

Control Structure Synthesis for Propane Precooled Mixed Refrigerant in Natural Gas Liquefaction Plant

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This work focuses on configuring the control structure of Propane Precooled Mixed Refrigerant (C3MR) process in Natural Gas Liquefaction plant. The control structure presented in this work is specifically designed to maintain the effectiveness of cold energy utilization in cryogenic exchanger. The most robust way of achieving this goal is by holding the temperature difference between two points in the hot-cold composite curve. Finding the proper variable pairings in order to meet this objective therefore is the main issue of this study. Results from RGA, SVD, dynamic RGA and also dynamic behavior observation suggest a control structure in which the temperature difference is paired with the mixed refrigerant vapor flowrate. The dynamic model for C3MR cycle was developed in Aspen Hysys 7.1 ®. This research was supported by a grant from the Gas Plant R&D Center funded by the Ministry of Land, Transportation and Maritime Affairs (MLTM) of the Korean Government.