

ABSTRACT

This proposal presents the development of a system to control water quality in vannamei shrimp (*Litopenaeus vannamei*) cultivation ponds by utilizing renewable energy. The system is designed by integrating Solar panel technology as the primary power source with water quality sensors connected to an ESP32 microcontroller.

The aim of this research is to monitor and manage key water quality parameters that affect the growth of vannamei shrimp, such as turbidity, pH, ammonia levels, and salinity. This system enables real-time monitoring and provides automatic responses to changes in water conditions, such as activating aerators as needed.

By implementing this system, it is expected to enhance operational efficiency in shrimp farms, reduce the use of fossil fuels, and promote more environmentally friendly and sustainable farming practices. Furthermore, this research aims to explore the application of renewable energy technology in aquaculture to improve productivity and sustainability in the fisheries sector.

Keywords: *Vannamei shrimp, water quality, renewable energy, Solar panels, sensors, ESP32 microcontroller, IoT, salinity, sustainable aquaculture.*