

ABSTRACT

Oil pollution is one of the problems that occur in industrial, household and transportation needs. One of the causes of oil pollution is oil leakage. Oil pollution that occurs can lead to oil pollution in clean water, damage to ecosystems, trigger fires, and disease. To cope with oil changes that occur, then created an oil-water separator automation system. In this system, the oil that is sampled is fuel oil.

Oil-water separator automation system is designed using a separator membrane, the internet of things, and uses two fuel oil objects, namely Peralite and Pertamina. Membrane separator acts as a filter or separator for water and oil. Membrane separator made from steel mesh and has been synthesized through a thermal oxidation process at 500 degrees Celsius for 2 hours. The thermal oxidation process forms nanostructures on the membrane which are hydrophobic or water-repellent. The water and oil automation system works by pumping water and fuel oil into a container that has been insulated in the form of a separator membrane in the middle. This system uses Arduino Uno as the main controller and NodeMCU as the sender of data from the separation of fuel oil to the internet. Internet of things as an on-off control and records volume data of fuel oil that successfully separated and data can be accessed remotely using Blynk application on a smartphone. Based on the test results, the water and oil separator automation system can separate fuel oil with a volume of 200 ml, 350 ml, and 500 ml with efficiencies of 80.67%, 89.92% and 93.73% respectively for calculations with HC-SR04 sensor in Peralite sample and 80.32%, 86.76%, and 88.45% for calculations with the HC-SR04 sensor in Pertamina sample.. For duration of sending the on-off control of the Blynk application takes 1.03 seconds and the duration of sending the resulting gasoline to the application respectively takes 3.9 seconds and 1.1 seconds.

Keywords: water and oil separator, internet of things, membrane separator