ABSTRACT

Non-Destructive Test is a method of testing materials, structures, or components to obtain its characteristic without having to damage the materials. In this test, A magnetic field induction sensor is made which consist of two coils, which is transmitter coil and receiver coil. Transmitter coil acts as a transmitter and receiver coil acts as a receiver. Sine signal excitation on the transmitter coil causes a varying magnetic field which causes electromotive force induction on receiver transmitter.

In this test, Transmitter coil and receiver coil are made in the form of a solenoid using wire with a diameter of 0.8 mm. The winding amount and length are 50 and 48 mm respectively. By using LCR meter, obtained value of transmitter coil induction is 70.1 uH and receiver coil induction is 69.1 uH. This coils system, which use 5 volts as the input and 11 cm as the distance between coils, can distinguished the presence or absence of an object and also different object orientation, as well as vertical, horizontal, or even diagonal. On iron object, the receiver highest voltage is in vertical condition with value of 0.02853. On aluminium object, the receiver highest voltage is in diagonal condition with value of 0.02786. On wood object, the receiver highest voltage is in diagonal condition with value of 0.0268.

Keywords:coils, magnetic field induction, orientation