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Case Study: Oil & Gas

UAE Oil Field - EVOLUTION®

PROBLEM

An operator of an established Oil field in the UAE approached GPT after encountering the same persistent problem with its flange isolation gaskets (kit) at two sites. Two to three years after the installation of an isolation gasket that was recommended by an engineering consultant, the flanges began to leak. On closer inspection, this was a unique incident. It was found that the conventional GRE (Glass Reinforced Epoxy) flange isolation kit (FIK) installed was not compatible with the application. Firstly, the application temperature had been tested, and in many cases had exceeded the manufacture’s recommended temperature values for the gasket kit. Secondly, and more importantly, the leak was attributed to permeation of the media through the GRE retainer of the isolation gasket.

SIGNIFICANCE

From the outset, the isolation gasket selected was not ideally suited for the particularly challenging conditions found in the application. The combination of differing medias, higher pressures and higher temperatures subjected on the FIK, pushed the selected gasket to its limit. It was also identified that with the application being a blind flange, two gaskets were used as means of sealing, one of which being a spiral wound gasket (not recommended). The inclusion of the spiral wound resulted in the wrong torque values being applied during the installation process, which only compounded the problem. More concerning was that while the situation was being assessed, a fire broke out within the pipeline, the FIK selected wasn’t fire safe and the GRE component of the gaskets couldn’t cope.

OPERATING CONDITIONS

Temperature:	350°F (180°C) - 430°F (220°C)
Pressure:	275 psi (19 bar)
Media:	Mixture - Steam, H ₂ S, Crude Oil, Vapor (Carbon Dioxide)
Application:	20 blind flange connections over two sites.
Size:	Multiple sized flanges ranging from 4" - 18"

SOLUTIONS

The only viable option and the recommend solution was EVOLUTION® isolation gasket (kit). The unique design of EVOLUTION® eliminates GRE from the design, avoiding the permeation issues encountered in the application. EVOLUTION® comfortably met the temperature and pressure ratings of the application, as well as providing a fire safe sealing element. GPT recommended the use of two isolation gaskets in the application. In addition, it was recommended that GPT should be in consultation at the design phase in order to avoid further oversights.

For more information, please visit:
<http://www.gptindustries.com>



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