Repair of Damaged Flanges Using the Belzona Flange Face Forming Technique

ID: 10116

Industry:	*Oil & Gas*	Customer Location:	*Al Khafji, Saudi Arabia*
Application:	*VPF-Valves, Pipes and Fittings*	Application Date:	*September 2024*
Substrate:	*Carbon steel*		
Products:	*Belzona 1511 (Super HT-Metal),Belzona 9411 (Release Agent),Belzona Flange Repair Kit*		

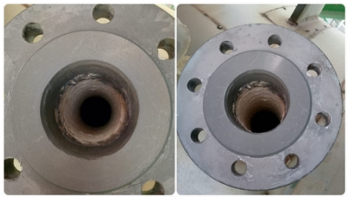
Problem

Two critical process vessels handling crude oil and produced water were experiencing severe corrosion on multiple flange faces due to the presence of H_2S in the system. The corrosion progressed rapidly, resulting in significant deterioration of the flange faces and subsequent leakage. These leaks disrupted normal plant operations, leading to unplanned downtime and production losses. Immediate action was required to restore sealing integrity and return both vessels to service.

Belzona Flange Face Forming Kit

Flange Face Former and Accessories Required for the Repair

Defective Flanges



Flange Faces After Belzona Repair

Application Situation

Replacing the damaged flanges was evaluated but ultimately deemed impractical following consultation with the vessel manufacturer. Cold cutting and welding would have posed a risk to the structural integrity of the vessels and required extended downtime, which the customer could not accommodate. With leakage occurring on both vessels simultaneously and limited repair time available, the maintenance team required a fast, reliable, and permanent solution.

Belzona's Flange Repair Kit provided the ideal solution. Designed for Class 300 / Schedule 120 flanges, the system enabled restoration of the sealing surfaces without hot work or component replacement. The use of Belzona 1511 ensured the repair process was quick, precise, and fully aligned with industry standards.

ISO 9001:2015
FS 695214
ISO 14001:2015
EMS 695213

Belzona products are manufactured under an ISO 9000 Registered Quality Management System.

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Application Method

The damaged flange faces were first grit blasted to achieve a minimum surface profile of 75 microns and Sa 2.5 cleanliness. Belzona 9111 Cleaner/Degreaser was then used to remove any remaining contamination and ensure full substrate cleanliness.

Belzona 9411 Release Agent was applied to the flange forming kit to allow smooth demoulding after cure. Belzona 1511 (Super HT-Metal) was mixed and applied to both the prepared flange surfaces and the former. Using the pre-cut applicator, a central sealing peak was created to replicate the correct gasket seating surface geometry.

The Belzona flange formers were installed, tightened, and left to cure. Once fully cured, the bolts were removed, the formers dismantled, and the restored flange faces were ready to be returned to service.

Belzona Facts

The Belzona Repair Kit proved to be a highly effective and time-saving solution for the customer. The use of Belzona 1511 (Super HT-Metal) enabled the restoration of serrated sealing faces, eliminating the need for hot work, flange replacement, or extended shutdown.

The complete repair of both vessels was achieved within two days, allowing the customer to resume production rapidly and avoid costly operational delays. The solution also provided long-term corrosion resistance, mechanical strength, and reliable sealing performance in a challenging operating environment.