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SOURCE: HYDREX





PROPELLERS & PROPULSION SYSTEMS

UNDERWATER REPAIRS CONTINUE TO KEEP VESSELS TRADING

Some recent propulsion system repairs highlight the inherent flexibility of specialist diving services

While propulsion system and propeller maintenance work is often carried out ashore in workshops or during scheduled drydockings, specialist underwater repair companies have a key role to play in this particular sector. A number of recent projects reported by such service providers underscore the flexibility offered by the underwater option in keeping vessels trading, and downtime to a minimum, while addressing emergency maintenance needs.

One recent job reported by Wärtsilä Underwater Services involved welding the rudder of a 195m vessel in a programme of work which kicked off in Dunkirk and concluded in Rotterdam. The cavitated weld seam, approximately 3,120mm long on the port side of the rudder, was ground to a maximum depth of around 20mm. Once completed, a Magnetic Particle Inspection (MPI) was executed on the full weld seam and the heat affected zone, during which no defects were found and an underwater coating was applied on the weld seam and outer steel layer.

Wärtsilä Underwater Services reports that business in the port of Barcelona has grown significantly since the company opened an office in the area. In May this year, the team performed propeller polishing and hull

cleaning on a cruise vessel in the Mediterranean as well as another vessel in Las Palmas. A further recent job for the company's Livorno office in Italy involved the repair of the rudder and propeller of a large cargo ship, where the rudder contained seven cracks and the propeller two. The project required re-welding the damaged area, which was later tested using a MPI procedure known as Magna-fluxing.

Earlier this year, a propeller blade exchange and propeller repair was undertaken by the company in the Mediterranean. In this case, a team of divers was mobilised from Italy and the Netherlands to get a ro-ro passenger ship back in service after it suffered serious damage to its propeller.

Harsh conditions

The Belgian company Hydrex draws attention to a number of underwater propeller repairs carried out earlier this year in Northern Europe, often in harsh weather conditions. Its diver/technicians traveled to Finland, Germany, the Netherlands and France to assist shipowners with damaged propeller blades. On two bulkers the blades were cropped, while on a third bulker and a general cargo vessel the bent blades were straightened. In all cases, Hydrex says the best solution was offered to the customer to restore the propeller's



A HYDREX DIVER BRAVING HARSH WEATHER CONDITIONS TO CARRY OUT PROPELLER STRAIGHTENING



efficiency to as close to the original condition as possible.

In one project, one of the bulk carrier's propeller blades was severely bent, while another was also distorted slightly. Divers returned the bent blade to its original state and, once the straightening was complete, technicians polished the blade to make sure that any remaining loss of efficiency would be minimal. The same procedure was then repeated on the other damaged blade. While calling at a port in Finland, all four blades of a 144m general cargo ship were bent. These were straightened using the same procedure as for the Rotterdam ship.

If straightening is not an option, the affected area on the blade can be cropped. This is a solution also adopted by Hydrex for several other projects, including work to all four blades of a 235m bulker's propeller, which had been severely damaged after impact with ice during the ship's stop in Rostock. Once Hydrex divers had cropped the blade tips, the blades were smoothed.

The five-blade propeller of another 229m bulk carrier unfortunately suffered a similar fate and an identical repair was carried out by diver/technicians in Dunkirk. The result of the operation was also the same, Hydrex states, in that the propeller's balance was restored and efficiency was brought back to optimum condition.

A Hydrex spokesperson, Christophe Verhoeven, says: "We

often encounter blades like this that have been severely damaged, chipped or almost completely broken off during ice navigation. In most instances they can still be repaired on-site by grinding and cropping the blades."

