

论文与报告

模糊控制在退火炉燃烧过程控制中的应用

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摘要

燃油退火炉控制的困难在于过程中参数的多变性, 非线性, 噪声, 不对称的增益特性, 以及较大的纯滞后. 本文介绍了模糊控制在退火炉燃烧过程中的应用. 在炉温和炉压控制回路中, 采用了经过改进的模糊控制器, 得到了较快的响应特性和较精确的温度、压力控制效果. 作者还应用模糊集理论设计了一种模糊自寻优控制器, 对油/风比进行控制. 运行结果表明, 模糊控制能克服退火炉燃烧过程控制中的上述困难, 具有较强的鲁棒性, 获得了满意的控制效果.

关键词 [模糊控制](#) [油/风比](#) [自寻优控制](#) [鲁棒性](#)

分类号

The Applications of Fuzzy Control to Temperature Control of Annealing Furnace

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Abstract

What makes the temperature control of the annealing furnace difficult is the variation of process parameters, the high nonlinearity, heavy noise and the large time delay of the process. In this paper, the applications of fuzzy control theory to the annealing control is reported. A modified fuzzy controller structure which has faster response and higher accuracy is used to control the temperature and the pressure of the furnace. And a fuzzy self-optimal controller with the aid of fuzzy sets theory is used to regulate the fuel/air ratio to keep a rational combustion. The operation run shows that the fuzzy control system can overcome the above difficulties, and the result is satisfactory.

Key words [Fuzzy controller](#) [optimal fuel/air ratio](#) [selfoptimal control](#)

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