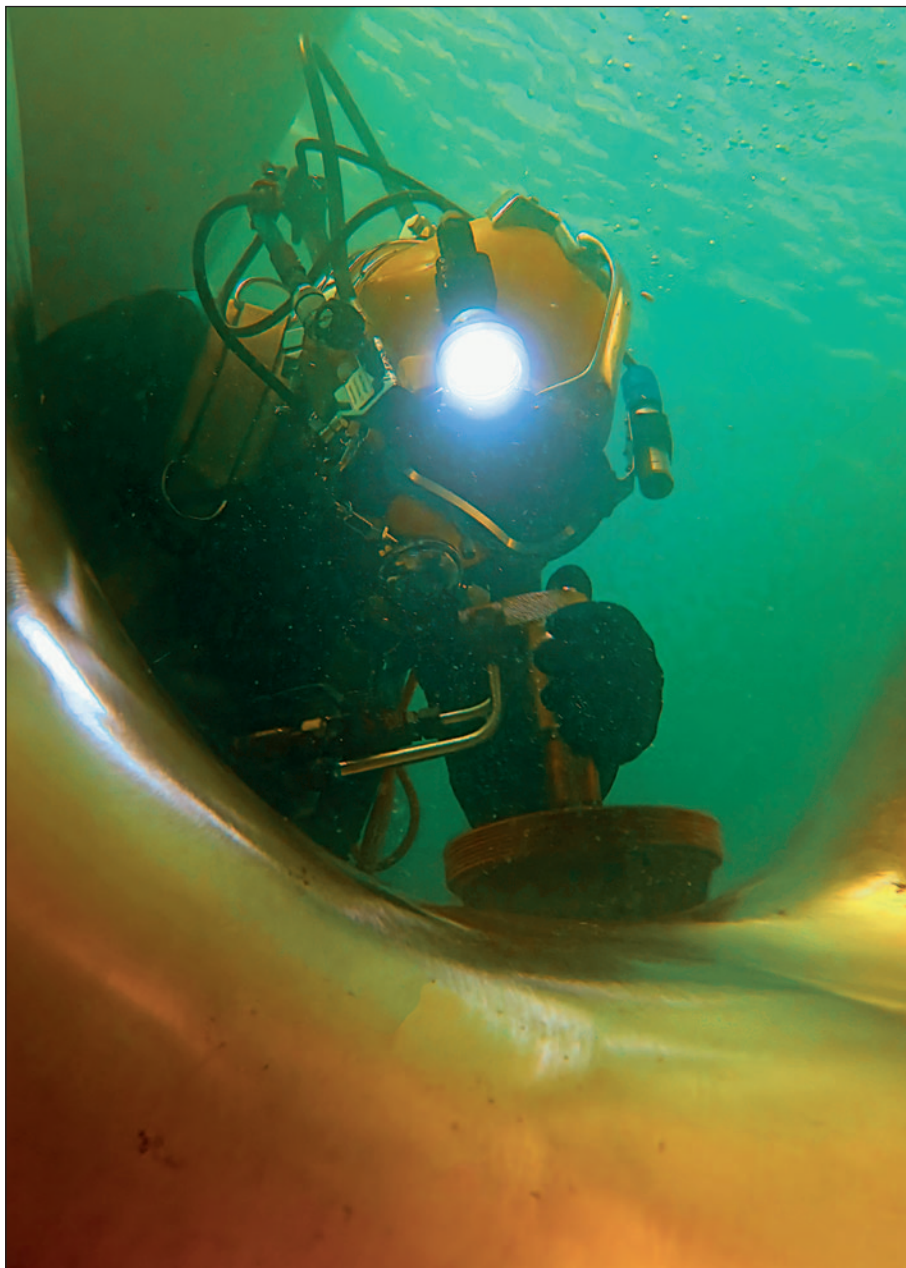
All used methods are fully approved by all major classification societies.

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Diver inspecting a heavily fouled offshore structure.



Propeller cleaning is just one example of how we take professional pride in every job, large or small.

Propeller polishing

Regular propeller polishing represents considerable fuel savings for a ship. Figures of 5% or more have been estimated. Fuel costs and CO₂ emissions can be reduced by this simple, straightforward and inexpensive measure carried out regularly with the ship afloat rather than waiting for the next drydocking.

Sea chest cleaning

When the grating of the sea chest has become blocked with hard fouling, it is time to have it cleaned. A tanker usually has many more gratings than a bulkier for example and therefore it is a bigger job. But the fact remains for any ship: the sea chests must not become blocked as it will interfere with vital cooling.

Speed log and depth sounder transducer replacements

A ship's navigation and its safety depend on knowing speed and depth at any time. The echosounder and speed log are vital instruments which must be maintained in good



Netting removed from a ship's rope guard, found while on an inspection.

working order. If a transducer fails or begins to malfunction, it must be replaced. This requires work on the outside of the hull. Emergency drydocking is inconvenient and quite unnecessary for this purpose as the job can easily be handled by competent divers. The replacement is usually handled by blanking the opening in the case of the speed log, or removing and replacing the transducer

from the outside in the case of the echosounder.

Blanking or plugging

When a valve inside the ship needs to be repaired or replaced, the opening must be blanked or plugged so that the operation can be carried out without taking in water. Usually the opening is blanked but with smaller openings it is sometimes practical to plug them while the work is carried out.

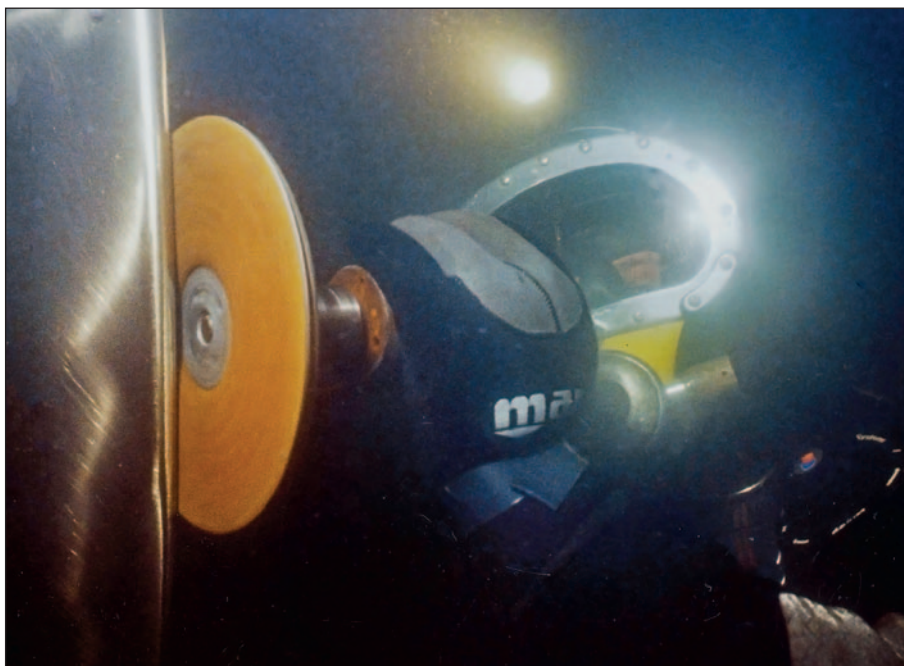
Anode replacement and ICCP renewal

Anodes wear down or can be damaged or can fall off and we are often asked to replace them. This is simply a matter of welding the new anodes in place. ICCP units also need maintenance and in some cases replacement. This can be done with the ship afloat rather than waiting for drydocking.



Anode replacement is a relatively straightforward operation to perform underwater without the need for drydocking.





Propeller cleaning done properly and regularly can save a great deal of fuel.

Unentanglement

Sometimes we are asked to come and clear a rope or net that has become tangled and caught up in the rope guard or rudder or propeller. Of course if we observe something of this nature while doing an inspection or a different job we will simply take care of it without additional charge, even if it wasn't part of the original plan.

What do these jobs require?

The minimum team sent to carry out any of the above jobs is three diver/technicians. Regulations in some countries, such as Spain, require a minimum of five divers. If the job is likely to require our presence inside the ship as well as in the water, as can be the case with transducer replacements or valve repair, we send a team of four or five. This is also the case when the job must be carried out at great depth, since the time a diver can work at those depths is limited. A larger team can get the job done more quickly which is often important so that the ship can stay on schedule.

Timo Verhoegstraete, Technical Services Officer for Hydrex, whose function it is to take care of the logistics and personnel for jobs once they have been confirmed, says, "Our aim is to send out the minimum team needed to get the job done in the required time while meeting the constraints of local diving regulations and conditions. We always take into account the economics of the job for the customer to make it as cost-effective as possible."

As always, the team that we send out consists of well trained and experienced divers and technicians capable of thinking on their feet and handling anything that comes up.

Logistics and equipment for smaller, maintenance jobs of this nature are handled exactly the same as for a major operation. No shortcuts are taken.

Combining jobs

Sometimes two or more of these maintenance jobs can be combined. For example, an inspection and a

propeller polishing can be carried out in the same visit by the same team. This represents considerable savings to the shipowner or operator, since the cost of mobilization and transport is often a large part of the overall cost of a job.

Sometimes an inspection reveals a problem that needs immediate attention. Such repair can be begun immediately with the same team once the project has been approved by the customer. A grounding inspection may find damage that needs immediate repair. It can save costs to have the team that is already on site shift gears from inspection to repair, rather than sending out a whole new team.

"Since our experienced divers and technicians are all trained on all the procedures, the same team can take care of crack repairs, rudder repairs, propeller straightening and cropping and anything else that comes up," says Toon Joos, Chief Diver, who is overall in charge of Hydrex technical activities and training of divers.

Additional equipment may be needed but it is more cost-effective to rapidly ship the equipment than to demobilize and remobilize a whole team.

We operate entirely from the viewpoint that we are here to take care of all the maintenance and repair your ships need while keeping them out of drydock and on schedule. So we put the same care and professionalism into a minor inspection as we do for a double stern tube seal repair. ■

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Scrubber pipe repairs and lasting protection



Exhaust scrubbers filter out all harmful toxins from exhaust gases 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. This is done by coating the pipes with a highly

corrosion resistant coating called Ecospeed.

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

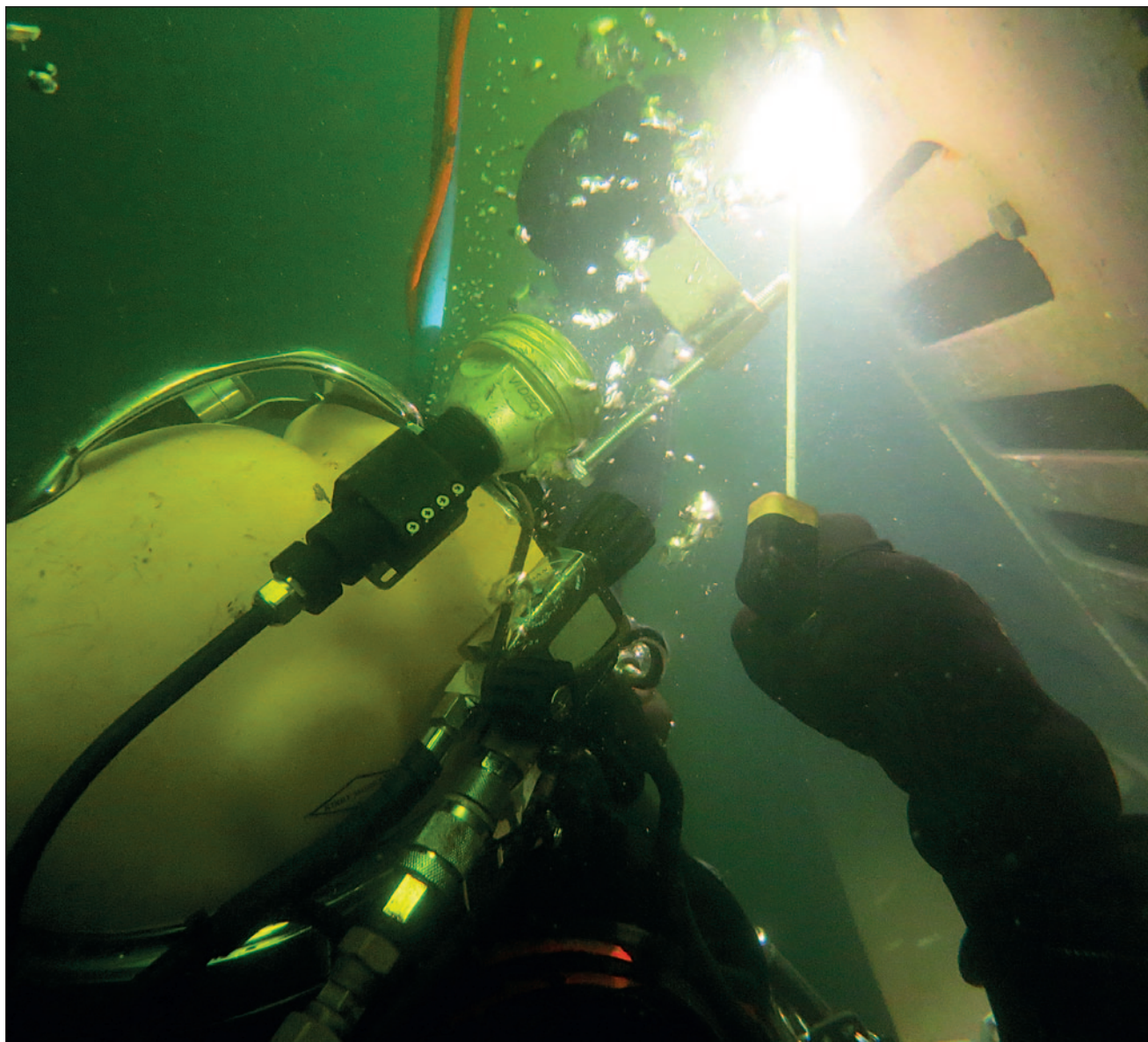


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