

Minimization of energy consumption for nitrogen expander based LNG process

카딜킨자, Muhammad Abdul Qyyum, Wahid Ali,
Hussain Arif, 오세희, 이문용[†]
영남대학교
(mynlee@ynu.ac.kr[†])

The optimal design of an LNG process involves multivariable non-linear thermodynamic interactions, which leads to entropy generation and contribute to process irreversibility. As key decision variables, the optimal values of mixed refrigerant flow rates and process operating pressures were determined corresponding to the minimum required energy for SMR process. SMR process was modeled using the Aspen Hysys® and the resulting rigorous model was connected with the optimization algorithm coded in MATLAB. The optimal operating conditions found by the algorithm significantly reduced the required energy and improved the coefficient of performance (COP) in comparison with the base case. This work was supported by Basic Science Research Program through the National Research Foundation of Korea (NRF) funded by the Ministry of Education (2015R1D1A3A01015621) and by Priority Research Centers Program through the National Research Foundation of Korea (NRF) funded by the Ministry of Education (2014R1A6A1031189).