2019 IEEE 10th International Symposium on Power Electronics for Distributed Generation Systems (PEDG 2019)

Xi'an, China 3-6 June 2019

Pages 1-564



IEEE Catalog Number: ISBN:

CFP19PEG-POD 978-1-7281-2456-8

Copyright \odot 2019 by the Institute of Electrical and Electronics Engineers, Inc. All Rights Reserved

Copyright and Reprint Permissions: Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limit of U.S. copyright law for private use of patrons those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

For other copying, reprint or republication permission, write to IEEE Copyrights Manager, IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. All rights reserved.

*** This is a print representation of what appears in the IEEE Digital Library. Some format issues inherent in the e-media version may also appear in this print version.

IEEE Catalog Number: CFP19PEG-POD ISBN (Print-On-Demand): 978-1-7281-2456-8 ISBN (Online): 978-1-7281-2455-1

ISSN: 2329-5759

Additional Copies of This Publication Are Available From:

Curran Associates, Inc 57 Morehouse Lane Red Hook, NY 12571 USA Phone: (845) 758-0400

Fax: (845) 758-2633

E-mail: curran@proceedings.com Web: www.proceedings.com



TECHNICAL PAPERS

Session D01: Devices and Components June 5, 2019 10:40AM - 12:10PM Session Chairs: Jiangbiao He, University of Kentucky, United States Kangping Wang, Xi'an Jiaotong University, China
A Novel Passive Integrated Unit for Multi-Component Resonant Converter
Electro-thermal Stress Comparison between Full Pressure and Silver Sintered Package Press Pack IGBT
SiC MOSFET Switching Characteristic Optimization and Application in Battery Charging/Discharging
A Cost-Effective Series-Connected Gate Drive Circuit for SiC MOSFET
Design and Evaluation of a High Performance Silicon Carbide MOSFET Driver
Study of Magnetic Core Geometries for Coupling Systems Through a Magnetic Bus29

Lucas Brighenti, Federal University of Santa Catarina, Brazil Wabermark dos Santos, Federal University of Espirito Santo, Brazil Denizar Martins, Federal University of Santa Catarina, Brazil
Design and Optimization of Magnetic Coupler Based on Series-Series Compensation for EV Wireless Chargers
An Investigation of Snubber and Protection Circuits Connections for Power-Electronic Switch in Hybrid DC Circuit Breaker
IGBT Open-Circuit Fault Diagnosis for Modular Multilevel Converter with Reduced -Number of Voltage Sensor Measuring Technique
A New Coupled Inductor Structure with Larger Leakage Inductance for EMI Suppression
Avalanche Capability Characterization of 1.2 kV SiC Power MOSFETs Compared with Si CoolMOS

June 5, 2019 10:40AM - 12:10PM
Session Chairs: Yan Zhang, Xi'an Jiaotong University, China
Fan Zhang, Xi'an Jiaotong University, China
A Novel Full-Soft-Switching Full-Bridge Converter with a Snubber Circuit and Couple Inductor
Lingzhi Yi, Xiangtan University, China
Hexiao Zhu, Xiangtan University, China
Binren Wang, Xiangtan University, China
Liang Fang, CRRC Zhuzhou Electric Co., Ltd., China
Wenbing Ma, CRRC Zhuzhou Electric Co., Ltd., China
Xiangxiang Liang, CRRC Zhuzhou Electric Co., Ltd., China
An LED Driver with Adjustable Output Current
Lili Zhu, Chongqing Vocational Institute of Engineering, China Bin Zhang, Chongqing Aerospace Polytechnic, China
Design of Controller Based on ADRC Strategy for Three-Phase UPS70
Shaokang Gong, Henan University of Science and Technology, China Jingtao Huang, Henan University of Science and Technology, China
Guofeng He, Henan University of Urban Construction, China
Control Strategy of Three-Phase Four-Wire Three-Leg Inverters
University, China
Output Voltage Adjustable Resonant Converter Based on Auxiliary LLC with Winding79 Yifan Lu, Beijing Institute of Technology, China
Congzhe Gao, Beijing Institute of Technology, China
Shunkang Mao, Beijing Institute of Technology, China
Topology Analysis of Basic Non-Isolated DC/DC Converter and DC Distributed Power
System
Jian Huang, Chongqing University, China
Quanming Luo, Chongqing University, China
Qingqing He, Chongqing University, China
Aqian Zu, Chongqing University, China
Xiong Du ,Chongqing University, China
Design of Rapid-Control-Prototype Platform for Modular Multilevel Converter Based on
RT-lab
Wei Dong, China Electric Power Research Institute, China Xiaolin Zhang, China Electric Power Research Institute, China
Long Jing, Beijing Jiaotong University, China
Wu Wen, Beijing Jiaotong University China

Session D02: Topology and Control of Power Converters

A Comparative Study of S-S and LCC-S Compensation Topology of Inductive Power Transfer Systems for EV Chargers
A High Step-Down DC-DC Converter
A High Step-Down DC-DC Converter Based On Switched-Capacitor and Two-Phase Buck
A Predictive Current Control Method for the T-Type Three-Level Inverters Fed Dual Three-Phase PMSM Drives with Reduced Current Harmonics
A Single-Carrier PWM Strategy for Multilevel Converters
A Graphical Performance Tool for Design and Comparative Assessment of Predictive Torque Control Methods in Motor Drive Applications

A Delay Compensation Method to Improve the Current Control Performance of the LCL-Type Grid-Connected Inverter
Pengju Sun, Chongqing University, China Jie Wang, Chongqing University, China Kunlong Zhu, Chongqing University, China Tongyu Xue, Chongqing University, China Yuxin Zhang, Chongqing University, China
Pre-Synchronization Control Method of Virtual Synchronous Generator with Alterable Inertia
A Reconfigurable Three-Phase Dual-Active-Bridge DC-DC Converter Designed for Wide-Range High-Efficiency Operation
Active Selection of Current Commutation Loop for Hybrid Three-Level Dual Active Bridge DC-DC Converter with TPS Control
Design of Parallel Converters with L-Filter and Reduced Filter Size
Modeling and Hybrid Controller Design of CLLLC
A Novel Topology and Operation Mechanism of Unipolar-to-Bipolar DC Transformer173 Shuhuai Shi, Xi'an Jiaotong University, China Yanlin Zhu, Xi'an Jiaotong University, China

Zhuan Zhao, Zhengzhou Electric Power College, China Sheng Cheng, Xi'an Jiaotong University, China Nan Zhang, Xi'an Jiaotong University, China Fang Zhuo, Xi'an Jiaotong University, China Feng Wang, Xi'an Jiaotong University, China Tianhua Zhu, Xi'an Jiaotong University, China
Research on Overvoltage Distribution of HVDC Converter Valve and Influence of Parasitic Capacitance in Special Environment
Model Predictive Control of Dual Active Bridge Converter Based on the Lookup Table Method
Session D03: Modeling, Simulation and Control June 5, 2019 10:40AM - 12:10PM Session Chairs: Shuang Xu, University of New Brunswick, Canada
Wanjun Lei, Xi'an Jiaotong University, China
An Improved Power Decoupling Strategy Based on Newton Interpolation for Electric Locomotive
Chun He, Xi'an Jiaotong University, China
Guochun Xiao, Xi'an Jiaotong University, China Shuai Zhang, Xi'an Jiaotong University, China
Chen Peng, Xi'an Jiaotong University, China
Zhihao Zhai, Xi'an Jiaotong University, China
Zebin Yang, Xi'an Jiaotong University, China
Research on Feeder Power Balancing Technology Based on SNOP Droop Control192 Changbao Xu, Guizhou Electric Power Research Institute of China Southern Power Grid Company Limited, China

Xufeng Yuan, Guizhou University, China Yutao Xu, Guizhou Electric Power Research Institute of China Southern Power Grid Company Limited, China Zhukui Tan, Guizhou Electric Power Research Institute of China Southern Power Grid Company Limited, China Chenghui Lin, Guizhou Electric Power Research Institute of China Southern Power Grid Company Limited, China Mingyang Chen, Guizhou University, China
Attitude Tracking of Enhanced Flexible Hybrid Nanogenerator in Human-Computer Interaction
Research on Optimizing PI Parameter of Skin Effect Electric Trace Heating System Based on Deep Learning
Unbalanced Harmonic Suppression of Three-Level Active Power Filter with Optimal Hybrid Control
A Real-time Simulator Using a Cluster of FPGAs for Testing Distributed Generations212 Weihua Wang, OPAL-RT Technologies Inc., Canada Bingjie Wang, OPAL-RT Technologies Inc., Canada Bowen Liang, OPAL-RT Technologies Inc., Canada Fei Gao ,OPAL-RT Technologies Inc., Canada
Intelligent Nano-Ground Based on Triboelectric Nanogenerator for Motion Tracking217 Peng Dong, Qingdao University, China Fabing Duan, Qingdao University, China Kai Wang, Qingdao University, China
Decoupled Feedback Linearization Control for SOP

Yi Lu, State Grid Zhejiang Electric Power Co., Ltd. Research Institute, China Feng Xu, State Grid Zhejiang Electric Power Co., Ltd. Research Institute, China
Research on the Control Strategy and Simulation of Air-Conditioning Load in Microgrid
A Modified Lyapunov-Based Control Scheme for the Three-Phase UPS with an Optimal Third-Order Load Current Observer
Algorithms for the Accounting of Multiple Switching Events in Real Time Simulation of Distributed Power
Power Quality of Single-Phase Standalone Inverter with Linear and Nonlinear Load242 Jose Luis Mata, Instituto Politecnico Nacional, Mexico Oscar Carranza, Instituto Politecnico Nacional, Mexico Ruben Ortega, Instituto Politecnico Nacional, Mexico Jaime Jose Rodriguez, Instituto Politecnico Nacional, Mexico
A Tuning Method of Selective Harmonic Voltage Compensator for Distributed Generators
Collaborative Volt-VAR Control Using Grid-Connected PV Inverters

June 5, 2019 10:40AM - 12:10PM
Session Chairs: Sixing Du, University of Toronto, Canada Xiaotian Zhang, Xi'an Jiaotong University, China
Reliability Evaluation of Photovoltaic Power Generation System Based on Fuzzy Layering
Method
Condition Monitoring of PWM Converter Based on Multiple Support Vector Machine Algorithm
Meng Shi, Army Engineering University, China Jinquan Wang, Army Engineering University, China Ye Xu, Army Engineering University, China Kefeng Huang, Army Engineering University, China Haichao Li, Army Engineering University, China Puyu Wang, Nanjing University of Science and Technology, China
A Fault-Tolerant Control Method of 12-Phase PMSM in FESS
Protection Strategy Summary of EAST PF High Power Supply
Fault Diagnosis of Isolated Bidirectional DC/DC Converter with Triple Phase-Shift Control
A Combined Fault-Tolerant and Model Predictive Control for Dual-Terminal Cascaded Five-Level Open-End Winding Motor

Session D04: Reliability, Fault and Protection

Jiaquan Hu, China University of Mining and Technology, China Guowu Hua, China University of Mining and Technology, China Rui Zhu, China University of Mining and Technology, China Yuanshen Zhou, Huaihai Institute of Technology, China
Novel Reliability Evaluation Method for Urban Energy Internet
Stress Analysis and Reliability Calculation of Saturable Reactor of HVDC Converter Valve in HEMP Environment
Data Fused Motor Fault Identification Based on Adversarial Auto-Encoder
Current Status and Development of Fault Current Limiting Technology for DC Transmission Network
Optimized Method for Reliability and Redundancy Analysis of MMC Based on Component Operating Conditions

Session D05: Microgrids June 5, 2019 10:40AM - 12:10PM Session Chairs: Jinwei He, Tianjin University, China Ning Li, Xi'an University of Technology, China
Virtual Synchronous Generator Technology and Its Parallel Control Strategy in Isolated Island Microgrid
Model Predictive Direct Power Control Method of Energy Storage Converter in Micro-Grid
A Coordination Control Method for Multi-Terminal AC/DC Hybrid System Based on MMC Transmission Technology
An Improved Parallel Strategy for Auxiliary Inverter without Control Interconnection in Metro Applications
Micro-Grid Scheduling of Electric Boiler and CHP with Thermal Energy Storage Based on Wind Power Accommodating

Grid-Connected Control Strategy for Bidirectional AC-DC Interlinking Converter in AC-DC Hybrid Microgrid
A Risk Evaluation Method of Ship Micro Grid with Distributed Generations
Electricity Quality Analysis of Teuri-Yagishiri Island Microgrid
Generic Derivation of Optimal Architecture for a Resilient Microgrid with Graph Theory
Model Predictive Control Based Energy Management of a Household Microgrid365 Hui Yan, Xi'an Jiaotong University, China Fang Zhuo, Xi'an Jiaotong University, China Nian Lv, Xi'an Jiaotong University, China Hao Yi, Xi'an Jiaotong University, China Zhenxiong Wang, Xi'an Jiaotong University, China Cuicui Liu ,Xi'an Jiaotong University, China
Power Decoupling Control of Parallel Converters Based on Negative Virtual Impedance under Unbalanced Conditions

Session D06: Renewable Energy and Storage Systems June 5, 2019 10:40AM - 12:10PM
Session Chairs: Milijana Odavic, University of Sheffield, United Kingdom
Hao Yi, Xi'an Jiaotong University, China
Modeling and Studies of the Two-winding Three-Phase Permanent MagneticSynchronous Generator of Offshore Wind Turbines
A Short-Term Photovoltaic Output Prediction Method Based on Improved PSO-RVM Algorithm
Life Prediction Method for VSG Energy Storage Unit
An Original Self-Turning PI Controller for STATCOM in Wind Farm with Voltage Fluctuation Based on IABC Algorithm
A MPPT Method for Photovoltaic System with Multi Output Power Peaks
An Improved Three Phase PWM Rectifier Active Damping Control Strategy with State Observer for Battery Charging and Discharging System

Topologies for Reduction of Second Harmonic Ripple in Battery Energy Storage Systems
Life Prediction of Hybrid Supercapacitor Based on Improved Model-Extreme Learning Machine
The Application of Cascade Power Electronic Transformer in Large-Scale Photovoltaic Power Generation System
A New Filter Topology for Multi-Paralleled Grid-Connected Inverters
An Enhanced Battery Interface of MMC-BESS
Study on an Energy Supply System Assuming a Pipeline Transportation of Compressed Hydrogen for Distributed Fuel Cell in China
PV- and Battery-Ratio for Very Large Modular PV Parks with DC Coupled Battery Converters
Power Management of a Residential Hybrid Photovoltaic Inverter with Battery Energy Storage System

Hao Cheng, Shenzhen Growatt New Energy Technology Co., Ltd., China
Voltage-Controlled Photovoltaic Generator with MPP Detection and Mode Switch
An Electro-Thermal Coupled Model of Vanadium Redox Flow Battery for Large-Scale Energy Storage System
Sensorless Control Scheme of DFIG Wind Energy Conversion Systems Based on SOGIs and FLL
Control Strategy for Cascaded Battery Energy Storage System under Unbalanced Grid Voltage
Session D07: Smart Grid June 5, 2019 10:40AM - 12:10PM Session Chairs: Dongdong Zhao, Northwestern Polytechnical University, China Shaodi Ouyang, Xi'an Jiaotong University, China
Research on Demand Side Resources Planning Strategy of Load Aggregator Considering CVaR
Hongbin Wu, Hefei University of Technology, China

Xianjun Qi, Hefei University of Technology, China
Distributed Generation Admittance Capacity Calculation of Distribution Network Based on Multi-Scenario Analysis and Active Management
Double-Layer Optimal Configuration of Active Distribution Network with Multiple Market Entities under Power Reform
Power Flow Calculation and Operating Parameter Optimization of Fractional Frequency Power Transmission System
Research on Load Clustering Algorithms Based on Hierarchy and Fuzzy Theory
Non-Intrusive Load Decomposition Based on SAMME.R-DT Algorithm
Session S01: DC-DC Converters I Location: Function Room 2 June 4, 2019 2:00PM - 3:40PM Session Chairs: Sudip K Mazumder, University of Illinois at Chicago, United States Xiong Du, Chongqing University, China
PSO-Algorithm-Based Optimal Design of the LCLC Resonant Converters for Space Travelling-Wave Tube Amplifiers Applications

Jinsong He, Nanyang Technological University, Singapore Xin Zhang, Nanyang Technological University, Singapore
High Efficiency Bidirectional Half-Bridge Three-Level DC-DC Converter
A Novel Non-Coupled Non-Isolated Double-Input Bidirectional High-Gain Converter for Hybrid Energy Storage Systems
A New Soft-Switching Synchronous Buck Converter without Auxiliary Switch
Analysis and Circuit Implementation of a Novel Quadratic Boost Converter with Low Inductor Current
Session S02: DC-AC Converters Location: Function Room 7 June 4, 2019 2:00PM - 3:40PM Session Chairs: Fred Wang, University of Tennessee, United States Milijana Odavic, University of Sheffield, United Kingdom An Integrated Structure for Transformer and Output Filter of a Micro-inverter with Flexible
Multilayer Foil Technique

Changsheng Hu, Zhejiang University, China

Wenxing Zhong, Zhejiang University, China Dehong Xu, Zhejiang University, China
Single-Phase High-Gain Bidirectional DC/AC Converter Based on High Step-Up/ Step-Down DC/DC Converter and Dual-Input DC/AC Converter
A New Single-Phase Single-Stage Photovoltaic Grid-Tied Inverter with Leakage Current Eliminating and Power Decoupling
Improved Y-source Inverter
A Transformerless Boost Inverter for Stand-alone Photovoltaic Generation Systems570 Zhixiang Yu, Anhui University of Technology, China Xuefeng Hu, Anhui University of Technology, China Meng Zhang, Anhui University of Technology, China Lezhu Chen, Anhui University of Technology, China Shunde Jiang, Anhui University of Technology, China
Session S03:High Power Converters I Location: Function Room 10 June 4, 2019 2:00PM - 3:40PM Session Chairs: Deepakraj M Divan, Georgia Institute of Technology, United States
Dongsheng Yu, China University of Mining and Technology, China
Design and Development of an Experimental Testbench Based on Multi-pulse and Multilevel Converters

Jinquan Tang, Pearl Electric, Co., France

Joseph Song Manguelle, Exxon Mobil, United States Tao Jin, Fuzhou University, China
The Impact of Execution Frequency in Sorting Algorithm on Nearest Level Modulated Modular Multilevel Converter
Direct Digital Controlled Modular Multilevel Converters with Cell-Distributed Controllers and Hot-Swap Features
A Battery Lifetime Improved Control Strategy of Modular Multilevel Converter for Electric Vehicle Application
Topology, Modulation and Control Strategy of a MMC Based Multi-port DC/DC Converter
Session S04: Control of Grid-Tied Converters I Location: Function Room 11 June 4, 2019 2:00PM - 3:40PM Session Chairs: Dushan Boroyevich, Virginia Tech, United States Yongheng Yang, Aalborg University, Denmark
A Novel Adaptive Observer-Based DC-Link Voltage Control for Grid-Connected Power Converters

Liuchen Chang, University of New Brunswick, Canada

Riming Shao, University of New Brunswick, Canada
Design of Observer-Based SMC Controller for Three-Phase LCL-Filtered Grid- Connected Inverters with Less Sensors
Partial Shading Mitigation in Photovoltaic Arrays using Shade Dispenser Technique617 Mahdieh Aliaslkhiabani, The University of British Columbia, Canada Francisco Paz, The University of British Columbia, Canada Martin Ordonez, The University of British Columbia, Canada Liwei Wang, The University of British Columbia, Canada
An Enhanced Transfer-Delay Frequency-Locked Loop Method for Single-Phase Grid Voltage Synchronization
Mingdi Fan, Chongqing University of Posts and Telecommunications, China
A DC Bus Signaling Based Autonomous Power Management Strategy for a Grid- Connected PV-Battery System
Session S05: Control of Microgrids I
Location: Function Room 12 June 4, 2019 2:00PM - 3:40PM Session Chairs: Jinjun Liu, Xi'an Jiaotong University, China Kai Sun, Tsinghua University, China
Ripple Energy Buffer for Microgrid Connected Hydrogen Energy Storage System
Robust Droop Control of AC Microgrid Against Nonlinear Characteristic of Inductor642

Wenbin Yuan, Aalborg University, Denmark Yanbo Wang, Aalborg University, Denmark Dong Liu, Aalborg University, Denmark Fujin Deng, Southeast University, China Zhe Chen, Aalborg University, Denmark
Distributed Cooperative Control for Multiple DC Electric Springs with Novel Topologies Applied in DC Microgrid
Power Sharing between Parallel Inverters by Using Droop Control with a Secondary Control Loop
Microgrid Power Sharing Using Variable Droop Coefficient Control
Session S06: Wideband Gap Applications Location: Function Room 2 June 4, 2019 4:00PM - 5:40PM Session Chairs: Tsai-Fu Wu, National Tsing Hua University, Taiwan Weimin Wu, Shanghai Maritime University, China
High-Efficiency Fault-Tolerant Three-Level SiC Active NPC Converter for Safety-Critical Renewable Energy Applications
An RC Snubber Circuit to Suppress False Triggering Oscillation for GaN Based Half-Bridge Circuits

Zhiqing Wang, Chongqing University, China Pengju Sun, Chongqing University, China Xiong Du, Chongqing University, China Yuqi Wei, Chongqing University, China
Novel Three-Phase Two-Third-Modulated Buck-Boost Current Source Inverter System Employing Dual-Gate Monolithic Bidirectional GaN e-FETs
Design of SiC MOSFET Medium Voltage Bipolar DC-DC Converter Based on Buck Structure
Design of Bidirectional Isolated DC/DC Converter Based on SiC Device
Beibei Wang, NARI Group Corporation, China; State Grid Electric Power Research Institute China; China EPRI Science & Technology Co., Ltd., China Zeming Yang, Beijing Jiaotong University, China Yongsheng Fu, NARI Group Corporation, China; State Grid Electric Power Research Institute
China; China EPRI Science & Technology Co., Ltd., China Kunpeng Zha, NARI Group Corporation, China; State Grid Electric Power Research Institute China; C-EPRI Electric Power Engineering Co., Ltd., China

Session S07: Storage Conversion Systems

Location: Function Room 7 June 4, 2019 4:00PM - 5:40PM

Session Chairs: Martin Ordonez, The University of British Columbia, Canada

Xin Zhang, Nanyang Technological University, Singapore

A Review of On-Board Integrated Charger for Electric Vehicles and a New Solution693 Tuopu Na, Harbin Institute of Technology, China Xue Yuan, Harbin Institute of Technology, China Jiaqi Tang, Harbin Institute of Technology, China Qianfan Zhang, Harbin Institute of Technology, China
A Three-Level Boost-Buck Converter for the Ultracapacitor Applications
Fast Integrated Charger Solution for Heavy-Duty Electric Vehicles
A Load Combination Prediction Algorithm Considering Flexible Charge and Discharge of Electric Vehicles
Multi-Parameter Optimization Strategy for Vanadium Redox Flow Battery Operation Based on Genetic Algorithm

Session S08: Stability of Grid-Tied Converters Location: Function Room 10 June 4, 2019 4:00PM - 5:40PM Session Chairs: Frede Blaabjerg, Aalborg University, Denmark Xiongfei Wang, Aalborg University, Denmark
Stability Assessment of a Three-Phase Grid-Tied PV Inverter with Eigenvalue-Based Method
Impedance Scanning Method of Grid-Tied Converters under Nonzero Grid Impedance Condition
Subsynchronous Resonance Mitigation for Series Compensation Transmission System of DFIG Based on PR Control
Analysis and Comparison of Various Dual Loop Active Damping Methods for the LCL-Type Grid Connected Inverter
Analysis of Inertia and Damping Characteristics of Grid-Connected Photovoltaic Powe Generation System Based on Droop Control

Session Chairs: Johan Enslin, Clemson University, United States Shuang Xu, University of New Brunswick, Canada Analysis of Negative Influence of Harmonic Circulation between Parallel STATCOMs and Jikai Chen, Northeast Electric Power University, China Peng Wang, Northeast Electric Power University, China Yang Hu, Northeast Electric Power University, China Hui Shao, Northeast Electric Power University, China Guoqing Li, Northeast Electric Power University, China Xiaozhe Wang, McGill University, Canada Jiangchao Qin, Arizona State University, United States Real-Time Models of Advanced Energy Conversion Systems for Large-Scale Integration Felipe Arrano-Vargas, University of New South Wales, Australia Georgios Konstantinou, University of New South Wales, Australia Identification Modeling Method of Voltage and Frequency Response Model for microgrid in Dong Xu, Hefei University of Technology, China Yong Shi, Hefei University of Technology, China Jianhui Su, Hefei University of Technology, China Chi Feng, Hefei University of Technology, China Sequence Impedance-based Stability Analysis of Droop-Controlled AC Microgrids............768 Marc Dokus, Leibniz Universität Hannover, Germany Axel Mertens, Leibniz Universität Hannover, Germany Day-Ahead Optimal Scheduling Strategy of Microgrid with EVs Charging Station......774 Zhaoxia Xiao, Tianjin Polytechnic University, China Hui Li, Tianjin Polytechnic University, China Tianli Zhu, Tianjin Polytechnic University, China Huaimin Li, Tianjin Polytechnic University, China

Session S10: Fault and Protection Location: Function Room 12 June 4, 2019 4:00PM - 5:40PM

Location: Function Room 11 June 4, 2019 4:00PM - 5:40PM

Session Chairs: Juan Carlos Balda, University of Arkansas - Fayetteville, United States

Jinwei He, Tianjin University, China

A Short-Circuit Fault-Tolerant Strategy for Three-Phase Four-Wire Flying Capacitor Three-Level Inverters
High-Impedance Fault Detection Method for DC Microgrids
A Current Residual-Based Open-Circuit Fault Diagnosis Method for Cascaded H-Bridge Multilevel Converters
Fault Isolation in the DC Distribution Grid Using Current Signature Analysis
Control of a Cascaded H-Bridge Multilevel Inverter with Failed Cells for Grid-Connected Application
Session S11: Power Devices Location: Function Room 2 June 5, 2019 2:00PM - 4:00PM Session Chairs: Martin Ordonez, The University of British Columbia, Canada Wuhua Li, Zhejiang University, China
High Temperature Gate Driver Design Using Discrete CMOS Devices

Comprehensive Analysis of Three-Phase Three-Level T-Type Neutral-Point-Clamped Inverter with Hybrid Switch Combination
Temperature Dependence of 1.2kV 4H-SiC Schottky Barrier Diode for Wide Temperature Applications
Improved IGBT Dynamic Model and Electro-Thermal-Mechancal Multi-Field Coupling Failure Analysis
Characterization of 600V/650V Commercial SiC Schottky Diodes at Extremely High Temperatures
High Frequency Transformer Design for Specific Static Magnetizing and Leakage Inductances Using Combination of Multi-Layer Perceptron Neural Networks and FEM Simulations

Session S12: Control of DC-DC Converters Location: Function Room 7 June 5, 2019 2:00PM - 4:00PM Session Chairs: Gerry Hurley, NUI Galway, Ireland Hongfei Wu, Nanjing University of Aeronautics and Astronautics, China
Photovoltaic Array Emulator Based on the Buck Converter
An Optimal Control for Dual-Active-Bridge DC-DC Converter in Eliminating Transient DC Bias Current
Finite Time Consensus Control for Dual Active Bridge DC-DC Converter Based on PCController
Design of LLC Resonant Converter with Magnetic Control for LEV Application
A Novel MPPT Strategy Based on Decentralized Control in SubDPP Systems
A Novel Current Sharing Method by Grouping Transformer's Secondary Windings for Multi-Phase LLC Resonant Converter

Location: Function Room 10 June 5, 2019 2:00PM - 4:00PM Session Chairs: Ralph Mario Kennel, Technical University of Munich, Germany Jiangbiao He, University of Kentucky, United States
Characteristic Analysis of the Grid-Connected Impedance-Source Inverter for PV Applications
Closed-loop Active Power Decoupling Control with Capacitor Current Feedforward for Single-Phase Bridge Inverter Based on Boost Converter
An Automatic Power Decoupling Control Method on Three Level DC-AC Converter to Suppress the Double-Line-Frequency Ripple
Zero-Sequence Circulating Current Suppression for Parallel T-Type Three-Level Inverters
Advanced Model Predictive Control for Three-Phase Inverter Circuit Based on Disturbance Observer
A Novel Step-Up Inverter with Wide Range Varied Input DC Voltage

Session S13: Control of DC-AC Converters

Session Chairs: Juan Carlos Balda, University of Arkansas - Fayetteville, United States Dongdong Zhao, Northwestern Polytechnical University, China
A Self-Synchronising Stationary Frame Current Control Strategy for Grid-Connected Converters with Integrated Frequency Tracking
Power Distribution Strategy & Real-Time Simulation for VSG-Controlled Parallel PV/Battery Microgrid Using RT-LAB
A Practical Method to Eliminate the Common Mode Current of 3-Level Active Neutral Point Clamped Inverters with Uncertain Parasitic Capacitance of Photovoltaic Panels
AC Grid Low Voltage Ride-Through (LVRT) of Diode-Rectifier Units based HVDC Transmission Systems
Design and Benchmark of Capacitive DC Links for the Hold-Up Time Application
An Extraction Method for the Parasitic Capacitance of the Photovoltaic Module Based on the Oscillation of the Leakage Current

Session S14: Control of Grid-Tied Converters II

Location: Function Room 11 June 5, 2019 2:00PM - 4:00PM

Session S15: Control of Microgrids II Location: Function Room 12 June 5, 2019 2:00PM - 4:00PM Session Chairs: Frede Blaabjerg, Aalborg University, Denmark Changsheng Hu, Zhejiang University, China
Island Interconnection Device - Enabling a Simplified Approach to Integrate Microgrids with the Grid
Hybrid Microgrid Controller Analysis and Design for a Campus Grid
Overcurrent Limiting and DC Bus Voltage Ripple Minimization in Grid-Forming PV Sources under Grid Voltage Sags
Adaptive Droop Control Strategy of Autonomous Microgrid for Efficiency Improvement
A Negative Sequence Voltage Control Strategy Based on Adaptive Virtual Impedance Implementation for Microgrid Inverter under Three-Phase Unbalanced Load
Design of DC Micro-Grid System for Integration of PMSM Elevator and Renewable Energy Sources

Session S16: DC-DC Converters II Location: Function Room 2 June 5, 2019 4:20PM - 6:00PM Session Chairs: Liuchen Chang, University of New Brunswick, Canada Dong Jiang, Huazhong University of Science and Technology, China
Clamped-Resonant Interleaved Boost Converter: Analysis and Design
An Interleaved Boost Converter with Parallel Input and Output Series for Renewable Energy System
Performance of Submodule Level Differential Power Processing Architecture in Mismatched PV Systems
A Dual-Transformer-Based Isolated DC-DC Converter with Hybrid Voltage-Multiplier for Wide and High Output Voltage Applications
Topology and Control Strategy of Multi-Port DC Transformer Based on Dual-Active-Bridge

Session S17: High Power Converters II Location: Function Room 7 June 5, 2019 4:20PM - 6:00PM Session Chairs: Meigin Mao, Hefei University of Technology, China Sixing Du, University of Toronto, Canada An Experimental Study of Cascaded H-Bridge Multilevel Inverter for Obtaining Multiple Voltage Waveforms Containing Different Number of Levels......1015 Ashique Anan Abir, University of Asia Pacific, Bangladesh Tapan Kumar Chakraborty, University of Asia Pacific, Bangladesh Khandaker Sultan Mahmood, University of Asia Pacific, Bangladesh Yuxiaoying Tu, Chongqing University, China Junru Chen, University College Dublin, Ireland Heping Liu, Chongqing University, China Terence O'Donnell, University College Dublin, Ireland Half-Bridge Submodule Test Circuit for MMC-Based Voltage Sourced HVDC Byuong-Jun Seo, Pukyong National Univ., Korea Kwon-Sik Park, Pukyong National Univ., Korea Kwang Rae Jo, Pukyong National Univ., Korea Jin-Yong Heo, Pukyong National Univ., Korea Eui-CHeol Nho, Pukyong National Univ., Korea Byung-Moon Han, Myongji University, Korea A Partial-Power Regulated Hybrid Modular DC-DC Converter to Interconnect MVDC and Jingxin Hu, RWTH Aachen University, Germany Yutan Zhang, RWTH Aachen University, Germany Shenghui Cui, RWTH Aachen University, Germany Philipp Joebges, RWTH Aachen University, Germany Rik W. De Doncker, RWTH Aachen University, Germany Design of a Medium Voltage AC Fast Solid-State Transfer Switch......1036 Wanxu Yang, Xi'an Jiaotong University, China Yongmei Gan, Xi'an Jiaotong University, China Fan Zhang, Xi'an Jiaotong University, China Yanwei Yu, Henan Mechanical and Electrical Vocational College, China Hongyue Yuan, Henan Mechanical and Electrical Vocational College, China Hailin Wang, Xi'an Jiaotong University, China Chenhao Zhao, Xi'an Jiaotong University, China

Session S18: Wind Power Conversion Systems Location: Function Room 10 June 5, 2019 4:20PM - 6:00PM Session Chairs: Grahame Holmes, RMIT University, Australia Andrés Escobar Mejía, Universidad Tecnológica de Pereira, Colombia A Vector Selection Based Common Mode Voltage Reduction Strategy for Dual Three Phase Permanent Magnet Synchronous Wind Power Generators Considering Harmonic Jin Xu, University of Sheffield, United Kingdom Milijana Odavic, University of Sheffield, United Kingdom Zigiang Zhu, University of Sheffield, United Kingdom Zhanyuan Wu, Siemens Gamesa Renewable Energy, United Kingdom Simplified Model Predictive Flux Control for Dual Inverter Fed Open End Winding Induction Di Wu, Huaihai Institute of Technology, China Jifeng Chen, China University of Mining and Technology, China Rui Zhu, China University of Mining and Technology, China Guowu Hua, China University of Mining and Technology, China A Sensorless Control Method based on MRAS for 12-Phase PMSM in FESS.......1055 Biyang Chen, Tsinghua University, China Jingliang Lv, Tsinghua University, China Xinjian Jiang, Tsinghua University, China Tomas Syskakis, University of British Columbia, Canada Martin Ordonez, University of British Columbia, Canada Daniel Memije, Instituto Politecnico Nacional, Mexico Oscar Carranza, Instituto Politecnico Nacional, Mexico Jaime Jose Rodriguez, Instituto Politecnico Nacional, Mexico Ruben Ortega, Instituto Politecnico Nacional, Mexico Edgar Peralta, Universidad Popular Autónima del Estado de Puebla, Mexico

Session S19: Wireless

Location: Function Room 11 June 5, 2019 4:20PM - 6:00PM

Session Chairs: Johan Enslin, Clemson University, United States
Jianing Wang, Hefei University of Technology, China

Implementation of High-Power & Low-Frequency Resonant Wireless Power Transfer Charging System for Electric Vehicles
Coil Design and Shielding Method for Resonant Wireless Charging System
Variable Angle Phase Shift Control in Series-Series Type Wireless Power Transfer System
A Passive Integration Device for LCC-Compensated Inductive Power Transfer System
Optimal Simulation Study for Wireless Charging Coils with Magnetizers

Session S20: Power Quality Location: Function Room 2 June 5, 2019 4:20PM - 6:00PM

Session Chairs: Denizar Cruz Martins, Federal University of Santa Catarina, Brazil

Jinwei He, Tianjin University, China

A High Efficiency Quasi-Single-Stage Unified Power Quality Conditioner Integrating Distributed Generation
Back-Stepping Control of Three-Phase Inverter for UPS Application with a Fourth-Order Load Current Observer in DQ Frame
A New High Control Precision Active Power Filter
Study on Voltage Compensation Method of Voltage Stabilizer of Voltage Dependent Load on Ship
A Novel Transformerless Active Voltage Quality Regulator