

目 次

创刊 60 周年贺词..... (前拉页)
 新时代 再出发..... 李东林
 卷首语: 辉煌 60 年 我们再出发..... 丁荣军

功率半导体技术

轨道交通用功率半导体器件应用技术研究..... 漆 宇, 窦泽春, 丁荣军(1)
 轨道交通用 IGBT 器件寿命预测技术综述..... 王 彬, 曹 琳(9)
 机车 IGBT 模块应用失效研究..... 刘敏安, 向 华, 徐丽宾, 马 瑶(13)
 IGBT 模块与散热器接触界面气隙对散热的影响研究..... 杨闯盛, 宋郭蒙, 王 雄(18)
 基于高效扰流技术的 IGBT 双面冷却散热器性能优化研究
 宋郭蒙, 王 雄, 王幸智, 黄 南, 吴智勇(22)
 基于 SiC MOSFET 的牵引逆变器在轨道交通中的应用研究
 杨 涛, 窦泽春, 朱 武, 胡 亮, 王幸智, 杨德勇(28)
 3 300 V 全 SiC MOSFET 功率器件开关特性研究
 孙康康, 陈燕平, 忻兰苑, 王晓年, 余开庆, 胡长风(34)
 SiC 功率器件在轨道交通行业中的应用..... 赵 炫, 蒋 栋, 刘自程, 马颖涛, 王江峰(38)
 4H-SiC MOSFET 静态温度特性的仿真分析..... 曾 亮, 王翠霞, 吴江枫, 余有灵, 李诚瞻, 杜 星(45)
 基于 SiC MOSFET 非线性电容 C_{gd} 的 Matlab 电路仿真模型
 杜 星, 王翠霞, 余有灵, 吴江枫, 刘 坤, 李思思(49)

机车自动驾驶技术

机车自动驾驶系统人机交互设计与应用..... 周文伟, 朱 龙, 赵云伟, 陈佳晖, 王 佳(53)
 重载列车自动驾驶纵向动力学仿真技术研究..... 宁 侨, 李铁兵, 霍 晟, 杨宜萍, 朱保林(58)
 机车自动驾驶系统安全导向策略研究..... 茹锡勇, 刘振华, 肖家博, 杜建业, 李 凯(65)
 HX_D1 型机车自动驾驶系统设计与应用..... 肖 勇, 朱 龙, 吴 军, 王 鑫, 周结良, 刘永新(69)
 机车自动驾驶系统模式切换策略研究..... 蔡永辉, 张朋刚, 宁 侨, 刘焯轩, 尚霜霜(74)

研究开发

基于滑模观测器的 LSLSM 位置辨识研究..... 梅文庆, 南永辉, 廖 武, 文字良, 赵岸峰(79)
 电气化铁路牵引供电系统可靠性评价系统研究..... 黄 硕, 吴命利(85)
 基于微分平坦理论 MMC-RPC 的 PIR 控制策略..... 宋平岗, 江志强, 周振邦(91)
 新型 DC 600 V 列车供电系统输出电压振荡解决方案..... 李 鹏(98)
 基于 EWT-SVD 方法的高速列车滚动轴承故障诊断..... 王 涛, 张 兵, 孙 琦(102)
 基于 WATV 去噪的冲击特征提取方法在高速列车轴承故障诊断中的应用
 杨慧莹, 伍川辉, 何 刘, 龙 莹(108)
 一种磁浮车辆悬浮架的交叉抗侧滚解耦机构..... 龚 朴(112)
 CKD_{6E}6000 型大轴重混合动力调车机车设计..... 朱延东, 任 聪, 孟玉发, 彭长福(117)
 转向架构架局部结构优化与轻量化研究..... 梁 昊, 米彩盈(121)
 出口苏丹内燃动车组辅助供电系统的设计..... 刘 军, 王 永, 李廉枫(126)
 焊接转向架构架仿真分析及试验研究..... 李 超, 孙晖东, 李志永, 刘静波, 郑 伟, 杨孟珂(129)
 基于双网冗余的 CR200J 型动力集中动车组人机交互界面设计
 陆 璐, 贾 峰, 周庆强, 宋 杨, 赵 鑫, 高 磊(132)

城市轨道交通车辆

城际车辆整车空调通风系统的仿真与试验研究..... 孙术娟, 林 鑫(136)
 城轨车辆司机室端部主吸能结构优化设计..... 刘 莉, 许 喆, 高 峰(139)

试验检测

车载接触网运行状态检测装置系统设计及应用..... 贺 文, 王俊平, 张 敏, 毛慧华, 陈天喜(144)
 动车组轴承异响故障诊断与研究..... 韩俊臣, 崔利通, 李晓峰, 宋春元, 战立超(149)

运用维保

广州地铁车辆关门障碍物检测故障及对策..... 陈卓群(154)

动态消息

《机车电传动》不接受电子邮件投稿的通知(8) 欢迎订阅《机车电传动》(97) 《机车电传动》
 编辑部声明(148) 广告索引(157)



EDL

ELECTRIC DRIVE FOR LOCOMOTIVES

(Bimonthly, Started in 1960)

No 1, 2020

(Sum. No 272)

Published on: Jan. 10, 2020

Sponsored by

CRRC Zhuzhou Institute
Co., Ltd.

Editor-in-chief

DING Rongjun

Printed by

Zhuzhou KeFa Printing Industry Co.,
Ltd., Zhuzhou, Hunan, China

China Standard Serial Numbering

ISSN 1000-128X

CN 43-1125/U

Distributed by

Zhuzhou Municipal Post Office

Domestic Subscription Office

Post Offices all over China

Overseas Distributor

China International Book Trading
Corporation (P.O. Box 399, Beijing, China)

Foreign Service Distribution Code

BM353

Address

Editorial Department of *ELECTRIC DRIVE
FOR LOCOMOTIVES*, CRRC Zhuzhou
Institute Co., Ltd., Hunan 412001, China

Tel (86-731)28498221, 28498141

Fax (86-731)28498141

E-mail edl@csrzc.com

http://edl.crrczic.cc

http://JCDC.chinajournal.net.cn

http://jcdcd.periodicals.net.cn

Contents

Power Semiconductor Technology

- Research on Power Semiconductor Converter Technology for Rail Transit Applications
..... QI Yu, DOU Zechun, DING Rongjun (1)
- IGBT Module Lifetime Prediction Technology for Rail Transit
..... WANG Bin, CAO Lin (9)
- Research of IGBT Module Application Failure for Locomotive
..... LIU Min' an, XIANG Hua, XU Libin, MA Yao (13)
- Research on Effect of Air Gap between IGBT Module and Heatsink on Thermal Performance
..... YANG Hongsheng, SONG Guomeng, WANG Xiong (18)
- Optimization of the Double-sided Cooling Heatsink of IGBT Based on High Performance Turbulator
..... SONG Guomeng, WANG Xiong, WANG Xingzhi, HUANG Nan, WU Zhiyong (22)
- Application Research on SiC MOSFET Inverter in Rail Transit
..... YANG Tao, DOU Zechun, ZHU Wu, HU Liang, WANG Xinzhi, YANG Deyong (28)
- Research on Switching Characteristics of 3 300 V Full SiC MOSFET Power Module
..... SUN Kangkang, CHEN Yanping, XIN Lanyuan, WANG Xiaonian,
YU Kaiqing, HU Changfeng (34)
- Application of Silicon Carbide Power Devices in Rail Transit
..... ZHAO Xuan, JIANG Dong, LIU Zicheng, MA Yingtao, WANG Jiangfeng (38)
- Simulation and Analysis of Static Temperature Characteristics of 4H-SiC MOSFET
..... ZENG Liang, WANG Cuixia, WU Jiangfeng, YU Youling, LI Chengzhan, DU Xing (45)
- Matlab Circuit Simulation Model Based on SiC MOSFET Non-linear Capacitor C_{GD}
..... DU Xing, WANG Cuixia, YU Youling, WU Jiangfeng, LIU Kun, LI Sisi (49)

Locomotive Automatic Operation Technology

- Human-machine Interaction Design and Application of Locomotive Automatic Train Operation
System..... ZHOU Wenwei, ZHU Long, ZHAO Yunwei, CHEN Jiahui, WANG Jia (53)
- Research on Longitudinal Dynamics Simulation Technology of Automatic Driving of Heavy Haul
Train..... NING Qiao, LI Tiebing, HUO Sheng, YANG Yiping, ZHU Baolin (58)
- Research on Security Strategy of Locomotive Automatic Train Operation System
..... RU Xiyong, LIU Zhenhuan, XIAO Jiabo, DU Jianye, LI Kai (65)
- Design and Application for Automatic Train Operation System Based on HXD1 Locomotive
..... XIAO Yong, ZHU Long, WU Jun, WANG Xin, ZHOU Jieliang, LIU Yongxin (69)
- Research of Pattern Switching Strategy for Locomotive Automatic Train Operation System
..... CAI Yonghui, ZHANG Penggang, NING Qiao, LIU Yexuan, SHANG Shuangshuang (74)

Research & Development

- Research on Position Identification of Long Stator Linear Synchronous Motor Based on Sliding
Mode Observer..... MEI Wenqing, NAN Yonghui, LIAO Wu, WEN Yuliang, ZHAO Anfeng (79)
- Evaluation of Reliability for Traction Power Supply System of Electric Railways
..... HUANG Shuo, WU Mingli (85)
- PIR Control Strategy of MMC-RPC Based on Differential Flatness Theory
..... SONG Pinggang, JIANG Zhiqiang, ZHOU Zhenbang (91)
- Solution for Suppressing Output Voltage Oscillation of New DC 600 V Train Power System
..... LI Peng (98)
- Fault Diagnosis of High-speed Train Rolling Bearings Based on EWT-SVD Method
..... WANG Tao, ZHANG Bing, SUN Qi (102)
- Application of an Impact Feature Extracting Method Based on WATV in Fault Diagnosis
of High-speed Train Bearing..... YANG Huiying, WU Chuanhui, HE Liu, LONG Ying (108)
- A Cross Anti-roll Decoupling Mechanism for Maglev Vehicle Bogies..... GONG Pu (112)
- Design of CKD66000 Heavy Axle Hybrid Power Shunting Locomotive
..... ZHU Yandong, REN Cong, MENG Yufa, PENG Changfu (117)
- Research on Local Structure Optimization and Lightweight Improvement of Bogie Frame
..... LIANG Hao, MI Caiying (121)
- Design of Auxiliary Power Supply System for DMUs Exported to Sudan
..... LIU Jun, WANG Yong, LI Lianfeng (126)
- Simulation Analysis and Experimental Investigation for a Welding Bogie Frame
..... LI Chao, SUN Huidong, LI Zhiyong, LIU Jingbo, ZHENG Wei, YANG Mengke (129)
- Design of Driver' s Display Unit Based on Dual Network Redundancy in CR200J Centralized
Power EMUs..... LU Lu, JIA feng, ZHOU Qingqiang, SONG Yang, ZHAO Xin, GAO Lei (132)

Urban Rail & Vehicle

- Simulation and Experimental Research of Air Conditioning and Ventilating System for
Intercity Train..... SUN Shujuan, LIN Xin (136)
- Optimization Design of Main Energy-absorbing Structure Fixed on the Cab End of Urban
Rail Vehicles..... LIU Li, XU Zhe, GAO Feng (139)

Test & Detection

- System Design and Application of On-board Overhead Catenary Monitoring Device
..... HE Wen, WANG Junping, ZHANG Min, MAO Huihua, CHEN Tianxi (144)
- Diagnosis and Study on Abnormal Noise of EMUs Bearing
..... HAN Junchen, CUI Litong, LI Xiaofeng, SONG Chunyuan, ZHAN Lichao (149)

Operation & Maintenance

- Fault and Countermeasures of Obstacle Detection in Guangzhou Metro Vehicles Door Closing
..... CHEN Zhuoqun (154)