ABSTRACT

In the industrial era 4.0, the use of conventional energy is still massive which causes pollutants to increase such as SO_2, CO_2 and NO_x. Therefore, renewable energy is needed that can reduce CO_2 up to 11.62%, one of the renewable energies that is widely used is solar energy which is used with tools that are arranged in such a way using light detection and rotary actuators.

This final project is able to follow light, one of which is sunlight with the help of a rotary actuator. The circuit is based on the NodeMCU ESP8266 as the source of the system process with the help of 4 LDR modules that are connected directly to the LDR as a light detection tool and solar panels as a receiver of energy from the sun. The digital value from the LDR module will be processed to drive the rotary actuator while the analog value received by the solar panel will be processed by the INA219 sensor to be processed in the NodeMCU and forwarded to the Anatares cloud. In addition to the analog value passed to Antares, this value will be forwarded to the charger module which becomes the vcc charger for the COM pin in the relay module with the NC and NO pins connected to the battery as (+) and (-) connected to the charger module.

The results of this final project are the ability of the system to be able to follow the direction of the light, the system is able to receive solar energy and transmit its energy to energy storage in the battery and the system can send it to the Anatares cloud with minimal delay and lost data conditions.

Keywords: *light detection, rotary actuator, NodeMCU ESP8266, Antares*