

ABSTRACT

The issues present in the tilapia fish cultivation pond can be resolved through the design of a monitoring and control system for water quality and filtration. Despite the current system in place, there are several limitations to tilapia cultivation, notably in terms of time and labor efficiency. The system will be enhanced by incorporating the concept of using an aerator for self-maintenance. Water quality detection will be performed using DS18B20, SEN0189, and pH-4502C sensors, with pH and turbidity as the self-maintenance triggering parameters. Calibration methods employed are verification for DS18B20, linear calibration for pH-4502C, and classification method for SEN0189. The hardware sub-system has been successfully implemented, with components functioning according to given commands. Data transmission to the database is also functioning well, allowing displayed data within an application. This indicates the proper operation of the application sub-system. pH levels and water turbidity improve post-filtration and automated cleaning or self-maintenance, although self-maintenance can occur multiple times depending on sensor readings. Overall, testing results demonstrate the effective operation of the automation system, as evidenced by graphs showing the gradual improvement of pH values and water turbidity levels after system activation.

Key Words : Turbidity, Water Quality, pH, Self Maintenance.