ABSTRACT

The fisheries sector in Indonesia has great potential in contributing to the national economy and as a major source of income for the community. However, fish farming is still mostly done manually, causing a lack of understanding of the importance of oxygen regulation in fish ponds. Oxygen is one of the main elements in the pond that must be considered properly. If oxygen levels are not considered properly, it will be one of the fatal causes of metabolism in fish as a result of which the energy in fish to carry out activities will be disrupted. This is one of the causes of keratinization in fish. As a place for fish to live, the pond must be observed regularly for oxygen conditions by the farmer. This is very difficult especially if you have a large pond. To overcome these problems, this research aims to design and implement an Internet of Things-based goldfish pond oxygen regulation system. In this study, there are several sensors used, namely the DO sensor to read dissolved oxygen levels and a temperature sensor (DS18B20) which functions as a detector or measure of water temperature. Then the tool is connected to the NodeMCu ESP8266 microcontroller which processes the readings of the two sensors and is converted into output on the digital LCD and 2 channel relay to move the waterpump and aerator. The result of this research is an automatic system to monitor and regulate oxygen levels in fish ponds using the Sugeno fuzzy method, this system efficiently adjusts oxygen levels based on environmental conditions and fish needs. The test results show the system's ability to maintain oxygen levels within the optimal range, improving the overall welfare of the fish.

***Keywords:** ESP8266, Dissolved Oxygen, DS18B20, Internet of Things, Goldfish*