

Apura

Gas-separation membrane

APPLICATIONS

- Greenfield operations
- Power plants
- Liquefied natural gas (LNG)
- Hydrogen sulfide removal for natural gas

BENEFITS

- Cost-effectiveness
- Improved production of saleable gas
- Global life-of-field support

FEATURES

- High durability
- Lower hydrocarbon losses in permeate
- Lower shutdown cycles
- Potentially less pretreatment under defined gas conditions

To meet pipeline transmission specifications, gas processing operations treat or condition produced gas that contains acid gases: hydrogen sulfide (H₂S), carbon dioxide (CO₂), or both. These acid gases need to be removed because they lower the heating value of natural gas and accelerate the corrosion of pipelines and transmission control equipment. Apura gas-separation membranes from Fujifilm have demonstrated excellent CO₂ and H₂S separation capabilities and are proven to recover more hydrocarbons compared with traditional spiral-wound cellulose acetate (CA) membranes.

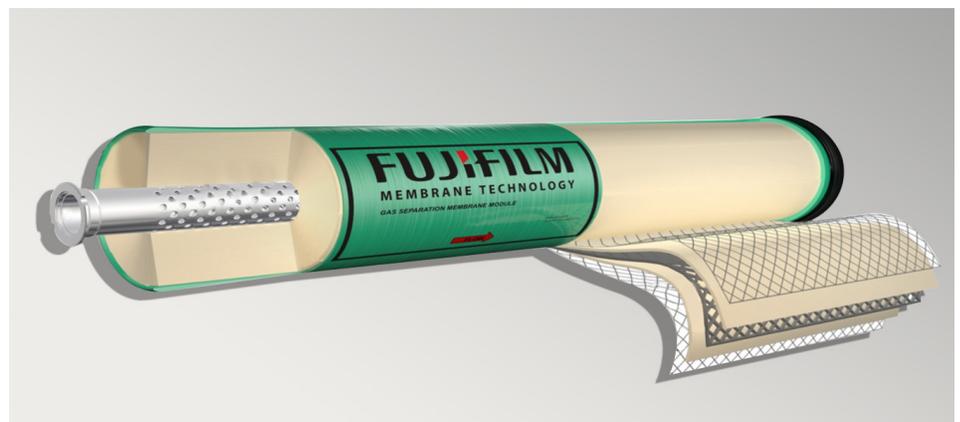
The Apura membrane's durable spiral-wound multilayer composite membrane is ideally suited for use in high-pressure gas streams and medium- to low-CO₂ applications for bulk and fine removal of contaminants that may also include H₂S, N₂, and H₂O. These membranes promote higher gas throughput, offer excellent CO₂ removal, and retain maximum hydrocarbons in the product gas. When applied in water-rich applications, performance levels and life expectancy are greater compared with traditional spiral-wound membrane technologies, resulting in substantial opex savings.

Additionally, when compared with competitive technologies such as amine systems, Apura membranes provide a smaller ecological footprint, reduced power consumption, zero chemical requirements, substantial savings on total cost of ownership, and fewer emissions into the environment. With Apura membranes, replacing existing spiral-wound CA membranes is a simple plug-and-play procedure.

Technological alliance

Continuing its efforts to advance acid gas treatment technologies, Schlumberger entered into an agreement with Fujifilm to further develop and market the Apura gas separation membrane. Fujifilm has worked in the field of organic chemistry, thin film coating, and manufacturing industry since 1934. This alliance increases Schlumberger acid gas treatment offerings and provides the means to maximize saleable hydrocarbon recovery.

The Apura membrane is available in 8-in and 8.25-in-diameter sizes and can operate upstream of existing plants to debottleneck CO₂ separation equipment, like amine plants, and can be used at remote sites to treat gas streams to meet stringent CO₂ pipeline specifications.

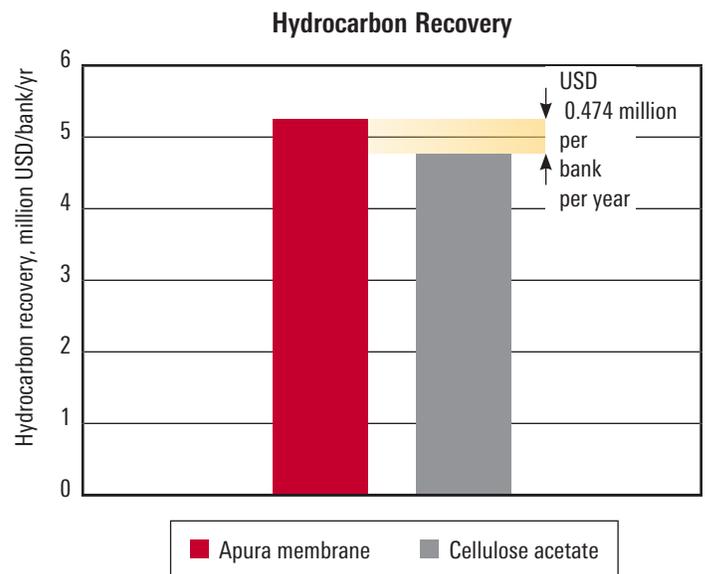
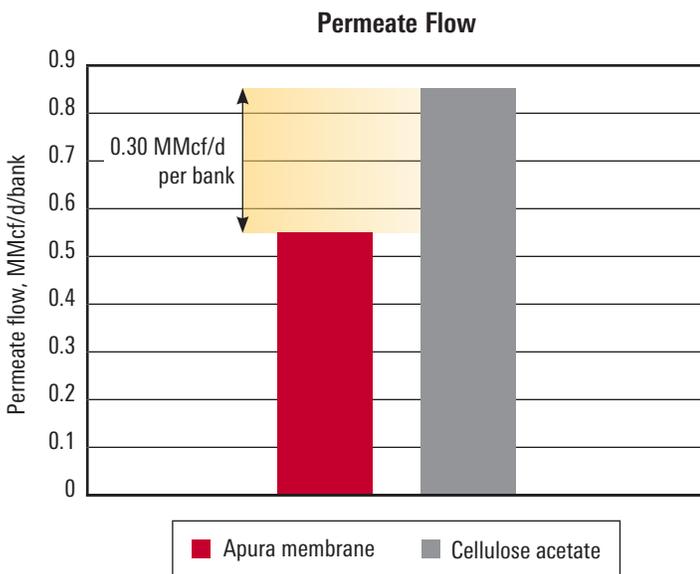
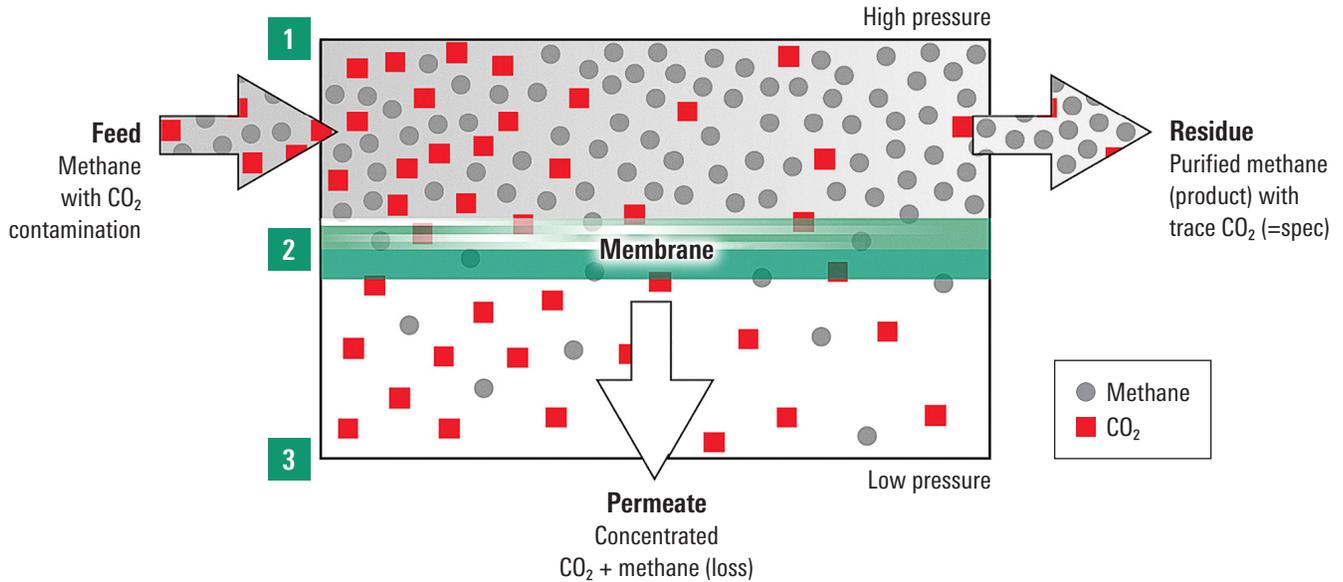


Advanced multicomposite spiral-wound module.

How it works

Feed gas enters from the side of the spiral-wound Apura membrane, allowing smaller molecules such as CO₂ and H₂S to pass through the multiple layers in a cross-flow manner and enter into the central perforated tube at lower pressure. The high-pressure nonpermeate gas stream, rich in hydrocarbons and depleted of CO₂, flows to the next section of

membrane modules to repeat this process until the necessary product gas specifications are met. The CO₂ rich, low-pressure permeate stream is then collected in the central perforated tube and is routed to the desired location as a waste stream.



Apura versus traditional cellulose acetate membranes.