

## **ABSTRACT**

The cultivation of tilapia at Sein Farm faces significant challenges due to the use of traditional aeration systems. Uneven water distribution and drastic temperature changes in the morning and afternoon result in poor water quality, which leads to the death of tilapia. To address this issue, a monitoring and control system is required to improve the water quality in Sein Farm's ponds.

This study aims to facilitate fish farmers in monitoring and controlling pond water quality remotely by developing a device with Internet of Things(IoT) technology. The device is equipped with dissolved oxygen sensors, temperature sensors, and turbidity sensors to monitor water quality. Additionally, it features an aerator that automatically activates when dissolved oxygen levels fall below 7 mg/L and deactivates when oxygen levels rise above 7 mg/L. The product will be placed in a panel box with dimensions of 150x250x100mm. Once connected to the internet, information about dissolved oxygen levels, temperature, and water turbidity will be sent in real-time to the user's smartphone via a mobile application.

The results of this research, conducted in the morning (08:00 WIB) and in the afternoon (13:00 WIB) at Sein Farm, show that each sensor, namely the Dissolved Oxygen sensor, temperature sensor, and turbidity sensor, can detect their respective parameters within the specified range and tolerance values that have been achieved for each sensor. Additionally, the control function on the aerator has operated optimally with a delay of 4-5 minutes. This monitoring system facilitates fish farmers at Sein Farm by providing an application that simplifies monitoring and helps maintain good water quality for the sustainability of Nile tilapia.

**Keywords:** Water quality, aerator, oxygen, temperature, water turbidity, Internet of Things