中国电机工程学报 2008, 28(23) 42-45 DOI: ISSN: 0258-8013 CN: 11-2107/TM

热能工程

定功率下加热器端差对机组热经济性的影响

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摘要： 定功率分析机组的热经济性有非常重要的意义。该文基于热力系统矩阵热平衡方程式与热耗变换系数的理论，通过严密的数学推导，建立了定功率条件下加热器端差对机组热经济性影响的简易数学模型。该数学模型考虑了热力系统的结构特点和辅助汽水系统的影响，并分别针对不同类型的加热器及在加热器之间采用不同连接方式时对机组热效率与加热器端差之间的依变关系进行了讨论。以某600MW机组为例，分别计算了其各级加热器端差增大2℃对机组热经济性的影响。研究表明，加热器端差对机组热经济性的影响可以用端差大小、热耗变换系数及相关的流量系数来描述。

关键词： 定功率法 加热器端差 机组热经济性 矩阵法 热耗变换系数

Influence of Terminal Temperature Difference on Thermal Economy Under Conditions of Constant Power Output

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Abstract: It is very important to analyze the influence of terminal temperature difference on thermal economy of unit under conditions of constant power output. Based on the structural matrix of thermodynamic system and theory of heat rate transformation coefficient, a calculation model for the influence of terminal temperature difference on thermal economy of unit under this condition was derived. This model took into account of the influence of the steam-water auxiliary system and the structural characteristics of thermodynamic system. The relation between thermal efficiency and terminal temperature difference influenced by different types and connections of heaters were discussed. The change of thermal economy of a 600MW unit was calculated when the terminal temperature difference increases by 2℃. The results indicate that the influence of terminal temperature has relationship with terminal temperature difference, steam flux and heat rate transformation coefficient.

Keywords: constant power output method terminal temperature difference thermal economy matrix method heat rate transformation coefficient

收稿日期 2007-07-17 修回日期 1900-01-01 网络版发布日期

DOI:

基金项目:

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