

ABSTRACT

Irrigation is an effort made by humans to irrigate agriculture since ancient times manually. In this modern era, there are many types of irrigation used by farmers, one of which is by using a water pump such as in the East Mauk District, Tangerang Regency, Banten. Water pumps are used especially during the dry season to flow water to the rice fields when irrigation recedes.

In this final project, the author designs and implements an automatic water pump for solar-powered rice field irrigation. This system uses off grid solar power. In addition, an automation system is installed on the water pump which aims to maintain the air level during planting. The troops are in the form of a voltage system on the battery and the set point that has been set on the Arduino Uno in the form of air height which is read out by the ultrasonic sensor. After that, the system will activate the relay and the water pump will automatically fill the rice fields.

The system built with the close loop control method provides accurate results when reading the water level. This is evidenced by the relatively stable air altitude at each planting phase with an error value of < 1 cm. With the use of off-grid solar power, the results of solar panel testing conducted every 30 minutes from 08.00 to 16.00 for seven days showed an average temperature of 29.15°C , voltage of 14.88 V, current of 1.55 A, and power of 23.35 Watt, with a maximum power of 33.65 Watt on the second day with sunny conditions while the minimum power generated is 14.90 Watt on the fifth day with cloudy weather conditions.

Keywords: *Irrigation, Automatic Water Pump, Ultrasonic Sensor, Solar Off Grid.*