

Comparing Hysteresis Characteristics Using Finite Element Method (FEM) With Different Techniques

Zoltan Nemeth, Miklós Kuczmann

Department of Automation, Széchenyi István University, Győr, Hungary
nemeth.zoltan@sze.hu, kuczmann@sze.hu

Abstract

An Epstein frame has been built, which is used to measure magnetic properties of different kind of core. The sinusoidal current excitation has been used in a frequency range of 1-400Hz. The measurements have been performed by a computer controlled measurement system. The building and the measurement process have been published before.

The objective of this work is to compare the results of different kind of software like COMSOL Multiphysics or Ansys by performing Finite Element Method (FEM) simulations. For this work Jiles-Atherton model has been chosen as hysteresis identification method. The model parameters can be obtained by using the measurement results.

The frame has been modelled in 2D and 3D as well. Simulations have been performed with the built-in modules as well as with some implemented potential formulation [1].

References

1. A. IVANYI AND M. KUCZMANN. The Finite Element Method in Magnetics. Academic Press, Budapest, 2008.