

## Underwater Welds Repair Major Hull Damage



*Hydrex recently sent a nine-man team to the United Arab Emirates to repair the shell plating of a bulk carrier that indented after a grounding and subsequently cracked.*

When the shell plating of a 300-m bulk carrier was indented over a 150 m length after a grounding in the Suez Canal, a crack 1.5 m long appeared, making it impossible to sail. To close off the crack and allow the vessel to continue its route, Hydrex sent a nine-man diver/technician team to its location 21 miles off the coast of Fujairah, United Arab Emirates.

The ship's extensive damage included indenting the underwater hull on the starboard side over half the total length of the ship and up to 6 m deep, compressing the shell plating and weakening the hull. The damage covered the first three ballast tanks; had it reached the fourth tank or cargo hold, there was risk the ship would have sunk.

A Hydrex technician flew to Fujairah for a preliminary inspection. The repair plan was designed in cooperation with a naval architect. The customer then approved the proposed plan.

The leakage lowered the fully loaded ship from a draft of 18 to 22 m. Because such a water depth means shorter diving intervals, a large team allowed continuous work for the 12 h available each day.

To get an assessment of the way the shell plating had been compressed, a frame made and secured over the damaged area allowed the diver/technician team to get exact measurements of the distorted plating. These were used to create a cofferdam that covered the crack and prevented it from growing.

After positioning and securing the cofferdam, it was reinforced with longitudinal stiffeners and additional fortifications until strong enough to hold the water pressure. The tank behind the crack was then emptied, bringing the vessel back to its previous draft.

In total, the reinforcements covered an area of 18 m<sup>2</sup>, and the combined length of all the welds was more than 500 m. When the operation was finished, only a few reinforcements needed to be added to the hull's interior to prepare the ship for its journey to China.

## Knovel Adds Welding Engineering and Materials Joining Subject Area

Knovel, New York, N.Y., the provider of a Web-based application integrating technical information with analytical and search tools (*why.knovel.com*), now offers welding engineering and materials joining. It is designed to help mechanical, design, and structural engineers optimize welding workflows; select the best job materials; reduce material waste; and improve the performance of welds in service.

"Welding continues to be a vital part of the advanced manufacturing, aerospace, and construction industries, and with innovative products, new materials, and increased use of automation and laser processes, it is more important than ever to ensure design engineers have access to the latest information on welding and materials joining," said Bob Wing, president, Welding Engineering Exchange (WEX), the primary distributor of American Welding Society (AWS) publications.

The new subject area includes current information on best practices and standardized welding materials, plus aims to help engineers increase the quality and performance of their products. It also launches with content from many sources, including AWS, the Hobart Institute, Wiley, Elsevier, and ASM Int'l.

Topics consist of inspection and testing, metallurgy, weld process and joint design, and weld structural design.

## Intelligrated to Add Jobs, Expand Headquarters



*Intelligrated expects to create 200 new jobs as well as double the size of the company's headquarters in Mason, Ohio.*

Intelligrated®, an automated material-handling provider, plans to add 200 new jobs and double the size of its Mason, Ohio, headquarters. Company executives recently made the announcement with Ohio Governor John R. Kasich.