ABSTRACT

The use of magnetic field sources using various methods as part of non-destructive testing (NDT). NDT is a test of material without damage and carried out for a certain period of time to find a system error if it is not in accordance with quality standards. In this research, coil parameter optimization is carried out to increase the strength of magnetic fields in solenoid-based magnetic field sources. Tests are carried out by varying the number of layers and using with and without ferrite measured on the x, y and z axes. The results of the optimal magnetic field obtained on each wire are compared with the coil in the configuration in order for the solenoid coil to produce a homogeneous magnetic field strength under normal temperature conditions. The results of the tests that have been done, the best results are obtained 1034 Gauss with a configuration of 900 coils, 20 layers and using ferrite core on the x-axis. Thus, this condition is the best result in testing using the NDT method to optimize coil parameters.

***Keywords**: Solenoid Magnetic Field Source, Effect of Coil Configuration in Strong Magnetic Fields.*