DESIGN AND CONSTRUCTION OF SOLAR POWER GENERATION FOR AUTOMATIC COVERING DEVICES IN CATFISH BREEDING POND

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ABSTRACT

Catfish breeding in Indonesia is an important sector in the fisheries industry because of its ease of maintenance and high market value. However, controlling the environmental conditions of the pond is a major challenge that affects the growth and health of catfish. Extreme weather changes such as heavy rain or excessive sun can damage the condition of the pond. High temperatures due to the scorching sun can reduce the level of dissolved oxygen in the water and grow excessive moss, which can be fatal for catfish. To deal with this problem, catfish farmers need pond covers so that catfish can grow well. However, when farmers install or close ponds manually, it will require extra energy when in bad weather conditions such as rain and scorching sun. Therefore, an automatic system is needed in closing the nursery pond to make it easier for farmers to maintain the water conditions in the catfish nursery pond. This study aims to design and develop an automatic and solar-powered catfish nursery pond cover system. This system is designed to protect ponds from extreme weather changes, optimize pond environmental conditions, and reduce operational costs through the use of renewable energy. This system is equipped with sensors to detect the time to activate the DC motor, and uses IoT technology to monitor the work results of the tool in real time. By utilizing solar thermal energy through Solar Power Plants (PLTS), this system can operate independently without the need for external power sources. Based on the results of the tests that have been carried out, the automatic pool cover system with RTC time control shows a success percentage of 100%. In measuring the output voltage of the solar panel with an average of 12.2 V and for the comparison between SCC and Voltmeter with an average percentage value of 1.07% with the power generated by the solar panel of 7.32 Watts, it can turn on the DC motor with a power of 7.2 Watts every 1 time it is active. In testing the Internet of Things with the Thingsboard platform, data is obtained from the system to display the condition of the DC motor and the rotation speed of the DC motor properly.

Keywords*: Lele, PLTS, RTC, Thingsboard*