

本期目录 | 下期目录 | 过刊浏览 | 高级检索
闭]

[打印本页] [关

论文

熔融盐催化煤与CO₂气化反应研究

周万云¹, 高建强¹, 王春波¹, 王晋权², 李永华¹, 陈鸿伟¹

1. 华北电力大学能源与动力工程学院
2. 国电安全生产技术服务中心

摘要:

利用自行设计的反应器研究熔融盐催化煤与CO₂的气化反应, 分析反应温度、催化剂和煤种对气化反应的影响。实验结果表明, 以熔融盐为催化剂的熔融盐催化煤CO₂气化反应的碳转化率较单纯煤CO₂气化反应有明显提高, 相同反应条件下, 无烟煤、贫煤、烟煤的提高幅度分别是: 76.38%~172.73%、46.98%~141.87%、40.52%~137.5%; 反应温度是影响熔融盐催化煤CO₂气化反应的主要因素, 在反应时间为90 min时, 反应温度从700 °C上升至820 °C, 无烟煤、贫煤和烟煤的碳转化率分别从0.14、0.162、0.192增至0.33、0.363和0.402, 其最佳反应温度为820 °C左右; 煤种不同使气化反应效果不同, 但添加熔融盐使反应活性较差的煤种也有很好的气化效果。利用动力学均相模型与未反应缩核模型对实验数据进行处理, 得出气化反应动力学参数。

关键词: 熔融盐 二氧化碳 催化气化 煤气化 动力学模型

Research on Gasification Reaction of Coal With CO₂ Catalyzed by Molten Salts

ZHOU Wan-yun¹, GAO Jian-qiang¹, WANG Chun-bo¹, WANG Jin-quan², LI Yong-hua¹, CHEN Hong-wei¹

1. School of Energy and Power Engineering, North China Electric Power University
2. China Guodian Corporation Service Center of Operation Safety Technology

Abstract:

The molten salt catalytic gasification kinetics of coal with carbon dioxide was carried out in the reactor designed by self. The reaction temperature, catalyst and coal type were considered in the experiment. Experiment results show, the conversion of coal catalyzed by molten salts in the gasification of coal with CO₂ has increased markedly compared to the gasification without the molten salts. In the same reaction conditions, the conversion of anthracite coal, lean coal and bituminous coal is respectively promoted by 76.38%~172.73%, 46.98%~141.87%, 40.52%~137.5%; The reaction temperature is the main factor in the gasification of coal with CO₂ catalyzed by molten salts, when the reaction time is 90 min, the reaction temperature increases from 700 °C to 820 °C, the conversion of anthracite coal, lean coal and bituminous coal increase respectively from 0.14, 0.162, 0.192 to 0.33, 0.363, 0.402, the best reaction temperature is about 820 °C; The different coal type makes different gasification results, but the less active coal has the excellent gasification results after adding the catalyst. The test data were processed with the homogeneous model and the shrinking core mode1 to obtain the kinetic parameters of the gasification reaction.

Keywords: molten salt carbon dioxide catalytic gasification coal gasification kinetic model

收稿日期 2008-04-18 修回日期 2008-07-07 网络版发布日期 2009-03-10

DOI:

基金项目:

国家自然科学基金项目(50876030)。

通讯作者: 周万云

作者简介:

参考文献:

本刊中的类似文章

扩展功能

本文信息

- Supporting info
- PDF(324KB)
- [HTML全文]
- 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

- 熔融盐
- 二氧化碳
- 催化气化
- 煤气化
- 动力学模型

本文作者相关文章

- 周万云
- 高建强
- 王春波
- 王晋权
- 李永华
- 陈鸿伟

PubMed

- Article by Zhou, M. Y
- Article by Gao, J. J
- Article by Yu, C. B
- Article by Yu, J. Q
- Article by Li, Y. H
- Article by Chen, H. W

文章评论 (请注意:本站实行文责自负, 请不要发表与学术无关的内容!评论内容不代表本站观点.)

反馈人

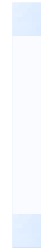
邮箱地址

反馈标题

验证码

3906

反馈内容



提交

Copyright 2008 by 中国电机工程学报