

GENERON[®] MEMBRANE TECHNOLOGY

Natural Gas Sweetening Systems

CO₂ is commonly found in natural gas. In order to meet pipeline specifications or other application specific requirements, the CO₂ has to be removed. In addition, there may also be H₂S and H₂O present that needs to be removed. Membranes have been widely used for CO₂ removal applications and come with the added benefit of removing H₂S and H₂O as well.



GENERON's CO₂ removal membrane systems offer some of the highest hydrocarbon recoveries achievable (with membranes) due to our high (CO₂ / CH₄) selectivity membrane. The customized CO₂ removal membrane systems are fabricated at our Houston, Texas facility while the membranes are fabricated at our Pittsburg, California facility. **GENERON** works directly with the client to provide the most efficient and most cost effective solution.

In a typical **GENERON** CO₂ removal membrane system the feed gas is first filtered to remove any entrained liquids and aerosols. The gas then enters the GENERON[®] membrane modules. The CO₂ as well as the H₂S and H₂O permeate preferably through the membrane. The non-permeated gas, mainly CH₄, remains at pressure and is the product gas.



Membrane CO₂ and H₂S Removal

In a typical **GENERON[®]** membrane gas dehydration system, the feed gas is filtered to remove any entrained liquids and aerosols. The gas then enters the GENERON[®] membrane modules, where the H₂O, CO₂ and H₂S permeate through the membrane. The non-permeated gas, mainly CH₄, remains at process pressure and is the product gas.

Pressure Swing Adsorption

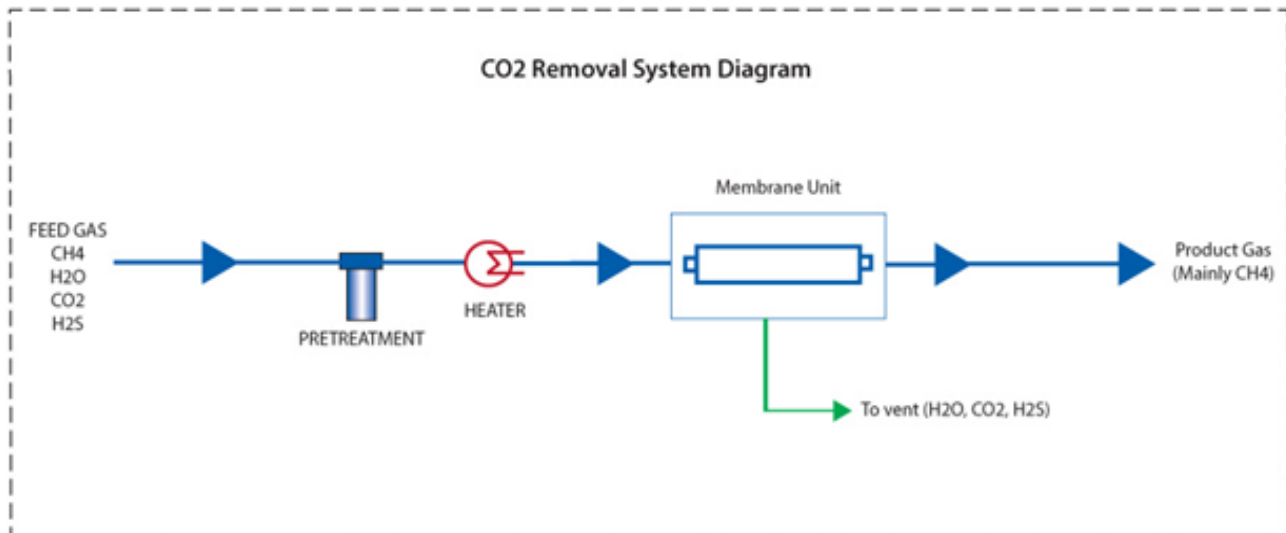
There are several molecular sieves that process the physical characteristics to adsorb CO₂ and H₂S from natural gas. These desiccants are generally used for Pressure Swing Adsorption systems consisting of two or more towers. While one tower is on-line adsorbing sour gases from the feed gas, the other tower is being regenerated. The towers are switched just before the on-line tower becomes fully saturated with sour gases. This system has an advantage in that its molecular sieve is non-toxic, non-corrosive, and can be

The GENERON[®] Advantage

- **Extensive Experience** - custom designed skids
- **State-of-the-art Membrane** - high recoveries
- **Simple Solution** - no moving parts, minimal maintenance
- **Remote Operation** - Minimal attention required, fully automated systems
- **Minimal Losses** - low HC losses
- **No Chemicals** - environmentally friendly
- **Small Footprint** - easily meet footprint requirements

Nitrogen Membrane® Systems

Natural Gas Sweetening



- GENERON helps customers choose the right system regarding their gas application and provides custom designed units that meet customer specifications.
- Our ASME vessel shop (HVM) builds our columns and separators in house, which makes our quality, delivery time, and pricing extremely competitive.
- GENERON facilities are ISO 9000 Certified and follow NEC/CEC (USA & Canada), ATEX (Europe), AS/NZS (Australia), IECEx (Worldwide) requirements.

SYSTEM PERFORMANCE:

- Feed gas pressures up to 1,000 psi (69 bar)
- > 60 vol % CO₂ in feed
- < 2% CO₂ content in product
- >98% recovery of hydrocarbon gas
- > 90% removal of CO₂
- Flow rates from 0.01 to 100 MMscfd

APPLICATIONS:

- Pipeline gas applications
- Biogas or digester gas
- Enhanced oil recovery (EOR)
- CO₂ capture from stack / flue gas
- Fuel gas conditioning
- Syngas from steam-reforming of natural or biogas
- Methanol cracking
- H₂-PSA purge gas
- Methanol Production
- Gasification plants (IGCC)

GENERON

16250 Tomball Parkway
Houston, Texas 77086
O - +1 .713. 937.5200
F - +1 .713. 937.5250
www.generon.com

GENERON



C-PS/GC-NGS-0617