ABSTRACT

Maintaining aquarium water quality is crucial to ensure that the animals living within it can thrive. The key factors that influence water quality are pH, temperature, and turbidity levels. Some animals, such as the axolotl salamander, are highly sensitive to changes in water pH and temperature. Axolotls are an endangered species due to water pollution and the negative impacts of invasive fish like tilapia. To support axolotl conservation, optimal water conditions are required, with a pH around 7 and a temperature range of 16°C-24°C. Conventional water quality monitoring requires physical presence at the location, making it inefficient. Therefore, this research developed an automated system to monitor and control the pH, temperature, and turbidity of aquarium water. The system uses pH sensors, temperature sensors, and turbidity sensors, along with the Sugeno fuzzy logic method for decision-making in regulating water temperature and pH. The system is also equipped with a Peltier device for temperature control and solutions for increasing and decreasing pH. With this system, the process of cultivating axolotl salamanders can be done more easily and effectively, helping to prevent the extinction of this endangered species. The test results showed a pH reading accuracy of 91.15% for pH 7, 84.09% for pH 4, and 95.01% for pH 9, with the temperature sensor accuracy at 97.82%.

Kata Kunci: *axolotl salamander*, fuzzy**,** *pH, temperature*