World Academy of Science, Engineering and Technology
International Journal of Mathematical and Computational Sciences
Vol:14, No:12, 2020

Simulation Model of Induction Heating in COMSOL Multiphysics

Authors : K. Djellabi, M. E. H. Latreche

Abstract : The induction heating phenomenon depends on various factors, making the problem highly nonlinear. The mathematical analysis of this problem in most cases is very difficult and it is reduced to simple cases. Another knowledge of induction heating systems is generated in production environments, but these trial-error procedures are long and expensive. The numerical models of induction heating problem are another approach to reduce abovementioned drawbacks. This paper deals with the simulation model of induction heating problem. The simulation model of induction heating system in COMSOL Multiphysics is created. In this work we present results of numerical simulations of induction heating process in pieces of cylindrical shapes, in an inductor with four coils. The modeling of the inducting heating process was made with the software COMSOL Multiphysics Version 4.2a, for the study we present the temperature charts.

Keywords : induction heating, electromagnetic field, inductor, numerical simulation, finite element
Conference Title : ICSRD 2020 : International Conference on Scientific Research and Development
Conference Location : Chicago, United States
Conference Dates : December 12-13, 2020