



Presented at NDE2002, to predict. assure. improve. www.nde2002.org
National Seminar of ISNT, the Indian Society for Non Destructive Testing
Hotel Taj Connemara and Raja Muthiah Hall, Chennai, 05. – 07. 12. 2002

A Modeling Approach for Eddy Current Probe Performance Optimization

M. Togo*, M.T. Shyamsunder*, Changting Wang and Yuri A. Plotnikov****

*John F Welch Technology Centre, Bangalore, India

**GE Global Research center, Niskayuna, USA

Abstract

Recent developments in eddy current testing have primarily been driven by increased industry demand for improved inspection reliability and reduced inspection time. The research efforts in addressing this demand have resulted in significant advances in eddy current coil designs. The development of flexible planar eddy current coils conformable to complex shaped components is one of them.

Compared to conventional probes, the fabrication of flexible planar coils is complex. Finite Element Modeling is often used to reduce the design time and associated fabrication costs. The finite element modeling of planar coils involves two major challenges – 1) small coil dimensions with large aspect ratios, and 2) intricate interconnects and complex coil shapes. Addressing these challenges result in high mesh density demands and consequent high solution time for convergence. This paper discusses the modeling challenges in detail with respect to specific inspection requirements.