## ABSTRACT

Utilization of New and Renewable Energy is an alternative solution to reduce the use of fossil fuels which is a major factor causing air pollution. At present, renewable energy sources provide around 8% of the world's energy (increasing to 22% of all users of renewable energy is included) this percentage continues to increase in some parts of the world. Whereas in Indonesia, the utilization of Renewable Energy is apparently still not optimal.

In this Final Project has been designed and operated the efficiency of photovoltaic (PV) panels with an automatic light tracking system against PV panels without an automatic system. The overall shape such as sunflower which adds to the aesthetic panel and electrical energy data generated per meeting is stored in firebase (database). The controller used is from the Arduino type, servo motor and radial motor drives using the type of dc motor, while the Light Dependent Resistor (LDR) is used to convert the light intensity.

The results of testing the device proves the panel with a tracking system, has a greater efficiency value of 18.4%. The output power generated by automatic panels is 2.21 Watt and passive panels is 2.03 Watt, and the durability testing of the device is carried out for 8 hours indoors and 4 hours outdoors with the status of using a normal work device. The average value of MOS performance, easy to use and installation respectively are 4.37, 4.22 and 4.13.

Keyword : Photovoltaic, sunflower, firebase, controller arduino.