

# CO<sub>2</sub> Removal

## GENERON<sup>®</sup> Membrane Technology



### Typical Applications

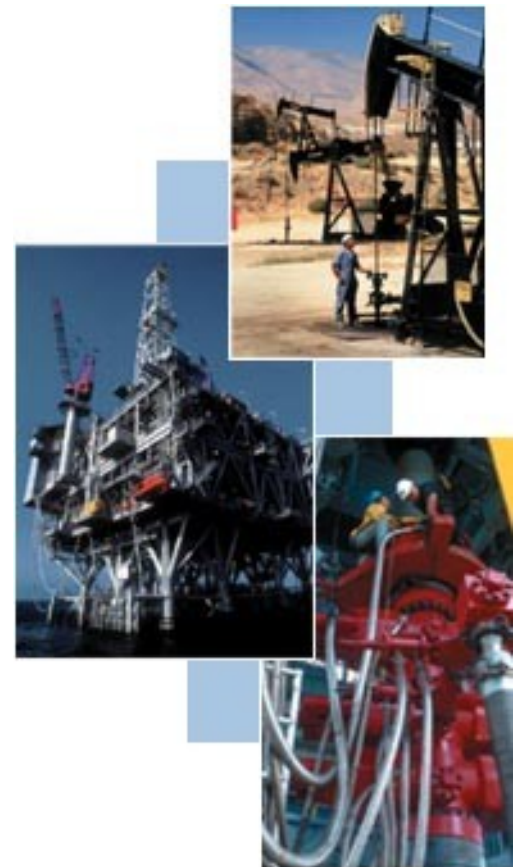
- CO<sub>2</sub> capture from stack / flue gas
- CO<sub>2</sub> removal from bio gas or digester gas
- Enhanced oil recovery (EOR)
- Fuel gas conditioning
- Syn gas from steam-reforming of natural or bio gas
- Methanol cracking
- H<sub>2</sub>-PSA purge gas
- Methanol production
- gasification plants (IGCC)
- Amine plant feed gas purification

### The GENERON<sup>®</sup> Advantage

- Skid mounted process units are easy to connect and commission
- Built to your specifications and for your convenience
- Engineering support from concept to completion
- Remote control operation
- Operation flexibility with automated part-load

CO<sub>2</sub> is found in natural gas from many sources. In order to meet pipeline or application specifications the CO<sub>2</sub> and other contaminants, e.g. H<sub>2</sub>O and H<sub>2</sub>S, must be removed before the methane gas can be used. The GENERON Membrane System is of simple process technology and utilizes patented GENERON<sup>®</sup> Membrane Technology.

Membrane Technology is competing against Amine systems which are used frequently but are complex and have high capital, operating, and installation costs, a relatively high fuel cost and potential environmental issues.



# CO<sub>2</sub> Removal

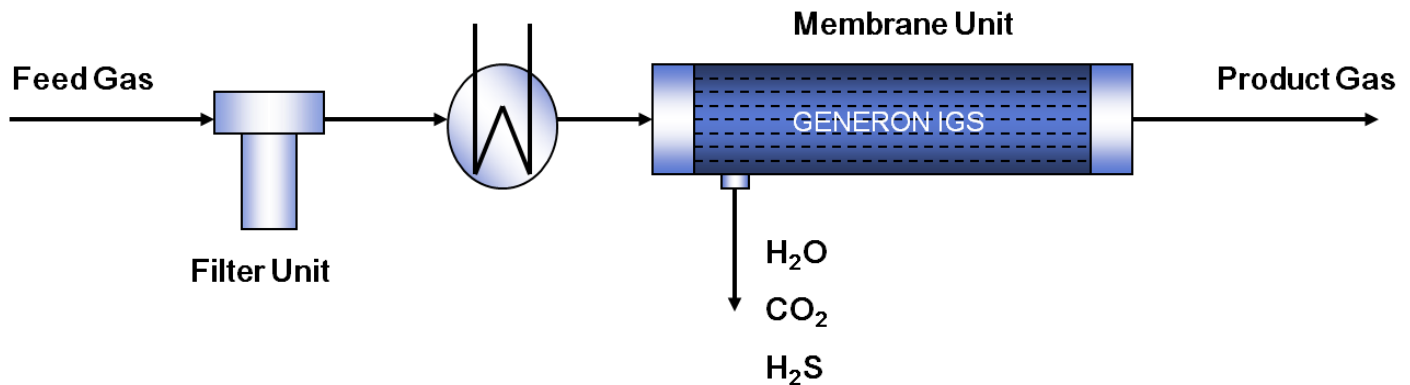
## GENERON<sup>®</sup> Membrane Technology

In a typical GENERON<sup>®</sup> membrane system for CO<sub>2</sub> removal the feed gas is filtered to remove particles and liquid condensate. The feed gas is then heated to an optimum operation temperature and ready to enter the GENERON<sup>®</sup> membrane modules. CO<sub>2</sub> gas permeates preferred through the membrane walls. The non-permeated gas remains at pressure and is the high heating value product. The “faster” permeating gases, e.g. CO<sub>2</sub>, H<sub>2</sub>O, H<sub>2</sub>S, are collected in the permeate.



### Advantages of MEMBRANE Systems:

- no moving parts, and designed for remote unmanned operation
- Efficient packaging minimizes space and weight — ideal for offshore applications
- Optimized process design to maximize total hydrocarbon recovery
- CO<sub>2</sub> content can be adjusted to desired specifications
- Easy installation: skidded system can be installed in hours



### The System Performance:

- Feed gas pressures up to 2,000 psi (138 bar)
- > 60 vol% CO<sub>2</sub> in feed
- < 2% CO<sub>2</sub> content in product
- > 95% recovery of hydro carbon gas
- > 90% removal of CO<sub>2</sub>
- Flow rates of 10 to 350,000 SCFM



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Pioneering Gas Solutions from Concept to Completion