Numerical Analysis of an Electromagnetic Stirring System for Composite Plastic Materials with Ferromagnetic Particles

T. Tudorache[1], S.M. Ion[2], C.G. Opran[3]
[1]*University Politehnica of Bucharest, Faculty of Electrical Engineering, 313 Splaiul Independentei Bucharest, Romania, tiberiu.tudorache @upb.ro*
[2]*University Politehnica of Bucharest, Faculty of Industrial Engineering and Robotics, 313 Splaiul Independentei Bucharest, Romania, sorin-mihai.ion@upb.ro*
[3]*University Politehnica of Bucharest, Faculty of Industrial Engineering and Robotics, 313 Splaiul Independentei Bucharest, Romania, constantin.opran@ltpc.pub.ro*

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Abstract.
This paper deals with a Finite Element (FE) numerical analysis of an electromagnetic stirring system for composite plastic materials with ferromagnetic particles. The electromagnetic stirring process is ensured by the rotating magnetic field produced by the stator of a three-phase induction motor supplied from an inverter.
The analysis is carried out using the professional software package Flux ® for electromagnetic field computation based on the FE method. The 2D computations allowed us to estimate the magnetic forces and their orientation acting on micrometric particles spread in a fluid plastic material. A preliminary experimental setup was also built for studying the solution.