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MODELING AND OPTIMIZATION OF NEW GLASS MELTING FURNACE WITH "INNER" INDUCTOR

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Abstract

The mathematical modeling of electromagnetic and thermal processes in the induction glass melting furnace of new design is carried out. The furnace has a closed magnetic core that envelops both an inductor and a crucible in the form of a hollow circular chute. The possibility and expediency of the furnace operation with industrial frequency (50 Hz) power-line supply are grounded. The basic characteristics of the furnace are compared with the corresponding

characteristics of traditional induction furnaces. As shown, the specific electric energy consumption and power consumption from line are substantially less for the proposed furnace. The propositions for furnace parameters providing the optimized energy characteristics are given. References 9, figures 6, table 1.

Key words: glass melting furnace, induction heating, magnetic core, energy characteristics, current control, computer modeling, optimization.

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