



Wellhead Tree Hanger Neck Face Seal

As part of the Wellhead maintenance campaign at an oil production/gas storage facility in Southern England, the hanger neck face seal failed its pressure test. A sealant injection system was deployed to try and solve the problem but without success. With the failure of the sealant injection system, it was decided to replace the metallic C-seal and test again.

Replacement spring energised metallic C-seals were ordered, manufactured and fitted but unfortunately failed again and the above process was repeated with the sealant injection system, but this also failed again.

ASSESSMENT

We were contacted for technical assistance and asked to provide a solution.

When all the operational criteria for the valve was shared with us, it was apparent that the spring energised metallic C-seal was an over specification and a spring energised PTFE sealing solution would be more suitable.

The issue however was the large 0.063" extrusion gap that for some unknown reason had been incorporated into the original design.

SOLUTION

Our proposal to solve the problem was to provide a special helical spring energised virgin PTFE internal pressure sealing face seal, with a PEEK 'top hat' design back-up ring/anti-crush ring. This would be a retrofit design, to fit the existing groove of the metal C-seal.

The benefits of this design were that the 'top hat' PEEK back-up ring would act as an anti-extrusion device, filling the above mentioned extrusion gap, but also act as a groove depth limiter. This would ensure the correct groove depth for the PTFE seal to function and provide the correct amount of pre-compression on the helicoil spring energiser.

RESULT

The above solution was manufactured in a couple of days at our Engineered Seals Division, delivered to site, fitted to the valve and the valve rebuilt within the customers allotted maintenance timescale plans.

The valve was tested successfully and the oil production/gas storage facility was back at full operational capacity.