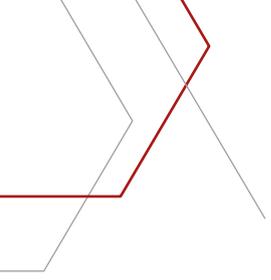


# CASE STUDY

Carbontech Case study 024  
Gouge repair on 12" line

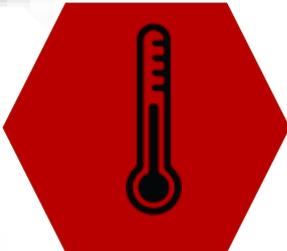




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## PROJECT DETAILS

	Case Study Number CTCS:024	Design Pressure 68.9 BARg	
	Repair Summary 300mm gouge repair	Operating Pressure 31 BAR	
	Client CTA Indonesia	Design Temperature 60°C	
	Service Type Natural gas	Operating Temperature 40°C	
	Line Size 12"	Base Material Carbon steel	
	Line Class N/A		



## ANOMALY DESCRIPTION

An inspection was conducted of a 12" gas pipeline, observed with a gouge defect of approximately 300mm on section of the pipe caused by excavator bucket during soil removal. The pipe partially buried at ground level - requiring excavation (see Fig 1).

Fig 2: Removal of insulation layer



Fig 3: Surface Preparation with Bristle blaster

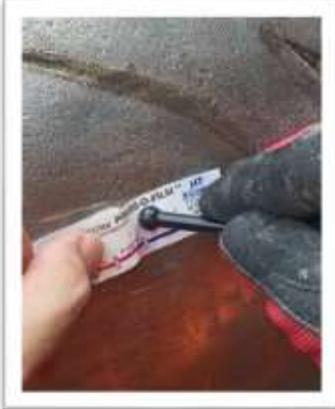


Fig 4: Tracing surface profile with Testex tape



Fig 5: Filling the gouge damage with Revofill putty



Fig 6: Application of Revowrap 110 Primer

## INTEGRITY CONCERNS

The occurrence of deep gouge damage in the straight pipe represents compromised structural integrity. Considering the process service (Natural Gas), as well as the length of the defect (300mm), this hazard poses a significant risk that, if not resolved, could potentially lead to loss of containment. This would ultimately be disastrous to the environment and any personnel in the vicinity of the pipe defect.



## THE CARBONTECH SOLUTION

To address the gouge defect caused by an excavator bucket (non-through-wall defect), a carbon fibre composite laminate repair was designed to provide structural pressure containment as the wall loss experienced by the pipe negated the substrate's load-carrying capacity. The substrate surface preparation for adequate adhesion between the substrate and the laminate using MBX tool. The laminate was applied as a spiral wrap consisting of 6 layers on the total repair length of 525mm with appropriate cure cycle was executed. The installed Revowrap 110 composite repair system is fully qualified and compliant with ASME PCC-2 to meet the demands of petroleum, petrochemical and natural gas industries for various service types. Fig 2 to 10 illustrate the application of the repair solution system and the completed wrap respectively

Surface Preparation achieved: SP3

Product used: Revowrap 110

Engineering calculations: ASME PCC2

Layers used: 6 layers

Post cured: Not Required - Line temperature provided sufficient heat to cure the wrap.



## CONCLUSION

The composite repair system designed by Carbontech and satisfying the ASME PCC-2 standard was successfully installed. The corrosive nature of the process fluid and the length of the defect presented a challenge for the repair solution which was expertly addressed by Carbontech. As a non-through-wall defect repair, the laminate wrap provides structural integrity to the pipe in accordance with the required design specifications that will withstand the internal corrosion for the remainder of the required design lifetime



## 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](http://www.revowrap.com)

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