



- **Petrochemical**

MTR uses VaporSep membrane systems to separate and recover hydrocarbons from light gases such as nitrogen, methane, hydrogen, and air.

Key publications and presentations:

[Presentation: Monomer Recovery in Polyolefin Plants Using Membranes: An Update](#)

[Publication: Achieving Ethylene Efficiency](#)

[Publication: Monomer Recovery in Polyolefin Plants](#)

Petrochemical

MTR is the leading supplier of membrane systems for hydrocarbon recovery from petrochemical plant vents.



PETROCHEMICAL

Polypropylene Production

Since 1996, MTR has installed over 20 VaporSep[®] systems for recovering propylene and nitrogen from resin degassing bin gas. The typical payback time for propylene recovery is less than 1 year. MTR has worked successfully with a variety of process licensors, including Novolen, Innovene, Mitsui, and Unipol. [Click here for more information about polypropylene production.](#)

Ethylene Oxide (EO) and Vinyl Acetate Monomer (VAM) Production

The production of EO and VAM involves the selective oxidation of ethylene. VaporSep systems can be used to recover greater than 90% of the ethylene from the reactor's purge stream. [Click here for more information about EO and VAM production.](#)

Polyethylene (PE) Production

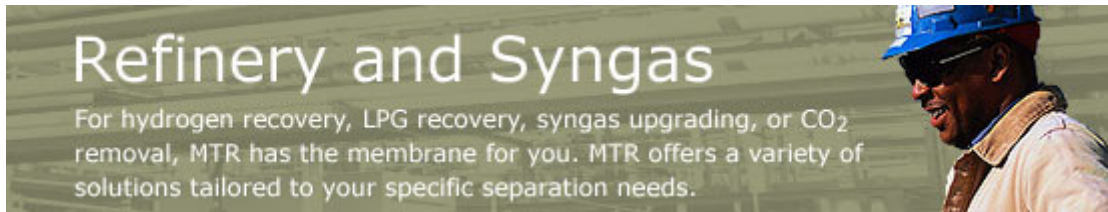
In PE plants, VaporSep systems can be used to recover hydrocarbons from resin bin off-gas and reactor column vents. MTR has worked successfully with a number of process licensors, including ChevronPhillips, Univation, Innovene, and Basell. [Click here for more information about PE production.](#)

Fuel Gas Recovery

VaporSep systems enable polyolefin producers to recover valuable fuel gas from purge bin offgas. [Click here for more information about Fuel Gas Recovery.](#)

Polyvinyl Chloride (PVC) Production

VaporSep systems allow PVC producers to recover 95% to 99% of the VCM otherwise lost in the production process. [Click here for more information about PVC production.](#)



REFINERY AND SYNGAS

For hydrogen recovery, liquefied petroleum gas (LPG) recovery, syngas upgrading, or carbon dioxide removal, MTR has the membrane for you. MTR offers a variety of solutions tailored to your specific separation needs.



Hydrogen Purification in Refineries

Hydrogen membranes are an economical method to recover and purify hydrogen from a refinery's own waste gases and reactor purges. MTR's hydrogen-permeable VaporSep-H₂ membranes can provide 90% to 99% hydrogen purity and greater than 90% recovery. [Click here for more information about hydrogen recovery in refineries.](#)

Refinery Gas Upgrading: LPG and/or H₂ Recovery from Fuel/Waste/Flare Streams

Refineries often produce low-pressure gas streams containing hydrogen, methane, ethane, and other light hydrocarbons. This gas is typically used as fuel or even flared, but MTR's hydrocarbon-permeable VaporSep membranes make it economical to recover the C₃₊ hydrocarbons as LPG. If required, residual gas can be further processed to recover a hydrogen-rich stream. [Click here for more information about refinery gas upgrading.](#)

Hydrogen Separations in Syngas Processes

Syngas produced in gasifiers or steam-methane reformers must be treated to remove impurities (such as acid gases and methane), to adjust the H₂/CO ratio to suit the downstream process requirements, or to recover purified H₂ or CO for use in other processes. VaporSep-H₂ membranes offer a simple method for separating and recovering H₂ in these applications.

When syngas is reacted to produce ammonia or methanol, inert gases have to be purged from the synthesis loop. VaporSep-H₂ membranes provide a simple and effective way to recover valuable hydrogen from these purge streams. [Click here for more information about hydrogen separation from syngas.](#)

CO₂ Removal from Syngas

CO₂ separation from syngas, refinery, and power plant streams has taken on increased importance since its role as a greenhouse gas has become accepted. MTR's Polaris™ membrane is unique because it is highly permeable to CO₂, but retains hydrogen. With this advance, it is now possible to use membranes to remove CO₂ from streams containing hydrogen such as gasifier streams, PSA tail gas, and various petrochemical process streams. [Click here for more information about CO₂ removal.](#)