

Study on dynamic modeling of BOG liquefaction process for enhancing operability

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LNG as fuel has been drawing attention in shipping industry because it emits less pollution than conventional fossil fuel. Among many applications related to LNG, liquefaction is one of the concern, where BOG (Boil-off gas) generated in the LNG tank due to heat exchange with surrounding is liquefied to keep the tank pressure constant.

In this research, control logic is designed based on the dynamic model with which applicability of control schemes is evaluated in a holistic manner, and operational feasibility is rigorously investigated in the context of thermodynamics and energy efficiency. Operating scenarios considering potential disturbances to the process are applied, in which operability of the control logic is examined. With the aid of developed dynamic models, conceptual understanding on dynamic behavior and operational characteristics existed in the liquefaction of BOG is gained, with which operating strategy for improving energy efficiency can be systematically provided.

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