



ADVANCED ENGINEERING FOR VACUUM TESTING

MCS, in partnership with Qserv is offering a new and innovative service in vacuum testing for flexible risers. Vacuum Testing is a specialised technique to monitor the condition of the annulus of a flexible riser to identify the threat of corrosion fatigue and take pro-active measures to design and plan repair work. The annulus, when flooded, can dramatically reduce the original design life of the flexible riser, with associated lost time and cost issues, and safety and environmental implications.

MCS' partnership with Qserv combines industry leading flexible pipe and integrity management expertise and extensive offshore operational experience to create an innovative and cost effective alternative inspection/testing technique to conventional GVI:

- unobtrusive to the flexible riser – zero downtime
- enhanced accuracy, repeatability and data capture
- evaluation of potential issues relating to annulus, gas venting systems and failure mechanisms
- evaluation of results and understanding of full implications within the context of integrity of asset
- annulus gas sampling for onshore analysis
- easily transportable internationally - compact unit

WHAT IS VACUUM TESTING?

Flexible riser annulus vacuum testing is a method of testing the integrity of the annulus region of an unbonded flexible riser. In general, the annulus region of a flexible pipe is the region between the two polymer sheaths of a flexible pipe cross section construction. Located in this region are the steel armour wires, which provide all the structural strength.

Traditionally the fatigue calculations for dynamic flexible risers have been based on fatigue data for a dry annulus in air. MCS' experience has shown that the annulus region of flexible pipe frequently becomes fluid flooded. Reasons for this have been:

- damage of external sheath during installation
- damage to the external sheath from dropped objects
- rupture of external sheath from an improper annulus vent system
- leaking end fittings
- accidental fluid ingress from the topside annulus vent system
- water permeation from the riser bore

Test results have demonstrated that the corrosive environment can reduce the fatigue life to about 1/10 to 1/50 of that derived in air, and thus having a dramatic reduction on the original specified design life of the flexible riser.

SERVICES

- MCS is working with well and pipeline service company Qserv to offer the industry an advanced annulus vacuum testing package.
- The partnership combines MCS' industry leading flexible pipe knowledge and Qserv's offshore service experience.
- The jointly developed equipment provides a significant advancement in accuracy and repeatability over current methods due to its innovative vacuum draw-down and monitoring system.
- The test rig utilises three individual methods of calculating the practical free volume of the flexible riser annulus, allowing cross comparison and greater confidence in results.
- The equipment incorporates the ability to capture gas samples from the extracted annulus gas, allowing analysis of the annulus environment.
- MCS can offer consultancy services and further analysis using industry leading software, to advise on flexible riser design life, and methods to extend this.



CAPABILITIES

- Independent and objective engineering combined with industry leading flexible pipe knowledge.
- Data analysis using in house, industry recognised advanced software
- In-depth knowledge, track record in integrity management
- Provision of "competent" personnel and "state of the art" well maintained equipment.
- Zero lost time incidents



KEY PROJECTS

- **North Sea**
 - Petrofac Broom
 - Talisman Energy Ltd Buchan/Hannay
 - Talisman Energy Ltd Blake/Ross
 - Talisman Energy Ltd Tartan
 - Talisman Energy Ltd WaGE
 - Maersk Oil North Sea UK Ltd Affleck



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