ABSTRACT

PT. Samator Gas Bambe – Gresik is a company that produces gas and liquid such as hydrogen, oxygen, nitrogen, argon, carbon dioxide and acetylene. Transformers and switchgear is used to adjust the voltage and power of each plant and placed in the room which is not equipped with fire protection facilities. In accordance with Kepmenaker No.186/Men/1999 that administrators or employers shall prevent, reduce, extinguish fires and fire prevention training and providing the means of detection, alarm, fire and evacuation facilities, therefore we need an integrated fire system design using carbon dioxide total flooding.

Potential fire hazard from transformer and switchgear are analyzed using HIRARC. In design of carbon dioxide total flooding we need determine hazard to be protected so that the volume and the amount of carbon dioxide concentration can extinguish the fire within 7 minutes. Requirement of the amount carbon dioxide is determined by dividing hazard volume to be protected with flooding factor and multiply by a conversion factor of material, where the total carbon dioxide needs to be a reference in determining the amount of tube, pipe size and number of nozzles.

Concentration of carbon dioxide extinguishing media with 50% stored in tubes and integrated with a photoelectric smoke detector, fire alarm control panel, alarm, manual call point, nitrogen pilot cylinder, flexible loop, loop and multijet nozzle pilot. From the calculation of total carbon dioxide that has been done that required as much as 1488 kg, stored in a tube with a capacity of 45.5 kg with pressure 750 psia (5171 kPa).

Keywords: HIRARC, Carbon dioxide, Fire Integrated System and Total Flooding