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## MODELING OF PHYSICAL PROCESSES IN THE FURNACE UNIT WITH ELECTROMAGNETIC STIRRING OF LIQUID METAL

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### Authors

**O.I. Bondar, O.I. Glukhenkyi, Yu.M. Goryslavets**

Institute of Electrodynamics National Academy of Science of Ukraine,  
pr. Peremohy, 56, Kyiv-57, 03680, Ukraine,  
e-mail: ugoris@ied.org.ua

### Abstract

*Multiphysical 3D modeling of electromagnetic, hydrodynamic and heating processes in reverberatory furnace for aluminum with combined electromagnetic stirrer of liquid metal, which creates traveling or pulsating magnetic fields depending on power type (multiphase or single phase power supply respectively) was performed. Four regimes of work of this stirrer, by which stirring of metal in furnace tank is carried out under the influence of separately traveling and separately pulsating magnetic field, in the regime of sequential action of these fields, and in case of reverse alternation in time of traveling magnetic field were investigated. The situation was modeled, according to which liquid metal in furnace was heated from above without stirrer over a period of time, after that heating was disabled and the stirrer was enabled*

*simultaneously, which brought eventually to temperature equalization of metal in furnace tank. Established that using of regimes of stirrer with switching of magnetic fields allows a significant increase the effectiveness of stirring of melt in furnace tank. References 4, figures 3.*

**Key words:** multiphysical modeling, reverberatory furnace, electromagnetic stirrer, traveling and pulsating magnetic fields, heating of melt.

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