

Propane precooled (C2N) Ethane–Nitrogen two phase–expander refrigeration cycle for energy efficient LNG production process

무하마드 자훤, 이문용^{1,†}, Muhammad Abdul Qyyum¹,
카딜 킨자¹
yeungnam university; ¹영남대학교
(mynlee@ynu.ac.kr[†])

This study proposes the propane precooling cycle with two phase expander implementation in order to improve the energy efficiency of N₂ expander liquefaction process for offshore side. Investigation of cooling effect created due to propane precooling and through expansion of high pressure ethane–nitrogen refrigerant by two–phase cryogenic expander. This work was analysed by simulating in the Aspen Hysys v10 and optimized by modified coordinate descent (MCD). The results displayed that energy consumption for liquefied natural gas (LNG) process can be significantly reduced by 52.45% comparing to the conventional N₂ single expander. This research was supported by the Basic Science Research Program Foundation of Korea (NRF) funded by the Ministry of Education (2018R1A2B6001566), the Priority Research Centers Program through the National Research Foundation of Korea (NRF) funded by the Ministry of Education (2014R1A6A1031189), and the Engineering Development Research Center (EDRC) funded by the Ministry of Trade, Industry & Energy (MOTIE) (No. N0000990).