

电力系统

基于TCSC技术和粒子群优化算法的电力系统阻塞疏导方法

周 前¹, 方万良²

1. 江苏省电力试验研究院有限公司, 江苏省 南京市 210036; 2. 西安交通大学 电气工程学院, 陕西省 西安市 710048

收稿日期 2007-5-7 修回日期 网络版发布日期 2008-4-8 接受日期

摘要

提出了一种基于晶闸管控制的串连电容器(thyristor controlled series capacitor, TCSC)技术和粒子群优化算法的电力系统阻塞疏导方法。首先根据线路灵敏度分析确定安装TCSC的线路; 然后提出了电力市场环境下电网中含有TCSC装置的阻塞疏导计算数学模型; 最后运用粒子群优化算法对这一数学模型进行参数优化, 达到疏导电网阻塞的目的。IEEE 14节点系统算例表明, 基于TCSC技术进行电网阻塞疏导是有效、合理的。

关键词

[电力市场; 阻塞疏导; 晶闸管控制的串联电容器; 灵敏度分析; 粒子群优化\(PSO\)](#)

分类号 [F129.4](#)

Studies on Congestion Management of Power Systems Based on TCSC and PSO

ZHOU Qian¹, FANG Wan-liang²

1. Jiangsu Electric Power Research Institute Company Limited, Nanjing 210036, Jiangsu Province, China;

2. School of Electrical Engineering, Xi'an Jiaotong University, Xi'an 710048, Shaanxi Province, China

Abstract

Based on the technology of thyristor controlled series capacitor (TCSC) and particle swarm optimization (PSO), a congestion management approach for power systems is proposed. According to the result of sensitivity analysis, the authors firstly decide the transmission line where the TCSC device should be installed; then a mathematical model for the congestion management calculation of power network containing TCSC device under the electricity market environment is proposed; finally by use of particle swarm optimization(PSO), the parameters of the proposed mathematical model is optimized to achieve the goal of congestion management. The calculation results of IEEE 14-bus test system show that the TCSC technology based congestion management is reasonable and effective.

Key words

[electricity market; congestion management; TCSC; sensitivity analysis; particle swarm optimization \(PSO\)](#)

DOI:

通讯作者 周前 xjtu@jsepc.com.cn

作者个人主页 周 前¹; 方万良²

扩展功能

本文信息

▶ [Supporting info](#)

▶ [PDF\(195KB\)](#)

▶ [\[HTML全文\]\(OKB\)](#)

▶ [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](#)

▶ [文章反馈](#)

▶ [浏览反馈信息](#)

相关信息

▶ [本刊中 包含 “](#)

[电力市场; 阻塞疏导; 晶闸管控制的串联电容器; 灵敏度分析; 粒子群优化\(PSO\)](#)

[” 的相关文章](#)

▶ [本文作者相关文章](#)

· [周 前](#)

· [方万良](#)