

ABSTRACT

Salt production in Indonesia is primarily still conducted using traditional methods, where the monitoring of salinity and control of water supply are not yet automated. This lack of automation often leads to untimely transfers of water between ponds, which can negatively impact both the quality and quantity of the harvest. The objective of this study is to design an automated water supply control system for pond management, based on salinity levels, utilizing Internet of Things (IoT) technology. The system is designed around an ESP32 microcontroller as the control center. It includes three salinity sensors for detecting salinity levels, a DHT22 sensor for monitoring temperature and humidity in the ponds, along with relays and mini pumps for transferring water between plots. The Arduino cloud platform is used to facilitate real-time data monitoring. Calibration results indicate that the salinity sensor has an accuracy level of 92.6%, with an average error of 7.4%. The system effectively automates water supply based on predetermined salinity thresholds of 4.9 parts per thousand (PPT), 7.2 PPT, and 8.8 PPT. Data communication testing revealed a delay of 869.199 ms and a jitter of 869.734 ms, with 0% packet loss and an RSSI of -63 dBm, which is acceptable for the requirements of a prototype system. Although this automated system has not yet been implemented on a production scale for farmers, it represents an initial step towards the automation of salt farming. Additionally, it can serve as a reference for designing more precise and adaptive systems that are tailored to field conditions.

Keywords: Internet of Things, ESP32, Salinitas, Arduino cloud, suplai air otomatis, tambak garam, Kualitas Layanan, RSSI.