

## **ABSTRACT**

Eddy Current Testing is one of the methods used in Non-Destructive Testing (NDT) by using the principle of electromagnetism in the way it works. This means that changes in electric current in conductive materials can provide induction if the material is correlated by a magnetic field. The Eddy Current Testing method is carried out by inducing a soil sample using a current coil which is stored at a certain distance above the surface of the soil being tested. The eddy current that is formed in the sample object will cause stress on the test object. The value of the object stress at certain points due to variations in the oil content in the soil is measured. In this voltage measurement is carried out using 2 electrode plates that are installed on both sides opposite each other from the box-shaped soil sample container. The type of soil used is laterite soil and the type of oil used is kerosene and motor lubricating oil. The test was carried out by varying the amount of oil volume of 5 mL gradually up to 75 mL which was dropped into the soil. This research uses a coil that is placed on top of the container containing the test object and given the frequency and amplitude through the function generator. The current received by the coil will produce GGL when the flux changes. The flux is detected by the electrode plate and displayed on the oscilloscope as a voltage output. With the variation in the volume of oil, it is analyzed by looking at the change in measured voltage. The amount of oil content in the soil can be detected by looking at the change in voltage before the soil is contaminated with oil and after being contaminated with oil. By using a coil of 90 per layer, 2 electrode plates, 10MHz input frequency, 20 Vpp amplitude input, and a distance between the coil and the ground of 0.5 cm, the average voltage change that occurs every 5mL addition of oil is 1.86 V for motor lubricating oil and 1.90V for kerosene.

**Keywords:** Non-Destructive Testing, Eddy Current Testing, Electromotive Force, Soil, Kerosene, Motor Oil.