

ABSTRACT

Oil is one of the sources of pollution in waters. Currently, environmental pollution is a major issue, especially in the aquatic environment. Oil pollution is one of the things that pollute water. Used frying oil is one of the many things that can cause oil pollution. Used frying oil is included in the Toxic and Hazardous Waste (B3) type because it contains free fatty acid compounds and peroxides which are carcinogenic.

Therefore, a solution is needed to separate oil and water. In this research, an oil and water separator is designed using the IoT (Internet of Things) based drum skimmer method. The system applies the IoT concept to monitor the volume of separated oil. Arduino Uno is added to manage the color sensor and distance sensor. The drum skimmer system is a system of separating oil from water with the help of a rotary drum as a carrier of oil from water. The system uses RGB sensors to detect oil in water, ultrasonic sensors to calculate the volume of water in the reservoir and calculate the volume of oil separated and uses an application as an IoT interface to display the volume of oil separated. ESP8266 is added to send ultrasonic sensor reading data of oil separated from water.

Three oil objects with different volumes were tested, namely 500 mL, 750 mL and 1000 mL. The total test was 90 times, the total number of tests was 90 with each volume being tested 30 times. The average results obtained on the object of 500 mL oil for 30 trials were 387.70 mL separated and obtained an efficiency of 77.54%. On the object of 750 mL oil, the average results were obtained 30 times the experiment was separated as much as 612 mL of oil separated and get an efficiency of 81.6%. Then in testing the 1000 mL oil object, the average results obtained 30 times were 938.16 mL of separated oil and got an efficiency of 93.82%.

Keywords: Oil, Aquatic Environmental Pollution, Oil Water Separator, Drum Skimmer, Internet of Things.