Contour Achieves Pressure Containment, Reinforcement on 6-inch Kickback Line

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Saudi Arabi

Pipe Details

- 6-inch (152-mm) diameter
- Ethylene
- 148° C (298° F) operating temperature

Summary

- Pipe damage significant internal corrosion and through wall leaks
- Clock Spring trained and certified installers applied 4 layers of Contour to the damaged areas of pipe
- Contour was applied to areas with complex geometry, including injection nozzles, bolted repair clamps, valve bodies and uneven surfaces
- This complicated repair was executed in 1 week
- The Contour repair will allow the pipe to work safely for another 5 years

A Saudi Arabia-based affiliate of SABIC discovered significant internal corrosion on a 6-inch (152-mm) diameter pipe carrying ethylene during an inspection of its facility. The area requiring repair included complex geometries and previously installed repair clamps for a 14 m (46 ft) length as well as multiple valve bodies up to the valve stem in a high-temperature line where the content reached 148° C (298° F).

Clock Spring experts designed a solution rated as a Class 3 repair, which is intended for produced water and hydrocarbons, flammable fluids, gas systems with pressures and temperatures more exacting than were present in this facility. Using a Class 3 repair in effect increased the thickness of the repair beyond the minimum requirement, providing an additional margin of safety.

Before: Pin Hole leak over Elbow Clamp and Low Thickness

After: Pinhole Leak Arrested and Entire Elbow Clamp Completely Wrapped

Before: Vertical Straight Clamp With Low Thickness

After: Vertical Straight Clamp covered by Wrapping

A team of Clock Spring trained and certified technicians grit blasted the area of the pipe to be repaired as well as the axial overlap to an SA 2.5 surface preparation, cleaning the damaged area to remove rust, coating, and mill scale to produce a near-white surface prior to the application of the Clock Spring Contour repair. The overlap section allowed a more secure bond between the metal pipe and the wrap outside the corrosion area. With the grit blasting completed, the line was flood washed with acetone to remove grease and dust before the installation began.

The installation team applied 4 plies of Contour wrap following precise instructions to ensure proper and safe application. With the initial wrapping completed for the first 4-m (13-ft) section, the team proceeded with the next section of the line, which covered an additional 6 m (19 ft) and included a long pipe clamp. Complex geometry and an uneven surface made the section of pipe with the elbow clamp more challenging. To add to the complexity, the repair had to be applied to injection nozzles over clamps. When this segment of the repair was completed, the team had arrested the original pinhole leak and completely wrapped the elbow clamp. The final segments of the repair were for a 2-m (6.5-ft) vertical pipe spool and a 2 m (6.5-ft) horizontal pipe spool up to its connection with a 12-inch (305-mm) diameter pipe.

Before: Patches and Low Thickness over Elbow and Piping

After: Entire Low thickness Piping with Elbows Covered by Wrapping

Before: Over View of Entire 6" Kick Back Line With Low Thickness

After: Over View of Wrapping Over Entire 6" Kick Back Line to cover leaks and low thickness

This application of the Contour product required wrapping both bolted repair clamps, complex geometries and valve bodies, making it one of the more complicated Contour installations to date. Because the installation required no hot work, it was possible to keep the line in service under lower pressure for the entire repair.

With the repair completed, the line was safe for another five years of service.

There are nearly 3,000 trained Clock Spring installers around the world who are qualified to provide repairs with Clock Spring products. Clock Spring regularly offers training classes for installers and can custom design training for individual company needs.

Before: Low thickness over Elbow and Piping below Platform

After: Low Thickness Elbow and Piping below Platform covered by Wrapping