

Numerical Solution and Optimization of New Design of Pulsed Eddy Current Probe

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Abstract

A numerical solution and optimization of measuring coils of pulsed eddy current probe is presented. The analysis was carried out by the finite element simulation using COMSOL Multiphysics software. One of the important factors of the eddy current defectoscopy is liftoff, which is the distance between the coil and conductive material. The change of liftoff due to nonplanar surface brings significant amount of noise into output signal of the testing device. To minimize the influence of liftoff change, new designs of eddy current testing probes are presented. New designs of testing devices are compared to the probe consisting of two solenoidal differential measuring coils in terms of output voltage and influence of the changing liftoff on the output signal. The results of numerical solution are verified by experimental measurement.

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