

THERMO-WRAP™

INTERNAL THINNING – PIPE REHABILITATION



Problem

A number of 1.5" dead-leg nozzles with blind flanges branching off of a 12" main line carrying diesel fuel were experiencing internal corrosion. The skin temperature of the pipe of approximately 375° F (190° C), in conjunction with the odd and difficult pipe geometry, was a limitation for the application of most standard repair methods. The pipe could not be shut down or reduced, so the repairs had to be made with the pipe in full operation.

Conditions

With the presence of internal wall loss, a repair was required in order to sufficiently reinforce the thinned area to prevent failure and keep the system in working order. The live skin temperature of the pipe was elevated to a point that most repair systems do not work as expected and are difficult to apply. While the repair conditions were in excess of the standard working conditions of most composites, the repair was only needed for a brief time until the pipe could be replaced.

Solution

Thermo-Wrap™ is an E-glass fabric saturated with a proprietary epoxy blend to form a composite repair system that has been developed specifically for high temperature applications and environments. In order to promote adhesion, the pipe was cleaned by removing rust, paint, and other foreign matter using power tools. The two part epoxy was then applied to the prepared surface to promote bond and prevent corrosion. The section of pipe was then wrapped with the Thermo-Wrap system, a 100,000 psi (6,895 bar) tensile strength fiberglass wrap system, which provides structural integrity to the thinned pipe, now and into the future.

Result

In only a few hours, NRI was able to fix this issue in 8 separate locations of the thinned pipe and restore it to higher than its original design pressure. By utilizing the Thermo-Wrap composite repair system, the pipe could remain in full working operation without the need to reduce the temperature or pressure, thereby fully repairing and reinforcing the section, while maintaining the current production schedules.



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