As a common and potentially critical flexible riser failure mode, blocked annulus vent ports are a serious cause for concern in flexible asset integrity management. FlexTech have applied their expertise and practical approach to deliver a solution.

**Problem**

A common occurrence with flexible pipe is the blocking of annulus vent ports, which can occur during normal operational service. The annulus of a flexible pipe is the region within the flexible pipe which is formed between the outside of the hydrocarbon containing pressure sheath and the inside of the protective outer sheath and typically contains the metallic components which give the pipe its tensile and pressure withstanding capabilities. Annuli are most commonly free venting to atmosphere and are accessed at the uppermost end fitting via one or all of three venting ports. When the vent system becomes blocked, there is a serious risk that the outer sheath will become pressurised and eventually burst, leading to exposure of the integrity critical steel internal components to the sea water environment.

**Development**

During routine annulus inspections, and as a result of industry experience, FlexTech have witnessed multiple failures of this nature. FlexTech undertook a detailed development program, including the retrieval and forensic dissection of an End of Life end fitting which had blocked ports. The dissection verified a long held belief that the blockage was/is predominantly caused by the small bore of the vent tubes becoming blocked with a waxy substance, believed to be process oils, greases and adhesives used during construction. This was proven with Chromatographic analysis of the recovered substances. These materials were shown to migrate with temperature and pressure towards the upper end of the riser system, subsequently condensing within the upper end fitting region, resulting in arterial blockage.

**Solution**

FlexTech have developed a (Patent Pending) multi phased approach of vent port reinstatement. Initially our approach is to undertake a process of reinstatement of the existing system with the application of an innovative and practical intervention system, introducing a ‘breaker fluid’ solution at a controlled pressure. This proven system is successful in many cases where previous vendors have been unable to gain communication. In certain, longer term instances this may not be possible or indeed too late, as the sheath may well have burst. In these instances, a retrofit vent system (in the case of the former) or a retrofit repair solution (for the latter) is offered. The concept for the retrofit solution is damage limitation. In many cases, acting quickly can prevent the irreversible damage to the flexible asset. Please contact us for a full report.