

工程热物理

煤粉气流在高温空气中着火与熄火的试验研究

聂欣 周志军 吕明 周俊虎 岑可法

杭州电子科技大学机械学院 能源清洁利用国家重点实验室(浙江大学) 能源清洁利用国家重点实验室(浙江大学) 能源清洁利用国家重点实验室(浙江大学) 能源清洁利用国家重点实验室(浙江大学)

摘要: 提出了一种新型的高温空气煤粉直接点火燃烧器, 并建立了相关试验系统平台。选用神华混煤, 在成功点燃冷态煤粉气流的基础上, 对影响着火与熄火热空气温度的各个因素(煤粉粒径、煤粉浓度、一次风流量、热风流量)进行了试验研究。试验结果表明, 随着一次风流量的增大或煤粉浓度的降低, 着火与熄火热空气温度下降, 且一次风流量的影响更为显著; 热风流量对其影响呈现两面性。在3种试验煤样中, 粒径分布越细的煤样, 其着火与熄火热空气温度相差越大。其余各因素对细颗粒煤粉气流的着火热空气度产生的影响比粗颗粒大; 而对粗颗粒煤粉气流的熄火热空气温度的影响又大于细颗粒。

关键词: 煤粉气流 高温空气点火 热空气温度 着火 熄火

Experimental Study on Pulverized Coal Flow Ignition and Flameout in High Temperature Air

NIE Xin ZHOU Zhi-jun LÜ Ming ZHOU Jun-hu CEN Ke-fa

Abstract: A novel coal combustor and its experimental system were designed for igniting the cold pulverized coal flow by high temperature air (HTA). Based on successful ignition, the factors' effects on the ignition and the flameout temperature of HTA were studied with Shenhua blending coal, such as the particle size and the concentration of pulverized coal, the flow rate of first air and HTA. The results show that the ignition and the flameout temperature of HTA decrease with the decreasing concentration of pulverized coal or the increasing flow rate of first air. The influence of the first air flow rate is more obvious. The HTA flow rate has two-faced influences on them. The difference between the ignition and the flameout temperature of HTA is more striking with the finer pulverized coal among the three experimental samples. The other factors have more remarkable influences on the ignition temperature of HTA to the finer pulverized coal. On the other hand, they have more remarkable influences on the flameout temperature of HTA when the bigger size pulverized coal has been used.

Keywords: pulverized coal flow high temperature air ignition temperature of high temperature air ignition flameout

收稿日期 2007-09-10 修回日期 1900-01-01 网络版发布日期

DOI:

基金项目:

通讯作者: 聂欣

作者简介:

作者Email: xin_nie2000@163.com; xin_nie2000@126.com

参考文献:

本刊中的类似文章

Copyright by 中国电机工程学报

扩展功能

本文信息

- ▶ Supporting info
- ▶ PDF(299KB)
- ▶ [HTML全文]
- ▶ 参考文献[PDF]
- ▶ 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
- ▶ 引用本文
- ▶ Email Alert
- ▶ 文章反馈
- ▶ 浏览反馈信息

本文关键词相关文章

- ▶ 煤粉气流
- ▶ 高温空气点火
- ▶ 热空气温度
- ▶ 着火
- ▶ 熄火

本文作者相关文章

- ▶ 聂欣

PubMed

- ▶ Article by