



ISSN 1000-6753

CN 11-2188/TM

半月刊

SEMIMONTHLY

电工技术学报

TRANSACTIONS OF
CHINA ELECTROTECHNICAL SOCIETY



中国电工技术学会主办

2023年 第4期

第38卷 Vol. 38 No. 4

ISSN 1000-6753



电工技术学报

第 38 卷 第 4 期 (2023 年 2 月 25 日出版)

目 次

电工理论

- 841 棒状铁铰合金磁特性测试装置的设计与实验 黄文美 陶 铮 郭萍萍 夏志玉 郭万里
852 集成式液压平衡电磁发射装置的非线性建模及控制 聂世雄
865 基于混合磁负超材料的的心脏起搏器无线供能系统 陈伟华 侯海涛 闫孝姮 陈宏强 叶智权
879 3 T 动物磁共振成像传导冷却超导磁体研究 陈顺中 王秋良 孙万硕 孙金水 程军胜

电机及其系统

- 889 不均匀气隙工况下轴向磁通永磁电动式磁悬浮电机的磁场与力特性分析 秦 伟 马育华 张洁龙 吕 刚
903 不同代价函数下永磁同步电机模型预测控制参数失配可视化分析 郭磊磊 王朋帅 李琰琰 武 洁 王明杰
915 永磁同步电机长线变频驱动系统定频滑模预测电流控制 郑长明 阳佳峰 高 昂 公 铮 伍小杰
925 模块化多相永磁风力发电机串并联直流海上风电场电压协调控制
..... 崔鹤松 李雪萍 黄 晟 黄凌翔 沈非凡等
936 基于 FEM/Kriging 近似模型结合进化算法的表贴式高速永磁电机转子强度优化 李 玮 汪泽润 张凤阁
945 基于分段交错不等磁极的表贴式永磁电机极频振动的削弱 李泽星 夏加宽 刘铁法 郭志研 朱启升
957 基于线圈子单元的永磁同步电机健康与定子绕组短路故障数学模型
..... 高彩霞 苗 壮 陈 昊 司纪凯 吕 珂

电力电子

- 970 一种独立光储发电系统用宽输入范围非隔离三端口变换器 高圣伟 祝庆同
983 面向舰船综合电力系统的 10 kV/2 MW 模块化多电平双向直流变换器控制策略
..... 刘计龙 陈 鹏 肖 飞 朱志超 黄兆捷
998 耦合电感集成型谐振变换器及其自适应频率控制 徐菁涛 许 国 孙 尧 熊文静
1010 基于自适应滑模观测器的中点钳位型三电平并网逆变器开路故障诊断
..... 许水清 黄文展 何怡刚 胡友强 程庭莉

高电压与放电

- 1023 饱和多孔介质对流特性对高压交流海底电缆载流性能的影响 刘士利 罗英楠 刘宗焯 付转古 刘庆达
1032 阴极曲率半径对微米尺度气隙击穿的影响规律研究 常泽洲 孟国栋 应 琪 成永红
1042 基于失效时间统计特性的交联聚乙烯电寿命模型修正 王国栋 周 凯 李 原 李诗雨 傅 尧
1051 基于热固耦合的中频变压器绝缘材料性能参数优化配合方法
..... 赵玉顺 戴义贤 庄加才 蔡国庆 陈志伟等
1064 GIS 局部放电检测天线本体和巴伦共面柔性小型化特高频天线传感器研究
..... 张国治 韩景琦 刘健桦 陈 康 张 硕
1076 磁保持型航天电磁继电器性能提升与质量一致性设计 陈 昊 叶雪荣 梁慧敏 翟国富
1088 干式空心电抗器五环简化缩比模型最优结构对比分析 代岭均 邹 亮 孙玉鑫 刘青松 张 黎
1104 动静态力共同作用对电抗器铁心振动影响 闫荣格 程云飞

TRANSACTIONS OF CHINA ELECTROTECHNICAL SOCIETY

Vol.38 No.4 (Feb.25 2023)

Contents

- 841 Design and Experiment of High Frequency Magnetic Properties Testing Device for Rod Iron-Gallium Alloy
..... Huang Wenmei Tao Zheng Guo Pingping Xia Zhiyu Guo Wanli
- 852 Nonlinear Modeling and Control of Integrated Hydraulic Balanced Electromagnetic Launch System Nie Shixiong
- 865 Wireless Energy Supply System for Cardiac Pacemaker Based on Hybrid Mu-Negative Metamaterials
..... Chen Weihua Hou Haitao Yan Xiaoheng Chen Hongqiang Ye Zhiquan
- 879 The Study of a 3 T Conduction-Cooled Superconducting Magnet for Animal Magnetic Resonance Imaging
..... Chen Shunzhong Wang Qiuliang Sun Wanshuo Sun Jinshui Cheng Junsheng
- 889 Characteristic and Magnetic Field Analysis of an Axial Flux Permanent Magnets Maglev Motor with Non-Uniform Air Gap
..... Qin Wei Ma Yuhua Zhang Jielong Lü Gang
- 903 Visual Analysis of Parameters Mismatch in Model Predictive Control for Permanent Magnet Synchronous Motor Under
Different Cost Functions..... Guo Leilei Wang Pengshuai Li Yanyan Wu Jie Wang Mingjie
- 915 Fixed Switching Frequency Sliding-Mode Predictive Current Control of a PMSM Variable-Frequency Drive System with
Long Cables..... Zheng Changming Yang Jiafeng Gao Ang Gong Zheng Wu Xiaojie
- 925 Voltage Coordinated Control Strategy for Modular Multi-Phase PMSG-Based Series-Parallel DC Connected Offshore
Wind Farm..... Cui Hesong Li Xueping Huang Sheng Huang Lingxiang Shen Feifan et al
- 936 Rotor Strength Optimization of Surface Mount High Speed Permanent Magnet Motor Based on FEM/Kriging Approximate
Model and Evolutionary Algorithm..... Li Wei Wang Zerun Zhang Fengge
- 945 Reduction of Pole-Frequency Vibration of Surface-Mounted Permanent Magnet Synchronous Machines with
Piecewise Stagger Unequal Poles..... Li Zexing Xia Jiakuan Liu Tiefa Guo Zhiyan Zhu Qisheng
- 957 A Mathematical Model Based on Coil Sub-Element for Permanent Magnet Synchronous Motor with Health and
Stator Winding Short-Circuit Fault..... Gao Caixia Miao Zhuang Chen Hao Si Jikai Lü Ke
- 970 A Wide Input Range Non-Isolated Three-Port Converter for Stand-Alone PV Storage Power Generation System
..... Gao Shengwei Zhu Qingtong
- 983 Control Strategy of 10 kV/2 MW Modular Multilevel Bidirectional DC-DC Converter for Vessel Integrated Power System
..... Liu Jilong Chen Peng Xiao Fei Zhu Zhichao Huang Zhaojie
- 998 Coupled Inductor Integrated Resonant Converter with Adaptive Frequency Control
..... Xu Jingtao Xu Guo Sun Yao Xiong WenJing
- 1010 Open-Circuit Fault Diagnosis Method of Neutral Point Clamped Three-Level Grid-Connected Inverter Based on
Adaptive Sliding Mode Observer..... Xu Shuiqing Huang Wenzhan He Yigang Hu Youqiang Cheng Tingli
- 1023 The Influence of Convective Characteristics of Saturated Porous Media on Ampacity Performance of Submarine Cable
..... Liu Shili Luo Yingnan Liu Zongye Fu Zhuangu Liu Qingda
- 1032 Study on the Influence of Cathode Radius on the Breakdown Characteristics across Microgaps in Air
..... Chang Zezhou Meng Guodong Ying Qi Cheng Yonghong
- 1042 Modification of Cross-Linked Polyethylene Electrical Life Model Based on Statistical Characteristics of Failure Time
..... Wang Guodong Zhou Kai Li Yuan Li Shiyu Fu Yao
- 1051 Optimization of Insulation Material Performance Parameters for Medium Frequency Transformers Based on
Thermosolid Coupling..... Zhao Yushun Dai Yixian Zhuang Jiakai Cai Guoqing Chen Zhiwei et al
- 1064 Research on Gas Insulated Switchgear PD Detection Antenna Body and Balun Coplanar Flexible Miniaturized
Ultra-High Frequency Antenna Sensor..... Zhang Guozhi Han Jingqi Liu Jianben Chen Kang Zhang Shuo
- 1076 Performance Enhanced and Quality Consistency Design Optimization of Magnetically Latching Aerospace
Electromagnetic Relay..... Chen Hao Ye Xuerong Liang Huimin Zhai Guofu
- 1088 Investigation of Comparison on Optimal Structure of Five-Loop Simplified Scaling Model for
Dry-Type Air-Core Reactors..... Dai Lingjun Zou Liang Sun Yuxin Liu Qingsong Zhang Li
- 1104 Influence of Dynamic and Static Forces on Vibration of Reactor Core..... Yan Rongge Cheng Yunfei