



# 中国电机工程学报

ZHONGGUO DIANJI GONGCHENG XUEBAO

第35卷

第20期(总第535期)

2015年10月20日

## 目 次

(论文电子版 <http://www.pcsee.org/CN/column/home.shtml>)

### · 智能电网 ·

- 电网安全运行知识的表达与演变 ..... 赵峰, 黄天恩, 孙宏斌 (5117)  
一种平抑微网联络线功率波动的电池及虚拟储能协调控制策略 ..... 王冉, 王丹, 贾宏杰, 杨占勇, 等 (5124)  
集群风电虚拟机组时变概率模型及调度性能指标(一): 时变概率模型 ..... 叶希, 鲁宗相, 乔颖, 闵勇 (5135)  
基于模块化多电平换流器的直流电网预充电控制策略 ..... 阎发友, 汤广福, 孔明 (5147)  
光伏并网逆变器不平衡故障穿越限流控制策略 ..... 郭小强, 刘文钊, 王宝诚, 卢志刚, 孙孝峰 (5155)

### · 大电网规划与运行 ·

- 发电机无功备用评估与优化方法综述 ..... 孙全才, 程浩忠, 马则良, 朱忠烈, 张健, 宋越, 杨堤 (5163)  
大型风电场中不同位置的风机对次同步谐振特性影响程度的比较分析 ..... 董晓亮, 谢小荣, 李江, 韩英铎 (5173)  
相近扭振频率并联发电机组次同步振荡研究 ..... 张鹏, 毕天姝, 杨奇逊, 贺静波 (5181)  
基于成本-价值解耦的源-荷备用协同优化 ..... 王凯, 褚晓东, 张文 (5188)  
中长期发电计划的值函数近似动态规划方法 ..... 梁振成, 韦化, 李凌, 田君杨 (5199)

### · 继电保护、通信及自动化 ·

- 考虑二次回路暂态传变特性的单端组合测距算法及其应用 ..... 许飞, 董新洲, 王宾, 施慎行 (5210)  
基于雷电定位系统与行波实测数据的雷击故障关联度分析 ..... 曹璞璘, 束洪春, 马仪, 黄然, 董俊, 等 (5220)  
基于能量比函数的串补线路行波故障测距 ..... 商立群, 夏远洋 (5228)  
基于信道认知在线可定义的电力线载波通信方法 ..... 李建岐, 陆阳, 高鸿坚 (5235)

### · 发电 ·

- 比表面积和灰分对烟煤半焦气化机理的影响 ..... 唐佳, 王勤辉, 张睿, 施正伦, 岑可法 (5244)  
粉煤灰改性钙基吸收剂循环碳酸化实验研究 ..... 陈惠超, 王芳, 赵伶玲, 赵长遂 (5251)  
1 000 MW 级机组电袋复合除尘特性三维数值模拟研究 ..... 孙超凡, 彭泽宏, 郑华昌, 陈奎续, 楼波, 等 (5258)  
某660 MΩ前后墙对冲燃煤锅炉贴壁风优化方案的数值模拟 ..... 陈天杰, 姚露, 刘建民, 黄启龙, 等 (5265)  
基于结构安全裕量准则的反应堆压力容器承压热冲击分析 ..... 陈明亚, 吕峰, 王荣山, 余伟炜, 等 (5272)

### · 电力电子与电力传动 ·

- 一种采用级联型多电平技术的 IPT 系统谐波消除与功率调节方法 ..... 李勇, 麦瑞坤, 陆立文, 何正友 (5278)  
基于恒流源补偿网络的电磁感应式非接触能量传输的 LED 驱动电路 ..... 韩洪豆, 曲小慧, 等 (5286)  
老化试验条件下的 IGBT 失效机理分析 ..... 赖伟, 陈民铀, 冉立, 王学梅, 徐盛友 (5293)  
逆变电源的广义虚拟电路控制方法 ..... 陈宏志, 王大志, 宋崇辉 (5301)  
可适应宽频带的抗混叠有源阻尼控制策略 ..... 孙素娟, 瞿炜, 瞿兴鸿, 程谦, 毛亚辉 (5310)

### · 电机与电器 ·

- 潜液式液化天然气泵用变频低温异步电机的关键参数设计 ..... 艾程柳, 黄元峰, 王海峰, 顾国彪 (5317)  
超精密微动台变磁阻电机建模 ..... 陈安林, 张鸣, 朱煜 (5327)  
新型超环面混合励磁电机的结构及特性分析 ..... 刘欣, 许立忠, 聂岭 (5335)  
特高压干式空心平波电抗器温度场耦合计算与试验 ..... 姜志鹏, 文习山, 王羽, 陈瑞珍, 曹继丰, 等 (5344)

### · 高电压技术 ·

- 用于油中局部放电定位的超声波接收阵列的定向算法比较 ..... 辛晓虎, 罗勇芬, 杜非, 唐啸, 李彦明 (5351)  
一种激光触发真空开关的触发特性研究 ..... 樊文芳, 何正浩, 王英, 毛晓坡, 林华中, 刘壮 (5360)  
纵向磁场中触头材料和直径对中频真空电弧特性的影响 ..... 蒋原, 武建文 (5367)  
高压直流输电线路分布参数测量新方法 ..... 肖遥, 邓军, 夏谷林, 杨晓峰, 张晋寅 (5375)

### · 行业信息 ·

- 《中国电机工程学报》荣获“2015 年期刊数字影响力 100 强” ..... (5162)  
“直流输电技术”专题征稿启事 ..... (5234)  
“电网信息物理系统”专题征稿启事 ..... (5343)  
“分布式能源系统”专题征稿启事 ..... (5383)  
“燃烧源细颗粒物形成与排放控制技术”专题征稿启事 ..... (5384)

### · 英文概述见论文电子版

**PROCEEDINGS OF THE CHINESE SOCIETY FOR  
ELECTRICAL ENGINEERING**  
**(PROCEEDINGS OF THE CSEE)**

Vol.35 No.20 (Ser. 535)

Oct. 20, 2015

**CONTENTS**

(Electronic Journals <http://www.pcsee.org/EN/column/current.shtml>)

**• Smart Grid •**

- Expression and Evolvement of Power System Security Operating Knowledge ..... ZHAO Feng, HUANG Tianen, SUN Hongbin (5117)  
A Coordination Control Strategy of Battery and Virtual Energy Storage to Smooth the Micro-grid Tie-line Power Fluctuations ..... WANG Ran, WANG Dan, JIA Hongjie, YANG Zhenyong, et al (5124)  
Time-varying Probabilistic Model and Dispatch Performance Indices for Wind Farm Cluster Virtual Power Generator—Part I: Time-varying Probabilistic Model ..... YE Xi, LU Zongxiang, QIAO Ying, MIN Yong (5135)  
Pre-charging Control Strategy for MMC-based DC Grid ..... YAN Fayou, TANG Guangfu, KONG Ming (5147)  
Fault Ride Through Control of PV Grid-connected Inverter With Current-limited Capability Under Unbalanced Grid Voltage Conditions ..... GUO Xiaoqiang, LIU Wenzhao, WANG Baocheng, LU Zhigang, SUN Xiaofeng (5155)

**• Large Power Grid Planning and Operation •**

- A Review on the Evaluation and Optimization of Generator Reactive Power Reserve ..... SUN Quancai, CHENG Haohong, MA Zeliang, ZHU Zhonglie, ZHANG Jian, SONG Yue, YANG Di (5163)  
Comparative Study of the Impact on Subsynchronous Resonance Characteristics From the Different Location of Wind Generators in a Large Wind Farm ..... DONG Xiaoliang, XIE Xiaorong, LI Jiang, HAN Yingduo (5173)  
Research on Subsynchronous Oscillation of Parallel Connected Generators With Close Torsional Frequencies ..... ZHANG Peng, BI Tianshu, YANG Qixun, HE Jingbo (5181)  
Cooperative Optimization for Supply/Demand Side Reserve by Decoupling Cost and Value of Reserve ..... WANG Kai, CHU Xiaodong, ZHANG Wen (5188)  
A Method of Value Function Approximate Dynamic Programming for Medium/Long Term Generation Scheduling ..... LIANG Zhencheng, WEI Hua, LI Ling, TIAN Junyang (5199)

**• Power System Relaying, Communication and Automation •**

- Single-ended Assembled Fault Location Method and Application Considering Secondary Circuit Transfer Characteristics ..... XU Fei, DONG Xinzhou, WANG Bin, SHI Shenxing (5210)  
The Correlation Degree of Lightning Location System and Measured Field Traveling Wave Data for Lightning Induced Fault Distinguishing ..... CAO Pulin, SHU Hongchun, MA Yi, HUANG Ran, DONG Jun, et al (5220)  
Energy Ratio Function-based Traveling Wave Fault Location for Series Compensated Line ..... SHANG Liqun, XIA Yuanyang (5228)  
On (Power-) Line Defined Power Line Communication Solution Based on Channel Sensing ..... LI Jianqi, LU Yang, GAO Hongjian (5235)

**• Power Generation •**

- Effect of Specific Surface Area and Ash Content on the Mechanisms of Bituminous Coal Char Gasification ..... TANG Jia, WANG Qinhuai, ZHANG Rui, SHI Zhenglun, CEN Kefa (5244)  
Study on Cyclic Carbonation Property of CaO-based Sorbents Modified With Fly Ash ..... CHEN Huichao, WANG Fang, ZHAO Lingling, ZHAO Changsui (5251)  
Three-dimensional Numerical Simulation of Collection Properties of a 1 000 MW Electrostatic-fabric Integrated Precipitator ..... SUN Chaofan, PENG Zehong, ZHENG Huachang, CHEN Xukui, LOU Bo, et al (5258)  
Numerical Simulation on the Optimization of Closing-to-wall Air in a 660 MW Front and Rear Wall Opposed Coal-fired Boiler ..... CHEN Tianjie, YAO Lu, LIU Jianmin, HUANG Qilong, et al (5265)  
Analysis of the Pressurized Thermal Shock of Reactor Pressure Vessel Based on the Structure Safety Margin Criterion ..... CHEN Mingya, LÜ Feng, WANG Rongshan, YU Weiwei, et al (5272)

**• Power Electronics and Drives •**

- A Harmonic Elimination and Power Regulation Approach of a Cascaded Multilevel Technology in IPT Systems ..... LI Yong, MAI Ruikun, LU Liwen, HE Zhengyou (5278)  
An Inductive-power-transferred LED Driver With Constant-current Compensation Tanks ..... HAN Hongdou, QU Xiaohui, et al (5286)  
Analysis of IGBT Failure Mechanism Based on Ageing Experiments ..... LAI Wei, CHEN Minyou, RAN Li, WANG Xuemei, XU shengyou (5293)  
A Generalized Virtual Circuit Control Method for Inverters ..... CHEN Hongzhi, WANG Dazhi, SONG Chonghui (5301)  
Anti-aliasing Active Damping Control Strategy Adaptable for Wide Band ..... SUN Sujuan, ZHAI Wei, QU Xinghong, CHENG Qian, MAO Yahui (5310)

**• Electric Machines and Apparatus •**

- Important Parameters Design of Inverter-driven Cryogenic Induction Motor for Submerged Liquid Natural Gas Pump ..... AI Chengliu, HUANG Yuanfeng, WANG Haifeng, GU Guobiao (5317)  
Modeling of the Variable Reluctance Actuator in Ultra-precision Microstage ..... CHEN Anlin, ZHANG Ming, ZHU Yu (5327)  
Structure and Characteristic Analysis of a Novel Toroidal Motor With Hybrid Excitation ..... LIU Xin, XU Lizhong, NIE Ling (5335)  
Test and Coupling Calculation of Temperature Field for UHV Dry-Type Air-Core Smoothing Reactor ..... JIANG Zhipeng, WEN Xishan, WANG Yu, CHEN Ruizhen, CAO Jifeng, et al (5344)

**• High Voltage Engineering •**

- Comparisons of Direction of Arrival Algorithms Applied to Ultrasonic Arrays for Partial Discharge Location in Oil ..... XIN Xiaohu, LUO Yongfen, DU Fei, TANG Xiao, LI Yanming (5351)  
Experiment Research on the Trigger Characteristics of a Laser-Triggered Vacuum Switch ..... FAN Wenfang, HE Zhenghao, WANG Ying, MAO Xiaopo, LIN Huazhong, LIU Zhuang (5360)  
Effects of Contact Materials and Diameters on Characteristics of Intermediate-frequency Vacuum Arc in Axial Magnetic Field ..... JIANG Yuan, WU Jianwen (5367)  
A Novel Distributed Parameters Measurement Method of HVDC Transmission Line ..... XIAO Yao, DENG Jun, XIA Gulin, YANG Xiaofeng, ZHANG Jinyin (5375)

**• For Extended Summaries, Please See the Electronic Journals.**