

Control structure synthesis of dual mixed refrigerant process

Yuli Amalia Husnil, Bonggu Choi, Wei Feng, Riezqa Andika, Nhien Le Cao, 이문-용*

영남대학교

(mynlee@yu.ac.kr*)

This study examined the optimal operation of the dual mixed refrigerant (DMR) process by steady-state optimality analysis. First, a rigorous dynamic simulation of the DMR process was built in the Aspen Hysys. Second, numerous step tests on the refrigerant flow rate were conducted. The steady-state operational map that correlates the refrigerant flow rate and total compressor duty was drawn to locate the optimal operation region of the DMR process.

The steady-state operational map suggests that when the flow rate ratio of the two refrigerants (WMR/CMR ratio) is kept constant, the operational of DMR process will remain within optimal region. The control structure that includes the WMR/CMR ratio loop also show excellent performance compared to the other possible structure in terms of maintaining the stability and fulfilling the control objectives of the DMR process. This study 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.