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论文

电力系统的超前热定值及其应用探讨

张辉 王孟夏 韩学山

张辉 王孟夏 韩学山: 山东大学电气工程学院, 山东 济南 250061; 张辉: 济南供电公司, 山东 济南 250012

摘要:

通过设定保守环境条件而确定的输电线路允许载流量在大部分时间内限制了线路热载能力的发挥.从实时运行角度出发,以反映电热耦合关系的热平衡方程为基础,对线路热载能力进行重新审视,并给出静态热定值和暂态热定值的定义,在此基础上以温度决定导体热载能力为核心,温度与电力系统运行调度相牵连为线索,提出超前热定值的新概念,并以超前调度、安全调度为例,阐述超前热定值的应用前景,为深层次地研究电力系统运行调度中电热协调理论奠定基础.

关键词: 电力系统;输电线路;超前热定值

The advanced thermal rating of power system and its application

ZHANG Hui, WANG Meng-xia, HAN Xue-shan: School of Electrical Engineering, Shandong University, Jinan 250061, China;

ZHANG Hui: Jinan Power Supply Company, Shandong, Jinan 250012, China

Abstract:

Current-carrying capacity of transmission lines obtained by setting conservative weather conditions limits the exertion of line heat capacity most of the time. Based on the heat balance equation that reflects the coordination relationship between heat and electricity, the heat capacity of transmission lines was reevaluated from the angle of real-time operation, and the definitions of static thermal rating and dynamic thermal rating were presented. From the standpoint that heat capacity is determined by the conductor temperature and the research clue that the temperature and power system operation dispatch are interlinked, a new concept of advanced thermal rating was proposed and its application foreground was expatiated by examples of advanced dispatch and security dispatch. The research can provide a foundation for the in-depth research of electro-thermal coordination in dispatch operation of power systems.

Keywords: power system; transmission line; advanced thermal rating

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作者简介:

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