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1236 A new topology of single-phase 15-level hybrid multilevel inverter with two DC sources

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1242 A High Boost Bi-directional Z-Source Inverter with Active Switched Inductor Cells

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1285 Spectral Analysis of the Modular Multilevel Converter Operated with Parallel Branches and Phase-Shifted Carriers

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Michael Gerstner (Technische Hochschule Nuernberg Georg Simon Ohm, Germany); Armin Dietz (Georg-Simon-Ohm University of Applied Sciences Nuremberg, Germany); Martin März (FhG Erlangen, Germany)

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Kaitao Bi and Yue Liu (Jiangnan University, China); Bing Tian (Norwegian University of Science and Technology, Norway); Weilin Yang, Dezhi Xu and Wenxu Yan (Jiangnan University, China)

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Yunqiu Zhu (Beijing Institute Of Technology, China); Zhiqiang Guo (Beijing Institute of Technology, China); Bing Han (CRRC QINGDAO SIFANG ROLLING STOCK RESEARCH INSTITUTE CO., LTD., China)

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Xie Menxi, He Liqun and Fan Mingdi (Soochow University, China); Yang Yong (Soochow University & School of Urban Railway Transportation, China)

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1348 Accurate Modeling of HE-Boost Topology and Compensation Network Design

Yichen Xu, Haibing Hu and Yiwen Lu (Nanjing University of Aeronautics and Astronautics, China)

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Haoxin Yang, Li Zhang and Yi Tang (Nanyang Technological University, Singapore)

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Zhenyan Cao (XJTLU, China); Huiqing Wen (Xi'an Jiaotong-Liverpool University, China); Haochen Shi and Qinglei Bu (XJTLU, China)

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Peng Chen (Southeast University, China); Jilong Liu, Fei Xiao, Zhichao Zhu and Qiang Ren (Naval University of Engineering, China)

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Song Hu (Changshu Institute of Technology, China); Xiaodong LI and Qingfei Zheng (Macau University of Science and Technology, Macao)

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1409 A Real Time Energy Management Strategy for Smart Home Considering the Uncertainty

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Xin Sui, Shan He, Daniel Stroe and Remus Teodorescu (Aalborg University, Denmark)

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Kyoung-Wook Heo (Ulsan National Institute of Science and Technology (UNIST), Korea(South)); Hyunjun Choi (LG Electronics, Korea (South)); Jee-Hoon Jung (Ulsan National Institute of Science and Technology (UNIST), Korea (South))

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Linjie Han (Harbin Institute of Technology, China); Shengbo Wang (Harbin Institute of Technology, China); Shukai Mao, Binbin Li and Dianguo Xu (Harbin Institute of Technology, China)

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Ruixin Liu (Tianjin University, China); Yifeng Wang (School of Electrical Engineering and Automation, China); Fuqiang Han (Tianjin University, China); Qing Chen (State Grid Jiangsu Electric Power Co., LTD., China); Pengyu Cheng, Zhongjie Wang and Xiaochen Wu (Tianjin University, China)

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Heng Chen, Yueshi Guan, Tingting Yao, Yijie Wang, Wang Wei and Dianguo Xu (Harbin Institute of Technology, China)

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Yunpeng Cui, Yueshi Guan and Yijie Wang (Harbin Institute of Technology, China); Marco Antônio Dalla Costa (Universidade Federal de Santa Maria, Brazil); J. Marcos Alonso (University of Oviedo, Spain); Dianguo Xu (Harbin Institute of Technology, China)

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F. Selin Bagci and Katherine A. Kim (National Taiwan University, Taiwan); Ting-Yu Lin and Yu Chen Liu (National Ilan University, Taiwan)

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- 1488 MRAS Sensorless Control Strategy of PMSM based on SiC-MOSFET Three-Phase Inverter Zhendong Zhang, Yitao Liu, Weihua Liang and Jianchun Peng (Shenzhen University, China)
- 1493 Analysis of Torque Control Stability of PMSM Sensorless Drives in Flux Weakening Region
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- 1499 Sensorless Speed control of Non-silent Permanent Magnet Synchronous Motor Established on a Nonlinear Observer Approach

Muhammad Usama and Jaehong Kim (Chosun University, Korea (South))

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Bing Tian and Marta Molinas (Norwegian University of Science and Technology, Norway); Stig Moen (Aker Solutions ASA, Norway); Chen Zhang (Norwegian University of Science and Technology, Norway)

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Pingyang Sun (UNSW Sydney, Australia); Harith R. Wickramasinghe (University of New South Wales, Australia); Georgios Konstantinou (The University of New South Wales, Australia)

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Yohan Fajar Sidik, Jingxin Hu, Philipp Joebges and Nurhan Averous (RWTH Aachen University, Germany); Rik De Doncker (RWTH Aachen University & Institute for Power Generation and Storage Systems, Germany)

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Qingren Jin, Zhiyang Yao and Min Guo (Electric Power Research Institute of Guangxi Power Grid Co., Ltd, China)

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Qiwei Huang, Weiguo Lu, Shaoling Li and Shengcai Liu (Chongqing University, China)

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Hyungjin Kim (Seoul National University of Science&Technology, Korea (South)); Hamza Belkamel, Junyeong Park, Ramadhan Hakim and Sewan Choi (Seoul National University of Science and Technology, Korea (South))

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Jayakrishnan Harikumaran (University of Nottingham, United Kingdom (Great Britain)); Giampaolo Buticchi (University of Nottingham, China); Giovanni MIgliazza (University of Modena and Reggio Emilia, Italy); Patrick Wheeler (Unviersity of Nottingham, United Kingdom (Great Britain)); Michael Galea (University of Nottingham Ningbo China & University of Nottingham, China)

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Jiale Yu (50 Nanyang Ave & NTU, Singapore); Jingyang Fang (Duke University, USA); Yi Tang and Li Zhang (Nanyang Technological University, Singapore)

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Chao Gao and Zeyu Hu (Huazhong University of Science and Technology); Xiongfeng Fang, Ze Wang, Jian Xiong and Kai Zhang (Huazhong University of Science and Technology, China)

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Ting Hua, Hua Lin and Xingwei Wang (Huazhong University of Science and Technology, China)

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RuiChi Wang and Ding Shuye (Nanjing Normal University, China); Jinghui Chen, JianDe WU and Xiangning He (Zhejiang University, China)

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YongXing Zhou (Xi'an Jiaotong University, China); Haoyu Wang (OMRON Industrial Automation, China); Wenjie Chen and Ruitao Yan (Xi'an Jiaotong University, China); Jinlu Liu (Xi'an Jiaotong University, China); Ru Zhang (Xi'an Jiaotong University, China)

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Ahmed Majed Saif, Concettina Buccella and Carlo Cecati (University of L'Aquila, Italy)

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Rongwu Zhu (Christian-Albrechts-Universität zu Kiel, Germany); Yong Dae Kwon (University of Kiel, Germany); Marco Liserre (Christian-Albrechts-Universität zu Kiel, Germany); Ahmad Afif Nazib, Donald Grahame Holmes and Brendan McGrath (RMIT University, Australia)

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Jinqing Linghu (Zunyi Normal University, China); Longyun Kang and Xuan Luo (South China University of Technology, China); ChuSheng Lu (South China University of Technology, unknown); Hongye Lin (South China University of Technology, China)

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2283 Improved Space Vector Modulation Strategies for High-Speed PMSM Fed by a SiC/Si Hybrid Inverter

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2287 Research on Finite-Time Control Strategy for Induction Motor Drives Based on Vector Control

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2292 Analysis and comparison of two current sensorless servo control methods for permanent magnet synchronous motor

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InKwon Park (RTDS Technologies Inc., Canada); Yi Zhang (RTDS, Canada)

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Cao Yu (Shanghai Jiao Tong University, China); Rui Li (Shanghai Jiao Tong University, China)

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Yusong Liu, Xiyuan Zhu and Zhongya Mao (Tongji University, China); Jinsong Kang (TongJi University, China); Jie Shen (Shanghai Lingang Power Electronics Research Institute, China)

2396 Inter-arm Voltage Balance Control of a Modular Multilevel Matrix Converter with Injecting Dual Frequency Circulating Current

Yichao Sun and Yinyu Yan (Nanjing Normal University, China); Carlos Teixeira (RMIT University, Australia); Jiankai Ma (State grid Shanghai Pudong Electric Power Supply Company, China); Muhammad Asif (Nanjing Normal University, China)

2402 An Optimized Start-up Method for Modular Cascaded AC/DC Power Electronic Transformer with Minimized Input-Inrush Current in Dual Active Bridge

Linqian Cheng, Xiaohui Li, He Liqun and Xie Menxi (Soochow University, China); Yang Yong (Soochow University & School of Urban Railway Transportation, China); Shengfang Fan (Huazhong University of Science and Technology, China); Fan Mingdi (Soochow University, China)

2408 Multi-objective Optimization Control for Input-Series Output-Parallel Dual-Active-Bridge DC-DC Converter in EER Application

Bingkai Zhou, Xiaofeng Yang, Renbiao Nong, Zejie Li and Trillion Q. Zheng (Beijing Jiaotong University, China); Pavel Kobrle (Czech Technical University, Czech Republic)

2414 Precise Correction of Current Zero-Crossing Distortion of Totem Pole PFC Converter

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Ting Hua, Hua Lin and Xingwei Wang (Huazhong University of Science and Technology, China)

2426 A Sliding Mode Control Method for SEPIC Power Factor Correction Converter

Shikuan Ma (Harbin Institute of Technology, China); Hongqi Ben (Harbin Institute of Technology (HIT), China); Tao Meng (Heilongjiang University, China); Mingyuan Ding (Harbin Institute of Technology, China)

2433 Research on the Dead-Time Control Scheme for the Four-Switch Buck-Boost Converter

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2441 A Topology Improvement Method of Cascaded DC Transformer for Improving its Fast Recovery Capability

Nan Zhang and Feng Wang (Xi'an Jiaotong University, China); Runchu Ding (University of Xian Jiaotong, China); Shuhuai Shi and Zhuo Fang (Xi'an Jiaotong University, China); Sheng Cheng (Xi'an Jiao tong University & State Grid Jiangsu Electric Power Co., Ltd., China)

2446 Piecewise Linear Approximation Minimum Current Trajectory for Dual Active Full-bridge Bidirectional DC-DC Converter

Ningyu Luo (XJTLU, China); Huiqing Wen (Xi'an Jiaotong-Liverpool University, China); Qinglei Bu (XJTLU, China)

2452 Modulation Strategies Based on Mathematical Construction Method for Three-to-Five-Phase Matrix Converters

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2458 A Decentralized Control Strategy with Output Voltage Deviation-Correction for Input-Series-Output-Parallel DC Transformer Based on Dual-Active-Bridge

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2463 Common-Mode Resonance Suppression Strategy for 3-Level Grid-Connected Inverter with the ILCL Filter

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2469 A Decoupling Control Method for Hybrid Cascaded H-Bridge Inverter

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2472 Analysis of Interaction Among Multiple Parallel Three-phase Grid-connected Inverters Based on RGA

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2485 Reliability and Lifetime Analysis Considering IGBT Thermal Resistance Performance Degradation based on Hydropower Mission Profile of MMC

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2505 Design of High-Frequency Bipolar Pulse Power Supply Based on Improved Marx Generator for Medical Applications

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2509 A High Efficiency Medical LED Driver with Novel Pulse Current Output

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2520 Enhanced Inductive Link Using Perpendicular Transmitting Coils in Wireless Power Transfer for Visual Implants

Chenglong Ma and Jian Yin (Shenzhen University, China)

2525 Speed Synchronized Control of Dual Motors System Using Fuzzy Logic

Yating Luo, Deliang Liang, Lishi Zhang, Shengliang Cai and Kun Zhou (Xi'an Jiaotong University, China)

2530 A Low-Switching-Frequency Discrete-Time Model and Control Strategy for NPC Three-Level Inverter-Fed Dual Three-Phase PMSM Drives

Minrui Gu, Zheng Wang and Yang Xu (Southeast University, China)

2536 An Improved Model Predictive Thrust Control for Long Primary Double-Sided Linear Induction Motor

Mingyuan Zhang (University of Chinese Academy of Sciences, China); Liming Shi and Haibin Zhu (Institute of Electrical Engineering, Chinese Academy of Sciences, China)

2540 Research on Multi-convergence Point Problem of Sensorless Control in Induction Motor Based on Z-MRAS

Zhihong Zhong (Beijing Jiaotong University, China); Ming Li (CRRC Tangshan Co., Ltd. R&D, China); Zhihao Li (Beijing Jiaotong University, China); Xiaochun Fang (School of Electrical Engineerin, China); Zhongping Yang (Beijing Jiaotong University, China); Zhiwei Zhang (The Ohio State University, USA)

2547 Hybrid Sensorless Control Phase-Locked Loop Transition Strategy for PMSM Drives

Siming Liu, Zhixun Ma and Yu Jin (Tongji University, China)

2552 Novel Flux-Weakening Control on Maximum Torque Control Frame for IPMSM Position Sensorless Control

Baohui Ma (Tianshui Electric Drive Research Institute Co., LTD, China); Kexing Xu (Xi'an Jiaotong University, China); Zien Mi, Yutao Yang and Chuanwen Shen (Xi'an Jiaotong University, China)

2557 A Flux-Weakening Method for PMSM Based Model Predictive Direct Speed Control

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2562 A Cost-Effective Dual Bus Current Measurement Scheme for Current Control of Three-phase Switched Reluctance Motors

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2567 Predictive Current Control of Permanent Magnet Synchronous Motor Based on An Adaptive Internal Model Observer

Minghui Chen (Fuzhou University, China); Fengxiang Wang (Fuzhou University, China); Long He (Quanzhou Institute of Equipment Manufacturing, Haixi Institutes, Chinese Academy of Sciences, China); Dongliang Ke and Kunkun Zuo (Quanzhou Institute of Equipment Manufacturing, Haixi Institutes, Chinese Academy of Sciences, China); Jose Rodriguez (Universidad Andres Bello, Chile)

2572 Refined Induction Machine Mathematical Model and Its Simulation Models Considering Iron Loss

Jie Li, Shu-Quan Zhang, Si-Yu Chen and Wen Huang (Xi'an University of Technology, China)

2578 Parameter Optimization of Multiple Resonant Controller: A Deep Reinforcement Learning Approach

Xiaojie Zhang (Xian Jiaotong University, China); Wanjun Lei, Yuqi Dai and Qibo Tang (Xi'an Jiaotong University, China); Xiaojie Yuan (Huizhou Power Supply Bureau, China); Zhongxiu Xiao and Gaotai Lv (Xi'an Jiaotong University, China)

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2588 Voltage Balancing Scheme Based on Active Voltage Cross Control for Series-Connected IGBTs

Jiahong Liu (Wuhan University, China); Meng Huang (WuHan University, China); Xuejun Zhang (Wuhan University, China); Xiaoming Zha (Wuhan University, China)

2594 A Two-channel LED Driver with Automatic Current Balance and Soft-switching

Xiangjun Zhang (Harbin Institute of Technology (HIT), China); Hongye Cai, Lei Sun, Dianguo Xu, Yijie Wang and Hao Liu (Harbin Institute of Technology, China)

2599 Unified Phase Shift Control Strategy to Optimize Transient Current Response in a Dual Active Bridge DC-DC Converter during Unidirectional and Bidirectional Power Flow Changes

Jian Lu and Jian Yin (Shenzhen University, China)

2605 A new pulse width modulation-based digital control for single-inductor multi-output DC-DC converters with low cross-regulation

Jianfu Liu, Tingcun Wei and Nan Chen (Northwestern Polytechnical University, China)

2610 A Control Method for Chirp Signal Injecting of DCDC Voltage Source Converter

Xing Weng (Tsinghua Uinversity, China); Zhengming Zhao, Kainan Chen, Liqiang Yuan and Tian Tan (Tsinghua University, China)

2618 Optimal Group Charging Method for Battery Integrated Modular Multilevel Converter

Nan Li (State Grid Tianjin Electric Power Research Institute, China); Feng Gao (Shandong University, China); Songyuan Li, Cong Zhao, Bowen Guo, Weibo Li and Suya Li (State Grid Tianjin Electric Power Research Institute, China); Kai Hou (School of Electrical and Information Engineering Tianjin University, China)

2622 Extended-State-Observer-Based Model Predictive Power Control for Three-Level NPC Rectifiers with Inductance Estimation

Chenhui Yu (Fuzhou University, China); Fengxiang Wang (Quanzhou Institute of Equipment Manufacturing, Chinese Academy of Sciences, China); Guiying Lin (Fuzhou University, China); Garcia Cristian (Universidad de Talca, Chile); Jose Rodriguez (Universidad Andres Bello, Chile)

2627 A Non-Isolated Bidirectional Buck-Boost Chopper With Auxiliary Converter for Battery Energy Storage Systems

Hamzeh J. Ahmad and Makoto Hagiwara (Tokyo Institute of Technology, Japan)

2634 Single - Phase Nine-Level Inverter For Grid Connected Hybrid Renewable Energy Sources

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2642 Control method to reduce current ripple of boost chopper suitable for NPC inverter

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3008 An Islanding Detection Method for Microgrids Using Synchronized Small-AC-Signal Injection Haoyang Zheng (Xi'an Jiaotong University, China); Zeng Liu (Xi'an Jiaotong University & Virginia Tech, China); Ronghui An and Jinjun Liu (Xi'an Jiaotong University, China)

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3192 An Accurate Inverter Impedance Estimation Method

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3210 Droop control strategy embedded with battery life prolonging considerations in DC microgrids Xiong Zhang (Wuhan University Of Technology, China); Liu Furong (Wuhan University of Technology, China)

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3240 Optimal capacity allocation method of energy storage system for increasing wind power integration

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3245 Fault Ride-Through of N-1 Preplan of Photovoltaic and Energy Storage System

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3252 A Random Sampling-Rate MPPT Method to Mitigate Interharmonics from Cascaded H-Bridge Photovoltaic Inverters

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3258 Stability Analysis of Wind Farm Connected to Hybrid HVDC Converter

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3536 The New Brushless Doubly-Fed Machine With Composite Coil

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