

Innovative tee repairs

Value Case Study



Reliability and operability

Project: NIA_NGGT0084
Valve Sealant Line
Grouted Tee
PEA cost: £147k
Duration: 1 year
Supplier: DNV GL
PEA benefits: £5m a year based on 25 defective sealant line replacements
Benefits realised: £817k

£817k

costs avoided

1,500

tonnes of CO₂ saved

Background

The National Transmission System (NTS) contains several thousand valves, a number of which are affected by corrosion. The location and age of the valve, as well as environmental factors, can cause corrosion to develop on the vent and sealant lines attached to the valve.

Where corrosion is more advanced, the valve would previously need to be removed and replaced, as no viable repair solution existed. Replacement of a valve requires isolation, excavation, venting and recompression. This is extremely expensive, takes several months and has environmental and safety impacts.

What's new?

Using Network Innovation Allowance (NIA) funding, the Pipeline Maintenance Centre (PMC) set out to develop a solution to repair, rather than replace, these valves. The team developed a small grouted tee connection, which can be attached to the vent and sealant pipework. Stopples are inserted into this connection and any trapped energy in the sealant line is drained. Once the stopple is removed, maintenance can take place on the valve while the gas remains live. This avoids the need for outages or recompression. In some cases, it also prevents a full excavation, as shallow dig repairs can be carried out instead.

The mini-grouted tee was used for the first time on three valves at Kings Lynn Tee. These valves had been classified as unrepairable. Typically, they would have been cut out and replaced at a cost of more than £1m. Using the mini-grouted tee, all three valves were repaired successfully at a cost of £280k.

Benefits

The mini-grouted tee significantly cuts the time and cost involved in repairing valve and sealant lines. The successful repairs of the three valves at Kings Lynn Tee removed the need to replace the valves, cutting costs by £817k.

The environmental impact of removing and replacing valves is also significantly reduced. With the traditional approach, gas in a high-pressure pipeline (70 bar +) would be removed to make sure the work could be done safely. As the gas can only be recompressed to 7 bar, any remaining gas would be removed by venting. The mini-grouted tee allows technicians to carry out repair works safely while the gas remains live in the pipeline - completely avoiding the need for recompression and venting of gas, and the associated carbon emissions.

The customer benefits too with no disruption to service while the repair work is carried out.