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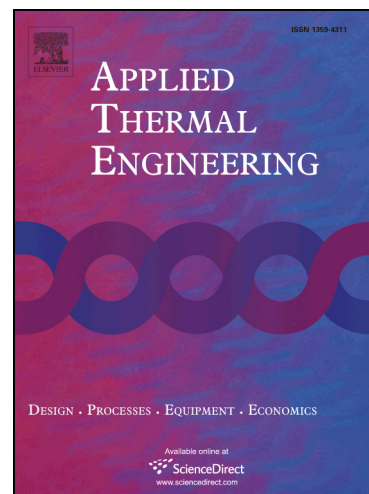
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Glass melting inside electromagnetic cold crucible using induction skull melting technology

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Abstract

Induction melting high purity glass is a new application of induction skull melting (ISM) technology. In this paper, a simplified 2-D mathematical model was established by analyzing the process of induction heating and heat transfer during glass melting by ISM, which can calculate the temperature field in the glass molten pool. Under different start-up conditions, the glass temperature during glass melting by ISM were calculated and the experiments were conducted, which considers the effects of different starting material (graphite and TC4), its position and dimension on the energy efficiency of glass melting. The calculated results are in good agreement with the measured values. The results show that the graphite as the starting material could melt the glass with less power consumption than TC4, moreover, it is more efficient for glass melting by ISM when the starting material with larger diameter is placed at the middle of coils.

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