

### Integrated framework of Dynamic Simulation and Heuristic Method for Configuring Control Structure of Liquefied Natural Gas Plant

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This paper describes the integrated framework for simulation and heuristic approaches used to configure the control system of liquefaction part of propane pre-cooled mixed refrigerant process. The liquefaction on cryogenic exchanger involves process where cold streams have to be cooled by themselves. Hence, there exist possible interactions among the streams in the liquefaction section which can be easily observed using dynamic simulation. In this work, sensitivity analysis has been made initially in order to identify the potential disturbances that might propagate to the process. Later, a step-by-step procedure for the heuristic approach has been made with some adjustments. Based on this, the production rate has been considered as a manipulated variable rather than as a controlled variable. As a result, the cold energy usage from the refrigerant can be maximized by utilizing temperature difference between hot and cold mixed refrigerant as a set point for the final element control of production rate.

#### Acknowledgements

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.