

ABSTRACT

vanname shrimp (Litopenaeus vannamei) has become an important aquaculture commodity in Indonesia. With a production target of 250% by 2024, water quality is a determining factor in the success of cultivation. A sensor-based automatic water wheel control system offers an innovative solution to optimize water quality. Poor water quality in whiteleg shrimp cultivation can cause stress, disease, and stunt growth. Manual water wheels, while useful, have limitations in responding quickly to environmental changes. An automatic water wheel control system, equipped with turbidity and dissolved oxygen sensors, is expected to help monitor water conditions in real time and automatically turn the water wheel on or off as needed. Test results show that the IoT system is able to maintain DO levels, maintaining fluctuations within the optimal range (4.5–6.5 mg/l) and water turbidity of 1822–2202 NTU, compared to traditional ponds that are prone to drastic declines. The ability of real-time monitoring and remote control via an application is very helpful for shrimp farmers.

Keywords: *Water quality, IoT, Automatic Water Wheel, ESP32, DO Sensor, Turbidity Sensor.*