

THE UTILIZATION OF PHOTOVOLTAIC CELL AS AN AUTOMATIC LAMP AND AERATOR DRIVER AND WATER PUMP AS FILTERIZATION IN FISH TANK USING OFF GRID SYSTEM

Aldo Trika Dharmawan

*Electrical Engineering Study Program, Faculty of Information Technology and Electro
Universitas Teknologi Yogyakarta
Jl. Ringroad Utara Jombor Sleman Yogyakarta
E-mail : aldotrika03@gmail.com*

ABSTRAK

The utilization of solar energy using solar panel in aerator system is beneficial for fish farmers as an effort to meet the needs of fish ponds, so they can take advantage of natural potential to be used as electrical energy. The system used in this system uses an off grid system, namely a system that is not connected to PLN electricity. This research method uses solar panels as the main source which is loaded with LED lights to illuminate fish ponds using LDR sensors so that the lights can turn on or off automatically, as well as an aerator to create air bubbles and filters as filtering. From the results of measurements and power analysis The peak produced from the solar panel using an average load for 3 days of experiment is 11.75 Watt with a voltage of 13.36 Volts and a current of 0.86 A and for the results of measurements without load for 3 days, the resulting solar panel voltage is obtained. 15.26 Volts, Current 0.83 Amperes, Solar Panel Power on average for 3 days of experiment without load was obtained at 12.7 Watts. Calculation of the required battery with a total load of 11.5 watts with an off-grid system and running for 2 hours per day using a 10 Ah battery is able to turn on the load for 3 days with details per day on for 2 hours and the solar panel uses a capacity of 20 Wp. To test the LDR sensor, it is found that the larger the lumen, the lamp will turn off and the smaller the lumen, the lamp will automatically turn on itself with an experiment of about 55 - 98 lumens, the lamp will turn on and if the lumen is around 150 and above, the light will automatically turn off.

Keywords : Solar Energy, Solar Panels, Batteries, LDR Sensors