ABSTRACT

PT. PJB UP Gresik is one of the electricity producer where the cooling generator using hydrogen gas. Hydrogen gas is produced by hydrogen plant through electrolized process between demin water with KOH catalist which is currrent by DC. From the process, hydrogen gas will be put in a tank. The capacity of the first tank is 75 m$^3$ or 75000 liters, while the second is 175 m$^3$ or 175000 liters.

This research is used risk management method to identify and evaluate the risk. Identify and evaluate the risk are with Failure Mode Effect and Critical Analysis (FMECA), FMECA is used to analyzed all forms, reasons, results and risk evaluation from the result of process which happens in hydrogen plant, then from the risk evaluation result, every risk which is in moderate, substantial, and tolerable category are prioritized to be given alternative solution. In economic term is used cost benefit analysis.

From the result identification uses FMECA in this research, there are 2 failures in the substantial risk category. The first failure is dryer purge and dryer trip with the damage consequence in the dryer. The second failure is high ampere, electrolite level not normal, the electrolite flow slow and with the damage consequence in the electrolysis modul. Based on the benefit cost analysis approach method, the alternative solution which is offered to this problem the schedule of cleaning the dryer periodically and to the second problem is having operator training especially for hydrogen plant PLTU operating.

Keyword: Hydrogen plant, risk management, FMECA, benefit cost analysis