ABSTRACT

In Indonesia, the train is one of the modes of transportation that is quite popular with the community because trains are faster to reach destinations far enough away from other land transportation. Behind it all, there are still many things that are approved less than railroads in Indonesia which may often occur on railroad crossings. This is because there are still many railroad crossings that do not have main crossing gates in these areas. This is related to the high cost of procuring 1 unit of the railroad crossing system and the lack of electricity supply from companies related to the power supply of the existing crossing system. With the design of this tool, it is hoped that in the future it can be a solution for companies related to the community around the crossing gate to be safe and avoid a sense of anxiety at the railroad crossing.

In this final project research, a prototype of the railroad crossing will be made. This tool uses an actuator in the form of a dc motor to move the barrier on the door which is controlled using a microcontroller and ngle ensor as a sensor and uses solar panels as the main power supply media and generator hand as an alternative if the condition of the solar panel is not possible to produce electricity due to several factors. Solar panels and hand generators will produce electrical energy that is connected to the battery as a storage medium for power.

The control method used in this final project research is the PID control method which can accelerate/slow down the time from up and down the crossing door, reduce oscillation and eliminate the steady-state error in the system. For the sensor used, it has an average accuracy value of 98.78%

Keywords: *Railroad crossing levels, Solar panels, Hand generators, PID control, Angle Sensor*