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Variations of fuel composition during storage at Liquefied Natural Gas refuelling stations

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Abstract

Liquefied Natural Gas (LNG) and Liquefied Biogas (LBG) utilization within the heavy duty transport sector is today a sustainable alternative to the use of oil.

However, in spite of the high degree of insulation in the storage tank walls, it is impossible to fully avoid any net heat input from the surroundings. Due to some degree of vaporization this results in variation in gas composition during storage at refuelling stations, potentially leading to engine failures.

Within this study, a vaporizer/sampler has been built and tested at a station delivering liquefied biomethane (LBG) and occasionally; such in this case, LNG to heavy and medium duty trucks. The vaporizer/sampler has then been used to study the variation of the LNG composition in the storage tank during a two weeks period. The results clearly underline a correlation between the gas phase and the liquid phase as the concentration changes follow the same trend in both phases. Two opposite effects are assumed to

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