

# 电网与清洁能源

Power System and Clean Energy

中国科技核心期刊 China's Core Sci-Tech Journals

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

DIANWANG YU QINGJIENENG YUAN

本期关注  
FOCUS



## □ 面向电网稳定性的智能化直流输电控制系统

Power Grid-Oriented Stability Multi-Agent DC Power Transmission Control System

ISSN 1674-3814



06>

主管单位 西北电网有限公司

主办单位 西北电网有限公司

西安理工大学水电土木工程建筑研究设计院

Northwest China Grid Company Limited

Northwest China Grid Company Limited

Design Academy of Water Conservancy Hydroelectric

Civil Engin&ARCH of Xi'an University of Technology

2012  
06

# 目次

《电网与清洁能源》 2012年第6期·第28卷·总第155期·6月

## 智能电网

- 01 面向电网稳定性的智能化直流输电控制系统 / 常勇, 李辉, 梁云丹  
08 谐振补偿在大型发电机中性点接地中的应用 / 熊再豹, 卢伟, 郭宗香, 苏光, 王林, 陈晓  
13 基于区间数逼近的微网电压暂降风险评估 / 李国栋, 严宇, 皮俊波, 王震  
19 一种基于PSCAD/EMTDC仿真平台的SVPWM逆变器控制算法 / 张紫凡, 向萌, 焦茜茜, 闫兴建  
25 无源滤波器的一种实用改进方法 / 李璨, 杭乃善, 廖敏乐, 曾志明  
29 基于改进下垂特性的微网功率控制方法 / 朱珺敏, 李鹏, 王阳, 陈超  
34 一种经济型故障限流器及其控制策略 / 苟霖, 蔡盛舟  
39 青海-西藏±400 kV直流线路工程绝缘配合研究 / 张小力, 郝阳  
44 变压器三相涌流波形特征分析及判别方法研究 / 卓元志, 李康, 赵斌, 韩斌, 赵雪沉缨  
49 耐热导线应用在500 kV输电线路的线路设计及电磁环境评估 / 刘昱, 周云浩, 李成学, 谢景海  
55 具有智能化特征的安全稳定分析与控制决策技术 / 李碧君, 徐泰山, 鲍颜红, 刘韶峰, 王胜明, 王昊昊, 徐伟  
61 基于小波熵和BP神经网络的孤岛检测与扰动辨识 / 梁雪飞, 陈歆技  
66 基于BP神经网络的并联型有源电力滤波器直流侧电压PID控制设计 / 李建科, 王金全, 马涛, 阙海丹

## 清洁能源

- 70 改善基于双馈感应发电机并网风电场的低电压穿越能力研究 / 赵海岭, 王维庆, 姚秀萍, 常喜强  
76 电网电压不平衡下变速恒频双馈感应电机的自适应控制 / 高治国, 焦晓红  
83 适应我国大规模风电接入的合理电网结构构建原则的思考 / 戚庆茹, 刘建琴, 王智冬  
88 风电场风切变指数研究 / 马惠群, 曲宁, 李超, 王守峰  
91 新能源发电与电能质量问题浅析 / 陈波, 李果, 杨胜辉, 苏楚研

## 水力发电

- 97 电力市场上发电侧无功定价研究分析 / 崔明华  
100 变态混凝土应用及施工技术 / 叶剑, 张艳杰

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  
2012 Vol.28 No.6 (Jun.155) Monthly

## Smart Grid

- 01 Power Grid–Oriented Stability Multi–Agent DC Power Transmission Control System /  
*CHANG Yong, LI Hui, LIA NG Yun-dan*
- 08 Application of Resonant Compensation in Neutral Grounding Mode of Large Generators /  
*XIONG Zai-bao, LU Wei, GUO Zong-xiang, SU Guang, WANG Lin, CHEN Xiao*
- 13 Risk Assessment of Micro–Grid Voltage Sag Based on an Approximation Method of Interval  
Numbers /*LI Guo-dong, YAN Yu, PI Jun-bo, WANG Zhen*
- 19 ASVPWM Inverter Control Algorithm Based on PSCAD/EMTDC /*ZHANG Zi-fan, XIANG Meng,*  
*JIAO Qian-qian, YAN Xing-jian*
- 25 An Improved Practical Method of Passive Filter /*LI Can, HANG Nai-shan, LIAO Min-le, ZENG Zhi-ming*
- 29 Micro–Grid Power Control Method Based on Improved Droop Characteristics /*ZHU Jun-min,*  
*LI Peng, WANG Yang, CHEN Chao*
- 34 An Economical Fault Current Limiter and Its Control Strategy /*COU Lin, CAI Sheng-zhou*
- 39 Research on Insulation Coordination for ±400 kV Qinghai–Tibet HVDC Transmission Line /  
*ZHANG Xiao-li, HAO Yang*
- 44 Analysis and Assessment Methods of Waveform Characteristics of Three–Phase Transformer  
Inrush Current /*ZHUO Yuan-zhi, LI Kang, ZHAO Bin, HAN Bin, ZHAO Xue-chen-ying*
- 49 Design and Electromagnetic Environment Evaluation of the 500 kV Transmission Line Using  
Thermal Resistant Conductors /*LIU Yu, ZHOU Yun-hao, LI Cheng-xue, XIE Jing-hai*
- 55 Intelligent Safety and Stability Control and Control Decision–Making Support Technology /  
*LI Bi-jun, XU Tai-shan, BAO Yan-hong, LIU Shao-feng, WANG Sheng-ming, WANG Hao-hao, XU Wei*
- 61 Islanding Detection and Disturbance Disturbance Based on Wavelet Entropy Theory and BP  
Neural Network /*LIANG Xue-fei, CHEN Xin-ji*
- 66 Design of DC Voltage with PID Control of Shunt Active Power Filter Based on BP Neural Network /  
*LI Jian-ke, WANG Jin-quan, MA Tao, QUE Hai-dan*

## Clean Energy

- 70 Study on Low Voltage Ride Through Enhancement of Grid–Connected Wind Farm Based on  
Doubly Fed Induction Generator /*ZHAO Hai-ling, WANG Wei-qing, YAO Xiu-ping, CHANG Xi-qiang*
- 76 Self–Adaptation Control of Double–Fed Induced Generators under the Unbalanced Grid Voltage /  
*GAO Zhi-guo, JIAO Xiao-hong*
- 83 Designing Principles for Reasonable Power Grid Structure to Accommodate Integration of  
Large–Scaled Wind Farms /*QI Qing-ru, LIU Jian-qin, WANG Zhi-dong*
- 88 Study on Wind Shear Exponents of Wind Farms /*MA Hui-qun, QU Ning, LI Chao, WANG Shou-feng*
- 91 A Brief Analysis of New Energy and Power Quality /*CHEN Bo, LI Guo, YANG Sheng-hui, SU Chu-yan*

## Water Power

- 97 Research on Reactive Pricing at the Generation Side in Power System Market /*CUI Ming-hua*
- 100 Application and Construction Technology of Distorted Concrete /*YE Jian, ZHANG Yan-jie*