

New techniques meet need for speed

Diver-technicians from Belgium-based Hydrex have recently carried out a variety of work to tight time scales

Last December the rudder of a 250m-long crude oil tanker started showing worrying readings. An inspection uncovered the fact that the rudder was not calibrated correctly and that its movements did not match the readings. The ship was unable to sail any further and an on-site solution was needed. As a result a Hydrex diver/technician team was sent to Le Havre to perform an emergency repair operation.

After arriving, the Hydrex team carried out a detailed inspection of the rudder, which revealed that the rudder pintle had to be removed to perform a permanent repair. Stormy weather conditions in Le Havre made it impossible to reinstall the pintle on-site and so it was decided that the ship needed to be towed to the nearest available drydock, in Brest, for permanent repairs.

The Hydrex team responded to the changed circumstances and pulled the rudder to a zero angle. They also took the exact measurements needed to fabricate four securing plates that would fully lock the rudder in the neutral position. Once the plates were delivered, they were modified by the team to the correct size and stiffeners were installed on both sides of the rudder to prevent the rudder from moving and causing further damage while the ship was towed.

Upon completion of the operation, the attending surveyor, together with the superintendent and captain of the ship, inspected and approved the repairs. The ship could then be towed safely to Brest for permanent repairs.

Hydrex spokesman Christophe Verhoeven, says: "Because of the extent of the damage to the steering gear, drydocking was the only option for this ship. In most cases, however, our in-house developed rudder repair techniques allow us to perform permanent repairs while the vessel remains at anchorage. Cargo operations can continue uninterrupted, saving the owner precious time and money."

Hydrex is also geared up to provide propeller repair solutions, by straightening the blades or cropping them. Prior to a propeller repair, a detailed underwater inspection is generally carried out by the



Diver/technicians positioning the latest version of the Hydrex cold straightening machine over a bent propeller blade

company's divers who are certified to make a full assessment of the condition of the propeller. The exact dimensions and position of the damage can then be communicated to the Hydrex technical department supervising the operation.

By taking advantage of the in-house developed cold straightening technique, damaged blades can be repaired underwater, allowing the ship to return to commercial operations without the need to drydock, while the optimum efficiency of the propellers can be restored by bringing the blades back close to their original form. Verhoeven says: "The cold straightening machine has been in use for quite some time now but our research department has been looking into ways to enhance the technique even further to improve our services. A new model of the straightening machine was recently put into service, and this is compatible with the existing model and can be used to restore more severely bent propeller blades."

If straightening is not an option, the affected area on the blade will be cropped to restore the hydrodynamic balance. This

kind of repair is carried out with propeller blade cutting equipment that was also developed by the in-house Hydrex research department. Verhoeven adds: "We also have the tools to carry out detailed crack inspections on propeller blades."

Hydrex not only offers repair services, but can also help customers when they have the need for preventive or other special custom projects. For example, preventive modifications were recently made in Bremerhaven to the blades of three ice-going sister vessels.

When several of this particular customer's vessels suffered damage and the propellers needed cropping after the winter, the owner wanted to find a way to prevent this from occurring to other container vessels in the fleet by giving the blades extra strength. This was done by modifying the blades to a very specific design that made them less prone to damage while keeping the performance of the propeller as close to optimum as possible. The operation was performed in close collaboration with the manufacturer of the propellers. **SRCT**