Modeling and Evaluation of Boil-Off gas prediction model for LNG carrier tank

최혜민, 이재형[†], 김신혁, 이재욱
카이스트
(jayhlee@kaist.ac.kr[†])

LNG tank during the voyage. LNG carriers transport LNG to supply natural gas from the production site to the terminal. During sailing, Boil-off gas (BOG), the evaporation rate of LNG, is one of the important factors in controlling tank pressure. The amount of BOG is affected by several factors such as weather, ambient temperature, sloshing effect, LNG compositions, and tank operations. Also, since LNG is multi-component, it is difficult to predict the tank condition as the composition ratio changes during the voyage.

Therefore, we propose the model predicts the amount of BOG, internal pressure, and composition of LNG using the ocean weather data. The multi-phase, multi-component model was developed through mass, and energy balance. The model also implements sloshing and investigated the sloshing effect of the tank. Case studies such as various LNG compositions were investigated.