ABSTRACT

Given the beauty and unique characteristics of goldfish as ornamental fish, keeping goldfish in aquariums is a popular hobby among the public. However, some people have problems with goldfish care that must be controlled manually. In this work, a water quality control system for goldfish aquariums using fuzzy logic is proposed. This system makes use of the SEN-0189 turbidity sensor to gauge the water's purity, the E-201-C pH sensor to determine the water's acidity level, and an ultrasonic sensor to track the water's surface height. The ESP32 microcontroller is used in this system as the control center. It is employed in the pH level adjustment process. In controlling the pH level, a mini pump is used which functions when the pH level is >9, then the mini pump will be active to lower the pH of the water to the set point. Meanwhile, to control water turbidity, two 12V DC pumps are used, where one pump functions to remove cloudy water and the other to fill clean water. Through the OLED panel, the data that the sensor has read can be observed. Based on the test results, the goldfish aquarium water quality control system using the fuzzy method can function properly. Meanwhile, the water draining process takes 5 minutes 20 seconds, and filling clean water takes about 15 minutes 24 seconds.

Kata Kunci: *Fuzzy, Gold fish, Turbidity, Water pH, Water pump*