

ABSTRACT

Indonesia is one of the countries located on the equator line. This climatic condition causes the sun to be an alternative source of energy for the wider community. Some of the advantages of this solar energy are pollution free, available almost everywhere and continuously throughout the year.

The problem that occurs among the people at this time is that there are still many railroad crossings that do not yet have a door, resulting in an accident. One reason for the lack of crossings in an area is the absence of PLN electricity. The use of solar energy and mechanical energy can be one solution to the problem if the area has not been distributed electricity to minimize accidents.

With these problems, the power supply hybrid system was built using solar panels and the hand generators were designed as alternative power sources to turn the rail crossing door. Solar panels are mounted on high spots to get better sunlight intensity. Whereas a hand generator, used when solar panels do not get enough power to perform charging on the battery. The power generated by solar panels and hand generators will be stored into the battery. In this final project, a hybrid power supply system will be made using solar panels and a hand generator designed as an alternative power source to power the railroad crossing. Solar panels are installed at high altitudes to get better sunlight intensity. While the hand generator, is used when solar panels do not get enough power to support the load. The power generated by solar panels and hand generators will be stored in batteries.

In this study, the load used in the form of a crossing door system with 32.43 watts of power and successfully supplied using as many as one solar panel with a capacity of 100 watts and one hand generator with a capacity of 24 watts which will be stored first in a 12 battery volt with a capacity of 40 Ah.

The results of this research are the energy that can be produced by solar panels at 278,89 Wh and generators at 3,411 Wh. While the energy used by the load is 30,32 Wh.

Keywords: *Solar Panel, Hand Generator, Battery.*