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*.