ABSTRACT

Oil pollution in water is one of the problems of environmental pollution. Oil pollution can come from household waste oil which causes water and soil contamination. Oil pollution that pollutes water can also endanger human health if contaminated water is consumed.

To reduce the level of oil pollution from household waste, a system of Automated Design to Separate Water and Household Waste Oil Utilizes Internet Of Things (IoT) Based Nano Separators. The use of this nano separator membrane aims to filter oil mixed with water for household waste disposal. The nano separator is made of steel mesh which is oxidized through a heating process using the thermal oxidation method. The heating process is carried out to produce a membrane nano-structure that is repelling to water. This heating process is carried out for 2 hours using a temperature of 500 ° C.

This system also monitors the volume of oil obtained from the nano separator membrane filtration process using IoT. The monitoring process is carried out through an application on a smartphone / PC via the Thingspeak platform. Manual testing results in an efficiency of more than 80% for coconut and palm oil. For testing the system with used frying palm oil waste resulted in an efficiency of 64.31%, 66.67% and 61.95% for each volume of 500 ml, 1000 ml and 1500 ml with a standard deviation value of 42.75 ml to 66.92 ml. Meanwhile, the coconut oil experiment resulted in efficiency values of 68.44%, 71.09% and 61.95% for 500 ml, 1000 ml and 1500 ml with a standard deviation value of 57.67 ml to 70.63 ml.

Keywords: Internet of Things, Membrane Separator, Water and Oil Separators