Case study – 30 inch straight

Integrity issue

The weld of a 30 inch straight section of pipework containing cooling water was suffering from severe external corrosion. The corrosion had reduced the wall thickness such that the weld was weeping. It was proposed to use a Futurewrap composite repair to reinstate the integrity of the pipework.

Initial condition of pipework

Design

The design of the Futurewrap repair was according to ISO 24817. The design approach was for pipework strengthening and leak sealing accounting for the limited landing area caused by the weld neck flange. The design parameters were; internal pressure 12.8 bar, temperature 93^{0}C, design lifetime 10 years, through wall defect. The repair design resulted in a thickness of 16.7 mm (20 layers) of Futurewrap Glass/LT composite repair with an axial length of 810 mm.

After surface preparation

Installation

The installation steps are shown in the photographs. The pipework was depressurised. The surface preparation was to ST3. Full QA/QC measurements were made to demonstrate that the Futurewrap repair was applied in accordance with ISO 24817 despite the limited access.

During repair application

Summary

A 30 inch cooling water tee/header suffering severe external corrosion was repaired using Futurewrap Glass/LT composite repair. The repair was completed within 11 days allowing the pipework to be re-pressurised returning the pipework to its original integrity.

Completed repair