

ABSTRACT

Using aerators is currently mandatory for fish farmers both on a small and large scale. This is because in their habitat fish will always need dissolved oxygen levels to help their growth and development, especially fish that are categorized as ornamental fish, such as guppies. These fish are very vulnerable to oxygen levels in the water. However, excessive and inappropriate use of aerators will also have a negative impact on fish and the operations of cultivators. So the use of aerators will be better if it can be adjusted to the existing conditions.

In overcoming this problem, an automation system is proposed so that aerators can work automatically and can be monitored remotely with the concept of the Internet of things. In this project, the microcontroller that will be used is esp32, with temperature and pH sensors and a website platform as a platform that can be used to configure the device. In addition, the microcontroller will also calculate the value of dissolved oxygen levels using the approach method on existing data. The device built is also designed to support two modes that can be used, namely automatic mode and manual mode.

This study found that the implementation of the IOT concept as a regulation of oxygen levels in water can work well, with an average temperature sensor accuracy of 99.36%, a pH sensor of 94.4%, average telegram bot response time of 3.81 seconds, and a response from controlling the aerator through the website averaging 2.9 seconds. The website platform and IOT platform used are also very good at processing data on a large enough scale. On the other hand, the use of pH and temperature sensors to obtain DO values is still not accurate due to the content in the water which is quite a lot so that the use of only two sensors is not able to parameterize that the water is classified as ideal or not. Other results also show that the use of aerators does not affect the pH and temperature in the water directly, this is seen from the results of tests carried out under normal conditions the pH and temperature values in water tend to have flat data both when the aerator is on / off.

Keywords : Device Control, Dissolved Oxygen, Fish farming, Internet of Things, Sensor Accuracy