计算机工程与应用 2010 46 (3): 201-203 ISSN: 1002-8331 CN: 11-2127/TP

工程与应用

垃圾焚烧过程自适应模糊复合控制策略

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收稿日期 2009-8-26 修回日期 2009-11-16 网络版发布日期 2010-1-28 接受日期

摘要 针对垃圾焚烧过程的非线性、时变性和大滞后特性，提出了一种结合蒸汽负荷粗调和炉温偏差细调的自适应模糊复合控制策略。首先根据蒸汽负荷的大小采用模糊PID控制器进行给料量的粗调，然后根据炉温偏差和偏差变化率采用自适应模糊控制器进行给料量的细调，再将两给料输出值相比较，确定出当前给料量变化值。实际运行结果表明，系统控制曲线相对平稳，炉温预报误差基本控制在±20℃以内。该方法为焚烧炉燃烧过程的智能控制提供了新的途径。

关键词 垃圾焚烧过程 蒸汽负荷粗调 炉温偏差细调 模糊PID控制器 自适应模糊控制器

分类号 TP39

Adaptive fuzzy composite control strategy for waste incineration process

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Abstract

An adaptive fuzzy composite control strategy combining steam load coarse adjustment and temperature deviation fine adjustment is proposed to solve the control problems of the waste incineration process that usually has the property of nonlinearity，time variation and large time-delay.Firstly，according to the steam load size，a fuzzy PID controller is used in coarse adjustment for the feeding coal.Then based on the temperature deviation and deviation rate，an adaptive fuzzy controller is used in fine adjustment for the feeding coal.Finally，the current feeding coal change value is determined by the comparison of the two feeding outputs.Actual operation results show that the control curve is relatively stable and the temperature prediction error is mainly within ±20℃.This method proposed in this paper provides a new way for intelligent control in the waste incineration process.

Key words waste incineration process steam load coarse adjustment temperature deviation fine adjustment fuzzy PID controller adaptive fuzzy controller

DOI: 10.3778/j.issn.1002-8331.2010.03.062

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