MAC-PAC
Leak Sealing Solution

Kinetics Controls
& Innovation Ltd

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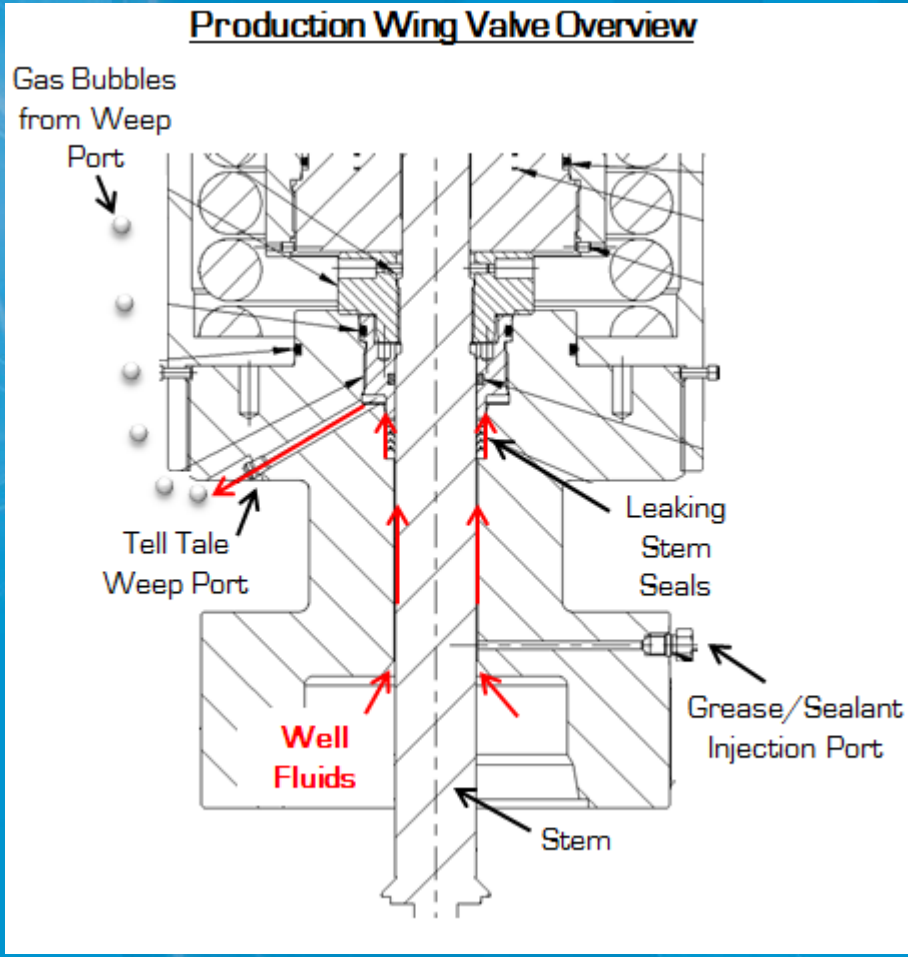
UPDATED

"Successful Isolation of Leaking Stem Seals on a Subsea Tree Valve using Mac-Pac"

Achilles FPAL REGISTERED

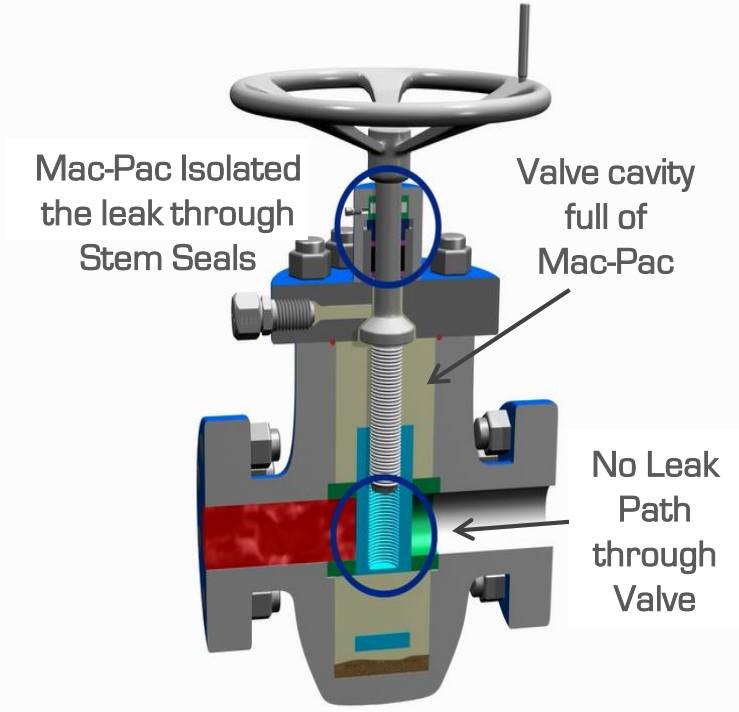
Subsea PWV Stem Seal Leak



Background

- KCI were requested by a Major Oil and Gas Operator in the UK to propose an isolation solution to prevent a fugitive gas leak from a Subsea PWV Tell Tale Weep Hole.
- KCI proposed to deploy Mac-Pac into the Valve Cavity. Mac-Pac would be squeezed into the Stem Seal area energising them & lubricating the Stem, stopping the external leak.
- Continue with the Mac-Pac deployment to totally fill the Valve Cavity which should extend the lifetime of the isolation.
- KCI provided the Engineering, Special Subsea Deployment Equipment , Product & Personnel to carry out the operation.

Subsea PWV Stem Seal Leak



Deployment Detail

- A Diver friendly KCI Deployment Manifold was attached to the PWV Grease Injection Port and the Deployment Tool c/w Mac-Pac was attached.
- 11 Litres of Mac-Pac were deployed into the PWV cavity totally filling all available space up to the Stem Seal area.
- The gas bubbles stopped almost immediately after the deployment started.
- Every time the Valve is operated Mac-Pac will coat the Stem which will in turn lubricate & isolate the Stem Seals.
- This isolation will not effect the operation of the valve & will continue without compromise. It will protect & lubricate the Gate & Seat interface repeatedly into the future.

This Low Cost isolation operation is estimated to have saved the owner of the Well between £4mn to £14mn+ dependent on their preferred repair plan.

The worst case scenario for this Well was Plug & Abandon costs (£14mn) + Loss of Production.