

Energy Saving Separation Technology for the Petroleum Industry

This technology consists of a new membrane material and method of manufacture for use in chemical separation and petroleum refining applications. The energy used for separation is decreased and economical hybrid distillation-membrane separation processes are made possible. Specifically, this separation method employs pervaporation of hydrocarbon mixtures utilizing specially formulated blends of rubbery polymers. Pervaporation is a process in which the liquid phase contacts one side of the membrane and the other side contacts a reduced pressure gas phase. The biggest hurdle facing pervaporation in refinery operations is the inability of membranes to withstand severe operating conditions. Membranes undergo physical and chemical changes as a result of exposure to organic liquids and elevated temperatures. This technology is particularly useful for separating aromatics from non-aromatics in petroleum refining and chemical processing plants. These membranes have the added advantage of being chemically and mechanically robust; they will not deteriorate or break when placed in service.

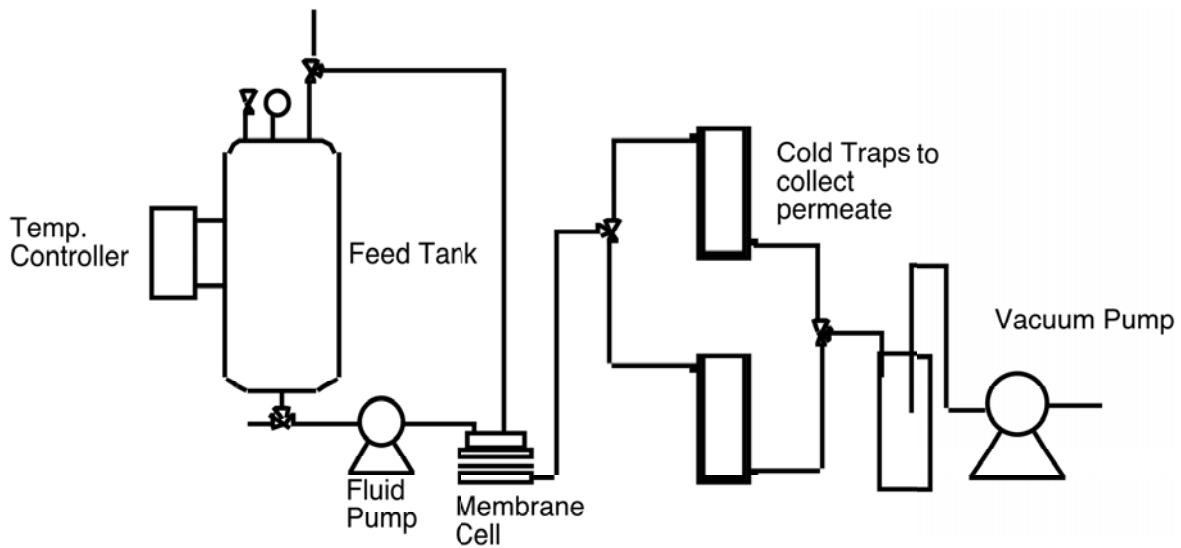


Figure 1. Experimental apparatus used to verify the breakthrough performance characteristics of the new membranes.

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