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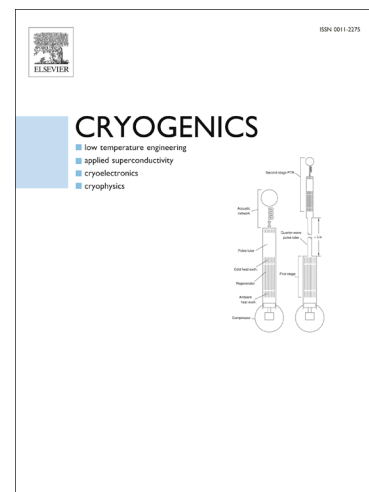
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Conceptual design and exergy Analysis of an integrated structure of natural gas liquefaction and production of liquid fuels from natural gas using Fischer-Tropsch Synthesis

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In this paper, utilizing absorption refrigeration system as an alternative to compression refrigeration system of MFC refrigeration cycle in an integrated superstructure with the main aim of reduction in required energy is investigated. High-energy consumption in such units is reduced because of the removal of a stage of the compression system, while the possibility of using waste energy through employing of absorption refrigeration system can be provided. A superstructure including cogeneration of heating, cooling and power for LNG production and liquid fuels using Fischer-Tropsch synthesis are investigated. Exergy analysis shows that the greatest amount of exergy destruction of equipment is related to the compressors by 28.99% and the lowest exergy destruction is related to the gas turbine by 0.17%. Integrated structure has overall thermal efficiency of 90% and specific power of $0.1988 \text{ kWh}/(\text{kg LNG})^{-1}$.

Key words: *Integration, LNG, Gas-to-liquids, Fischer-Tropsch, Exergy*

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