

## Modeling and Simulation of Multi-stream Heat Exchanger Using Artificial Neural Network

칸 모드 샤리크, 이문용\*

영남대학교

(mynlee@ynu.ac.kr\*)

A multi-stream heat exchanger (MSHE) is the heart of LNG plant where 40% of the entire energy is consumed in this section. Moreover, the plant operation is subject to a number of variations from the plant inlet such as ambient temperature, pressure, feed flow or composition. In this paper, we developed an Artificial Neural Network model of MSHE using operational data from Natural gas liquefaction plant, which has been generated by using rigorous Hysys first principal model. To capture the start-up, shutdown and the intermittent dynamics of the MSHE, several scenarios were created and the most representative data were used for ANN training, testing & validation. The modeling is made in such a way that the information about the internals of heat exchanger could allow the MSHEs from any variations that arise from the process itself or upstream conditions. The developed model can predict and provide prior information for the MSHE in order to take action during the plant performance as supported by simulation results. This research 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.