# ABSTRAK

## SISTEM MONITORING KUALITAS AIR TAMBAK BUDIDAYA UDANG *Littopenaeaus vannamei* MENGGUNAKAN NODEMCU ESP32 BERBASIS IoT

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Penelitian ini telah dirancang sistem monitoring kualitas air yang mampu memonitoring suhu, pH, dan *Total Dissolve Solid* (TDS) menggunakan NodeMCU ESP32 berbasis *Internet of Things* (IoT) untuk kualitas air tambak udang *Littopenaeaus vannamei.* Sistem monitoring menggunakan sensor pH Kit Versi E201-C BNC, sensor TDS DFRobot, dan Sensor DS18B20 *waterproof* yang dikendalikan oleh mikrokontroler ESP32. Sistem ini dapat bekerja ketika sensor dimasukkan ke dalam tambak udang dan sensor akan mendeteksi kualitas air. Hasil pengukuran akan diproses oleh ESP32 kemudian ditampilkan pada LCD dan telegram. Aplikasi telegram dapat menerima data pada saat pengukuran menggunakan metode *long-polling*. Pengujian sensor dilakukan dengan cara membandingkan pembacaan sensor dengan alat yang terkalibrasi. Pengujian sensor pH Kit versi E201-C BNC dengan menggunakan larutan asam (cuka), sensor TDS DFRobot dengan TDS-3 meter, dan sensor DS18B20 *waterproof* menggunakan Thermometer HTC-2. Hasil penelitian menunjukkan sensor mampu mendeteksi nilai pH, TDS, dan suhu dengan masing-masing akurasi parameter 98,87%, 98,33%, dan 98,73%.

Kata kunci: ESP32, kualitas air, sistem monitoring, tambak, telegram.

## ABSTRACT

***Water Quality Monitoring System for Agricultural Tank Shrimp Littopenaeaus vannamei Uses ESP32 NodeMCU Based IoT***

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*This research has designed a water quality monitoring system capable of monitoring temperature, pH, and Total Dissolve Solid (TDS) using Internet of Things (IoT)-based NodeMCU ESP32 in the water quality of Littopenaeaus vannamei shrimp ponds. The monitoring system uses a pH sensor Kit Version E201-C BNC, a DFRobot TDS sensor, and a waterproof DS18B20 sensor controlled by an ESP32 microcontroller. This system can work when a sensor is inserted into a shrimp pond and the sensor will detect water quality. The ESP32 will process the measurement result and then display the result to the LCD and telegram. The telegram application can receive data at the time of measurement using the long-polling method. Sensor testing is done by comparing sensor readings with calibrated devices. pH Kit version E201-C BNC sensors tested using an acid solution (vinegar), the DFRobot TDS sensor with a TDS-3 meter, and the DS18B20 waterproof sensor using an HTC-2 Thermometer. The results showed that the sensor was able to detect pH, TDS, and temperature values with each parameter accuracy of 98.87%, 98.33%, and 98.73%.*



*Keywords: ESP32, water quality, monitoring system, shrimp pond, telegram.*