Closed-loop self-recuperative process for LNG production

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In this research, the possibility of up gradation and modification in the configuration of the N2-expander refrigeration cycle in terms of energy efficiency for LNG plant has investigated. The proposed studies was carried out using ASPEN HYSYS®. The modified coordinate descent (MCD) methodology was linked with ASPEN HYSYS® for the optimization of the proposed LNG process. Using MCD algorithm up to 80% total energy was saved in comparison with the conventional N2 single expander LNG processes respectively. Furthermore, the result showed that, the energy efficiency of the proposed N2 expander LNG process was higher than the reported N2 single and double expander as well as propane and carbon dioxide precooled N2 based expansion processes. 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).