Sathaporn Lawan 2008: Fire Dynamic Simulation for Fire Analysis of Liquefied Petroleum Gas and Compressed Natural Gas Tanks in Taxicab. Master of Engineering (Safety Engineering), Major Field: Safety Engineering, Interdisciplinary Graduate Program. Thesis Advisor: Associate Professor Kaitkai Aryuwat, M.Eng. 133 pages.

This research aimed to analyze the fire of liquefied petroleum gas and compressed natural gas in the event of burning in a taxi. Three package programs were utilized, which comprised of Fire Dynamics Simulator, Smokeview and PyroSim. The simulation and studies were in a taxi with 1600 cc power.

The study examined the results of the combustion of Liquefied Petroleum Gas and Compressed Natural Gas used in a taxi which had a plastic partition between the baggage compartment and the passenger compartment that had a thickness of 0.0005 meter. After combustion occurred, the burning rate from the combustion of LPG and CNG was about 0.6 kg/s and have heat release rate 7,808 kW and 8,733 kW on 0.1 s in the baggage compartment respectively, and the temperature was 1,253 °C and 803 °C, in passenger compartment was 467 °C and 456 °C respectively. Because there was high temperature in passenger compartment, combustion of LPG and CNG was examined again, but with a change of material in the partition from plastic to steel with a thickness of 0.0005 meter. The burning rate from the combustion of LPG and CNG was found to be 0.6 kg/s and to have a heat release rate 7,793 kW and 8,717 kW on 0.1 s. respectively, and that the temperature in the baggage compartment during LPG combustion was about 1,238 °C and with CNG, a temperature of 828 °C and in the passenger compartment there was a temperature of 54 °C and 426 °C respectively. The change in material resulted in less temperature from the combustion of LPG than before changing the material, but for the combustion of CNG, there was still a high temperature, so if there is combustion of CNG, there will be more impact to the passenger and property in the passenger compartment with more speed compared to the combustion of LPG.

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