

COMPOSITE GUARD™ FP

PROCESS PIPING REHABILITATION



Problem

A section of 24" pipe, at a US refinery was experiencing accelerated wall thinning due to external corrosion of the pipe. The contents within the pipe were highly flammable, therefore the repair method required a minimum of a 2 hour fire rating to even be considered. In addition, the pipe could not be shut down for the installation of the repair as the function of the pipe was critical to the refinery's operation.

Conditions

With the presence of external 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 flammable contents of the pipe required extra safety precautions to be used in preparation for the repair. The repair was designed for the full 285 psi (20 bar) pressure rating at a constant operating temperature of 155°F (68°C) with expected temperature spikes up to 194°F (90°C).

Solution

The Syntho-Glass®XT composite repair system was installed to restore the pipe back to design conditions providing full rehabilitation and structural integrity of the corroded pipe. Due to the flammable contents of the piping system, a fire proofing system, Composite Guard™FP, was installed over the composite repair creating a fire proofing barrier from the exposure of external flames of 1596°F (869°C). The extremely low thermal conductivity of the Composite Guard™FP's nano-technology prevents the composite repair system from reaching temperatures exceeding the HDT or Tg of the composite repair system, thus preventing failure of the composite which could fuel the fire source.

Result

In only a couple of hours, NRI was able to restore the thinned pipe back to design specification while providing an integrated fire proofing system over the composite repair system on a high risk pipe. The result, the pipe could remain in full working operation without the need to shutdown the refinery.

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