

***Optimization of Solar Panel Power Monitoring Based on NodeMCU ESP8266  
on Venturi Finebubble Portable Buoy Technology in Vaname Shrimp Farm***

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***ABSTRACT***

*Vaname shrimp (Litopenaeus vannamei) farming industry in Indonesia, especially in Banyuwangi, East Java, holds an important role in the national economy. The use of modern and environmentally friendly technology in the shrimp pond environment is the main key to maintain and increase optimal shrimp farming yields. Venturi Finebubble Portable Buoy Technology based on Solar Cell and Internet of Things (IoT) appears as an innovative solution to help the waterwheel work process and increase dissolved oxygen levels in water, thus helping to improve shrimp health and growth. This research aims to optimize the process of monitoring the power and performance of solar panels more efficiently, accurately, and in real-time. The research process starts from conceptualizing the tool, determining components, making wiring diagrams, assembling components, and testing the device. The implementation of the Internet of Things (IoT) system utilizes the main components in the form of a NodeMCU ESP8266 microcontroller, PZEM-017 as a sensor that reads the amount of current, power, and voltage produced by solar panels, a 50A shunt resistor to direct and create a lower resistance or resistance path, RS-485 as a communication protocol path, and the Blynk application to display the monitoring process via android. The Internet of Things (IoT) system shows effective capabilities and works optimally in measuring and displaying performance data such as voltage, current, and power. The Internet of Things (IoT) system showed effective capabilities and worked optimally in measuring and displaying performance data such as voltage, current, and power generated by solar panels accurately and in real-time, and also contributed directly to the process of increasing pond productivity.*

***Keywords :*** *Blynk, Internet of Things (IoT), Solar PV Monitoring*