

ISSN 0258 - 8013
CODEN ZDGXER

中国电机工程学报

第四十二卷 第五期
2022年3月

中国电机工程学报

半月刊

第 42 卷 第 5 期

Proceedings of the CSEE

SEMIMONTHLY

Vol.42 No.5



3月
2022
2022-03-05 出版

ISSN 0258-8013



9 770258 801223



中国电机工程学会主办
THE CHINESE SOCIETY FOR ELECTRICAL ENGINEERING



中国电机工程学报

ZHONGGUO DIANJI GONGCHENG XUEBAO

第 42 卷

第 5 期 (总第 688 期)

2022 年 3 月 5 日

目 次

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

· 国家重点研发计划专栏 ·

- 基于混合子模块与全桥臂电感的三端口模块化多电平变流器：简化建模与电网互联控制策略 陈阳, 王晗, 朱淼, 刘明, 马建军, 蔡旭 (1641)
模块化串联光伏直流变换器的环形功率均衡拓扑及效率优化策略 庄一展, 刘飞, 黄艳辉, 刁晓光, 黄文慧, 查晓明 (1657)
HVDC 送端系统故障引发受端换相失败分析 林圣, 雷雨晴, 刘健, 刘磊 (1669)
直流短路故障下基于暂态能量抑制的 MMC-HVDC 电网主电路电感参数优化 胡凯凡, 范美琴, 何壮, 程德健, 陆辉, 施永, 张榴晨 (1680)
冷绝缘超导电缆终端用环氧玻璃钢材料绝缘劣化机制研究 张志斌, 任明, 宋波, 陈荣发, 余家赫, 范文杰, 董明 (1690)
油纸绝缘场致动态参数对换流变端部电场计算结果的影响 池明赫, 王倩, 罗青林, 张潮海, 刘骥, 关毅, 陈庆国 (1701)

· 大电网规划与运行 ·

- 高比例电力电子电力系统稳定性的统一性判据研究(一): 场站稳定判据 孙华东, 王一鸣, 高磊, 郭强, 许涛, 宋瑞华, 李亚楼, 贺静波 (1713)
计及机组启停与线路投切显式短路电流约束的电力系统日前优化调度 华浩丞, 刘天琪, 何川, 南璐, 胡晓通, 苏学能 (1724)
基于全纯嵌入法的电力系统解耦模型: 薄弱节点辨识 刘承锡, 赖秋频, 姚良忠, 徐箭, 孙元章 (1736)
抑制柔性负荷过响应的微网分散式调控参数优化 叶宇剑, 袁泉, 汤奕, Goran Strbac (1748)

· 智能电网 ·

- 数字化主动配电系统初探 尚宇炜, 周莉梅, 马钊, 王运虎 (1760)
基于数字孪生的柔性直流电网纵联保护原理 李猛, 聂铭, 和敬涵, 陈可傲, 王小君, 许寅 (1773)
考虑需求侧动态及耦合特性的激励型综合需求响应优化建模 祁兵, 郑顺林, 孙毅, 李彬, 田世明, 石坤 (1783)
考虑网络约束的能量枢纽灵活性价值评估 胡俊杰, 刘雪涛, 王程 (1799)
考虑可再生能源的配电网储能和电动汽车运行优化研究(英文) 刘自发, 刘云阳, 王新月, 屈高强 (1813)
一种基于关键点检测和注意力机制的违规着装识别算法及其应用 何国立, 齐冬莲, 闫云凤 (1826)
基于 PSO 算法的电动汽车有序充放电两阶段优化策略 张良, 孙成龙, 蔡国伟, 黄南天, 吕玲 (1837)
基于 DIndRNN-RVM 深度融合模型的 AGC 指令执行效果精准辨识及置信评估研究 陈光宇, 孙叶舟, 江海洋, 王宁, 康春雷, 张仰飞, 郝思鹏 (1852)

· 发电 ·

- 1000MW 近零排放燃煤机组细颗粒物及 SO₃ 排放和分布特征 宋畅, 尹武昌, 余学海, 靳旺宗, 顾永正, 陈凌云, 李朋, 王家伟, 汪涛, 吴华成, 张永生 (1867)
一种确定仿生翅片安装角度的方法与分析 李东旭, 岳敏楠, 李春, 缪维跑 (1875)
中小型燃气-蒸汽联合循环系统的部分回热调控方法 罗力文, 杨承, 马晓茜 (1884)
典型超低排放燃煤电厂总颗粒物中水溶性离子分布规律研究 吴凯, 李军状, 朱林, 杨柳, 何晴, 盛重义 (1895)

· 电力电子与电力传动 ·

- 电力电子化电力系统动态问题的基本挑战和技术路线 袁小明, 张美清, 迟永宁, 鞠平 (1904)
针对复杂安装条件的光伏电站光伏板异常状态检测技术 曹仟妮, 贾孟硕, 沈沉 (1917)
4-SiC 3L-ANPC 逆变器损耗均衡和效率优化调制策略 娄修弢, 张犁, 陈永炜, 沈竹, 郑仲舒 (1925)
多 VSC 系统有功功率-频率动态的电路建模方法 贾焦心, 颜湘武, 杨鹏, 王德胜, 秦本双 (1933)
Boost 电感反相绕组法的共模噪声抑制特性分析与设计 林苏斌, 周云, 张丽萍, 陈为 (1946)
一种可工作于 CCM 模态的高效图腾柱无桥 PFC 变换器 章治国, 李世锋, 李鑫, 程鹏铭, 罗全明 (1957)

· 电机与电器 ·

- 特高压输电用同步调相机端部涡流损耗及流固耦合传热研究 王立坤, 毕晓帅, 朱志佳, 孙玉田, 寇宝泉, 邢洪凯 (1968)
基于电压脉冲注入和傅里叶拟合的转子绕线式同步起动/发电机初始位置检测方法 王锐, 刘卫国, 孙承浩 (1981)
基于耦合参数辨识的直驱 H 型平台反馈线性化解耦同步控制 张康, 王丽梅, 方馨 (1992)

· 高电压技术 ·

- 电力变压器油中溶解气体数据的分布特征参数快速计算方法 张鹏, 齐波, 刘娟, 鲁丽萍, 鞠登峰, 李成榕 (2001)
变压器绝缘油中金属钝化剂的降解产气机制研究 高思航, 何雨欣, 柯亭婧, 李佳俊 (2012)
配电变压器低压侧脉冲注入故障测距方法 杨庆, 崔浩楠, 揭青松, 刘红文, 黄继盛 (2025)

· 教育与教学 ·

- 论拉格朗日方程与基尔霍夫定律相互演绎 陈希有, 郭源博, 齐琛, 李冠林, 章艳 (2036)

· 英文概述见论文电子版 ·

期刊基本参数: CN11-2107/TM * 1964 * S * A4 * 404 * zh * P * ¥84.00 * 4000 * 35 * 2022-03 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.42 No.5 (Ser. 688)

Mar. 5, 2022

CONTENTS

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

National Key Research and Development Program •

- Three-port MMC With Hybrid Submodules and Full Arm Inductor Scheme: Simplified Modeling and Grid Interconnection Control Strategy CHEN Yang, WANG Han, ZHU Miao, LIU Ming, MA Jianjun, CAI Xu (1641)
A Circular Power Balancing Topology With Efficiency Optimization Strategy for Modular Cascaded Photovoltaic DC/DC Converter ZHUANG Yizhan, LIU Fei, HUANG Yanhui, DIAO Xiaoguang, HUANG Wenhui, ZHA Xiaoming (1657)
Analysis of Receiving-side Commutation Failure Mechanism Caused by HVDC Sending-side System Fault LIN Sheng, LEI Yuqing, LIU Jian, LIU Lei (1669)
Optimization of Inductance Parameters of Main Circuit for MMC-HVDC Grid Based on Transient Energy Suppression Under DC Short-circuit Faults HU Kaifan, MAO Meiqin, HE Zhuang, CHENG Dejian, LU Hui, SHI Yong, ZHANG Liuchen (1680)
Insulation Deterioration Mechanism of Glass Fiber Reinforced Plastic Used in Cold Dielectric Superconducting Cable Terminal ZHANG Zhibin, REN Ming, SONG Bo, CHEN Rongfa, YU Jiahe, FAN Wenjie, DONG Ming (1690)
Influence of Oil-paper Insulation Electric-dynamic Parameters on Calculation Results of Electric Field at the End of Converter Transformer CHI Minghe, WANG Qian, LUO Qinglin, ZHANG Chaohai, LIU Ji, GUAN Yi, CHEN Qingguo (1701)

Large Power Grid Planning and Operation •

- Research on Unification Stability Criterion for the Power Electronics Dominated Power System (I): Criterion of the Power-electronic Interfaced Plant SUN Huadong, WANG Yiming, GAO Lei, GUO Qiang, XU Tao, SONG Ruihua, LI Yalou, HE Jingbo (1713)
Day-ahead Optimal Scheduling of Power System Considering Explicit Short-circuit Current Constraints With the Impact of Commitment of Units and Transmission Switching HUA Haocheng, LIU Tianqi, HE Chuan, NAN Lu, HU Xiaotong, SU Xueneng (1724)
Power System Decoupling Model Based on Holomorphic Embedding Method: Weak Bus Identification LIN Chengxi, LAI Qiupin, YAO Liangzhong, XU Jian, SUN Yuanzhang (1736)
Decentralized Coordination Parameters Optimization in Microgrids Mitigating Demand Response Synchronization Effect of Flexible Loads YE Yujian, YUAN Quan, TANG Yi, Goran Strbac (1748)

Smart Grid •

- Preliminary Study of Digitalized Active Distribution Systems SHANG Yuwei, ZHOU Limei, MA Zhao, WANG Yunhu (1760)
Pilot Protection of Flexible DC Grid Based on Digital Twin LI Meng, NIE Ming, HE Jinghan, CHEN Ke'ao, WANG Xiaojun, XU Yin (1773)
A Model of Incentive-based Integrated Demand Response Considering Dynamic Characteristics and Multi-energy Coupling Effect of Demand Side QI Bing, ZHENG Shunlin, SUN Yi, LI Bin, TIAN Shimeng, SHI Kun (1783)
Value Evaluation of Energy Hub Flexibility Considering Network Constraints HU Junjie, LIU Xuetao, WANG Cheng (1799)
Operation Schedule Optimization of Energy Storage and Electric Vehicles in a Distribution Network With Renewable Energy Sources LIU Zifa, LIU Yunyang, WANG Xinyue, QU Gaoqiang (1813)
An Illegal Dress Recognition Algorithm Based on Key-point Detection and Attention Mechanism and Its Application HE Guoli, QI Donglian, YAN Yunfeng (1826)
Two-stage Optimization Strategy for Coordinated Charging and Discharging of EVs Based on PSO Algorithm ZHANG Liang, SUN Chenglong, CAI Guowei, HUANG Nantian, LYU Ling (1837)
Research on Accurate Identification and Confidence Evaluation of AGC Command Execution Effect Based on DLIndRNN-RVM Deep Fusion Model CHEN Guangyu, SUN Yezhou, JIANG Haiyang, WANG Ning, KANG Chunlei, ZHANG Yangfei, HAO Sipeng (1852)

Power Generation •

- Emission and Distribution Characteristics of Fine Particulate Matter and SO₃ in 1000MW Near-zero Emission Coal-fired Unit SONG Chang, YIN Wuchang, YU Xuehai, JIN Wangzong, GU Yongzheng, CHEN Lingyun, LI Peng, WANG Jiawei, WANG Tao, WU Huacheng, ZHANG Yongsheng (1867)
Proposal and Analysis of a Method for Determining Installation Angle of Bionic Fin LI Dongxu, YUE Minnan, LI Chun, MIAO Weipao (1875)
Partially Recuperative Control Method of Medium/Small-sized Gas-steam Combined Cycle Power System LUO Liwen, YANG Cheng, MA Xiaoqian (1884)
Distribution Characterizations of Water-soluble Ions in Total Particulate Matter of Typical Ultra-low Emission Coal-fired Power Plants WU Kai, LI Junzhuang, ZHU Lin, YANG Liu, HE Qing, SHENG Zhongyi (1895)

Power Electronics and Drives •

- Basic Challenges of and Technical Roadmap to Power-electronized Power System Dynamics Issues YUAN Xiaoming, ZHANG Meiqing, CHI Yongning, JU Ping (1904)
A Fault Detection Scheme for PV Modules in Large Scale PV Stations With Complex Installation Conditions CAO Qianni, JIA Mengshuo, SHEN Chen (1917)
A Dedicate Modulation Scheme for 4-SiC 3L-ANPC Inverter With Loss Balanced Distribution and Efficiency Improvement LOU Xiutao, ZHANG Li, CHEN Yongwei, SHEN Zhu, ZHENG Zhongshu (1925)
Circuit Modeling Method of Active Power-frequency Dynamics for Multiple-VSC Systems JIA Jiaoxin, YAN Xiangwu, YANG Peng, WANG Desheng, QIN Benshuang (1933)
Analysis and Design of Common Mode Noise Suppression Characteristics of Boost Inductor Anti-phase Winding Method LIN Subin, ZHOU Yun, ZHANG Liping, CHEN Wei (1946)
A High Efficiency Totem-pole Bridgeless PFC Converter in CCM Mode ZHANG Zhiguo, LI Shifeng, LI Xin, CHENG Pengming, LUO Quanming (1957)

Electric Machines and Apparatus •

- Research on Eddy Current Loss and Fluid-solid Coupling Heat Transfer in the End Region of Synchronous Condenser for UHV Transmission WANG Likun, BI Xiaoshuai, ZHU Zhijia, SUN Yutian, KOU Baowan, XING Hongkai (1968)
Initial Rotor Position Estimation Method for a Wound-rotor Synchronous Starter/Generator Based on Voltage Pulse Injection and Fourier Fitting WANG Rui, LIU Weiguo, SUN Chenghao (1981)
Direct Drive H-type Platform Feedback Linearization Decoupling Synchronous Control Based on Coupling Parameter Identification ZHANG Kang, WANG Limei, FANG Xin (1992)

High Voltage Engineering •

- Fast Calculation Method for Distribution Characteristic Parameters of Dissolved Gas Data in Power Transformer Oil ZHANG Peng, QI Bo, LIU Juan, LU Liping, JU Dengfeng, LI Chengrong (2001)
Investigation on the Mechanism of Metal Passivator Degradation and Gas Generation in Oil-paper Insulation GAO Sihang, HE Yuxin, KE Tingjing, LI Jiajun (2012)
Fault Location Method of Pulse Injection in Distribution Transformer's Low Voltage Side YANG Qing, CUI Haonan, JIE Qingsong, LIU Hongwen, HUANG Jisheng (2025)

Education and Teaching •

- On the Mutual Deductions of Lagrange's Equation and Kirchhoff's Law CHEN Xiyou, GUO Yuanbo, QI Chen, LI Guanlin, ZHANG Yan (2036)

For Extended Summaries, Please See the Electronic Journals •