化工学报 2008 59 (7): 1686-1690 ISSN: 0438-1157 CN: 11-1946/TQ

过程系统工程

基于案例推理的电熔镁炉智能优化控制

吴永建, 张莉, 岳恒, 柴天佑

东北大学自动化中心;沈阳化工学院

收稿日期 2008-4-15 修回日期 2008-4-30 网络版发布日期 2008-7-15 接受日期

摘要

电熔镁炉是生产电熔镁砂的主要设备之一，电熔镁砂冶炼过程具有非线性、强耦合、随机干扰严重等特点，传统的控制算法无法满足控制要求，本文提出了一种将案例推理与规则推理相结合的智能优化控制方法，详细阐述了基于规则的冶炼电流设定技术和基于案例推理的电熔镁炉冶炼电流补偿技术，研制了电熔镁炉智能优化控制系统，成功应用于国内某企业的电熔镁炉上，取得了满意的控制效果和明显的经济效益。

关键词

电熔镁炉 规则推理 案例推理 智能优化控制

分类号

扩展功能

本文信息

Supporting info

PDF(846KB)

[HTML全文](0KB)

参考文献

服务与反馈

把本文推荐给朋友

加入我的书架

加入引用管理器

复制索引

Email Alert

文章反馈

浏览反馈信息

相关信息

本刊中 包含“电熔镁炉”的 相关文章

本文作者相关文章

- 吴永建
- 张莉
- 岳恒
- 柴天佑

Intelligent optimal control based on CBR for fused magnesia production

WU Yongjian,ZHANG Li,YUE Heng,CHAI Tianyou

Abstract

The electro-fused magnesia furnace is one of the main equipment used to produce electro-fused magnesia. Aimed at multiple variables, strong nonlinearity and coupling among variables, as well as strong random disturbance of the fused magnesia production process, an intelligent optimal control strategy based on the integration of case-based reasoning and rule-base reasoning was proposed. First, the technical process of fused magnesia production was introduced. Next, the intelligent optimal control strategy including the optimal set model based on rule-based reasoning and the optimal set compensation based on case-based reasoning was discussed in detail. Finally, the intelligent optimal control system was developed and successfully applied to a real fused magnesia production process. The proposed intelligent optimal control strategy demonstrated reliable, accurate and timely control performance.

Key words

electro-fused magnesia furnace rule-based reasoning case-based reasoning intelligent optimal control

DOI:

通讯作者 吴永建 wyj_neu@163.com