

Simulation of stratified LNG in storage tanks

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LNG mainly consists of methane which evaporates faster than other component, for example ethane, propane, butane. The major safety issue of consideration in the past was about a thermal stability problem of the stored LNG of different grade, which involves density layer evolution and its consequent hydrodynamic instability leading to a sudden increase in the boil-off gas rate, known as "roll-over" phenomenon. However, this paper do not put emphasis on roll-over, build a model based on HSM model proposed by Heestand et al. to calculate boil-off gas rate accurately. The principle applications of model lie in the design of pressure relief valves, reducing the amount of LNG lost to boil-off. A further application exists in quantifying the hazards posed by projected layer formation, and planning accordingly.