

Energy-and-cost effective integrated LNG, LPG, and Pentane-plus process for offshore site

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This research work proposes a new liquefaction process that uses nitrogen self-recuperation rather than external precooling with 80% less energy consumption as compared to existing single nitrogen expander processes. We evaluate the use of an innovative self-recuperative expander-based integrated process to produce LNG-LPG-C5+ at an offshore site in an energy efficient manner with minimal capital expenditure. Thermodynamic and economic analyses were performed to evaluate the commercial feasibility of the proposed process. Furthermore, the environmental impact in terms of CO₂ emissions was also calculated. This study reveals that the LNG-LPG can be produced at a specific energy expense of 0.2362 kW with a payback period of 1.38 years. 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(No. N0000990).