

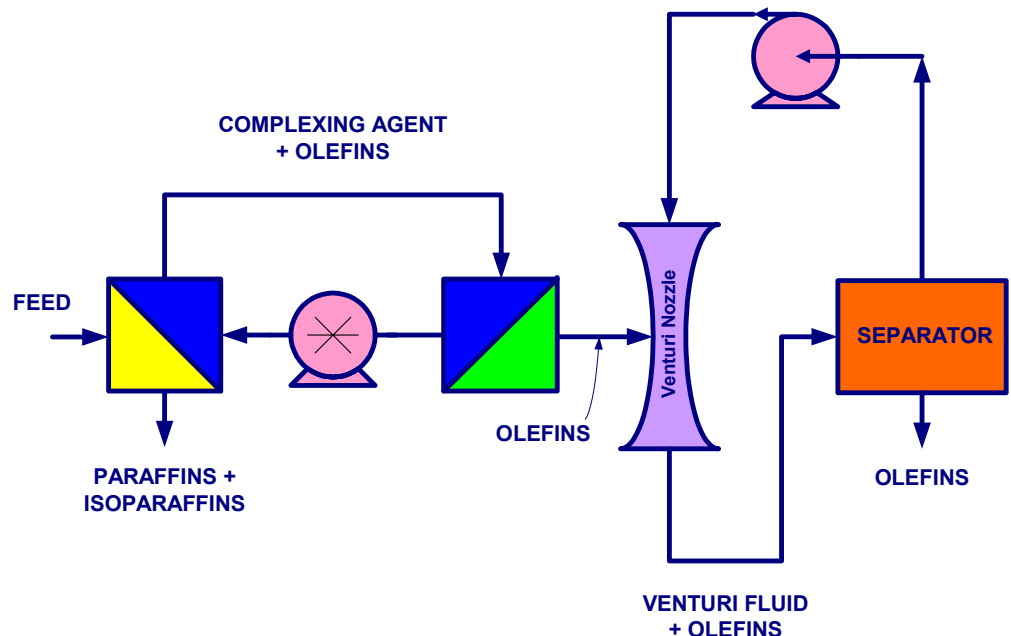
MMEO

Membrane Mediated Extraction Process For Energy-Efficient Olefin Recovery

Ethylene and propylene are two of the most important chemicals produced by the U. S. chemicals industry. In addition to being the primary building blocks for plastics like polyethylene and polypropylene, they are used to make numerous other chemicals including EPDM, ethylene and propylene oxides, ethylene glycol, oxo alcohols, acrylonitrile, acetone and isopropyl alcohol. While demand for olefins worldwide is increasing, U. S. production is lagging, primarily because the cost of producing olefins has escalated dramatically in the past several years. Contributing to this is the fact that olefins production is extremely energy intensive, generally requiring the separation of these molecules from their alkane isomers (olefin/paraffin separation) by cryogenic distillation. Another factor is that feedstock (natural gas liquids) prices have soared in recent years. Since there is little that can be done to control the price of natural gas in the currently deregulated market, the only route to substantial lowering of the cost of producing olefins is to lower the capital and operating costs for new and existing facilities, especially those oriented to more energy efficient olefin/paraffin separations.

MMEO (Membrane Mediated Extraction of Olefins) is a hybrid process that Trans Ionics Corporation is developing under the sponsorship of the U. S. Department of Energy. A simplified schematic of the process is shown below.

In the MMEO process, a mixed olefin/paraffin feed is contacted with a complexing agent (that is capable of selectively binding with olefins) in a unique membrane contactor, thus producing (1) a feed stream significantly reduced in olefins and (2) a complexing agent stream significantly enriched in olefins. Olefins are then easily separated from the complexing agent in a separate recovery unit and recycled conveniently to the feed contactor.



Trans Ionics is currently working with a major U. S. chemical company to develop and apply MMEO to both gaseous and liquid olefins streams, and expects the technology to be ready for commercial application in early 2009.

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