

# 电网与清洁能源

Power System and Clean Energy

中文核心期刊 Chinese Core Journals

中国科技核心期刊 Chinese Science and Technology Core Periodical

美国《乌利希期刊指南》收录期刊 Indexed by Ulrich's Periodicals Directory, United States

波兰《哥白尼索引》(IC)来源期刊 Source Periodicals for Index of Copernicus (IC), Poland



基于DFIG风电场功率振荡的成因分析

Analysis of Causes of Oscillation in the Wind Farm System  
Based on DFIG

ISSN 1674-3814

07&gt;



万方数据

主管单位  
主办单位

国家电网公司  
国网陕西省电力公司  
西安理工大学水电土木工程建筑研究设计院  
State Grid Corporation of China  
State Grid Shaanxi Electric Power Company  
Design Academy of Water Conservancy Hydroelectric  
Civil Engin&ARCH of Xi'an University of Technology

2017  
07

# 目次

《电网与清洁能源》 2017年第7期·第33卷·总第216期·7月

## 智能电网

- 01 基于相似理论的电能质量试验电源研究 / 吴楠, 李尚盛, 孙建军  
08 综合无功优化与网络重构的配电网优化运行研究 / 顾明宏, 孙为兵, 顾颖歆, 赵健, 金诚, 王薪苹  
13 考虑电压稳定性的油田电机-抽油机启动特性及失压脱扣保护研究 / 时振堂, 陈瑶, 崔朝丽, 陈科成, 康忠健  
19 基于D5000平台的继电保护远方操作双确认技术研究与应用 / 钱海, 邱金辉, 贾松江, 杨飞, 于游, 姜健琳  
25 故障限流器对电网安全稳定的影响及应用研究综述 / 吕亚洲, 崔晓丹, 胡阳, 李熙, 李威, 李碧君  
35 基于全软件控制方式的船舶岸电系统船侧逆功率防护技术研究 / 徐鲲鹏, 卜佩征, 赵羨龙, 李晓光, 周诚根  
39 基于双层改进粒子群算法含DG配电网的重构策略研究 / 朱斌, 孙展展, 赵晋泉, 苏大威, 吴海伟  
47 智能电网中电力通信传输参数远程监测系统优化设计 / 王坤  
53 基于改进PSO算法的微电网调度方法 / 王向红  
58 基于改进教与学算法的配电网无功优化 / 蒋嘉焱, 李红伟, 向美龄, 刘宇陆, 林山峰  
64 基于Open DSS的配电网低电压问题治理优化策略研究 / 刘明忠, 洪扬, 刘佳钰, 顾晨临, 张宏图, 曾方迪, 滕予非, 宁联辉  
73 改进的Buck-Boost变换器的无源性控制策略 / 杨小斌, 杨金明, 向如意  
77 通信延时环境下虚拟发电厂分布式控制收敛速度分析 / 郭峰, 赵逸岚, 杨欢  
85 城市管廊中电缆线路运行热环境研究 / 李红雷, 俞瑾华, 蒋晓娟, 徐永铭, 包海龙  
90 基于小波神经网络方法的电力需求预测 / 沈放, 吴静进, 谢风连

## 清洁能源

- 97 基于DFIG风电场功率振荡的成因分析 / 王兴亮, 姚钢, 周荔丹, 王丰华, 顾临峰, 王杰  
105 玉米秸秆低温热解制备生物质炭的特性研究 / 刘大贵, 李伊光, 王孟晴, 王留成  
110 考虑大量分布式电源接入的主配网协同优化控制 / 张振伟, 赵晋泉, 韩佳兵, 林昌年, 魏文辉  
116 燃煤电厂SO<sub>2</sub>超低排放技术研究及其应用 / 张宗来  
123 电力市场环境下含风电电力系统旋转备用优化 / 汪泳涛, 赵健  
129 光伏直流系统对地绝缘检测方法研究 / 杨青波, 黄小有, 柴卫强, 邹复春, 李文雅  
134 基于BIM技术的漆水河倒虹改建工程设计与研究 / 白勇, 赵蕾蕾, 张金辉, 张玉明, 申鲁

本刊送阅:

国务院、国家能源局、各省(区)政府电力、能源主管领导

国家电网、能源企业主要负责人

中国科学院、中国工程院院士

电力、能源相关学会、协会

中国国家图书馆、中国版本图书馆、各省(区)图书馆

万方数据

# Contents

Power System and Clean Energy

2017 Vol.33 No.7 (Ser.216) Monthly

## Smart Grid

- 01 Study of Power Quality Testing Supply Based on Similarity Theory / *WU Nan, LI Shangsheng, SUN Jianjun*
- 08 Comprehensive Operational Optimization of Distribution Network Based on Combining Reactive Power Optimization and Network Reconfiguration/ *GU Minghong, SUN Weibing, GU Yingxin, ZHAO Jian, JIN Cheng, WANG Xinpeng*
- 13 Study on Starting Characteristic and Under-Voltage Release Protection of Motor-Pumping Unit in Oilfield Considering Voltage Stability / *SHI Zhentang, CHEN Yao, CUI Zhaoli, CHEN Kecheng, KANG Zhongjian*
- 19 Research and Application of Double Confirmation Technology for Relay Protection Remote Operation Based on D5000 Platform / *QIAN Hai, QIU Jinhuai, JIA Songjiang, YANG Fei, YU You, JIANG Jianlin*
- 25 Effects of Fault Current Limiter on the Safety and Stability of Power Grid and Its Application : A Research Review/ *LÜ Yazhou, CUI Xiaodan, HU Yang, LI Xi, LI Wei, LI Bijun*
- 35 Research on the Ship-Side Reverse Power Protection Technology of the Ship Shore Power System Based on Full Software Control/ *XU Kunpeng, BU Peizheng, ZHAO Xianlong, LI Xiaoguang, ZHOU Chenggen*
- 39 Reconfiguration Strategy of Distribution Network with DG Based on Double Layer Improved Particle Swarm Optimization / *ZHU Bin, SUN Zhanzhan, ZHAO Jinquan, SU Dawei, WU Haiwei*
- 47 Optimization Design of the Remote Monitoring System of Power Communication Transmission Parameters in the Smart Grid / *WANG Kun*
- 53 A New Scheduling Method of Microgrid Based on Improved PSO Algorithm / *WANG Xianghong*
- 58 Reactive Power Optimization of Distribution Power System Based on Improved Teaching-Learning Optimization Algorithm / *JIANG Jiayan, LI Hongwei, XIANG Meiling, LIU Yulu, LIN Shansheng*
- 64 Researches on the Optimization Strategy for Low Voltage Management in Three Phase Power Distribution Networks Based on Open DSS /*LIU Mingzhong, HONG Yang, LIU Jiayu, GU Chenlin, ZHANG Hongtu, ZENG Fangdi, TENG Yufei, NING Lianhui*
- 73 Passivity-Based Control Method for Improved Buck-Boost Converters / *YANG Xiaobin, YANG Jinming, XIANG Ruyi*
- 77 Convergence Speed Analysis for Distributed Control of Virtual Power Plant with Time-Delays / *GUO Feng, ZHAO Yilan, YANG Huan*
- 85 Study on the Thermal Environment of Cable Operation in Urban Corridors / *LI Honglei, YU Jinhua, JIANG Xiaojuan, XU Yongming, BAO Hailong*
- 90 Electric Power Demand Forecasting Based on Wavelet Neural Network Method / *SHEN Fang, WU Jingjin, XIE Fenglian*

## Clean Energy

- 97 Analysis of Causes of Oscillation in the Wind Farm System Based on DFIG / *WANG Xingliang, YAO Gang, ZHOU Lidan, WANG Fenghua, GU Linfeng, WANG Jie*
- 105 Study on the Properties and Preparation of Biocoal from Corn Straw by Low Temperature Pyrolysis / *LIU Dagui, LI Yiguang, WANG Mengqing, WANG Liucheng*
- 110 Collaborative Optimization Control of the Transmission and Distribution Networks Considering a Large Number of DGs Connected / *ZHANG Zhenwei, ZHAO Jinquan, HAN Jiabing, LIN Changnian, WEI Wenhui*
- 116 Review of Ultra-Low Emission Technologies of SO<sub>2</sub> and Their Practical Application / *ZHANG Zonglai*
- 123 Optimal Spinning Reserve of Power System with Wind Power Penetrated Under Power Market Environments / *WANG Yongtao, ZHAO Jian*
- 129 Research on DC System to Ground Insulation Detection Method for Photovoltaic Power Stations / *YANG Qingbo, HUANG Xiaowei, CHAI Weiqiang, ZOU Fuchun, LI Wenya*
- 134 Design of and Research into the Qishui River Inverted Siphon Reconstruction Based on BIM Technology / *BAI Yong, ZHAO Leilei, ZHANG Jinhui, ZHANG Yuming, SHEN Lu*

