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 H₂/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**

H₂ 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 H₂ and CO. H₂ is the “fast” gas, whereas CO and CO₂ are the “slow” gases. The pressurized feed gas enters the bundle from the shell side; the syngas stays under pressure while the H₂ is collected at a lower pressure from the fiber bore.

**SHELL FED SEPARATOR**

1,300 PSI (90bar) transmembrane pressure limitation