

CASE STUDY

Carbontech Case study 011
30" Flare Gas line Repair





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PROJECT DETAILS



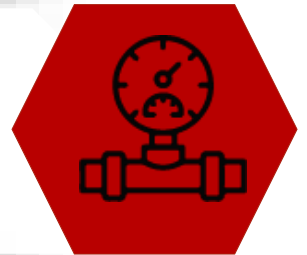
Case Study Number
CTCS:011

Design Pressure
5 Bar



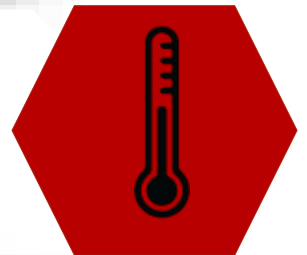
Repair Summary
30" Flare Gas Line.

Operating Pressure
0.1 Bar



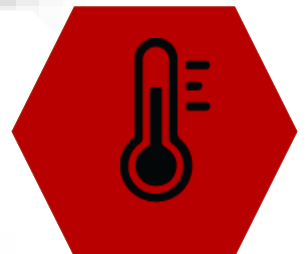
Client
Shell & BP (Sapref)

Design Temperature
156°C



Service Type
Flare Gas

Operating Temperature
60°C



Line Size
30"

Base Material
Carbon



Line Class
150#



ANOMALY DESCRIPTION

A through hole due to internal corrosion was noted on a 30" Flare line. PAUT corrosion mapping was done on the line and reviewed that the line also suffered severe pitting. A minimum thickness of 7.7mm was also recorded from an original nominal thickness of 12.7mm.

Figure 1: Through wall defect



INTEGRITY CONCERNS

Continued pitting corrosion results in larger holes scattered across the affected area and this causes the pipe to weaken around the corroded area. This will result in the pipe losing its structural integrity and may cause sudden failure of the pipe. Furthermore, leaking process could result in major fire and environmental hazards.



THE CARBONTECH SOLUTION

A rectangular plate (with threaded hole in the middle) was rolled to outside diameter as the original pipe. The pipe was cleaned to a bare metal finish. After smearing the hole's periphery with Revofill, the plate was placed over the hole and some Revofill was applied around the plate to stop the gas from leaking through the sides of the plate but only through the threaded hole. Metal cable ties were used to secure the metal plate while allowing the Revofill to set. Cable ties were removed and the grub screw was screwed into the threaded hole to stop the leak. Carbontech installed 8 layers of carbon fiber composite wrap that is engineered to ASME PCC2 2015. The wrap was designed to a worst-case scenario to allow for up to a 40mm through defect failure.

Surface Preparation achieved: SSPC3

Product used: Revowrap 185

Engineering calculations: ASME PCC2

Layers used: 8 layers

Post cured: External using Habitat

Figure 4: Patch secured with Revofill



Figure 5: Completed Wrap



CONCLUSION

The use of Revofill and a rectangular plate helped to temporarily stop the leak resulting in a successful carbon fiber wrap that restored integrity until the next planned turnaround where the flare line was planned to be replaced.



CARBONTECH

The place chemistry, engineering and global expertise are brought together to drive progressive innovation in advanced composite technologies for the emergency repair of critical assets "There is nothing generic about us" we don't just sell pipe wraps; we provide accurate engineering backing to deliver tailored solutions

Sound and responsible engineering is the basis on which we build our company, products and services. It is the core to our success and it is the foundation on which we have engineered and manufactured our innovative and bespoke products

We strive by a zero-failure philosophy and warrant our engineered composite solutions are tested, proven and validated. We vow to provide dependable, responsible and accurate information regarding the capabilities of our systems

www.revowrap.com

CONTACT DETAILS

Office: +27 (0) 10 446 6866

Email: info@revowrap.com

PHYSICAL ADDRESS:

Unit A5 • Growthpoint Industrial Estate • Bell Street • Meadowdale Germiston • 1614 • South Africa

PROGRESSIVE COMPOSITE ENGINEERING

