

Composite Repairs Internal Corrosion on Cooling Water Line

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Poland

Pipe Details

- A 16-inch (400-mm) cooling water line with complex geometry experienced corrosion
- Design Pressure: 116 psi (8 bar)
- Design Temperature: 122°F (50°C)
- Trained technicians installed 12 layers of Syntho-Glass XT to repair the damaged line
- The repair was completed in less than 3 hours
- No interruption to operations

Summary

Internal corrosion on a cooling water line led to a leak on the aged system and required a repair. The system could not be shutdown without a plant shutdown and due to the length and geometry, an enclosure was not feasible. A moisture tolerant system was required in order to avoid contamination of the composite during application. The repair was installed using 12 layers of Syntho-Glass XT, a water activated system with leak sealing capabilities, minimizing disruption to operations.

Benefits

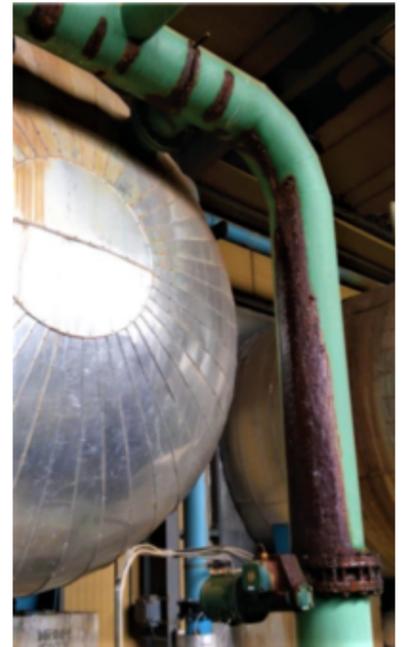
- Addressed the entire defective spool vs. only the leak location
- No hot work
- Resin pre-impregnated into the fabric decreased install time by 50%
- Avoided a 4-day plant shutdown

Internal corrosion on a 16-inch (mm) cooling water line in a fertilizer plant led to a leak in the aging system. Corrosion had affected a 40-inch (101 cm) section, and the line needed immediate attention.

The extent of the damage posed a problem. Cutting and replacing the line would not only take 4 days, it would require a complete plant shutdown because it was not possible to shut down the cooling water system without impacting the entire plant. And because of the length and complex geometry of the defect area, creating an enclosure to carry out the repair was not practical or economically feasible.

The repair needed to be performed without introducing hot work and without disrupting day-to-day operations, which meant the plant owner needed a composite solution.

CSNRI provided Syntho-Glass® XT to address the damage.



Damaged Cooling Water Line

Syntho-Glass XT is a unique pre-saturated, bi-directional fiberglass composite for repairing and reinforcing internal and external corrosion. The pre-saturated system ensures appropriate fiber-to-resin content ratios to deliver reliable performance in restoring pipeline integrity on lines with complex geometry. It also makes the composite system faster to install.



Cooling Water Line Repair



Syntho-Glass XT can be installed on a live line in a matter of hours, and because it cures quickly, a damaged line can be rapidly restored to safe service.



Technicians began the installation by preparing the surface of the damaged cooling line and used Syntho-Steel putty filler to fill the voids and restore the pipe's original geometry, then the entire defective spool was coated with 30 mils of Syntho-SubSea LV, an anti-corrosion primer that promotes adhesion of the composite to the surface of the pipe. The coating was followed by 12 layers of Syntho-Glass XT, which technicians wrapped around the straight line, elbow, and 3 tee joints.

Using the pre-impregnated fabric enabled the team to decrease installation time by 50%. In less than 3 hours, the Syntho-Glass XT composite repair system restored the line to its original design strength, safely extending the life of the line without disrupting plant operations.