

PERFORMANCE STUDIES

Field Reports from Cook Compression

COMPRESSOR VALVES
REPORT # 112

Offshore Producer More Than Doubles Compressor Valve Run Times

SCENARIO

Gas compressor applications on offshore production platforms and FPSO (Floating Production Storage and Offloading) are tough on compressor valves. The gas composition from the well and associated processes often includes heavy hydrocarbons, H₂S and water. Furthermore, the gas composition changes frequently during operations, making it difficult to optimize a valve design for all conditions.

A major multinational oil company was battling frequent compressor valve failures on an offshore platform. Their Cooper Superior W-76 four-stage unit was compressing dirty natural gas and experiencing a maximum of six months run time for their plate valves. The compressor operates at 900 rpm. First stage suction pressure is 70 psig and the third stage discharge pressure is 599 psig. With the high costs of downtime and lost production offshore, the operator needed a valve capable of delivering longer service life.

SOLUTION

Cook Compression recommended replacing plate valves in stages 1-3 with patented MOPPET® valves. The MOPPET design consists of a series of small, identical, radiused-disc elements made of durable, lightweight thermoplastic material. The element design provides outstanding resistance to damage and wear from entrained debris. The low mass of the thermoplastic disc reduces impact velocities, while the radiused sealing surface deflects solid matter. Elements are thick (0.35 inch/8.89 mm) and have a centerline diameter of only one inch (25.4 mm), making them extremely stiff and resilient. They exhibit low bending stresses and withstand high impact forces caused by extreme pressure, gas mole weight, driver speed, or the presence of incompressible matter in the gas.

RESULTS

After more than a year of operation, the MOPPET valves are still operating reliably today. The operator is so pleased with the durability of the valves, they are upgrading two sister units that have experienced even more severe problems.

For more details about MOPPET valves and other high-performance solutions, contact your Cook Compression representative or visit cookcompression.com.



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