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论文

基于三色法和BP神经网络的回转窑温度检测

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摘要:

回转窑内的燃烧是个非常复杂的过程,针对以往温度测量的不足,根据三基色原理和Plank定律建立三色测温公式,结合光学技术和图像处理技术, 提出了一种基于BP神经网络模型的温度场测量方法. 同时给出系统的软、硬件的设计及工程实现. 实验结果表明,该系统简便实用,与传统测量相比,它具有测量精度高和适应性强等优点,可满足系统温度场的在线检测,并能对炉内的燃烧状况做出符合实际的评价.

关键词: 三色法测温 回转窑 图像处理 BP神经网络

Temperature detection of a rotary kiln based on three-color measurement and the BP neural network

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Abstract:

Burning is a very complex process in a rotary kiln, for lack of temperature detection in the past. A three-color temperature measurement formula was established on the basis of three primary color principles and the plank law. Combined with digital image processing and optical technology, a method of temperature detection based on the BP neural network was put forth. The software and hardware design of this system were presented, and the engineering realization was also given. The results show that this system is simple and convenient for practical application, which has higher measurement accuracy and better suitability than the traditional detection method. This technology can be used to realize the on-line detection of the temperature field, and evaluate the combustion situation in the furnace in conformity with reality.

Keywords: three-color temperature detection rotary kiln digital image processing BP neural network

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