GAS TO LIQUIDS

CONVERTING GASEOUS FEED STOCKS TO FUNCTIONAL LIQUIDS

DESCRIPTION

As global oil consumption continues to increase, Gas-to-Liquids (GTL) facilities are required to efficiently produce liquid fuels and chemicals. Air Liquide Advanced Separations' (ALaS) industry leading high selectivity syngas membranes offer a seamless and cost effective bridge between steam methane reforming (SMR) and Fischer-Tropsch technologies. SMR technology results in product streams containing H_2/CO ratios in the 3.0-5.0 range; this leaves a gap between desired GTL Fischer-Tropsch feed ratios and attainable ratios with the SMR technology. Through the use of a high-selectivity polyaramide hollow-fiber membrane, the syngas ratio gap is closed by selectively removing hydrogen while retaining over 99% of the carbon monoxide produced.

CUSTOMER BENEFITS

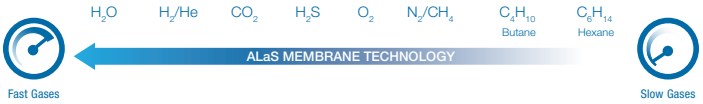
ALaS system bypass designs allow for higher flow rates in ratio adjustments.

ALaS offers the most selective membranes in the industry, meaning the highest CO retention rate for our clients.

- No moving parts
- Skid mounted systems cartridge design for simple installation
- Estimated payback period of less than a year
- High permeability membranes for compact, low capital system design
- Unrestrained turndown capabilities
- Automated turndown system for ease of operation and safety
- Linear scale up for all size systems
- Hollow fiber membranes offer higher area to volume efficiency resulting in better packing efficiency, smaller footprint and reduced weight and module count

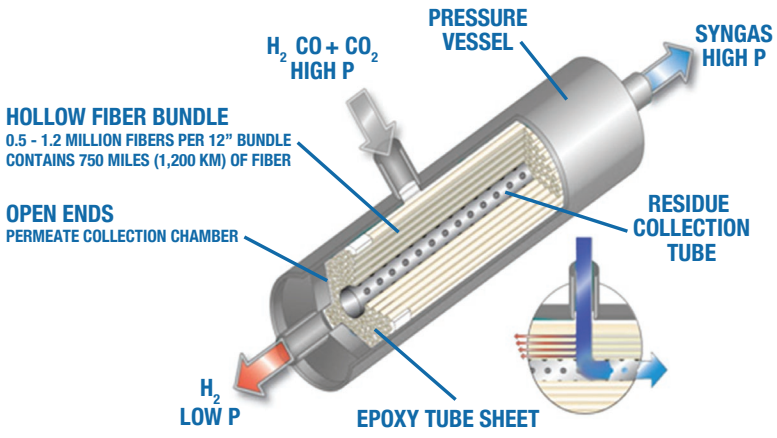
TECHNOLOGY

H_2 is selectively separated from CO by permeation through a polymeric hollow fiber membrane. The driving force is the partial pressure difference across the membrane for H_2 and CO. H_2 is the "fast" gas, whereas CO and CO_2 are the "slow" gases. The pressurized feed gas enters the bundle from the shell side; the syngas stays under pressure while the H_2 is collected at a lower pressure from the fiber bore.



SHELL FED SEPARATOR

1,300 PSI (90bar) transmembrane pressure limitation



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