IMPLEMENTATION OF SAFETY INSTRUMENTED SYSTEM (SIS) WITH METHODS LAYER OF PROTECTION ANALYSIS (LOPA) DISTILLATION COLUMN UNIT BIO ETHERAL PLANT PTPN X MOJOKERTO

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Abstract
Distillation column is a component separation based on boiling point. Boiling point of pure ethanol is 78 °C while the water is 100 °C (standard conditions). By heating the solution at a temperature range of 78° - 100°C will result in most of the ethanol evaporates, and through the condensing unit will bias produced ethanol with a concentration of 95%. In this final safety analysis in distillation column using Layer Of Protection Analysis (Lopa). In this method allows the user to determine the risks associated with various adverse events by utilizing the severity and likelihood of events. Retrieval of the data used is P & ID diagrams and data contained OREDA per component distillation column. The results of the analysis obtained PFD Lopa target entry into class no SIL = 5 loops, loops SIL 0 = 3, and SIL 2 loops = 1 which means that there is only one loop which may require that the SIF loop 7. Conditions currently existing in loop 7 with a target SIL 2, the loop 7 there is no safety in the form of BPCS and mechanical safety as a relief valve for safety, and there are no rules governing the prohibition of entering a dangerous area. In addition BPCS this line can not be done because the line is already used to control flow. For entry rules banning dangerous areas can not be done in the area because there are many people who work in the plant area. Additions such as mechanical safety relief valve may not be installed on the condition of the pressure is too low to open. Possible is the addition of an alarm and handling, which mememiliki PFD value of 0.01 according to IEC 61 511. With the addition of handling alarms and SOP, then the PFD turned into 8,04 E - 02, which means decreased to SIL 1. The rest of the PFD is a PFD targets to be met SIF.

Keywords: Safety Instrumented System, Safety Integrity Level