Analysis of Gas Explosion Consequence Models for the Explosion Risk Control in the New Gas Energy Filling Stations

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The annual domestic consumption of LPG and LNG gas is increasing steadily. In addition, it is increased about interest of new and renewable energy to reduce the burden of problem by depletion of fossil fuels and air pollution. So LPG and DME are going to be replaced by DME-LPG mixture and HCNG mixture.
Because these energies are flammable gases, it is not safety about explosion. So, quantitative risk analysis to use alternative mixture in existing facilities is studied by using three types of model to manage the risk.
Gas explosion prediction tools are developed and used in safety. These models can be classified into empirical model, phenomenological model and CFD model. Among these models, three models are selected in each types of model: TNT Equivalency model, PHAST, FLACS. These selected model is using in real business, because these models have high reliability.
In this study, explosion prediction model is studied and the differences of results by models are compared. Through a comparison of the practical results, I suggest the way when and how to use these models.