

核能与可再生能源发电

## 太阳能-煤炭互补的发电系统与互补方式

崔映红<sup>1</sup>;杨勇平<sup>1</sup>;张明智<sup>1</sup>

华北电力大学能源的安全与清洁利用北京市重点实验室<sup>1</sup>

收稿日期 2007-4-24 修回日期 网络版发布日期 2008-4-15 接受日期

摘要

多能源综合互补利用系统是近年来能源系统的发展方向之一。该文进行了太阳能与煤炭互补的发电系统与互补方式研究。分析了太阳能热量用于不同容量燃煤机组不同受热面的热经济性,得出在大容量机组上利用太阳能满足水的汽化潜热吸热热经济性要优越于其他方式;利用技术成熟的抛物面槽式集热器收集太阳能热量,和国产300 MW机组进行互补发电系统的拟定;分析了在这种互补发电方式太阳能场的设计中,影响设计辐射强度选取的主要因素,并以3个地区的辐射资源为例进行研究,得出太阳能辐射资源与最佳设计太阳能辐射强度的关系。

关键词 [太阳能](#) [燃煤机组](#) [混合发电](#) [经济性](#) [辐射强度](#)

分类号 [TM 511](#)

## Solar-coal Complementary Electric Generation System and Its Modes

CUI Ying-hong YANG Yong-ping ZHANG Ming-zhi

Abstract

Utilizing multi energy sources synthetically and efficiently based on the system integration is one of the trends of energy science recently. Researches on solar-coal complementary electric generation system and its modes were performed. Firstly, thermal economy was analyzed when solar energy was used at different surface or heaters in various capacity coal-fired units. It is concluded that using solar energy to evaporate water in large capacity units is better than others; Thermal system was then proposed when the mature parabolic trough collectors were used to collect solar heat and integrated into a native 300 MW coal-fired unit. Finally, the factors affecting the chosen of designed solar irradiance were also discussed during the designing process of solar fields in a hybrid generation unit. In addition, solar resources of three different sites were used as examples to calculate the optimum designed solar irradiance, and the relationship between solar resources and the optimum designed solar irradiance was obtained.

Key words [Solar energy](#) [Coal-fired plant](#) [Hybrid electric generation](#) [Economy](#) [Irradiation intension](#)

DOI :

通讯作者 崔映红 [cuiyinghong@sina.com](mailto:cuiyinghong@sina.com); [ncepucyh@tom.com](mailto:ncepucyh@tom.com); [ncepucyh@yahoo.com.cn](mailto:ncepucyh@yahoo.com.cn)

作者个人主页 崔映红 杨勇平 张明智

### 扩展功能

本文信息

▶ [Supporting info](#)

▶ [PDF \(323KB\)](#)

▶ [\[HTML全文\]\(OKB\)](#)

▶ [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](#)

▶ [复制索引](#)

▶ [Email Alert](#)

相关信息

▶ [本刊中 包含“太阳能 燃煤机组 混合发电 经济性 辐射强度”的 相关文章](#)

▶ 本文作者相关文章

· [崔映红](#)

· [杨勇平](#)

· [张明智](#)