

MOGAS valves deliver repeatable and lasting isolation in the manufacturing of 1-butene.

MOGAS' strength lies in our technical and engineering knowledge and the value we add to an often complex solution.

Challenge

AlphaButol® is a licensed process for the production of 1-butene made by the dimerization of ethylene, which is used in Olefin conversion in the production of certain kinds of polyethylene. As 1-butene cools in the production process, a viscous sludge solidifies as a rubbery compound that hardens on valve internals. Understanding the failure modes that could cause a valve lockup and leak through was essential to the project's success. This application also required custom bore sizes.

Solution

MOGAS and the customer re-evaluated the P&IDs to determine which valves were critical, then re-specified those as a severe service; not commodity block trunnion valves, which had been originally specified.

MOGAS T-Series trunnion valves are truly metal-seated severe service valves and engineered to include:

- a plug style trunnion design that aligns the ball in the center of valve body for increased stem engagement, better control of loads generated by the sealing forces, better ball support from lower plug and valve stem, and substantially lower operating torque as reaction loads are transmitted directly to valve body
- fully machined and permanently attached actuator mounting surface to govern actuation loads with additional benefit of an outboard bearing support to eliminate side-loads to the stem
- preloaded disc springs versus multiple coil springs, which are prone to trapped media resulting in increased torque and lockup

Customized features that add value include:

- sharp leading edge seat technology for better shearing of adhesive build-up on the ball surface ensuring tight isolation
- double spring arrangement eliminates viscous sludge from accumulating in the spring pocket area preventing torque increases over time and valve lock-up

Results

Six years after install, the customer reported that the MOGAS installed valves at this facility have operated in "a very consistent and reliable manner" and "without fault", even during system steam condensation issues. Valves normally provided for these services last six to nine months before needing repair and cleaning. These 18- and 24-inch valves have yet to be repaired nor taken out to clean after six years of continuous service. The confidence level that MOGAS valves provide repeatable and lasting isolation is evidenced in the eventual order of more than 1600 additional valves throughout the plant.

Conditions

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| Application: | 1-butene |
| Temperature: | 30–550° F (0–290° C) |
| Pressure: | 125–500 psig (8.6–34 bar g) |
| Valve Models: | T-Series |
| Valve Size: | 18–24 inch (460–610 DN) |
| No. of Valves: | 64 |

