ABSTRACT

PT. IPMOMI has a hydrogen storage unit is storage of hydrogen gas in the vessel. One of the properties of a material nature of hydrogen is explosive when mixed with air in concentrations between 4% (Lower Explosive Limit) to 74.5% (Upper Explosive Limit) of hydrogen in the air. Therefore, as the basis of risk control measures against fire and explosion on Hydrogen Storage Tank PT. IPMOMI, it is necessary to evaluate the potential danger of fire and explosion.

Evaluation of the potential dangers in this study was done by two methods, the Dow’s Fire and Explosion Index (D-F&EI) and the Likely Loss Fire and Explosion Index (LL-F & EI). Assessment of the D-F & EI starts from the determination of the danger the unit processes, Material Factor, General Process Hazards Factor (F1), Special Process Hazards Factor (F2), Process Unit Hazards Factor (F3), Fire & Explosion Index (F&EI), Loss Control Credit Factor (LCCF), Radius of Exposure, Area of Exposure, Value of Exposure Area, Damage Factor (DF), Base MPPD, Actual MPPD, MPDO and Business interruption. While the assessment of the LL-F&EI is to use a value of F&EI, and LCCF from D-F&EI assessment.

From the evaluation of D-F&EI method obtained results that the hydrogen storage tank process unit at the level of the most severe safety hazards (severe), with an area of 6710.85 m\(^2\) exposure, the magnitude of losses from fire and explosion realistic (actual MPPD) was 44,943,351,238 Rupiah. Business interruption losses and the amount received due to disruption of the production process during the 126 days is 1,197,685,440,000 Rupiah. While the method of evaluation with LL-F&EI states that the unit processes at the level of hazard risk heavy.  Advice given is to do the risk assessment prior to selection of the location of a unit to the location of units of distance considerations tailored to the level of danger, the addition of fire protection at the site of hydrogen storage tanks, and if possible take action relocation process units.

Keywords: Hydrogen Storage Tank, Dow’s Fire and Explosion Index, Likely Loss Fire and Explosion Index