

**From Panama to Vietnam:
Hydrex underwater repairs in action worldwide**



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action worldwide

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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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From Panama to Vietnam: Hydrex underwater repairs in action worldwide

From emergency hull damage in Southeast Asia to precision propeller work in Northern Europe and complex structural repairs in West Africa, the past few months have once again demonstrated one thing: Hydrex teams go wherever they are needed and get the job done.

Operating across continents and climates, our diver/technicians have successfully completed a wide variety of underwater repairs, often under tight deadlines and in challenging conditions. The common denominator in all these projects is clear: vessels stayed operational, drydockings were avoided, and owners remained in control of their schedules.

Several of the cases below were featured in previous Hydrex magazines. Full case studies can be found on our website: www.hydrex.be

Dakar: two vessels, two complex solutions

Few recent Hydrex interventions illustrate our flexibility better than in Dakar, where two very different repair scenarios were handled back-to-back.

The first involved a vessel with serious hull damage requiring immediate reinforcement. Hydrex teams designed and installed four custom-fabricated doubler plates over the damaged areas. Each plate was carefully shaped to match the hull, sec-



Hydrex team in Stockholm about to unload the truck.



Hydrex diver/welder welding one of the inserts in Dakar.

ured in place and fully welded, with additional reinforcements added to ensure structural integrity. The vessel was able to continue operations without interruption.

The second case, involving an LNG carrier, required a permanent repair solution. Severely deformed and cracked shell plating inside a ballast tank called for a more advanced

approach. Hydrex installed cofferdams to create a dry working environment, allowing damaged steel to be removed and new insert plates to be welded in place under controlled conditions. The repair was carried out to class approval and completed efficiently, without drydocking.

Thruster replacement in freezing conditions

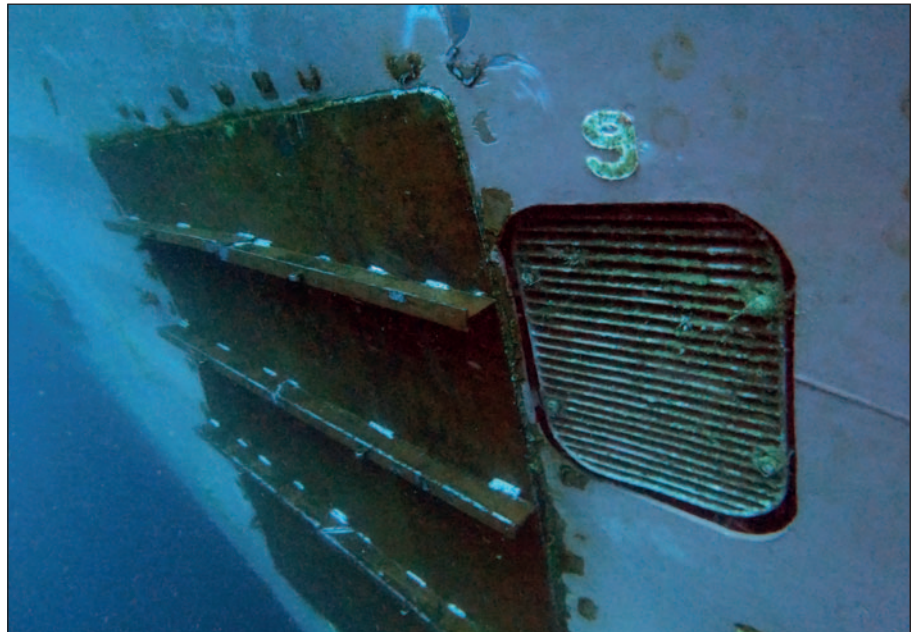


Preparing the new bow thruster for installation.

In Stockholm, a ferry required a full bow thruster replacement right in the middle of winter.

Snow, low temperatures and limited daylight made the operation more demanding, but careful planning ensured everything ran smoothly. Equipment was mobilized from Antwerp, while the team coordinated closely with the vessel's schedule to carry out the replacement during a planned downtime.

Using proven underwater replacement procedures, the existing thruster was removed and a fully assembled unit installed without the need for a dry environment. Once the thruster was secured and tested, the ferry was ready to return to service. The



During the first operation in Dakar, four doubler plates were installed over the damaged areas of the hull.

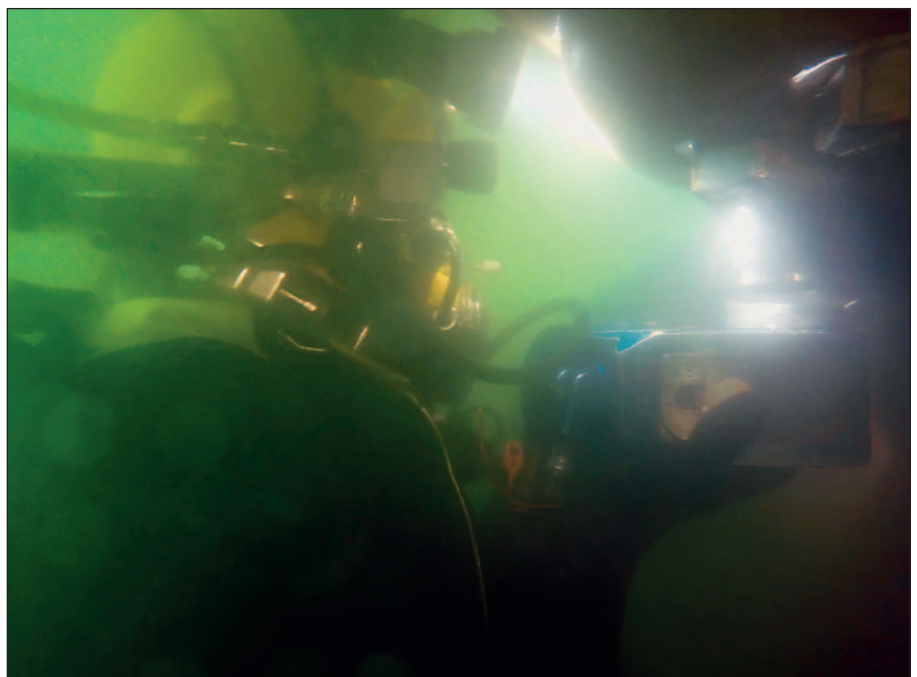
operation clearly demonstrated that even highly specialized underwater work can be executed reliably in extreme conditions with the vessel afloat.

West Africa: precision propeller work under pressure

In Lagos, a hopper dredger faced a critical issue: oil leakage from a controllable pitch propeller blade.

Hydrex mobilized quickly to carry out the repair underwater, avoiding costly delays. After identifying the faulty blade, the team removed it, inspected all components and confirmed that no structural damage was present. New seals and a sealing plate were installed according to class and manufacturer requirements.

The blade was then reinstalled, bolts tightened to specified torque and



Loosening one of the propeller blade bolts.



Hydrex diver getting ready for underwater operation.

thorough testing carried out. The successful repair restored full functionality and allowed the vessel to continue operations without interruption, despite the logistical challenges of the location.

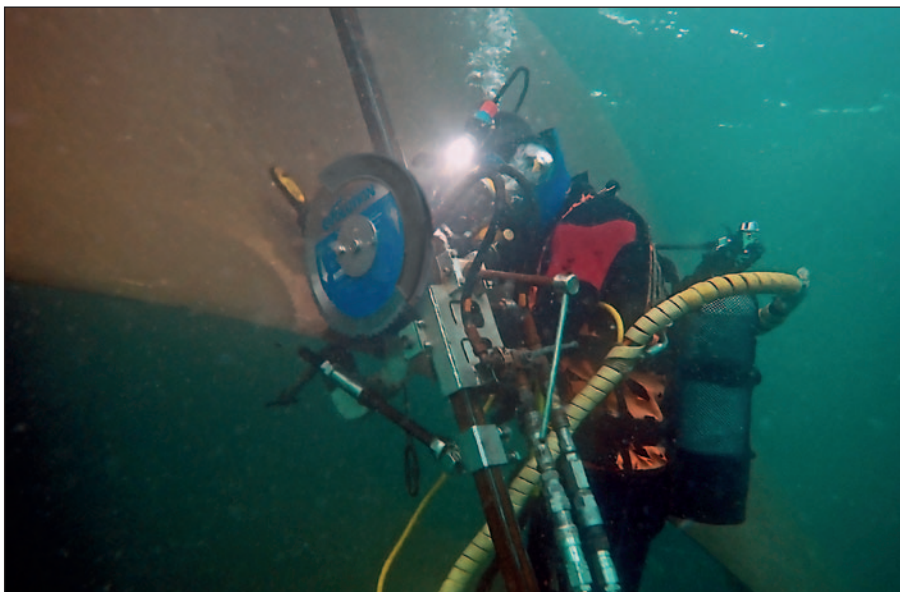
Offshore Congo: engineered solutions in remote conditions

When a container vessel at anchorage off Pointe Noire reported propeller damage after a suspected

grounding, the situation required both speed and creativity.

Inspection revealed that all six blades were bent. With no drydock available nearby, Hydrex developed an alternative solution in consultation with class: cropping all blades to identical dimensions. A team and equipment were mobilized offshore, supported by a workboat.

The underwater cropping operation was carried out according to strict



Hydrex diver positioning the blade cutting tool over the propeller blade.

Permanent in-water rudder repairs now possible without drydocking



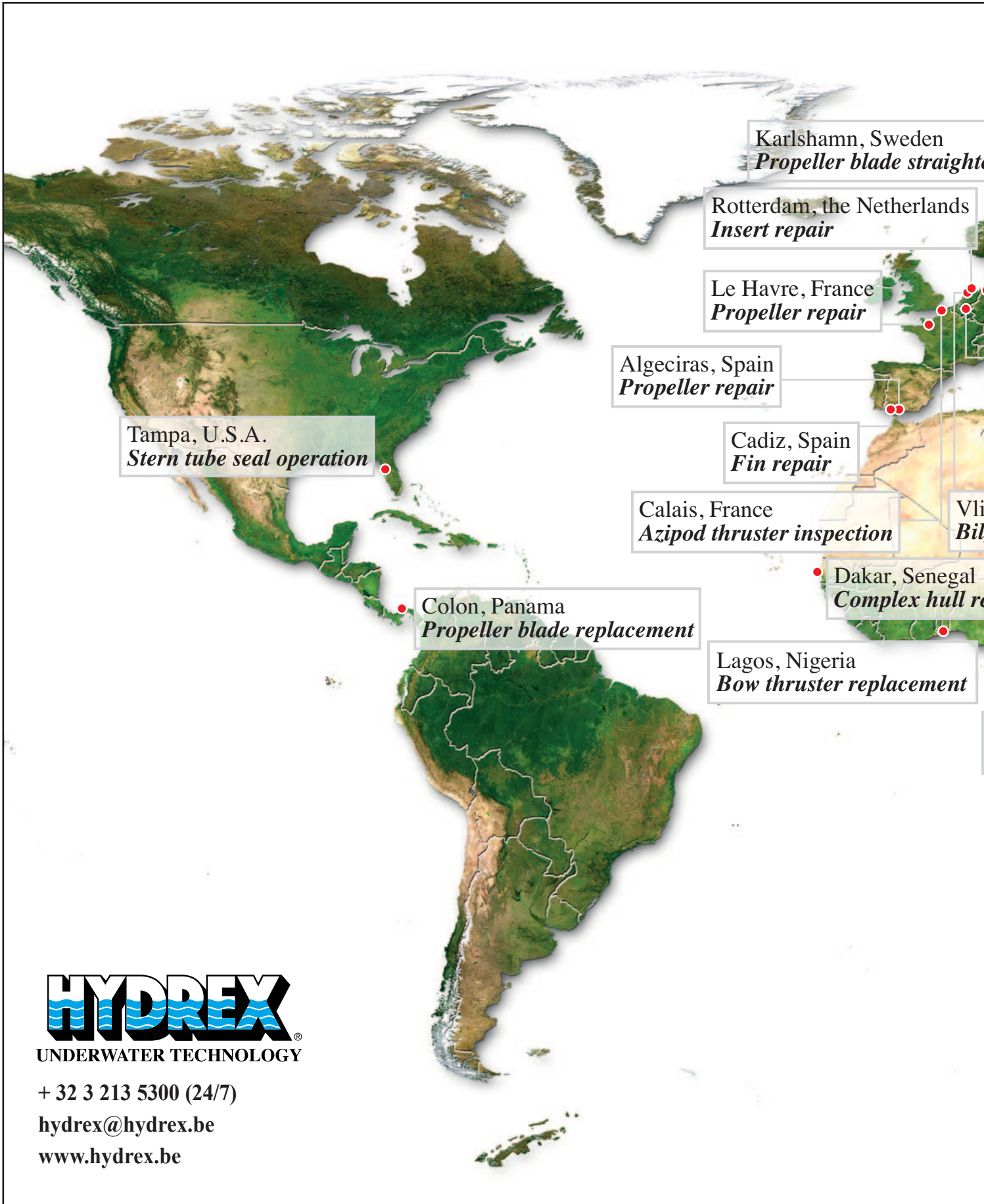
Hydrex has developed an entirely new method enabling permanent repairs of rudders without drydocking the ship. Permanent repairs were hitherto not possible and ships had to drydock in case a major defect was found. The newly designed equipment is light-weight and can be mobilized very rapidly in our special flight containers.

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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Worldwide underwater repair



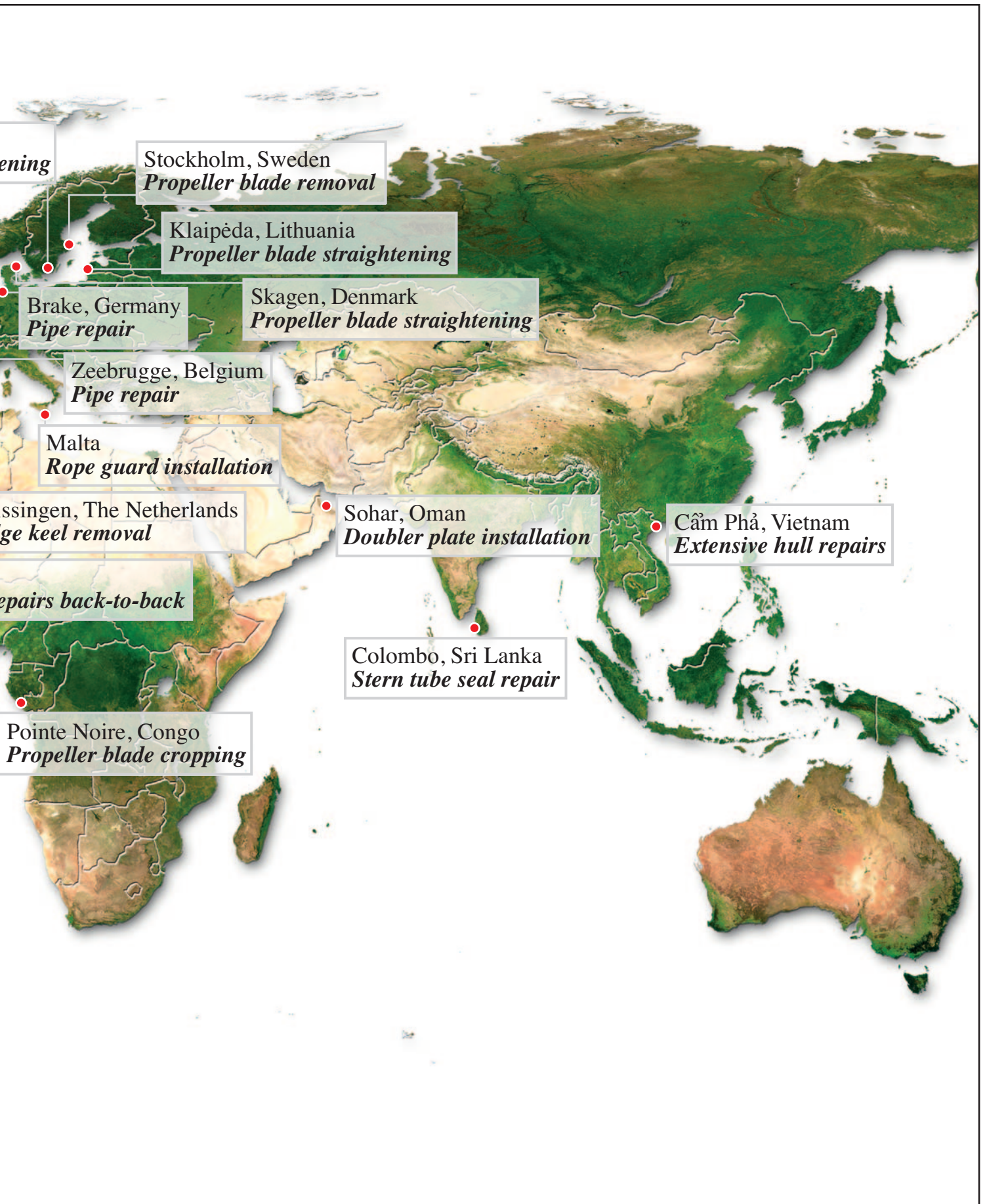
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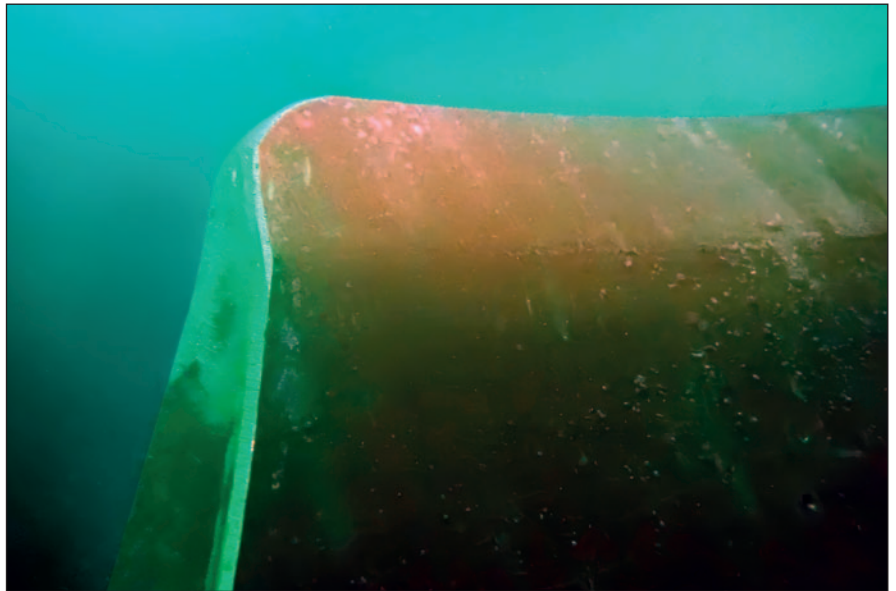
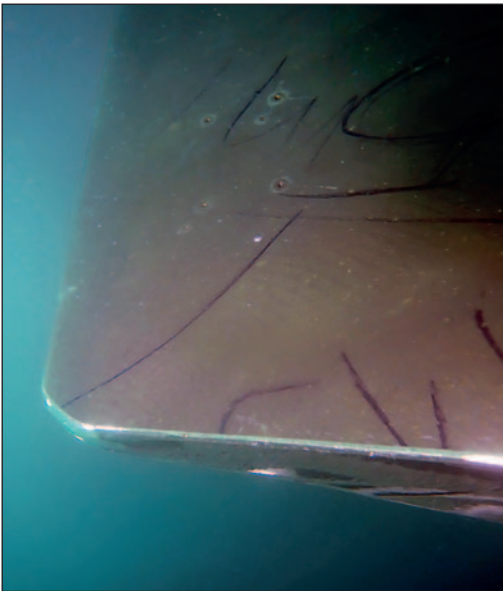
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and maintenance operations





After cutting the blade the edges were rounded off.

procedures, after which the blades were carefully finished to restore hydrodynamic efficiency. The vessel was able to resume operations with a safe and effective solution, demonstrating Hydrex's ability to engineer practical repairs even in remote locations.

Rotterdam: permanent repairs without drydock

In Rotterdam, a supply vessel required a permanent insert repair after damage was discovered inside a bilge holding tank.

Instead of sending the vessel to drydock, Hydrex installed a cofferdam to access the damaged area from the outside. Once the compromised material was removed, the structure was inspected together with class, and approval was given for the installation of a new insert plate.

The plate was welded into place under controlled conditions, completing a class-approved, permanent repair while the vessel remained afloat. The operation once again highlighted how drydockings can often be avoided without compromising quality.



A cofferdam was installed on the hull, covering the damaged area.



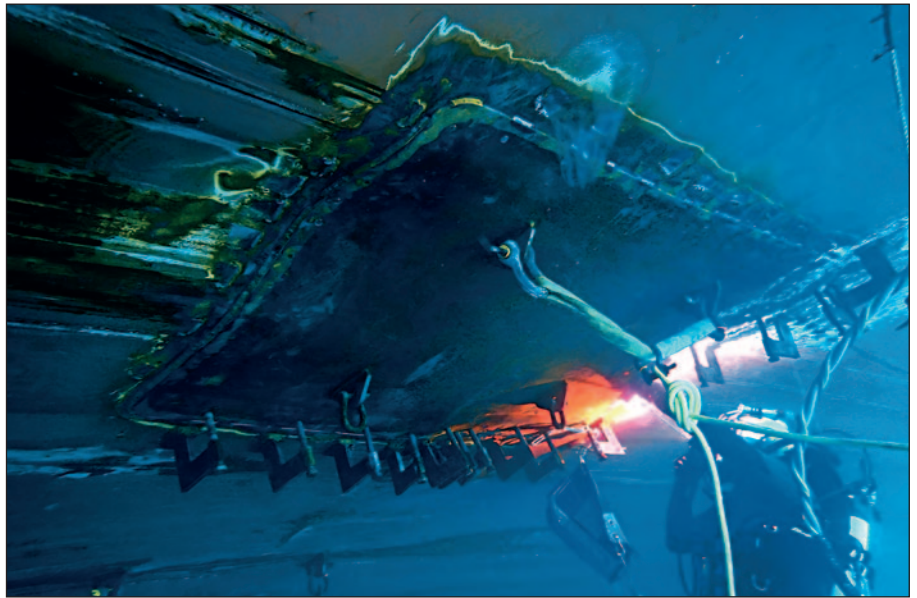
The area where the insert was to be installed was cut away.

Oman: fast and effective temporary steel repair

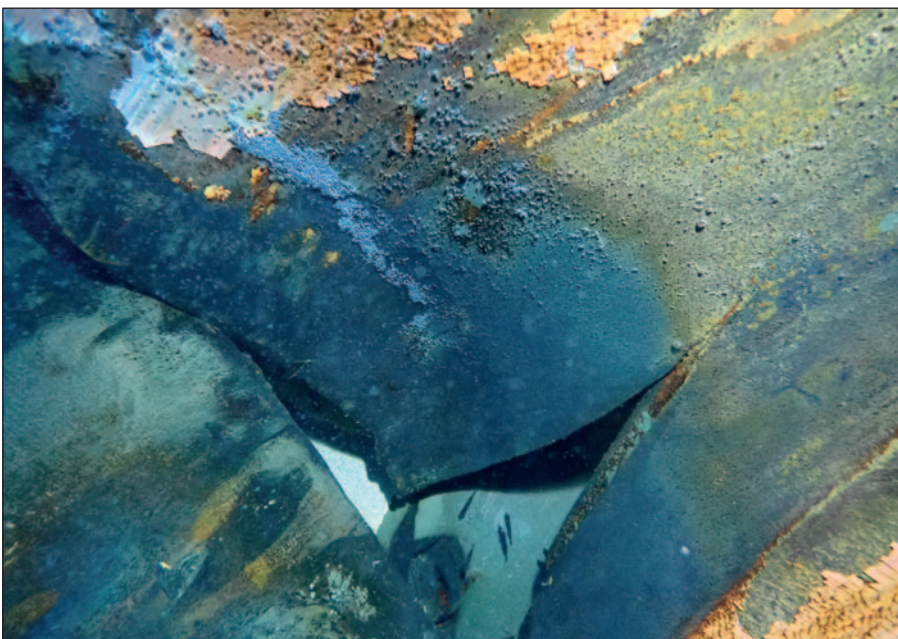
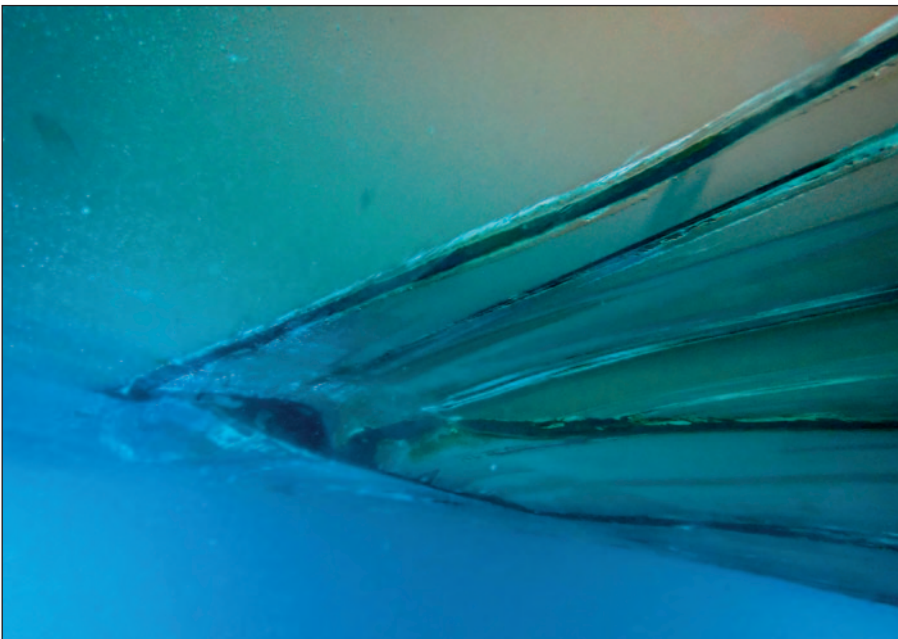
A ro-ro vessel in Sohar faced a different challenge after grounding damage tore the bottom hull.

Hydrex proposed a temporary, class-approved repair to keep the vessel in service. After drilling crack-arrest holes, a custom doubler plate was installed over the damaged area, secured and fully welded.

The entire operation was completed within two days, giving the owner



Hydrex diver performing underwater welding in Oman.



Severe grounding damage on the bottom hull plating of the ro-ro ship.

the flexibility to schedule permanent repairs at a convenient time. It was a clear example of how underwater solutions can provide both safety and operational freedom.

A truly global operation

Beyond these featured projects, Hydrex teams have been active worldwide.

In Vietnam, extensive hull repairs were carried out on a vessel that had grounded on a rocky seabed. In Malta, a rope guard installation improved operational safety. Propeller blade cold straightenings were completed in Skagen and Klaipeda, while in Panama a full blade replacement was executed underwater.

Additional work included a stern tube seal repair in Sri Lanka and a fin repair in Cadiz. Closer to home, numerous jobs were carried out in Belgium, France and the Netherlands, supporting vessels operating near our Antwerp headquarters.





Hydrex van next to workboat in Skagen during propeller blade straightening operation.

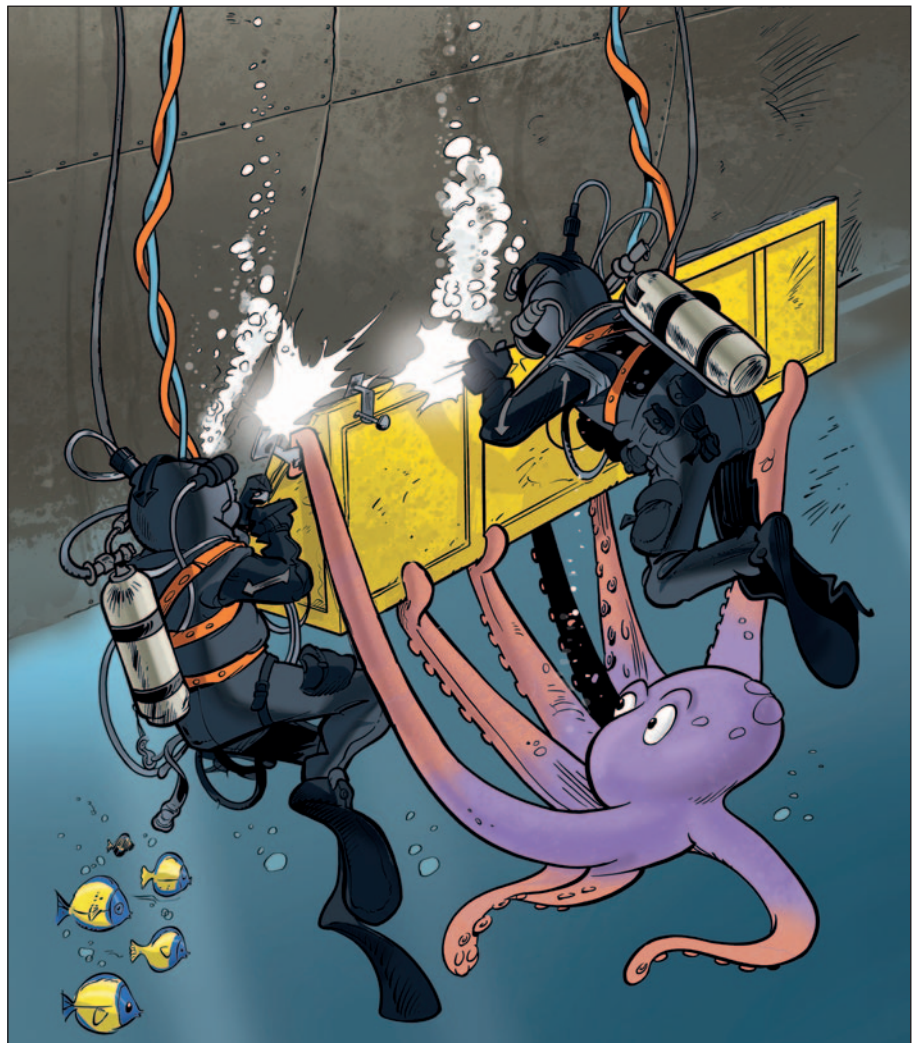
One partner, every repair

Our strength lies in combining technical expertise, in-house developed procedures and rapid global mobilization. Whether the situation calls for an emergency intervention or a carefully planned repair, we provide solutions that minimize downtime and reduce costs.

Wherever your vessel is located, Hydrex can mobilize quickly and deliver a reliable underwater repair solution. ■

Contact us with your repair needs. Our teams are ready to assist any-time, anywhere.

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Start saving fuel with your propeller cone fin now



We regularly install propeller cone fins on different types of vessels. We can carry out these operations underwater, out of drydock, all over the world without interrupting the ship's schedule.

Propeller cap energy saving devices can recover energy loss of

a propeller hub vortex in the propeller's slipstream. This decreases fuel consumption from 3% up to 5% according to the manufacturers and reduces cavitation on rudders and hulls.

As a result of our underwater installation, the owner of the vessel can start enjoying the fuel savings

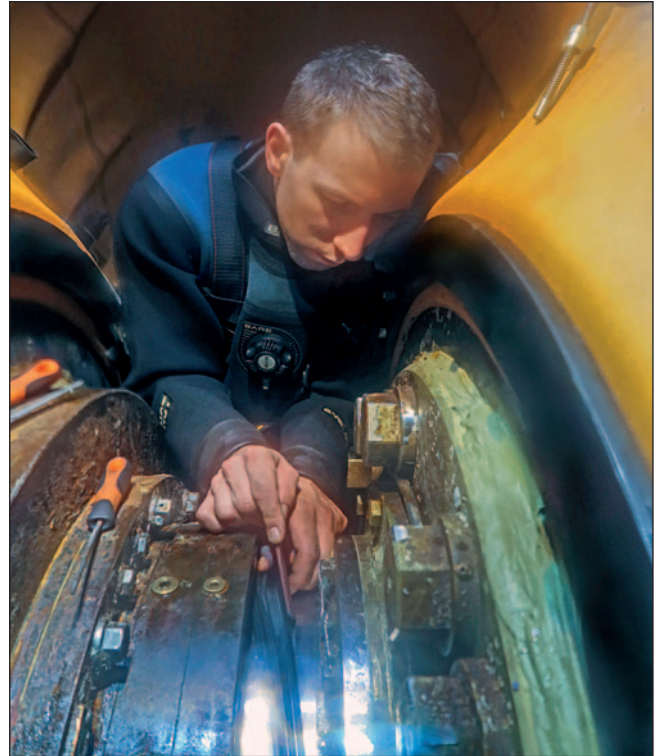
right away. Not having to wait for the next scheduled drydocking can win him up to four years of fuel savings. Since he will have earned back the cost of the underwater installation in only a few weeks, the savings are considerable.

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- Accurate estimates with final invoices that match
- Typical stern tube seal repair/replacement by Hydrex:
Two (2) days start to finish
- All major brands repaired/replaced

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