



Molecular Sieve Switching Valve Success

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Process Conditions	Specifications
Application: Sour gas dehydration	Valve Type: 3" V1-1, 6" Nextech® "R"
Process Flowrate: 300 mmscfd	Pressure Class: 900
Process Temp: 290°F	Trim Code: Carbide Coated
Process Pressure: 800 psig	Applicable Grade: ASME III
Gas Composition: H2S and CO2	

Requirement: Molecular sieves are often utilized in the petroleum industry, especially for the purification of gas streams. Valves leading into and out of molecular sieves cycle frequently and leakage in these critical areas can make it difficult or impossible to meet product purification requirements. Sour gas dehydration is of particular interest because of the complexity introduced by the acidic and corrosive nature of H₂S and CO₂. The challenge for dehydration units to maintain their reliability when a valve fails to isolate and/or operate due to the abrasive wear is costly. A single, carefully selected valve can answer a large number of concerns.

A typical dehydration system consists of two or more columns packed with a molecular sieve material (Zeolites). As the wet/sour stream is processed in one column, the other column is regenerating. The switching valves on the molecular sieving system plays an important role of directing the inlet/outlet stream of gas into the columns from an adsorption phase into a regeneration and cooling phase in sequence. Cycling frequency varies depending on the molecular sieving system but typically these valves can cycle three or more times a day. The typical lifespan of other valve designs in this corrosive environment is approximately one year and routinely replaced during scheduled maintenance shutdowns.

Solution: ValvTechnologies' zero leakage carbide coated metal seated ball valves were selected and installed for a major operator's sour gas plant in Monkman, British Columbia. These valves feature the same design proven since ValvTechnologies' first installation of valves in a molecular sieve system. The first installation is still providing severe service zero leakage isolation seven years after its initial installation. Given a conservative one day shut-down per year to replace other designed valves in a plant processing 220mmscfd of saleable gas at \$750,000 per day, that is \$5.25M in improved efficiency over the course of seven years.