

## **ABSTRACT**

*Monitoring water parameters and making appropriate adjustments is the key to maintaining appropriate water quality in fish farming. Water quality, especially the pH of pond water, is an important parameter that must be considered in fish farming, especially tilapia fish. Each type of fish has different characteristics regarding the water pH and water temperature conditions in the pond. Monitoring water quality in tilapia fish cultivation ponds is often done manually and takes a long time. Tilapia fish can live well in water with a pH range of between 6.5 to 8.0. Apart from that, the ideal water temperature for the growth and health of tilapia fish ranges from 24°C to 30°C. Temperature conditions in this range allow tilapia fish to grow well and even reproduce well. Apart from pH and temperature, water cleanliness is also an important factor in maintaining tilapia fish. They prefer water that is quite clear and not too cloudy. The aim of this research is to design a water pH control system device that is also related to the temperature and turbidity of the tilapia fish pond water based on the Internet of Things. This design device consists of an Arduino Nano as a microcontroller, a pH sensor (SKU: SEN0160), a temperature sensor (DS18B20) and a turbidity sensor. The pH in tilapia fish ponds can be controlled and monitored automatically on the Blynk platform. This system is designed using the fuzzy mamdani calculation method. Using the fuzzy mamdani method shows the movement of changes in water quality. The lower the fuzzy mamdani calculation, the better the water quality and vice versa. The test results show that the percentage error in reading the pH sensor SKU: SEN0160 is 2.4%, the percentage error in the DS18B20 temperature sensor is 1.9% and the percentage error in the turbidity temperature is 3.09%. Testing of the automatic water pH control system in tilapia fish ponds using fuzzy mamdani was carried out 10 times, and the results had an accuracy of 90%.*

**Keywords:** *Arduino Nano, Blynk, Tilapia Fish, Internet of Things.*