Molecular Gate ä
Adsorption Technology

Molecular Gate Systems for N_2 and CO_2 Removal

Molecular Gate Ô Unit

Nitrogen rejection and carbon dioxide removal using the Molecular Gate® adsorbent-based technology is gaining widespread acceptance in the natural gas industry. With two-dozen projects underway, the economic and easily operated system is allowing natural gas producers to develop contaminated fields with a simple technology that operates unattended with only a daily visit by the well pumper. Unlike other technologies, the system removes N_2 and CO_2 in a single step and provides high on-stream factors with minimal operator attention.

The benefit of the removal of the inert from the methane in the Molecular Gate system has been underscored in field operation where very wide ranges of N_2 and CO_2 have been treated to pipeline specifications. In fact, units are in operation and achieving pipeline specifications with feed streams at twice the design level of contaminants due to unexpectedly poor feed gas quality. Feed streams of up to 40% contaminants have been treated to pipeline specification in a single step.

The technology is focused on two applications:

In *nitrogen removal*, the process operates by adsorbing nitrogen at about 100 psig while delivering the product sales gas at near feed pressure. No pretreatment, other than dehydration, is required and the system completely removes CO2 along with the nitrogen in a single step. The system recovers 90-95% of the methane as sales gas and the rejected nitrogen containing "tail gas" is normally used as fuel to gas engines or other local uses. One critical benefit of the technology is that it removes the nitrogen (plus any CO2) and leaves sales gas at near feed pressure. All other technologies remove the methane, leaving the sales gas at low pressure and requiring significant recompression.

In *CO2 removal*, water and CO2 is removed in a single step, again with product methane delivered at near feed pressure. Cost is generally 20% lower than amine processing and with much less operator attention required while also dehydrating the gas.

Offered as a prefabricated, modular system based on patented adsorbent materials and processing steps, Molecular Gate technology is generating significant interest in the natural gas processing industry. Easy start-up, unattended operation, and cost-effectiveness are the hallmarks of the technology.

Flow rates handled to date range from 0.5 MMSCFD or smaller to 10 MMSCFD. A major feature of the process is the ability to meet pipeline specifications regardless of the feed composition, a benefit as future wells of varying composition are brought online.
System turndown is to zero flow and units are commonly designed

for expansion of the treating capacity for future production – often to double the initial capacity.

Guild Associates also offers standalone natural gas dehydration units and systems to remove heavy hydrocarbons for dew point control or to CARB natural gas specifications.
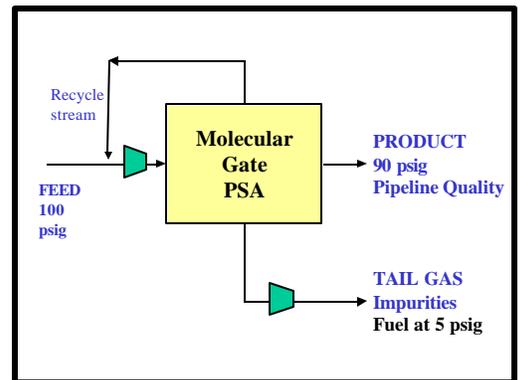
Molecular Gate Ô for Low Pressure Wells
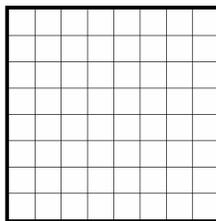
About Guild Associates
Guild Associates is the licensee of the Molecular Gate technology originally developed by Engelhard Corporation (now a part of the BASF Group) and has provided all systems to date. Guild provides adsorption and catalyst systems to a variety of markets as well as shop fabricated engineered systems.

Contact
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You can also visit us on the Internet at www.moleculargate.com

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