

DESIGN AND CONSTRUCTION OF FISH POND WATER QUALITY MONITORING EQUIPMENT WITH pH SENSOR AND TOTAL DISSOLVE SOLID (TDS) SENSOR

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ABSTRACT

In this era of globalization, technological developments have become increasingly advanced with various existing technological developments, one of which is the Internet of Things. IoT can be used as a tool for monitoring the water quality of tilapia ponds. When cultivating tilapia, you need to pay attention to the pH of the water and dissolved solids in the water. The ideal pH number is between 4 – 9, however for optimal growth for tilapia fish, the ideal pH is between 6 – 8. TDS values for cultivation activities are listed in the water quality standards PP Number 82 of 2001 (class II) , which states that the TDS range for fish farming activities is 1000 ppm, which means that the lower the concentration value in the waters, the better it is for raising tilapia fish. This research aims to create a monitoring tool that can be monitored via an Android smartphone. Using Arduino Uno, Esp8266, pH sensor, TDS (Total Dissolve Solid) sensor, ultrasonic sensor, servo, and 2 channel relay. This tool uses serial communication which is used to send data from Arduino to ESP8266. The applications used to monitor this tool are Blynk which is used to display data obtained from sensors and Telegram is used to provide notifications to users if changes occur in the tilapia pond water. If the pH sensor detects a value below 4 or a pH value above 9, the tool will send a message to the Telegram application. If the TDS value is more than 600ppm then pump 1 will turn on to drain the fish pond. When the ultrasonic sensor detects that the distance between the water and the sensor is more than 30cm, pump 2 will turn on to fill the pool. Telegram will get a message if one of the pumps turns on. pH sensor calibration has an error of 5.34% and TDS sensor calibration has an error of 7.79%.

Keywords: *IoT, pH sensor, ESP8266, Arduino Uno, TDS sensor.*