论文与报告

基于分层递阶融合算法的高炉料面煤气流分布软测量方法

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摘要
高炉能否稳顺、高产和低耗运行与煤气流的分布密切相关, 本文针对料面煤气流分布难以直接检测的问题, 提出了一种基于多源信息分层递阶融合的高炉料面煤气流分布软测量方法. 首先, 将多源信息配准为同一时间和空间的尺度; 然后, 采用数据级融合分别建立能够反映煤气径向和轴向分布的高炉料面温度场模型和高炉布料模型; 最后, 利用模糊决策级融合算法计算出高炉料面煤气流分布状态. 现场数据仿真表明本文的检测方法有效, 能够准确地反映高炉料面的煤气流分布状态, 为高炉操作提供必要的指导.

关键词　高炉　煤气流　料面温度场　信息融合　软测量
分类号

Soft-sensing Method of Gas Flow Distribution of Blast Furnace Burden Surface Based on Multi-level Hierarchical Fusion Algorithm

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Abstract
Since the operation of blast furnace (BF) is closely related to the gas flow distribution in terms of stability, high production and low energy consumption, a soft-sensing method of gas flow distribution of BF burden surface based on multi-level hierarchical fusion is accordingly presented in order to solve the difficulty of direct detection for gas flow distribution. First, the multi-source information is registered to the same spatial dimension and temporal dimension. And then, the model of burden distribution and the model of burden surface temperature profile are respectively designed by means of data level fusion, which could reflect the gas distribution in the radial and axial directions. Finally, the gas flow distribution state is obtained by using the fuzzy decision level information fusion algorithm. According to the field simulation to verify the detection method, the method can accurately reflect the gas flow distribution of BF burden surface and offer a necessary guidance for the BF operation.

Key words　Blast furnace (BF)　gas flow　burden surface temperature profile　information fusion　soft-sensing

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