Hybrid System of Hollow Fiber Membrane and Distillation Processes: Modelling, Simulation and Design

이문용†, Faizan Ahmad, 그레고리 리오누그로호 할비안토, Wahid Ali, 김서은
영남대학교
(mynlee@yu.ac.kr†)

The combination of membrane and distillation processes in the form of hybrid separation system is proposed as a substitute design of conventional distillation. Hollow fiber module is selected due to its cost effectiveness in comparison with other membrane modules. The feasibility of hybrid membrane distillation schemes is studied by simulation in Aspen Plus. A built in model for membrane separation is implemented by developing mathematical model in Aspen Custom Modeller and interfacing it in Aspen PLUS for process simulation of hybrid system. Parameter sensitivities have been investigated for different designs of hybrid systems and compared with the existing distillation process. The insights of process design can be used to define the operating conditions and to initialize the economic optimization. This study was supported by a grant from the Gas Plant R & D center funded by the Ministry of Land, Transportation and Maritime Affairs (MLTM) of the Korean government. This work was also supported by Priority Research Centers Program through the National Research Foundation of Korea (NRF) funded by the Ministry of Education (2014R1A6A1031189).