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PS转炉造渣过程的动态控制模型

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摘要: 为了对Peirce-Smith(PS)转炉造渣过程进行优化控制, 基于冶金反应动力学建立造渣过程的动态控制模型。该动态控制模型为1组具有12个状态变量的多输入多输出常微分方程组。采用现场生产数据对建立的动态控制模型进行仿真实验, 并与检验数据进行对比。仿真结果表明: 该动态模型计算准确, 其中模型的组分 Fe_3O_4 计算值平均相对误差为1.7%, 铜硫热力学温度的最大绝对误差低于5 K; 该模型可用于造渣过程的优化控制。

关键字: PS转炉铜硫吹炼; 动态模型; 机理模型

Dynamic controlling model for slag making process of PS converter

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Abstract: In order to optimize and control the slag making process of Peirce-Smith(PS) converter, the dynamic control model based on metallurgy reaction kinetic was established. This dynamic control model includes 12 state variables, and can be set up by a group of multi-input and multi-output ordinary differential equations. Simulation experiment of this dynamic model was carried out using the practical production data from a copper plant and compared with test data. The results show that the dynamic model computes accurately. The average relative error of components Fe_3O_4 computed by the model is 1.7%, and the maximum absolute error of matte temperature is lower than 5 K. The dynamic model can be used in the optimization and control of the slag making process.

Key words: PS converter matte converting; dynamic model; mechanism model

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