

## A Comparative Study of Flow Configurations in Hllow Fiber Membrane Module for Gas Separation System

Faizan Ahmad, Gregorius Rionugroho Harvianto, Mohd. Shariq Khan, Wahid Ali, , \*

(mynlee@ynu.ac.kr\*)

A mathematical model dealing with hollow fiber module within process simulator is needed to examine the performance and economics of gas separation system. A hollow fiber membrane model was incorporated in Aspen HYSYS as a user defined unit operation for the study of CO<sub>2</sub> separation from natural gas. The performance and economics for different flow configurations (co-current, countercurrent and radial-crosscurrent) is evaluated. The countercurrent configuration exhibits slightly higher separation performance in comparison to the radial crossflow, while both being superior to cocurrent. It is observed that flow with the most effective separation performance is not always the most economical in terms of gas processing cost. Therefore, a tradeoff must be determined to decide the optimal flow configuration for efficient CO<sub>2</sub> separation.

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