

CIRCOR AIDS EPC IN SEARCH OF BEST PUMP FOR VARIED, AGGRESSIVE LPG PROCESS FLUIDS

A National Oil Company (NOC) in the Middle East had awarded an EPC contractor a project for improving the liquefied petroleum drainage system at a liquefied petroleum gas (LPG) processing plant located at one of the largest oilfields in the world. The raw LPG is recovered from natural gas liquids which are produced in association with large quantities of crude oil processed at this plant. The resulting high levels of volatile sulfur compounds make this application critical in terms of safety and emission compliance.

THE CHALLENGE

For an upgrade of the closed drain and dewatering systems, the EPC has struggled to find the best pumping solution to handle a wide range of hydrocarbon process fluids including high sulfur content, basic sediment and water (BS&W) production streams. There was a clear need to optimize the pump selection protocol to help to ensure reliability, safety and fulfill process requirements when fluid properties vary widely and can be aggressive.

THE SOLUTION

Working with a vendor that had in-depth knowledge and experience in complying with the specifications of the NOC customer was imperative. Identifying CIRCOR as that partner, the EPC worked closely with CIRCOR's Sales & Applications Engineering teams to develop the pump specification. As a result CIRCOR recommended progressing cavity (PC) pumps per API 676 for this application, with double mechanical seals according to API plan 53B for the utmost in safety and reliability.

PC pump materials are particularly suitable for highly contaminated or high BS&W fluids such as produced water and raw gas condensates and can accommodate fluctuating working pressure, low NPSH and variable fluid consistencies with ease.

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A PC pump consists of a rotor (or eccentric screw) surrounded by an elastomeric or metallic stator. Allweiler is one of the few global PC pump manufacturers to produce specially formulated elastomeric stators completely in-house to fit a wide range of applications. Quality control and testing for the stators is performed in-house by Allweiler, at the highest standards.

To ensure that the customer was comfortable in the stator material selection considering the high concentration of sulfur process fluids, CIRCOR presented material test samples to demonstrate that the selected fluoroelastomer stator material was compatible with and could withstand the actual process fluid characteristics over time.

The final selection was an Allweiler AE 2N horizontally mounted pump selected and designed according to API 676 3rd Edition with 316 stainless steel wetted materials and a hard chrome plated rotor for enhanced corrosion- and wear-resistance. The skid package included externally mounted pressure relief valves with auxiliary piping and flange termination at the baseplate edge for ease of installation and tie-in by the contractor.

THE RESULTS

Working with CIRCOR's experts collaboratively, the EPC was able to refine its specification and develop an acceptable and compliant solution. The complete package was delivered in accordance with the NOC's engineering, quality and testing standards.

