

AMMONIA SYNTHESIS

PURIFICATION AND RECOVERY OF H₂ IN AMMONIA SYNTHESIS LOOPS

DESCRIPTION

Air Liquide Advanced Separations' (ALaS) membranes are specially designed to recover high concentrations of hydrogen while rejecting inert gases from ammonia purge gas streams. With superior chemical resistance, high temperature tolerance, and the ability to withstand transmembrane pressures greater than 90bar, ALaS membranes are among one of the most selective commercially available polymeric membranes.

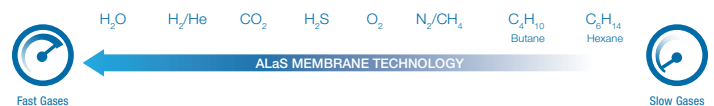
CUSTOMER BENEFITS

ALaS is the only manufacturer of polymeric membranes that can tolerate high concentrations of dry ammonia. Our membranes sustain the highest level of inert rejection paralleled with the highest level of H₂ recovery.

- Estimated payback time of less than a year
- Minimized inert gas purge and hydrogen losses
- Increased ammonia production and decreased natural gas consumption
- No upstream water wash unit required
- Low CAPEX and OPEX
- No moving parts

TECHNOLOGY

H₂ is selectively separated from nitrogen by permeation through a polymeric hollow fiber membrane. The driving force is the partial pressure difference across the membrane for H₂, N₂ and other gas components. H₂ is the "fast" gas, whereas CH₄ and N₂ are "slow" gases. The pressurized feed gas enters the bundle from the shell side; the nitrogen, methane and argon stay under pressure while the H₂ is collected at a lower pressure from the fiber bore.



FLOW SCHEMATIC: HYDROGEN RECOVERY IN AMMONIA SYNTHESIS

