

Molecular Gate®

New technology economically opens up shut-in gas wells



Molecular Gate system at a facility in Southern Illinois

Molecular Gate® adsorption-based technology, a new and unique technology has been installed in Southern Illinois to remove

N₂ and CO₂ from coal mine gas.

Unlike other technologies, Molecular Gate removes N₂ and CO₂ in a single, step and provides high on-stream factors with minimal operator attention. It is gaining further market acceptance with eight units either in operation or fabrication with flows up to 10 MM SCFD.

Offered as a prefabricated, modular system based on patented adsorbent materials, Molecular Gate is generating significant interest in the natural gas processing industry.

Easy start-up, unattended operation and cost-effectiveness are the hallmarks of Molecular Gate. Located at the natural gas wellhead, the Southern Illinois unit is powered on-site

using tail gas generated by the process.

The technology is focused on two applications:

In *nitrogen removal*, the process operates by adsorbing nitrogen at high pressure (80-800 psig) while delivering the product sales gas at near feed pressure. This ability to deliver methane at high pressure minimizes the compression requirements.

No pretreatment other than dehydration is required and the system 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.

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

In operation, very wide ranges of N₂ and CO₂ can be removed. Due to the impurity being removed from the methane, the system can always achieve pipeline specifications regardless of the feed composition.

At the facility in Southern Illinois, the system is designed to reduce nitrogen levels in the natural gas from up to 10% to the local pipeline

specification of 4%. It also removes water and carbon dioxide (CO₂) from the gas and can treat up to one million standard cubic feet per day (1 MM SCFD).

The purified natural gas is then sold to an interstate transmission pipeline. Other treatment methods have proved too costly for developing the coalmine for natural gas recovery.

About Engelhard

Engelhard Corporation is a surface and materials science company that develops technologies to improve customers' products and processes. A Fortune 500® company, Engelhard is a world-leading provider of technologies for process, environmental, appearance and performance applications.

Contact

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