Membrane Deoxygenation

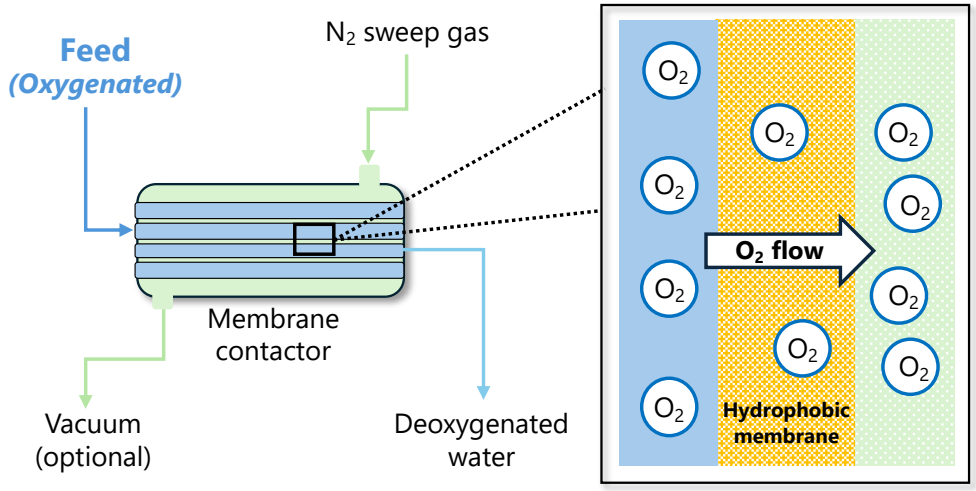
Process Description

Membrane deoxygenation is a gas-liquid membrane separation process that removes dissolved oxygen (DO) from water without chemical addition.

Water flows along one side of a hydrophobic hollow-fiber membrane, while an inert sweep gas (e.g., N_2), vacuum, or both are applied on the opposite side. The hydrophobic membrane prevents water penetration, allowing only dissolved gases to diffuse through the membrane pores. Thus, in the process oxygen diffuses across the membrane in response to the oxygen partial pressure gradient, with the hollow-fiber configuration providing high surface area for mass transfer.

Membrane deoxygenation is typically used to remove DO from seawater, produced water, boiler feedwater, and other process waters to minimize corrosion, improve system performance, and meet low-oxygen specifications. Pretreatment may be required to control membrane wetting and fouling.

Process Schematic



Publications

- Application of membrane contactors to remove hydrogen sulfide from sour water (Link)
- The effect of Hydrogen sulfide oxidation with ultraviolet light and aeration on sour water treatment via membrane contactors (Link)
- Membrane applications and opportunities for water management in the oil & gas industry (Link)

For further information, please contact us at email: GWSC@conocophillips.com