



MOLECULAR SIEVE – TRICENTRIC® TRIPLE OFFSET

APPLICATION DETAILS

Molecular Sieve units are a Pressure Swing Adsorption system used for the dehydration and purification of natural gas. They are installed where natural gas is required as a feedstock for refineries, LNG regasification, petrochemical plants, power plants, pipelines, air separation units, ammonia production, and extracting NGL.

Natural gas dehydration is essential for restricting hydrates from forming and causing corrosion. Natural gas purification is necessary for ensuring finished product quality.

The process involves a minimum of two molecular sieve beds containing an adsorbent (often Zeolites) through which natural gas is continually passed. Each bed has a set of switching valves frequently cycling between the adsorption and regeneration stages. During the adsorption process, high pressure gas is passed through the molecular sieve bed until the adsorbent is fully saturated by water and/or impurities allowing the pure, dry natural gas to slip through. The molecular sieve bed is then regenerated with temperature swings and regenerative gases releasing the trapped water, CO₂ and liquid hydrocarbons.

APPLICATION CONSIDERATIONS

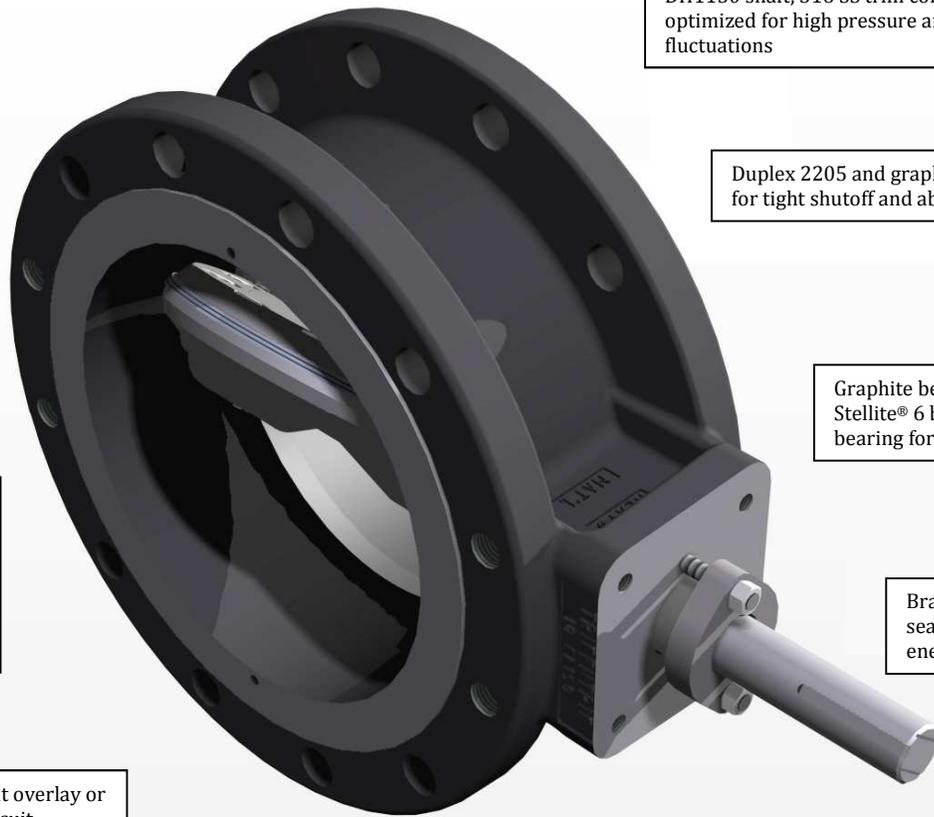
High Cycle	Valve cycling may exceed 60,000 cycles a year
Temperature Fluctuations	Frequent and rapid temperature cycling from 392F to 800F during the regeneration cycle
Pressure Fluctuations	Frequent and rapid pressure cycling between 580 psig to 1450 psig during the gas and regeneration in/out cycles, pressurizing and depressurizing cycles
Erosion	Abrasive catalyst and bed residuals may escape the catalyst beds
Tight Shutoff	Tight shutoff is required for maintaining gas quality and catalyst performance
Fugitive Emissions	Low emissions required for safety, environmental and health considerations
Corrosion	Process inefficiency can lead to a corrosive environment through the formation of hydrates and acidic contaminants
Limited Maintenance	Typically valves in this service are required to perform flawlessly for a minimum of 5 years between maintenance cycles

TRICENTRIC® TRIPLE OFFSET

The TRICENTRIC® triple offset butterfly valve's non-rubbing, metal to metal, torque seated design and material selection combine to provide a custom, economical and compact solution to meet the extreme requirements of molecular sieve applications while delivering high efficiency, reduced downtime and capital expenditure.

TRICENTRIC® TRIPLE OFFSET MOLECULAR SIEVE CONFIGURATION

The TRICENTRIC® triple offset butterfly valve can be customized to suit any molecular sieve application. The below description is an example of a typical configuration.



Standard materials of construction include A216 WCB body, A351 CF8M disc, 17-4 PH DH1150 shaft, 316 SS trim components optimized for high pressure and temperature fluctuations

Duplex 2205 and graphite laminated seal ring for tight shutoff and abrasion resistance

Graphite bearings for CL150 or Stellite® 6 bearings and thrust bearing for >CL150

Braided graphite bearing seals or optional energized seals

Design considerations for material selection, dimensional clearances and tolerances are selected to meet the application temperature range and thermal transients

Stellite® 21 seat overlay or higher alloy to suit application for abrasion resistance

ZERO leakage to API 598, resilient seated, high and low pressure, shutoff

Graphite low emission packing (100 ppm) and optional live loading

Contact sales@scorevalves.com for more information.