

# Composite Repair Clamp

Innovative pipeline structural repair and rehabilitation

## Award Winning Technology

A novel composite clamp for pipeline repair, designed to be used as a repair system for pipes with leaking through-wall defects. The clamp is comprised of two half shell sections which are brought together and bolted in position around the pipe to secure the repair, and a specially designed sealing system to provide the means for leak and pressure containment.



## Key Benefits Compared with Conventional Technologies

### Rapid delivery of custom-made solutions

shorter lead time, faster repair deployment and reduced down-time.

### Improved corrosion resistance

reducing inspection requirements, with the possibility of repair life extension.

### Up to 75% reduced weight when using composite vs. steel

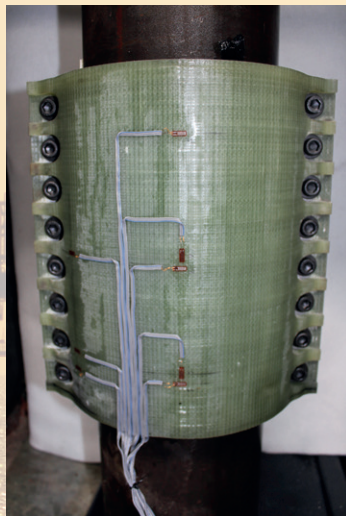
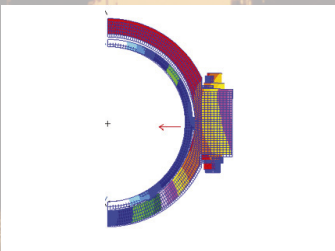
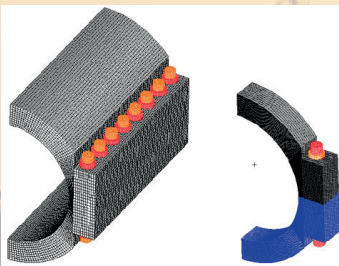
simplified installation infrastructure and reduced number of repair operators, which leads to significant cost savings in installation.



## Development and Certification Testing

Extensive simulation and validation testing has been conducted to verify clamp integrity and ability to meet required repair scenarios.

- Innovative design and advanced finite element analysis has enabled highly optimised light-weight designs to be generated for clamps used to repair a range of pipe diameters
- Low-cost and flexible manufacturing methods have been developed to allow short lead-time production of custom designed clamps
- Extensive seal testing has been conducted to ensure clamp integrity is maintained over time at elevated temperature and pressure conditions
- Coupon and sub-element testing has been used to verify clamp design methodology and analysis
- Full scale, short and long term hydrostatic pressure tests have been carried out at elevated temperatures



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The development of the composite repair clamp was undertaken in partnership with PETRONAS, and run within the framework of the CRC-ACS.