



UNDERWATER TECHNOLOGY

Magazine

Number 307



Routine scrubber overboard installation	4
New echo sounder in a single day.....	10
Thriving and in constant search of new technology.....	13

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

Editorial



In June Hydrex and Subsea Industries took part in Posidonia 2022, together with our agent for Greece, N. Bogdanos Marine Bureau. The exhibition was very successful for everyone involved and we are already looking forward to the next edition.

Many networking opportunities presented themselves throughout the exhibition and the N. Bogdanos booth was bustling with activity from start to finish. Our representatives met many interesting people from the shipping industry. We reinforced existing business relationships while also forging new ones.

We would like to thank all of you who visited us there for coming, and

we look forward to working with you on an ongoing basis. We would also like to invite you to come and visit us during SMM 2022 at the Holland Pavilion in Hall B7, booth 505.

We hope that this magazine will encourage you to contact us if you have a problem or need maintenance work carried out. We are ready to assist you 24/7.

A handwritten signature in black ink, which appears to be 'BVR' followed by a long horizontal stroke.

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Table of contents



Routine scrubber overboard installation

4-8



New echo sounder in a single day

10-12



Thriving and in constant search of new technology

13-14

ISO 9001 certified

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Routine scrubber overboard installation

Getting the job done while keeping the ship on schedule

We replaced two corroded scrubber overboard pipes on a large container ship without interrupting or delaying the ship's itinerary. An operation like this requires careful planning and excellent coordination between the ship's management team, officers and crew and our Technical Department. It also requires fast, efficient work on the part of our competent diver/technicians.

It begins with obtaining the exact specifications so that the new pipes can be fabricated. Once made they go to a specialist paint shop to apply Ecospeed. This is a proprietary protective coating needed to make sure that the pipes will not corrode again. Ecospeed is impervious to all of the very harsh chemicals present in the scrubber effluent. These are responsible for the rapid corrosion of the pipes when not properly protected. It is manufactured and distributed by



Scrubber overboard pipes receive proprietary protection with Ecospeed prior to installation.

Hydrex's sister company, Subsea Industries.

Following is a case study of just such an operation that took place

earlier this year. It was begun in Rotterdam and completed in Algeciras. This allowed the ship to continue on its schedule without delays.

The specifications of the required replacement overboard pipes were obtained from the customer. The new pipes fabricated and coated with Ecospeed well before installation was scheduled.

In order to carry out the operation with the ship still afloat rather than in drydock, cofferdams had to be installed underwater on the exterior of the hull. This blanked off the scrubber outlet while the pipes were being replaced.

On the day that the ship was to dock in Rotterdam, preparations were



Hydrex workboat arriving in Rotterdam with parts and equipment for the scrubber installation.



Preparing for the diving operation on board the Hydrex workboat en route to the ship.



The replacement scrubber overboard pipes are hoisted up to the ship to be taken to the engine room.

going ahead at the Hydrex fast response center in Antwerp. Two cofferdams of the right dimensions were loaded onto one of the Hydrex workboats. The two replacement scrubber outlet pipes and the needed diving equipment were also loaded. The workboat then headed off to Rotterdam in good time to be there when the Hydrex team of divers/technicians arrived by road.

With the team on board, the Hydrex workboat speeded to the ship. Unpacking and setting up gear were all carried out rapidly and efficiently while the workboat was en route through the port of Rotterdam to the ship at the container terminal.

The next step was to hoist the two replacement outlet pipes on board so that they could be taken to the engine room ahead of time.



Hydrex US ready to mobilize immediately



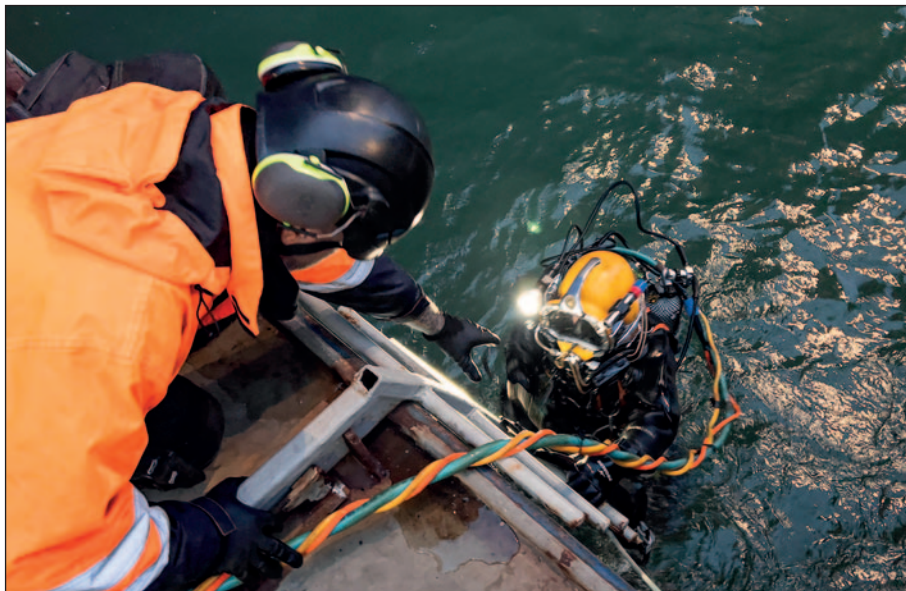
Hydrex has an office located in Clearwater in the Tampa Bay area that is ready to mobilize immediately. The office has a fast response center that is equipped with an extensive range of state of the art logistics, trucks, tools and diving support equipment. This enables Hydrex US to efficiently service 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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Hydrex diver surfacing after locating the scrubber outlets and attaching a down line.



New overboard pipe lifted onto the ship.



Two teams of technicians work flat out to remove the old pipes as quickly as possible.



Cutting out the old overboard pipe.



The old scrubber pipe seriously corroded by the highly acidic effluent from the scrubber.

With this done, the first diver suited up and prepared to dive to find the scrubber outlets on the hull. Once located and with a down line in place, installation of the two cofferdams could proceed. By now it was getting dark but work on the installation proceeded until both scrubber outlets were blanked off. The cofferdams were secured in place with screw dogs welded to the hull around the outlet.

Two teams then went into the engine room and began to cut out the corroded pipes that were to be replaced. Removal of the two existing outlet pipes completed the work of the first shift.

Meanwhile a second shift of diver/technicians mobilized from the Hydrex Antwerp fast response center and arrived just as the first shift was wrapping up. They quickly moved into the engine room and prepared to install the new pipes.

A bevel was then grinded on the hull plate openings where the old pipes had been removed. This was done in preparation for the full penetration welds needed to install the new pipes. Then the new pipes were fitted in place and the welding began.

The welding continued through the night. When it was finished, it was tested by an independent NDT expert and found to be sound. The scrubbers were reassembled. This completed the work of the second shift and they departed, leaving the new scrubber overboard pipes in place.

The ship had to sail. The cofferdams remained in place for removal at a





The frame and brackets are cut through to make way for the new pipe.

later date in another port when this could be accomplished without disrupting the ship's schedule.

The ship was due to dock in Algeciras quite soon with enough time to remove the cofferdams. The team arrived at the ship's location and prepared to dive to remove the cofferdams from the scrubber outlets. The welds could also be inspected from the outside during this part of the operation.

The cofferdams were successfully removed. The welds were found to be sound on the exterior and after it was cleaned up, epoxy was applied for further protection.

The ship was able to continue on schedule with the new scrubber outlets functioning properly and proofed against future corrosion.

The entire operation was carried out without the need to drydock and

without delays to the ship's schedule.

This is a good example of how Hydrex keeps ships in business and out of drydock. We perform a large number of similar operations as well as a variety of underwater maintenance and repair jobs all over the world at short notice. ■

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

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**KEEPING SHIPS
IN BUSINESS**

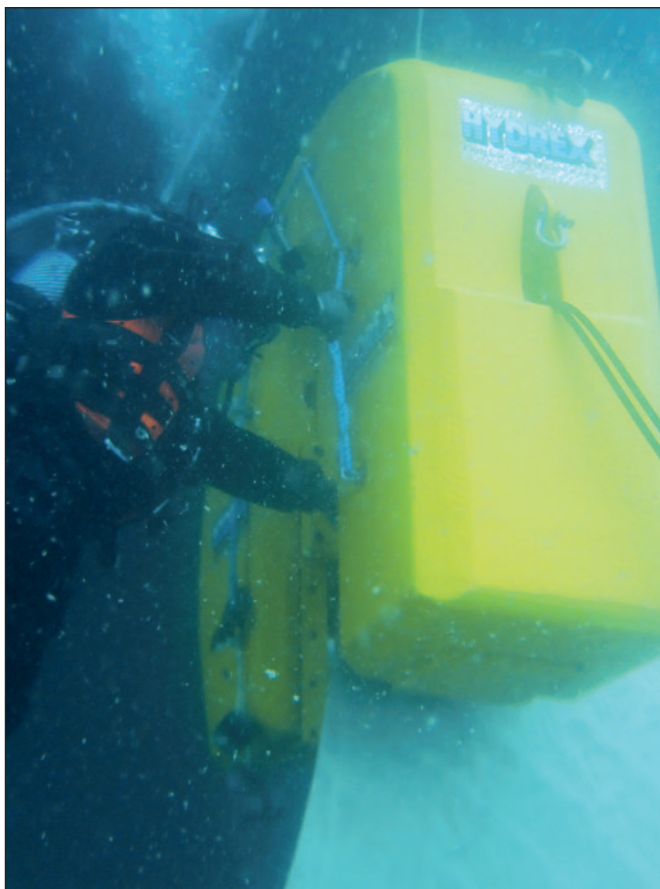


Multipass, multilayer full penetration weld attaches the new pipe to the hull.



Independent non-destructive testing of the welds is always performed before the job is complete.

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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New echo sounder in a single day

Our diver/welders installed a new echo sounder and speed log system in the shell plating of a roro vessel during her stop in Eemshaven. Our teams can very quickly install or replace any type of transducer without any hindrance to a ship's schedule. This was demonstrated when the operation in the Netherlands was concluded in a single day.

The team mobilized from the Hydrex headquarters in Antwerp, arriving at the vessel's location together with all the needed equipment.

Quayside preparations were made for the operation, which started with an inspection of the tank where the echo sounder was to be installed.

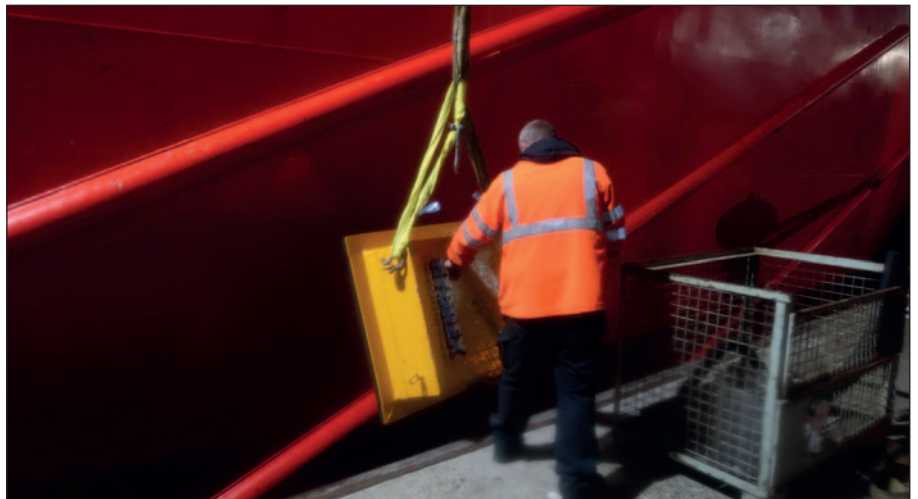
The team then installed a mobdock, constructed at our fast response center, over the designated area. This allowed them to perform work inside the tank without water ingress. A part of the adjacent frame was removed to give our welders a proper working space for the operation.

The area that needed to be cut away was marked on the shell plating and removed. The edges of the opening were then prepared for the installation of the echo sounder base flange which was positioned and secured with a full penetration weld

Next an independent inspector carried out NDT testing of the weld seams. The system valve was then installed on top of the flange by our



Hydrex team members setting up a support station before the operation.



Cofferdam lowered into the water.



The cofferdam was positioned over the area where the transducer was to be installed.



The shell plating was prepared for removal.



Removing the shell plating for installation of the new transducer system.



Preparing the edges of the hole.

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.





Hydrex diver getting ready for underwater operation.

team. Finally the cofferdam was removed from the hull, concluding the operation. The combined echo sounder/speed log system was ready for connection to the engine room.

Conclusion

Our divers are certified wet and dry welders as well as technicians. We made sure that the operation was finished in the shortest possible time frame, without any delay for the customer. ■



After the NDT test the valve was installed on top of the flange.



The new echo sounder flange seen from the outside.

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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.



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 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.

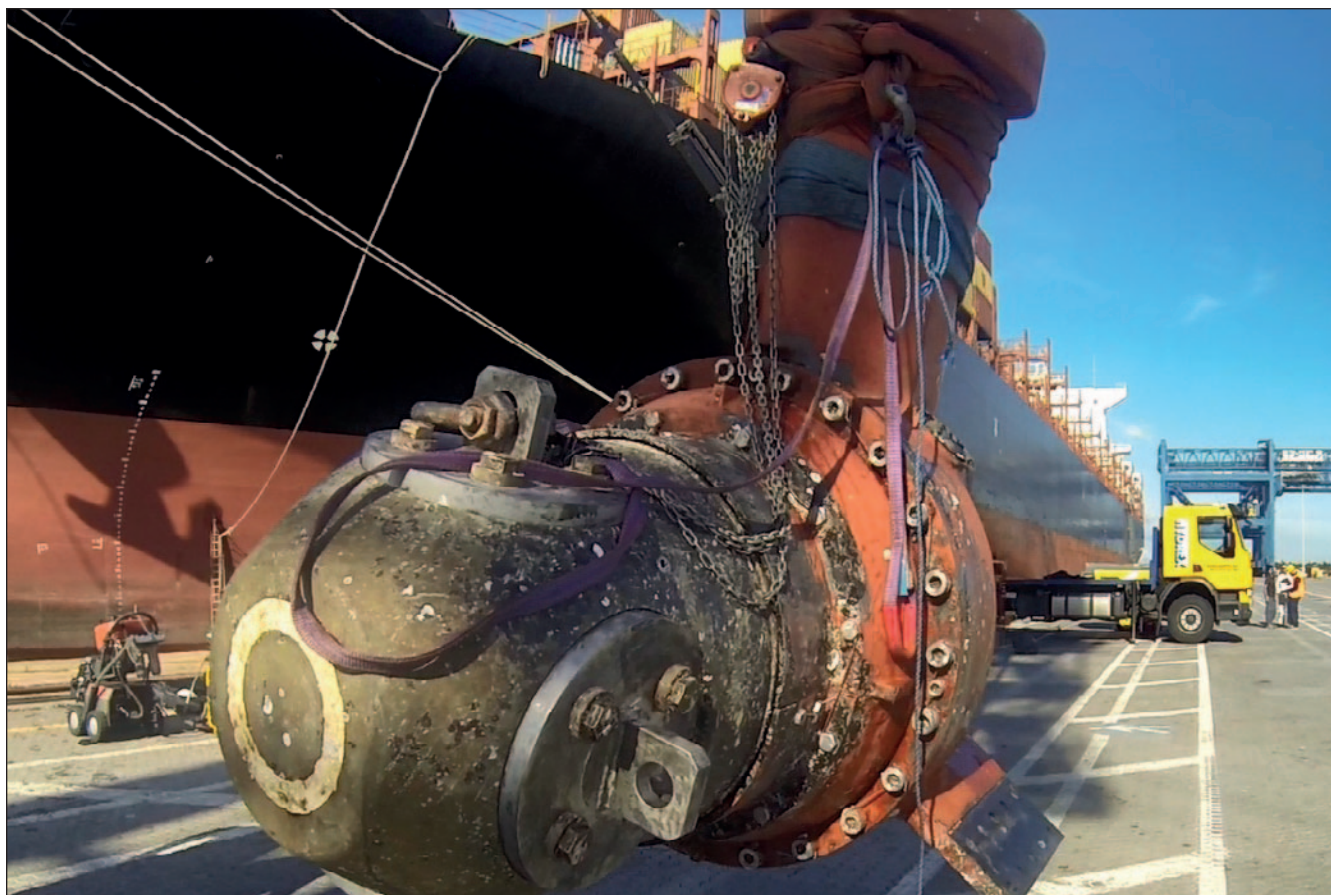
Every few years our entire fleet of vehicles is refurbished or replaced if needed. The vans are also updated regularly so they stay state-of-the-art mobile monitoring stations.

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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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.

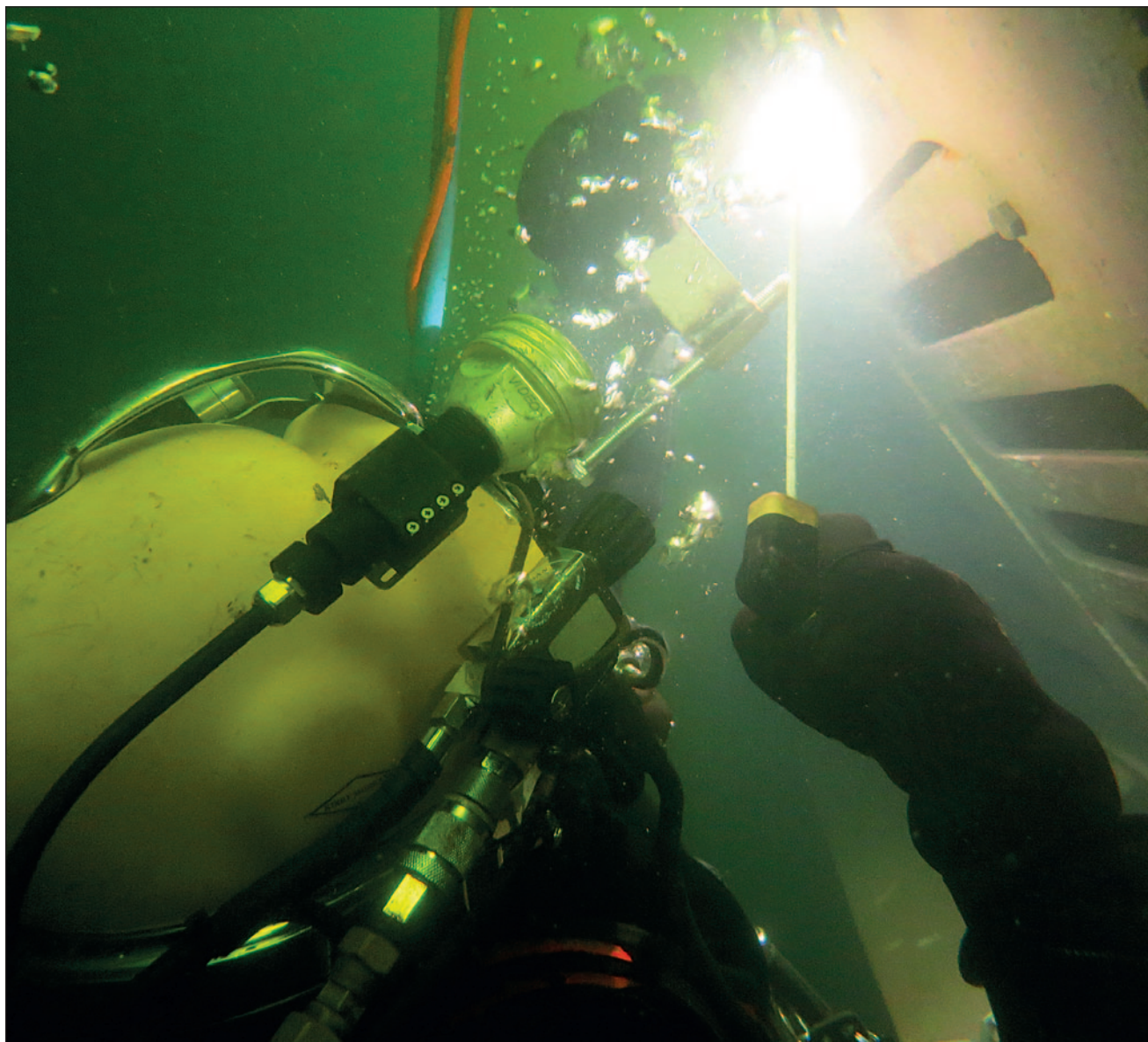
There is no need to send the vessel to drydock as all operations can be carried out in port or while the vessel is stationary at sea. Normal commercial activities can therefore continue without disruption.

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Sail safe with Hydrex



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