

Estimation of BOG Evaporation Rate and LNG Heating Value from LNG Storage Tank using Dynamic Simulation

Alyssa Marie Fulgueras, Manish Pokhrel, 조정호^{1,†}

Kongju National University; ¹공주대학교

(jhcho@kongju.ac.kr[†])

Large amounts of liquefied natural gas (LNG) are being delivered by tank lorry wherein boil-off gas (BOG) is generated by the heat transfer from the external atmosphere. The main component which constitutes the BOG generated is methane which has a low calorific value. While LNG is being delivered, methane gas evaporates which resulted to an increase in LNG heating value. This study estimated the BOG evaporation rate and LNG heating value from LNG storage tank. The spent time to reach the gross heating value (GHV) from an initial value of 10,300kcal/m³ to a final value of 10,600kcal/m³ was also recorded using dynamic simulation. Pure methane was used in the simulation and the calculation was based on the maximum temperature in summer and minimum temperature in winter, respectively. Three LNG tank cases were analyzed based from the data of Korea Gas Corporation (KOGAS).