

短文

## 竖炉焙烧过程的多变量智能优化控制

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摘要

针对铁矿选矿中的竖炉焙烧过程具有综合复杂性和产品质量指标—磁选管回收率难以在线测量因而不易实现优化控制的难题, 通过对焙烧过程动态特性和人工操作模式的分析, 将智能方法与前馈、反馈控制相结合, 提出一种基于磁选管回收率、台时产量、煤气消耗等综合生产指标的多变量智能优化控制方法. 根据综合生产指标的目标值和边界条件的变化在线对控制回路的设定值进行自动调整而实现优化控制. 将提出的方法应用于国内某大型选矿厂竖炉焙烧过程, 实现了综合生产指标的优化控制, 取得显著应用效果.

关键词 [竖炉焙烧](#) [综合生产指标](#) [多变量](#) [智能控制](#) [优化](#)

分类号

## Multivariable Intelligent Optimizing Control Approach for Shaft Furnace Roasting Process

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Abstract

Shaft furnace roasting in iron mineral processing is a synthetic complex process, whose product quality index, i.e. magnetic tube recovery rate (MTRR), is hard to measure online, and the optimizing control of such process is very difficult. Based on analysis of its dynamic characteristic and manual operation mode, a multivariable intelligent optimizing control approach is developed, combining intelligent method, forward-feed control and feedback control. The target is the optimization of integrated production indices including MTRR, hour's yield and consumed gas. The setpoints of control loops of the process are adjusted online automatically according to the targeted integrated production indices and variations of boundary conditions, so the optimizing control is achieved. The proposed approach has been applied to a roasting process of a mineral processing factory of China, and optimization of the integrated production indices is realized and remarkable benefits are obtained.

Key words [Shaft furnace roasting](#) [integrated production index](#) [multivariable intelligent control](#) [optimization](#)

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