



中国电机工程学报

ZHONGGUO DIANJI GONGCHENG XUEBAO

第 40 卷

第 1 期 (总第 636 期)

2020 年 1 月 5 日

目 次

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

· 大电网规划与运行 ·

- 利用储能系统实现可再生能源微电网灵活安全运行的研究综述 刘畅, 卓建坤, 赵东明, 李水清, 等 (1)
柔性直流输电系统高频振荡特性分析及抑制策略研究 郭贤珊, 刘泽洪, 李云丰, 卢亚军 (19)
基于有效输电成本的输电网扩展规划 陈典, 钟海旺, 夏清, 杨知方 (30)
聚光型太阳能电站与风电商联合优化运行及竞价策略 方宇晨, 赵书强 (39)
电力系统惯性的时空特性及分析方法 曾繁宏, 张俊勃 (50)
基于改进 K-means 聚类技术与半不变量法的电 - 气综合能源系统运行风险评估方法 谢桦, 陈昊, 等 (59)

· 泛在电力物联网 ·

- 泛在电力物联网智能感知关键技术发展思路 周峰, 周晖, 刁瀛龙 (70)

· 智能电网 ·

- 新能源发电的伊藤随机过程模型 陈晓爽, 林今, 刘锋, 宋永华 (83)
配电线弧光高阻故障检测技术综述 王宾, 崔鑫, 董新洲 (96)
适用于电力系统凸优化场景的能源区块链底层技术 平健, 陈思捷, 严正 (108)
基于 Multi-Agent 异步深度强化学习的居民住宅能耗在线优化调度研究 张虹, 申鑫, 穆昊源, 等 (117)
考虑类别不平衡的海量负荷用电模式辨识方法 李想, 王鹏, 刘洋, 许立雄 (128)

· 发电 ·

- 基于在线监测数据的燃煤电厂大气污染物达标评判方法研究 孙雪丽, 朱法华, 李辉 (138)
流化床模拟烟气中喷射混合还原剂脱硝反应研究 林晨, 于娟, 张曜, 冯帆, 姜金东, 朱志祥, 等 (148)
二维瞬态非线性热传导反问题的混合多宗量反演新方法 张博文, 梅杰, 张春云, 彭海峰, 崔苗, 等 (156)
密封结构对汽轮机转子动力特性的影响分析 司和勇, 曹丽华, 李盼 (165)
磷酸二氢铵对生物质燃烧过程中颗粒物排放特性的影响 樊纪原, 朱有健, 吴贵豪, 成伟, 刘恒, 等 (176)

· 电力电子与电力传动 ·

- 开关变换器及其控制环路的建模综述 周国华, 冷敏瑞, 李媛, 田庆新, 邓伦博 (183)
高压直挂储能功率变换技术与世界首例应用 蔡旭, 李睿, 刘畅, 陈强, 黎小林, 雷博, 陈满, 等 (200)
基于虚拟电压矢量的五相电压源逆变器空间矢量调制算法 余彬, 宋文胜, 冯加旭, 宋玉明, 唐涛 (212)
采用开关电容/开关电感的多电平逆变器拓扑研究综述 吴学智, 祁静静, 刘京斗, 杨安娜, 等 (222)
外部汇流母排对压接型 IGBT 器件内部多芯片并联均流特性的影响 顾妙松, 崔翔, 彭程, 等 (234)
高速铁路再生制动能量储存与利用技术研究 胡海涛, 陈俊宇, 葛银波, 黄文龙, 刘陆洲, 何正友 (246)

· 电机与电器 ·

- 定子无铁心轴向磁通永磁同步电机研究进展综述 刘向东, 马同凯, 赵静 (257)
基于无监督特征对齐的变负载下滚动轴承故障诊断方法 康守强, 邹佳悦, 王玉静, 谢金宝, 等 (274)
风电机组基于最优跟踪路径的改进型 MPPT 控制 赵骞, 邵一川, 姚兴佳, 郭庆鼎, 厉伟 (282)
V/v 接线牵引变压器高次谐波横向传递特性 周福林, 李琦琦, 杨瑞轩, 熊进飞, 李群湛 (290)
矩阵变换器-永磁同步电机系统直接转矩控制转矩波动抑制策略 刘晓楠 (300)
恶劣风况下的风机最大容许出力模型及其控制策略 林湘宁, 丁苏阳, 王子璇, 李正天, 孙士荷, 等 (309)

· 高电压技术 ·

- Kramers-Kronig 变换在介电响应分析中的数值计算方法、意义及应用 高岩峰, 卢毅, 梁曦东, 等 (318)
电压稳定剂修饰纳米 SiO_2 提升低密度聚乙烯直流电气特性的研究 高雅涵, 黄兴溢, 江平开, 等 (330)
基于双重注意力机制的变压器油中溶解气体预测模型 崔宇, 侯慧娟, 肖明凯, 李善武, 盛戈皞, 等 (338)
基于振荡波的变压器绕组故障诊断方法研究 吴振宇, 周利军, 周祥宇, 林桐, 郭蕾, 刘红文, 等 (348)
基于 Bayes 估计相空间融合和 CM-SVDD 的有载分接开关机械故障诊断 王丰华, 曾全昊, 等 (358)

· 英文概述见论文电子版

期刊基本参数: CN11-2107/TM * 1964 * S * A4 * 368 * zh * P * ¥84.00 * 4000 * 34* 2020-01 版权所有 未经许可不得转载及上网

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

Vol.40 No.1 (Ser. 636)

Jan. 5, 2020

CONTENTS

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

• Large Power Grid Planning and Operation •

- A Review on the Utilization of Energy Storage System for the Flexible and Safe Operation of Renewable Energy Microgrids LIU Chang, ZHUO Jiankun, ZHAO Dongming, LI Shuiqing, et al (1)
Characteristic Analysis of High-frequency Resonance of Flexible High Voltage Direct Current and Research on Its Damping Control Strategy GUO Xianshan, LIU Zehong, LI Yunfeng, LU Yajun (19)
Transmission Expansion Planning Model Based on Effective Transmission Cost CHEN Dian, ZHONG Haiwang, XIA Qing, YANG Zhifang (30)
Joint Optimal Operation and Bidding Strategies of Concentrating Solar Power Plants With Wind Farms FANG Yuchen, ZHAO Shuqiang (39)
Temporal and Spatial Characteristics of Power System Inertia and Its Analysis Method ZENG Fanhong, ZHANG Junbo (50)
Electric-gas Integrated Energy System Operational Risk Assessment Based on Improved K-means Clustering Technology and Semi-invariant Method XIE Hua, CHEN Hao, et al (59)

• The Ubiquitous Internet of Things in Electricity •

- Development of Intelligent Perception Key Technology in the Ubiquitous Internet of Things in Electricity ZHOU Feng, ZHOU Hui, DIAO Yinglong (70)

• Smart Grid •

- Itô Stochastic Process Model for Renewable Generations CHEN Xiaoshuang, LIN Jin, LIU Feng, SONG Yonghua (83)
Overview of Arc High Impedance Grounding Fault Detection Technologies in Distribution System WANG Bin, CUI Xin, DONG Xinzhou (96)
A Novel Energy Blockchain Technology for Convex Optimization Scenarios in Power System PING Jian, CHEN Sijie, YAN Zheng (108)
Research on Online Optimal Dispatching of Residential Energy Consumption Based on Multi-agent Asynchronous Deep Reinforcement Learning ZHANG Hong, SHEN Xin, MU Haoyuan, et al (117)
Massive Load Pattern Identification Method Considering Class Imbalance LI Xiang, WANG Peng, LIU Yang, XU Lixiong (128)

• Power Generation •

- Study on Assessment of Compliance With Emission Limit Values of Air Pollutants for Coal-fired Power Plants Base on the Data From CEMS SUN Xueli, ZHU Fahua, LI Hui (138)
Study on Denitration Reaction in Simulating Flue Gas of Fluidized Bed With Mixed Reducer LIN Chen, YU Juan, ZHANG Yao, FENG Fan, JIANG Jindong, ZHU Zhixiang, et al (148)
A New Method for Solving Two-dimensional Transient Nonlinear Inverse Heat Conduction Problems for Inverting Hybrid Multi Parameters ZHANG Bowen, MEI Jie, ZHANG Chunyun, PENG Haifeng, CUI Miao, et al (156)
Effect of Seal Structure on Rotor Dynamic Characteristics of Steam Turbine SI Heyong, CAO Lihua, LI Pan (165)
Effect of NH₄H₂PO₄ Additives on PM emissions From the Combustion of Biomass FAN Jiyuan, ZHU Youjian, WU Guihao, CHENG Wei, LIU Heng, et al (176)

• Power Electronics and Drives •

- A Review on Modeling of Switching Converters and Their Control Loops ZHOU Guohua, LENG Minrui, LI Yuan, TIAN Qingxin, DENG Lunbo (183)
Transformerless High-voltage Power Conversion System for Battery Energy Storage System and the First Demonstration Application in World CAI Xu, LI Rui, LIU Chang, CHEN Qiang, LI Xiaolin, LEI Bo, CHEN Man, et al (200)
Virtual Voltage Vectors Based Space Vector PWM Method for Five Phase Voltage Source Inverters YU Bin, SONG Wensheng, FENG Jiaxu, SONG Yuming, TANG Tao (212)
Review of Multilevel Inverter Topology Research Using Switched Capacitor/Switched Inductor WU Xuezhi, QI Jingjing, LIU Jingdou, YANG Anna, et al (222)
Influence of the External Busbar on Current Sharing Performance Inside a Multi-chip Press-pack IGBT Device GU MiaoSong, CUI Xiang, PENG Cheng, et al (234)
Research on Regenerative Braking Energy Storage and Utilization Technology for High-speed Railways HU Haitao, CHEN Junyu, GE Yinbo, HUANG Wenlong, LIU Luzhou, HE Zhengyou (246)

• Electric Machines and Apparatus •

- An Overview on Research Progress of Coreless Stator Axial Flux Permanent Magnet Synchronous Motor LIU Xiangdong, MA Tongkai, ZHAO Jing (257)
Fault Diagnosis Method of a Rolling Bearing Under Varying Loads Based on Unsupervised Feature Alignment KANG Shouqiang, ZOU Jiayue, WANG Yujing, XIE Jinbao, et al (274)
Improved MPPT Control of Wind Turbine Based on Optimal Tracking Path ZHAO Qian, SHAO Yichuan, YAO Xingjia, GUO Qingding, LI Wei (282)
Lateral Transmission Characteristics of High-order Harmonics in V/v Traction Transformer ZHOU Fulin, LI Qiqi, YANG Ruixuan, XIONG Jinfei, LI Qunzhan (290)
Torque Ripple Reduction in Matrix Converter-fed Permanent Magnet Synchronous Motor Driven by Direct Torque Control LIU Xiaonan (300)
The Maximum Output Model of Wind Turbine and Its Control Strategy under Severe Wind Conditions LIN Xiangning, DING Suyang, WANG Zixuan, LI Zhengtian, SUN Shitong, et al (309)

• High Voltage Engineering •

- Numerical Computational Method, Application and Significance of the Kramers-Kronig Transform in the Analysis of Dielectric Response GAO Yanfeng, LU Yi, LIANG Xidong, et al (318)
Effect of Voltage Stabilizer Modified Nano-SiO₂ on DC Electrical Properties of Low Density Polyethylene GAO Yahan, HUANG Xingyi, JIANG Pingkai, et al (330)
A Prediction Method for Dissolved Gas in Power Transformer Oil Based on Dual-stage Attention Mechanism CUI Yu, HOU Huijuan, XU Mingkai, LI Shanwu, SHENG Gehao, et al (338)
Research on Fault Diagnosis Method of Transformer Winding Based on Oscillatory Wave WU Zhenyu, ZHOU Lijun, ZHOU Xiangyu, LIN Tong, GUO Lei, LIU Hongwen, et al (348)
A Mechanical Fault Diagnosis of On-load Tap-changers Based on Phase Space Fusion of Bayes Estimation and CM-SVDD WANG Fenghua, ZENG Quanhao, et al (358)

• For Extended Summaries, Please See the Electronic Journals.