

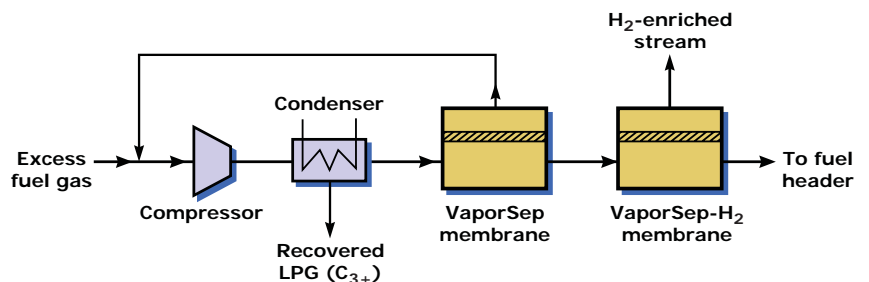


CASE STUDY:

Liquefied Petroleum Gas (LPG) and Hydrogen Recovery From Excess Refinery Fuel Gas

Client's Problem

A Texas refiner was producing a large amount of excess fuel gas. Historically, the excess fuel was dealt with by flaring. However, flaring is now becoming restricted, and the refiner must find an alternative method to deal with excess fuel.



MTR's Solution

MTR evaluated several recovery system configurations for treating the excess fuel gas; the optimum recovery system is shown below. This system reduces the excess fuel gas by producing a liquid hydrocarbon stream for use in gasoline production or for sale as LPG. In addition to recovering LPG, an H₂-enriched stream is produced that can be used in the refinery.



Membrane skid for hydrocarbon recovery

In this process, the low pressure of the excess fuel gas required compression for the membrane to operate efficiently. The first step of the recovery system recovers LPG compounds using a combination of compression/condensation plus MTR's "solubility-selective" VaporSep® membranes. The second step recovers enriched hydrogen (85-90 mol%) using MTR's "size-selective" VaporSep®-H₂ membrane. The unit is designed to recover 1,400 barrels/day of LPG and 100,000 scfh of H₂. Payback is less than 1 year.