

COMPOSITE-GUARD™ FP

PROCESS PIPING REHABILITATION & FIRE PROOFING



Problem

A refinery in Germany was experiencing internal wall loss on a 20" tee joint carrying hydrogen gas. The section of pipe operated at a very high pressure therefore, due to the wall loss, the pressure needed to be reduced which would result in loss of production, or the pipe must be immediately repaired.

Conditions

With the wall loss experienced and shut down being a limited option, the decision was made to repair the tee using a carbon fiber composite repair system. The highly flammable contents of the pipe required extra safety precautions be used in conjunction with the repair. The repair was designed for the full 2,320 psi (160 bar) pressure rating at a constant operating temperature of 133° F (55°C).

Solution

The Viper Skin™ 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, the fire proofing system Composite-Guard™FP, was installed over the composite repair creating a fire proofing barrier from the exposure of external flames and subsequent heat. The extremely low thermal conductivity of the Composite-GuardFP'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

Once repaired and fire-proofed, NRI was able to restore the thinned pipe back to design specification while also providing an integrated fire proofing system over the composite repair system on a high risk pipe located in a high risk area. The result was that the pipe could remain in full working operation without the need to shutdown the refinery and the client can feel safe that it is also fully protected in the event of a fire in the facility.

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