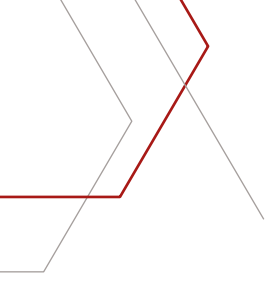


# CASE STUDY

Carbontech Case study 022  
Manhole cover repair





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## PROJECT DETAILS

	Case Study Number CT-CS:022	Design Pressure 10 BARg	
	Repair Summary Through wall patch	Operating Pressure Atmospheric	
	Client Shell & BP Refinery	Design Temperature -40°C to 50°C	
	Service Type Catalyst	Operating Temperature 30°C	
	Line Size N/A	Base Material SS316	
	Line Class N/A		



## ANOMALY DESCRIPTION

Multiple pitting discovered in manhole cover caused by internal corrosion.

## INTEGRITY CONCERNS

Leak was detected and welding a patch repair would be challenging or not possible due to the location of the leak and the geometry of the manhole. If the leak was left unchecked it could compromise the asset leading to expensive replacements and shut downs



Figure 1 showing manhole with leak

## THE CARBONTECH SOLUTION

Using a bristle blaster, the manhole surface area was cleaned to a bare metal finish. After surface cleaning, the surface profile was examined using Testex tape to ensure the surface finish falls within acceptable standard. The area was then cleaned with acetone to remove any undesirable contaminants from the metal surface.

The pinhole was plugged with quick setting putty to completely arrest the leak. Composite carbon fibre, engineered to ASME PCC-2 2018, was applied over the defected area to successfully complete the installation (see Figure 3). 4 layers of composite wrap were installed on this repair and to accelerate cure, hot air from a TIOGA space heater was directed over the repair area, this also aided in achieving cure with very low ambient temperatures from the winter season, after 24 hours a full cure was achieved





Figure2: Installed composite Internal wrap repair on manhole via patch repair.



Figure 3: Installed composite External wrap repair on manhole via patch repair

## CONCLUSION

A successful repair was completed, and the equipment could run as per normal specifications. The composite repair acted as a structural repair that lasted the client until the next planned turnaround whereby a permanent repair could be instituted.



## 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

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