Case Study

Customized subsea technology used in Western Australia pipeline repair

A major NOC experienced a deepwater pipeline fracture offshore Western Australia which required urgent repair. The Operator commissioned engineering teams from connector specialists Hydratight and Norwegian subsea technologists Connector Subsea Solutions (CSS) to supply a quick, high-quality and lasting repair.

The Challenge
The fracture was detected on a four-inch MEG line, located at an impressive depth of 830 meter and rated at a high pressure of 400 bar. The Operator required minimal lead times and suppliers with extensive experience of safe, leak-free solutions in challenging deepwater environments.

The entire project had to be carried out remotely, using ROV compatible tooling, due to the great depth unsuitable for diver-led repair. Hydratight and CSS were selected to devise a solution.

The Solution
Hydratight recommended the use of the CSS-designed and manufactured Structural Deepwater Pipeline Repair Clamp, specialized for use in high-pressure environments. Prior to deployment, the clamp underwent extensive pressure-testing to exceed the 400 bar requirement. It was also designed to last 25 years in service.

The clamp which is DNV GL approved, was custom-fabricated for the specific requirements. Crucially, it was designed without the use of bolt tensioning to activate. All activation system technologies and hydraulics were within a separate retrievable tool, to reduce weight, fatigue and cost.

It would ensure that the fracture was repaired rapidly and with minimal impact on the underwater environment.

A new, high-performance ROV-based Coating Removal Tool, designed by CSS, was also deployed to prepare the section of pipe prior to installation of the clamp. This would remove all sea-growth, debris and the original protective coating to provide a clean surface for the repair.

The Project
All equipment and tooling was shipped to the location and once lowered from the deck of the support vessel the coating removal tool was locked onto the pipe. With the pipework’s protective coating removed, the installation tool and clamp were slotted onto the pipe and the clamp installed.

After final pressure-testing and verification of the seal, the installation tool was removed with the repair clamp left as a permanent repair on the pipe.

“We reinvented what a clamp product is capable of through this design; delivering a lightweight solution that withstood the water depth and pressure rating challenges.”

James Rowley
Global Subsea Market Development Manager for Hydratight

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James Rowley, Global Subsea Market Development Manager, Hydratight, stated, “The water depth and pressure rating were obviously significant challenges; but then we also needed the final solution to be light weight so as to not overstress the pipe at the point of repair. This required a “back to basics” approach: we removed the bolts and made the installation systems separate; therefore reinventing what a clamp product is capable of.”

Deployment of the Structural Deepwater Pipeline Repair Clamp makes it possible to repair pipeline fractures in previously hard-to-reach areas faster and with lower risks than was previously the case.

CSS and Hydratight expect increased demand for these services as subsea assets age and are confident they have the products and service expertise to increase the lifespan of infrastructure for oil and gas operators globally.

For more information, visit hydratight.com.