GENERON® MEMBRANE TECHNOLOGY

Hydrogen Purification Systems

The Hydrocarbon market requires a high quality hydrogen feed to chemically react with other feed stocks, to form new products and uses, higher hydrogen partial pressure, prevent oxidation or in fuel-cell applications. The hydrogen required can be produced by on-site generation or using a steam-reforming of natural gas or methanol cracking process, or recovery from a hydrogen rich process stream.

The hydrogen production processes generate syngas that include by-products like carbon-dioxide, carbon-monoxide, slip-methane, water vapor and traces of argon, nitrogen and oxygen. When hydrogen rich residual gas streams or by-products from chemical or petrochemical processes are purified, they form impurities like hydro-carbons, methanol, hydrogen-sulfide and ammonia that are removed from the hydrogen before use. **GENERON®** provides several systems to meet these needs.

GENERON works directly with clients to provide the most efficient and cost effective solutions. Contact our professional engineering team at 713.937.5200 or www.generon.com for more information.

The GENERON® Advantage

- **Extensive Experience** - custom designed skids
- **State-of-the-art Membrane** - high recoveries
- **Simple Solution** - no moving parts, minimal maintenance
- **Engineering support** from concept to completion
- **Remote Operation** - Minimal attention required, fully automated systems
- **Minimal Losses** - low H losses
- **No Chemicals** - environmentally friendly
- **Small Footprint -** easily meet footprint requirements

TYPICAL APPLICATIONS:

- Amine Production off-gas
- Ammonia purge gas
- Desulphurization purge gas
- FCC overhead gas
- Food Engineering
- Glass manufacturing
- Hydro-cracker purge
- Hydrogen peroxide production
- Metallurgy and heat treatment
- Steam reforming of natural or biogas

Nitrogen Membrane® Systems

Hydrogen Purification

In a typical **GENERON®** membrane system for hydrogen purification the feed gas is cooled to remove the higher hydro-carbons that would otherwise condense inside the membrane fibers during the separation process. After subsequent particle and condensate removal, the feed gas is heated to an optimum operation temperature and ready to enter the **GENERON®** membrane modules. Hydrogen gas permeates through the membrane walls transforming in to the purified hydrogen product.

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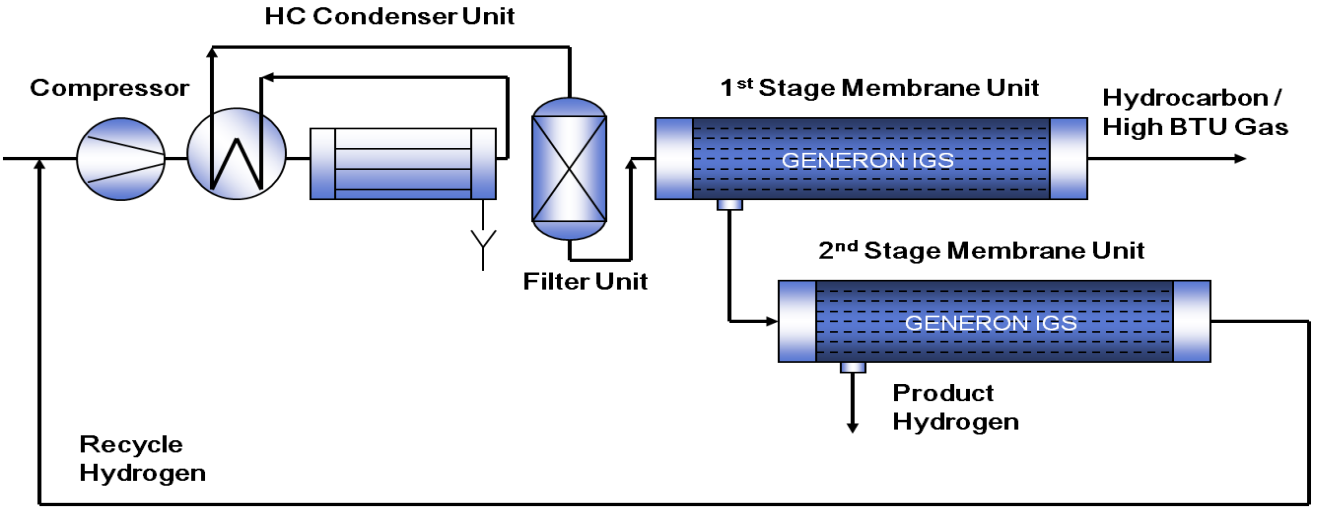

SYSTEM PERFORMANCE:

- **Feed gas pressures up to 1,000 psi (69 bar)**
- **90%-99% Hydrogen Recovery**
- **Purities to 99.9%**
- **99.9%-99.999+% with PSA technology**
- **Flow rates from 0.01 to 100 MMscfd**

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GENERON

QUALITY SYSTEM CERTIFICATION DNV·GL ISO 9001

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