

热能工程

回注蒸汽微型燃气轮机系统研究

和彬彬 段立强 杨勇平

华北电力大学能源的安全与清洁利用北京市重点实验室 华北电力大学能源的安全与清洁利用北京市重点实验室 华北电力大学能源的安全与清洁利用北京市重点实验室

摘要: 应用复杂循环是进一步提高燃气轮机效率的重要途径。遵循此原则,研究了采用回注蒸汽措施对回热型微燃机性能的影响,并结合具体算例进行了计算分析。研究表明,回热循环与回注蒸汽循环可以互补,匹配关系良好,通过回注蒸汽可使回热型微燃机的效率与比功均得到显著提高。同时揭示了回热与回注蒸汽两者整合优化的基本规律:在回热度一定时,发电效率随着回注比增大而增大,在某点效率达到最大值,超过此点时,效率开始下降;在回热度不同时,回热度越高回注蒸汽后可达到的最高效率值越大。

关键词: 微型燃气轮机 回注蒸汽循环 回热循环 整合优化

Study on Steam Injected Micro Gas Turbine System

HE Bin-bin DUAN Li-qiang YANG Yong-ping

Abstract: It is an important way to improve the efficiency of gas turbine by applying the compound cycle. Based on this idea, the effects of steam injecting on performance of a regenerative micro gas turbine were studied with a case. Results show that the regenerative cycle and the steam injected cycle can effectively complement and match each other. Both the efficiency and the specific work of micro gas turbine can be improved remarkably. Some optimization rules integrating the two kinds of cycles were revealed as follows: When recuperator effectiveness is constant, the efficiency of micro gas turbine will increase with the increase of steam injected ratio and it will reach to a maximum at a certain steam injected ratio beyond which the efficiency of micro gas turbine will decrease; When recuperator effectiveness varies, the higher the recuperator effectiveness is, the higher the efficiency of micro gas turbine with steam injection is.

Keywords: micro gas turbine steam injected cycle regenerative cycle integration and optimization

收稿日期 2007-06-01 修回日期 1900-01-01 网络版发布日期

DOI:

基金项目:

通讯作者: 和彬彬

作者简介:

作者Email: hebin19790317@126.com

参考文献:

本刊中的类似文章

1. 赵巍 杜建一 徐建中. 微型燃气轮机与有机朗肯循环装置组成联合循环的设计与分析 [J]. 中国电机工程学报, 2009, 29(29): 19-24

扩展功能

本文信息

- Supporting info
- PDF(382KB)
- [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

- 微型燃气轮机
- 回注蒸汽循环
- 回热循环
- 整合优化

本文作者相关文章

- 和彬彬

PubMed

- Article by