

## **ABSTRACT**

*Environmental pollution is currently a very serious problem, especially in the aquatic environment. One of the pollution that sometimes occurs in the waters is oil pollution. Oil mixed with water is very dangerous and threatens the damage to the ecosystems. Oil pollution can come from household waste oil that causes polluted water and soil. This pollution can also have serious effects on human health such as indigestion and nervous disorders, if left for a long period of time. Currently, separation is done by utilizing the density of water and oil, so that the oil rises to the top due to the lighter density of the oil, and the water down, but the system arrangement is very difficult and the cost of using this method is very expensive.*

*In this study, the design of an automated water and oil separator system based on IoT (Internet of Things) using density differences was created. The oil and water mix are separated using density differences and using nano separators, so the oil can escape but the water does not. Once the water and oil are separated, the ultrasonic sensor detect the water and oil level and then send a signal to the microcontroller. The microcontroller activate a water pump that re-drain the water and oil of an already separate IoT system designed to display the volume of filtrated oil. Testing aims to find the efficiency value of water and oil separation with membrane nano separator and efficient water and oil separator system. From the test results obtained an average efficiency value above 94% and in the testing of water and oil separator systems there is an efficiency above 95%. By using this tool, it is expected to separate oil and water with more effective methods, and also cost-effective in solving environmental problems.*

*Keywords : Separation, Oil, Water, Internet of Things, Pollution.*