

ABSTRACT

Induction of magnetic field testing has been carried out using 8 coils and objects in the middle, where there is 1 coil as a transmitter and the other 7 coil as receiver coil. This research aims to detect the presence or absence of an object, detect the material type of the object, and detect the shape of the object based on the value of the voltage on the receiving coil (receiver coil). The value of the voltage generated due to the induction of the transmitter coil which causes a magnetic field that changes so that the induced electromotive force (emf) on the receiver coil. This test uses a coil with a wire diameter of 0.8 mm, a total of 50 turns and a length of turns of 48 mm. With an induction voltage of 15 Vpp and a working frequency of 2 MHz and a distance between coils of 10 cm. In this test, that the receiver's voltage value can detect whether or not there is an object in the middle of the range, if an 8 coil configuration is no object (air) between the coil, the receiver's voltage value is < 1.1 V whereas if there are objects between the coils the receiver's voltage value \pm 1.3V. In addition, it can detect material objects by looking at the difference in receiver voltage values. Non-Ferromagnetic materials produce higher receiver voltage values (\pm 1.5V). The difference in stress values between iron and aluminum material in the experiment is not too large, that is \pm 0.001-0.01. However, in this test can't detect the shape of the object, because this test does not reach the tomography. The result of receiver voltage will be used as a basic for tomography steps.

Keywords: *Coil, Magnetic Induction, Coil Receiver Voltage Value*