

Typical Applications

- H₂:CO-ratio adjustment in syn gas
- Biomass-to-Liquid (BTL) biofuels production
- CO purification
- Gas-to-liquid (GTL) fuel production (Fisher Tropsch)
- Hydro-cracker purge gas
- FCC overhead gas



Syn gas (H₂ + CO + others) is used to produce a variety of products. Each product requires a specific ratio of H₂ to CO in the process feed gas to optimize production yields. Feed streams too rich in H₂ can be adjusted by using membranes to selectively strip out the excess H₂. The H₂:CO ratio can be optimized effectively using GENERON® membrane systems.

GENERON can further boost the yields through system designs and blending schemes that take full advantage of GENERON® membranes high selectivity for H₂. The vented off-gas of H₂ can be at purities over 96%. Control of the process is very simple with arrays of membrane modules controlled with a single flow control valve. There are no moving parts to maintain and the flow is continuous and easily adjusted.

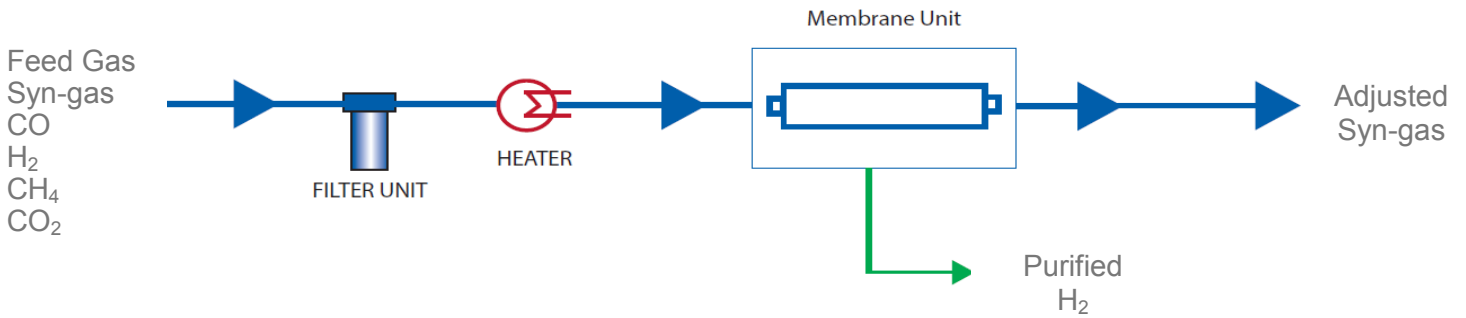
Depending on the feed composition one can purify CO with GENERON® membrane to over 95% with greater than 90% CO yields. If higher purities are required and/or if nitrogen is present in the CO rich feed gas, GENERON's PSA (pressure swing adsorption) can be used to achieve purities up to 99.99%:

The GENERON® Advantage

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



Syngas H₂:CO Ratio Adjustment GENERON® Membrane Technology



In a typical GENERON® membrane system for H₂:CO ratio adjustment the feed gas is filtered to remove particles and condensate and is then heated to an optimum operation temperature and ready to enter the GENERON® membrane modules. Hydrogen gas permeates preferred through the membrane walls creating a hydrogen rich permeate stream. CO₂ and H₂O as well as H₂S are enriched in the permeate stream as well, i.e. may be adjusted lower by this same process. The hydrogen-reduced CO richer product gas remains at pressure in the non-permeate (“retentate”) stream.



The GENERON® Membrane System Performance:

- Feed gas pressures up to 2000 psi (138 bar)
- 90% to 99% CO + H₂ recovery
- Lower maintenance cost (no switching valves) compared to H₂-PSA
- CO+H₂ purities to 95%
- Flow rates of 0.01 to 500 MMscfd
- Better economics than H₂-PSA (lower price + faster deliveries, commissioning and start-up)

When ultra-pure CO is required, 99.9% to 99.99+%, GENERON'S® PSA (pressure swing adsorption) technology recommended.

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