

2015 9th International Conference on Power Electronics and ECCE Asia

(ICPE-ECCE Asia 2015)

**Seoul, South Korea
1-5 June 2015**

Pages 1-727



**IEEE Catalog Number: CFP15CPB-POD
ISBN: 978-1-4799-8800-6**

Technical Program

Session Title: [TuA1] 09 : Multilevel Power Converters (1)
Date & Time: June 2 (Tue.) / 08:30~10:35
Room: Room A (Pine)
Session Chairs: Prof. Subhashish Bhattacharya (North Carolina State Univ., USA)
 Prof. Sangshin Kwak (Chung-ang Univ., Korea)

[TuA1-1] 08:30 ~ 08:55

A Cell Capacitor Energy Balancing Control of MMC-HVDC under the AC Grid Faults 1

Jae-Jung Jung (Seoul Nat'l Univ., Korea), Shenghui Cui (RWTH Aachen Univ., Germany), Younggi Lee, and seung-Ki Sul (Seoul Nat'l Univ., Korea)

[TuA1-2] 08:55 ~ 09:20

Grouping-Sorting Optimized Model Predictive Control of Modular Multilevel Converter with Reduced Computational Load 9

L. Pu, W. Yue, C. Wulong, and L. Wanjuan (Xi'an Jiaotong Univ., China)

[TuA1-3] 09:20 ~ 09:45

A Robust Hybrid Multilevel Rectifier with Adjustable Output Voltage and Variable Load 14

Sangin Lee, Poria Fajri, and Mehdi Ferdowsi (Missouri Univ. of Science and Technology, USA)

[TuA1-4] 09:45 ~ 10:10

A Single-Source Photovoltaic Power Conditioning System using Asymmetric Cascaded Multilevel Inverter 21

Mohana Sundar Manoharan, Ashraf Ahmed, Hyun-Woo Kim, and Joung-Hu Park (Soongsil Univ., Korea)

[TuA1-5] 10:10 ~ 10:35

An Improved Discontinuous Modulation for Three-Level Inverter 27

Liang Zhigang, Lin Xinchun, Kang Yong, and LiuXin (Huazhong Univ. of Science and Technology, China)

Session Title: [TuB1] 06 : Uncontrolled Rectifiers and AC/DC Converters (1)
Date & Time: June 2 (Tue.) / 08:30~10:35
Room: Room B (Sequoia)
Session Chairs: Prof. David Xu (Ryerson Univ., Canada)
 Prof. Honnyong Cha (Kyungpook Nat'l Univ., Korea)

[TuB1-1] 08:30 ~ 08:55

DC-link Shunt Compensator for Three-phase System with Small DC-link Capacitor 33

Hoon Shin, Hyeon-Gyu Choi, and Jung-Ik Ha (Seoul Nat'l Univ., Korea)

[TuB1-2] 08:55 ~ 09:20

Control of the Input Characteristic and the Displacement Factor of Uni- and Bidirectional SWISS Rectifier for Symmetrical and Unsymmetrical Three-Phase Mains 40

L. Schrittwieser, M. F. Vancu, J. W. Kolar (ETH Zurich, Switzerland), and T. B. Soeiro (ABB Switzerland Ltd., Switzerland)

[TuB1-3] 09:20 ~ 09:45

Soft-Switching Single-Stage Current-Fed Full-Bridge Isolated Converter for High Power AC/DC Applications 48

Yu Zhang (Huazhong Univ. of Science and Technology, China), Chushan Li, Zhifang Cao, and David Xu (Ryerson Univ., Canada)

[TuB1-4] 09:45 ~ 10:10

The Analysis of TRIAC Dimming LED Driver by Variable Switched Capacitor for Long Life and High Power-Efficient Applications 54

Eun S. Lee, Bo H. Choi, Duy T. Nguyen, and Chun T. Rim (KAIST, Korea)

[TuB1-5] 10:10 ~ 10:35

A High Efficiency Integrated Step-down Cuk and Flyback Converter for LED Power Driver 60

Weiming Lin, Xu Yuzhen, and QingLiang Zheng (Fuzhou Univ., China)

Session Title: [TuC1] 11 : Motor Control and Drives (1)
Date & Time: June 2 (Tue.) / 08:30~10:35
Room: Room C (Cedar)
Session Chairs: Prof. Ralph Kennel (Technische Universität München, Germany)
 Prof. Hong-Hee Lee (Univ. of Ulsan, Korea)

[TuC1-1] 08:30 ~ 08:55

Compensating of Common Scaling Current-Measurement Error for Permanent Magnet Synchronous Motor Drives N/A
 Hong-jun Heo (Pusan Nat'l Univ., Korea), Jin-woo Choi (LG Chemical, Korea), and Jang-mok Kim (Pusan Nat'l Univ., Korea)

[TuC1-2] 08:55 ~ 09:20

Position Sensorless Vector Control of the Brushless Synchronous Motor 65
 Hongwu She, Bo Qu, Jingkui Shi, Zhuohui Tan, and Jie Shen (GE Global Research, China)

[TuC1-3] 09:20 ~ 09:45

1MHz Variable Sampling Deadbeat Control for PM Motor using FPGA 70
 Asahi Kitada, Kota Miyata, Kota Tsuchiya, Hiroki Sato, and Tomoki Yokoyama (Tokyo Denki Univ., Japan)

[TuC1-4] 09:45 ~ 10:10

Double-Delta Sourced Winding for Dual Winding Induction Machine 77
 Yongsoon Park, Jeong-Mock Yoo, and Seung-Ki Sul (Seoul Nat'l Univ., Korea)

[TuC1-5] 10:10 ~ 10:35

Model Predictive Control of Induction Motor Drives: Flux Control versus Torque Control 86
 Yongchang Zhang and Haitao Yang (North China Univ. of Technology, China)

Session Title: [TuD1] 13 : Renewable Green Energy (1)
Date & Time: June 2 (Tue.) / 08:30~10:35
Room: Room D (Spruce)
Session Chairs: Prof. Frede Blaabjerg (Aalborg Univ., Denmark)
 Prof. Seung-Ho Song (Kwangwoon Univ., Korea)

[TuD1-1] 08:30 ~ 08:55

A Novel DC-DC Converter for Wind Turbines in the Series DC Wind Farm N/A
 Changjiang Sun, Gang Shi, Jiangwen Zhang, and Xu Cai (Shanghai Jiao Tong Univ., China)

[TuD1-2] 08:55 ~ 09:20

FPGA HiL Simulation of Back-to-Back Converter PMSG Wind Turbine Systems 99
 Zhenbin Zhang, Fengxiang Wang, Metehan Acikgoz, Xinbo Cai, and Ralph Kennel (Technische Universität München, Germany)

[TuD1-3] 09:20 ~ 09:45

Energy Recovery Flyback Type Snubber for 10kV IGCT in 7MW Wind Turbine Systems 107
 Siamak Shirmohammadi, Kihyun Lee, and Yongsug Suh (Chonbuk Nat'l Univ., Korea)

[TuD1-4] 09:45 ~ 10:10

Transformerless Photovoltaic Inverters with Leakage Current and Pulsating Power Elimination 115
 Y. Tang (Nanyang Technological Univ., Singapore), W. Yao (Northwestern Polytechnic Univ., China), H. Wang (Nanyang Technological Univ., Singapore), P. C. Loh, and F. Blaabjerg (Aalborg Univ., Denmark)

[TuD1-5] 10:10 ~ 10:35

Optimum and Adjustable Damping Control of Grid-Connected Inverter with an LCL Filter 123
 Toshiji Kato, Kaoru Inoue, Yusuke Akiyama, and Koki Ohashi (Doshisha Univ., Japan)

Session Title: [TuE1] 08 : DC/AC Inverters (1)
Date & Time: June 2 (Tue) / 08:30~10:35
Room: Room E (Juniper)
Session Chairs: Prof. Shaojun Xie (Nanjing Univ. of Aeronautics and Astronautics, China)
 Prof. Hanju Cha (Chungnam Nat'l Univ., Korea)

[TuE1-1] 08:30 ~ 08:55

Single-Phase Isolated Impedance-Source Inverters 129

Zeeshan Aleem, Hafiz Furqan Ahmed, Honnyong Cha, and Heung-Guen Kim (Kyungpook Nat'l Univ., Korea)

[TuE1-2] 08:55 ~ 09:20

Operation and Modulation of H7 Current Source Inverter with Hybrid SiC and Si Semiconductor Switches 135

Weiqi Wang, Feng Gao (Shandong Univ., China), and Shuling Rui (State Grid Qingdao Power Supply Company, China)

[TuE1-3] 09:20 ~ 09:45

Weight Minimization of LCL Filters for High Power Converters 142

Ki-Bum Park, Frederick Kieferndorf, Uwe Drofenik, Sami Pettersson, and Francisco Canales (ABB Corporate Research, Switzerland)

[TuE1-4] 09:45 ~ 10:10

Feedforward of Grid Line-to-Line Voltages for Grid-Connected Inverter Under the Weak Grid Condition 150

Alireza Shayestehfard, Hamza Belkamel, Saad Mekhilef, Hazlie Bin Mokhlis, Mutsuo Nakaoka (Univ. of Malaya, Malaysia), and Koki Ogura (Kawasaki Heavy Industries Ltd., Japan)

[TuE1-5] 10:10 ~ 10:35

Analysis of Pre-compensator for Disturbance Signal Elimination in Single-Phase Inverters with Virtual Vector Control 157

Yuxiang Wang, Yunjie Gu, Wuhua Li, and Xiangning He (Zhejiang Univ., China)

Session Title: [TuF1] 02: Modeling, Simulation and EMI (1)
Date & Time: June 2 (Tue.) / 08:30~10:35
Room: Room F (Cypress)
Session Chairs: Prof. Masahito Shoyama (Kyushu Univ., Japan)
 Prof. Jun-Keun Ji (Soonchunhyang Univ., Korea)

[TuF1-1] 08:30 ~ 08:55

EMI Reduction Technique of Flyback Converter Based on Capacitance Model of Transformer with Wire Shield 163

Byeong-Geuk Kang (Gyeongsang Nat'l Univ., Korea), Hee-Seung Kim, Jae-Sun Won (Samsung Electro-Mechanics Co., Ltd., Korea), and Se-Kyo Chung (Gyeongsang Nat'l Univ., Korea)

[TuF1-2] 08:55 ~ 09:20

Study on an Accurate Iron Loss Calculation Method Considering the Non-Uniformity of the Magnetic Flux Density 170

Hiroaki Sato and Toshihisa Shimizu (Tokyo Metropolitan Univ., Japan)

[TuF1-3] 09:20 ~ 09:45

SPICE-Compatible High Frequency Physical Modeling Approach for an Inductor 176

J. Taki, M. Bensetti, and D. Sadarnac (GeePs, France)

[TuF1-4] 09:45 ~ 10:10

Class D Audio Amplifier with Hybrid Control 182

Sridhar Joshi and Parthasarathi Sensarma (Indian Institute of Technology, India)

[TuF1-5] 10:10 ~ 10:35

Power SiC MOSFET Model with Simplified Description of Linear and Saturation Operating Regions 190

Ruiyun Fu (Mercer Univ., USA), Enrico Santi (Univ. of South Carolina, USA), and Yucheng Zhang (South Dakota School of Mines & Technology, USA)

Session Title: [TuG1] 14 : Micro/Smart Grid (1)
Date & Time: June 2 (Tue.) / 08:30~10:35
Room: Room G (Lavender)
Session Chairs: Prof. Liuchen Chang (Hefei Univ. of Tech., China)
 Prof. Jung-Wook Park (Yonsei Univ., Korea)

[TuG1-1] 08:30 ~ 08:55

Design Methodology of Dual Active Bridge Converter for Solid State Transformer Application in Smart Grid 196
 Hyun-Jun Choi, Hwa-Pyeong Park, and Jee-Hoon Jung (Ulsan Nat'l Institute of Science and Technology, Korea)

[TuG1-2] 08:55 ~ 09:20

Reliability Modeling and Analysis of a Microgrid with Significant Clean Energy Penetration 202
 Xiaofang Shi and Ali M. Bazzi (Univ. of Connecticut, USA)

[TuG1-3] 09:20 ~ 09:45

The Impact of Line Resistance on Load Sharing and An Improved Droop Control of DC Microgrid 208
 Cao Wei (Shanghai Univ., China), Yang Daopei (Shanghai Univ. of Electric Power, China), Cao Jialin (Shanghai Univ., China), Wang Yongzhi, and Yan Yuxing (Shanghai Univ. of Electric Power, China)

[TuG1-4] 09:45 ~ 10:10

Interconnection of Two Neighboring Autonomous Microgrids Based on Small Signal Analysis 213
 Ehsan Pashajavid, Farhad Shahnia, and Arindam Ghosh (Curtin Univ., Australia)

[TuG1-5] 10:10 ~ 10:35

Time Delay Control of Flyback CCM Inverter for PV Power Applications 221
 Sooa Kim, Minsung Kim, Sungho Lee, and Jin S. Lee (POSTECH, Korea)

Session Title: [TuH1] 03 : Soft Switching Converters (1)
Date & Time: June 2 (Tue.) / 08:30~10:35
Room: Room H (Rosemary)
Session Chairs: Prof. Hubert Razik (Universite Claude Bernard Lyon 1, France)
 Prof. Joung-Hu Park (Soongsil Univ., Korea)

[TuH1-1] 08:30 ~ 08:55

A High Efficiency Half-Bridge LLC Converter with Simple Hold-Up Compensation Circuit 227
 J. B. Lee, J. I. Baek, H. S. Youn, C. O. Yeon, C. Y. Lim, and G. W. Moon (KAIST, Korea)

[TuH1-2] 08:55 ~ 09:20

Minimizing Switching Losses in High Switching Frequency GaN-based Synchronous Buck Converter with Zero-Voltage Resonant-Transition Switching 233
 Woongkul Lee, Di Han, Casey Morris, and Bulent Sarlioglu (Univ. of Wisconsin - Madison, USA)

[TuH1-3] 09:20 ~ 09:45

A High-Efficiency Variable Modulation Strategy for a Dual-Active-Bridge Converter with a Wide Operating Range 240
 Byeng-Joo Byen, Kyung-Pil Kang, Younghoon Cho (Konkuk Univ., Korea), and Anno Yoo (LSIS Co., Ltd., Korea)

[TuH1-4] 09:45 ~ 10:10

Continuous-Current Mode Operation of a Semi-Dual-Bridge Resonant Converter 246
 Song Hu, Ming Lu, and Xiaodong Li (Macau Univ. of Science and Technology, Macao)

[TuH1-5] 10:10 ~ 10:35

Zero-Voltage Switching Analysis of Active-Clamped Forward Converter with Current-Doubler Rectifier 253
 Paul Jang and Bo-Hyung Cho (Seoul Nat'l Univ., Korea)

Session Title: [TuA2] 09 : Multilevel Power Converters (2)
Date & Time: June 2 (Tue.) / 13:30~15:35
Room: Room A (Pine)
Session Chairs: Prof. Brendan McGrath (RMIT Univ., Australia)
 Prof. Honnyong Cha (Kyungpook Nat'l Univ., Korea)

[TuA2-1] 13:30 ~ 13:55

Principles and Dynamics of Natural Arm Capacitor Voltage Balancing of a Direct Modulated Modular Multilevel Converter 259

Shenghui Cui (RWTH Aachen Univ., Germany), Jae-Jung Jung, Younggi Lee, and Seung-Ki Sul (Seoul Nat'l Univ., Korea)

[TuA2-2] 13:55 ~ 14:20

Modeling and Analysis of Conducted EMI for a Modular Multilevel Converter 268

Zhang Bin, Chen Wenjie, Huang Lang, Zhang Jiao, and Yang Xu (Xi'an Jiaotong Univ., China)

[TuA2-3] 14:20 ~ 14:45

Hybrid Modulation for Neutral Point Voltage Ripple Reduction in DC-fed Three-Level Motor Drive Systems 274

Xuning Zhang, Dushan Boroyevich, and Rolando Burgos (Virginia Tech., USA)

[TuA2-4] 14:45 ~ 15:10

A Novel SVPWM Scheme for Common-Mode Voltage Reduction in Five-Level Active NPC Inverters 281

Quoc Anh Le and Dong-Choon Lee (Yeungnam Univ., Korea)

[TuA2-5] 15:10 ~ 15:35

A Novel Voltage Balancing Method for Isolated Modular Multilevel DC-DC Converter N/A

Changjiang Sun, Yudong Mou, Jiangwen Zhang, Miao Zhu, and Xu Cai (Shanghai Jiao Tong Univ., China)

Session Title: [TuB2] 29: (Organized Session) Power Electronics Technologies for Renewable Energy System
Date & Time: June 2 (Tue.) / 13:30~15:35
Room: Room B (Sequoia)
Session Chairs: Prof. Junming Zhang (Zhejiang Univ., China)
 Prof. Tsorng-Juu Liang (Nat'l Cheng Kung Univ., Taiwan)

[TuB2-1] 13:30 ~ 13:55

Design and Implementation of a Photovoltaic Grid-Connected Micro-Inverter with Power Factor Correction Technology 294

Yu-Kun Chen, Tsorng-Juu Liang, and Wei-Chia Wu (Nat'l Cheng Kung Univ., Taiwan)

[TuB2-2] 13:55 ~ 14:20

Two-Phase Interleaved Bidirectional Converter Input-Parallel Output-Series Connection 301

Yuji Yamamoto, Taro Takiguchi, Takaharu Sato, and Hirotaka Koizumi (Tokyo Univ. of Science, Japan)

[TuB2-3] 14:20 ~ 14:45

A DSP-Based Differential Boost Inverter with Maximum Power Point Tracking 309

Marojahan Tampubolon, Irwan Purnama, Pei-Chin Chi, Jing-Yuan Lin, Yao-Ching Hsieh, and Huang-Jen Chiu (Nat'l Taiwan Univ. of Science and Technology, Taiwan)

[TuB2-4] 14:45 ~ 15:10

Modular Multilevel Power Electronic Transformer 315

Zhaohui Wang, Junming Zhang, and Kuang Sheng (Zhejiang Univ., China)

[TuB2-5] 15:10 ~ 15:35

High Power Density Asymmetrical Full-Bridge Soft-Switching Inverter 322

Pei-Chin Chi, Cheng-Yen Chou, Marojahan Tampubolon, Yao-Ching Hsieh, Jing-Yuan Lin, and Huang-Jen Chiu (Nat'l Taiwan Univ. of Science and Technology, Taiwan)

Session Title: [TuC2] 11 : Motor Control and Drives (2)
Date & Time: June 2 (Tue.) / 13:30~15:35
Room: Room C (Cedar)
Session Chairs: Dr. Vladimir Blasko (United Technologies Corporate Research, USA)
 Prof. Seon-Hwan Hwang (Kyungnam Univ., Korea)

[TuC2-1] 13:30 ~ 13:55

Variable Time Step Control for Six-step Operation in SMPMSM

Jaeyong Park, Sungho Jung, and Jung-Ik Ha (Seoul Nat'l Univ., Korea)

[TuC2-2] 13:55 ~ 14:20

Two Parallel Converters with Small Inter-Converter Inductor for Elevator Drive System

Wu Wenlong, Wang Fei, Wang Yong, and Gao Qiang (Shanghai Jiaotong Univ., China)

[TuC2-3] 14:20 ~ 14:45

Simplification of Halt Sequence to Suppress Increase of DC-link Voltage during Motor Regeneration

T. Nagano, K. Orikawa, J. Itoh (Nagaoka Univ. of Technology, Japan), and A. Toba (Fuji Electric Co., Ltd., Japan)

[TuC2-4] 14:45 ~ 15:10

On-line Identification Methods of Parameters for Permanent Magnet Synchronous Motors Based on Cascade MRAS

Yanqing Zhang, Zhonggang Yin, Xiangdong Sun, and Yanru Zhong (Xi'an Univ. of Technology, China)

[TuC2-5] 15:10 ~ 15:35

Torque Ripple Reduction of PM Synchronous Motor for Wide Speed Operating Ranges

Jong-Hyun Kim, Kwan-Yuhl Cho, Hag-Wone Kim, Byung-Kuk Lim (Korea Nat'l Univ. of Transportation, Korea), and Byung-Moon Han (Myongji Univ., Korea)

Session Title: [TuD2] 33: (Organized Session) Wind Energy Grid-Adaptive Technology (1)
Date & Time: June 2 (Tue.) / 13:30~15:35
Room: Room D (Spruce)
Session Chairs: Dr. Eduard Muljadi (Nat'l Renewable Energy Laboratory, USA)
 Prof. Yong-Cheol Kang (Chonbuk Nat'l Univ., Korea)

[TuD2-1] 13:30 ~ 13:55

Modified Stepwise Inertial Control Using the Mechanical Input and Electrical Output Curves of a Doubly Fed Induction Generator

Moses Kang, Jinsik Lee, and Yong Cheol Kang (Chonbuk Nat'l Univ., Korea)

[TuD2-2] 13:55 ~ 14:20

Permanent Magnet Synchronous Condenser for Wind Power Plant Grid Connection Support

Ping Hsu (San Jose State Univ., USA) and Eduard Muljadi (Nat'l Renewable Energy Lab., USA)

[TuD2-3] 14:20 ~ 14:45

Evaluation of STATCOM Capacity on Transient Stability in Jeju-island System with HVDC and Wind Farms

S. Hwang (Korea Univ., Korea), M. Yoon, and G. Jang (Seoul Nat'l Univ., Korea)

[TuD2-4] 14:45 ~ 15:10

Study on Transient Performance of Doubly Fed Induction Generator with Crowbar during Three-Phase Voltage Dips

Zhong Cheng and Yan Gangui (Northeast Dianli Univ., China)

[TuD2-5] 15:10 ~ 15:35

A Survey on Operation of Wind Turbine Generators in Stand-Alone Microgrid

Jaewoo Kim, Dongmin Kim (Yonsei Univ., Korea), Seung-Mook Baek (Kongju Nat'l Univ., Korea), Soo Hyoung Lee (Korea Electrotechnology Research Institute, Korea), and Jung-Wook Park (Yonsei Univ., Korea)

Session Title: [TuE2] 08 : DC/AC Inverters (2)
Date & Time: June 2 (Tue.) / 13:30~15:35
Room: Room E (Juniper)
Session Chairs: Prof. Tsai-Fu wu (Nat'l Tsing Hua Univ., Taiwan)
 Prof. Joung-Hu Park (Soongsil Univ., Korea)

[TuE2-1] 13:30 ~ 13:55

An On-Line UPS System that Eliminates the Inrush Current Phenomenon While Feeding Multiple Load Transformers

Syed Sabir Hussain Bukhari (Hanyang Univ., Korea), Thomas A. Lipo (Florida State Univ., USA), and Byung-il Kwon (Hanyang Univ., Korea)

[TuE2-2] 13:55 ~ 14:20

Dynamic Evaluation of LCL-type Grid-Connected Inverters with Different Current Feedback Control Schemes

Yang Han, Zipeng Li (Univ. of Electronic Science and Technology of China, China), and Josep M. Guerrero (Aalborg Univ., Denmark)

[TuE2-3] 14:20 ~ 14:45

Output Ripple Performance Evaluation and Comparison of 2L-VSI and 3L-VSI Considering the Spectral Characteristics

Ziya Özkan and Ahmet M. Hava (Middle East Technical Univ., Turkey)

[TuE2-4] 14:45 ~ 15:10

Circulating Current Reduction of Parallel Connected Four-Pole Inverters

Meng-Jiang Tsai and Po-Tai Cheng (Nat'l Tsing Hua Univ., Taiwan)

[TuE2-5] 15:10 ~ 15:35

A Simplified Control Architecture for Three-Phase Inverters in Modular UPS Application with Shunt Active Power Filter Embedded

Chi Zhang, Josep M. Guerrero, and Juan C. Vasquez (Aalborg Univ., Denmark)

Session Title: [TuF2] 02: Modeling, Simulation and EMI (2)
Date & Time: June 2 (Tue.) / 13:30~15:35
Room: Room F (Cypress)
Session Chairs: Prof. Keiji Wada (Tokyo Metropolitan Univ., Japan)
 Prof. Se-Kyo Chung (Gyeongsang Nat'l Univ., Korea)

[TuF2-1] 13:30 ~ 13:55

Optimized Coupling Factor of Multi-Winding Coupled Inductor for Minimum Inductor Current Ripple in Rapid Traction Battery Charger System

Taewon Kang, Beomseok Chae, Tahyun Kang, and Yongsug Suh (ChonBuk Nat'l Univ., Korea)

[TuF2-2] 13:55 ~ 14:20

Modeling and Analysis of Primary Side Regulated Flyback Converter with Pulse Frequency Modulation

Juzheng Yu, Shen Xu, Qinsong Qian, Weifeng Sun, and Shengli Lu (Southeast Univ., China)

[TuF2-3] 14:20 ~ 14:45

Small Signal Model and Control of a Series Resonant Inverter with an Auxiliary Switched Capacitor Cell using Describing Function

Bishwajit Saha (InterNat'l Univ. of Business Agriculture and Technology, Bangladesh), Mohammad Rashedul Islam The City College of New York, USA), and Rae-Young Kim (Hanyang Univ., Korea)

[TuF2-4] 14:45 ~ 15:10

A Method for In-Situ Measurement of Grid Impedance and Load Impedance at 2 k - 150 kHz

Junzhe Tan (Delft Univ. of Technology, Netherlands), Dongsheng Zhao (Dutch Metrology Institute, Netherlands), and Braham Ferreira (Delft Univ. of Technology, Netherlands)

[TuF2-5] 15:10 ~ 15:35

Dynamic Modeling and Integral Sliding Mode Controller Design for Cuk Converter under Load Variation

ByeongCheol Han, Minsung Kim, Sungho Lee, and Jin S. Lee (POSTECH, Korea)

Session Title: [TuG2] 14 : Micro/Smart Grid (2)
Date & Time: June 2 (Tue.) / 13:30~15:35
Room: Room G (Lavender)
Session Chairs: Prof. Josep M. Guerrero (Aalborg Univ., Denmark)
Prof. Sung-yeul Park (Univ. of Connecticut, USA)

[TuG2-1] 13:30 ~ 13:55

A Novel Droop Control Method for Distribution Loss Minimization in DC Microgrids with Decentralized Communication
Seok-Woong Kim, See-Young Choi, and Rae-Young Kim (Hanyang Univ., Korea)

[TuG2-2] 13:55 ~ 14:20

Architecture and System Analysis of Microgrids with Peer-to-Peer Electricity Sharing to Create a Marketplace which Enables Energy Access
Wardah Inam, Daniel Strawser (Massachusetts Institute of Technology, USA), Khurram K. Afridi (Univ. of Colorado Boulder, USA), Rajeev J. Ram, and David J. Perreault (Massachusetts Institute of Technology, USA)

[TuG2-3] 14:20 ~ 14:45

Stability Analysis of an Islanded Microgrid Based on Impedance Characteristics
Lixiang Hou, Hongtao Shi, and FangZhuo (Xi'an Jiaotong Univ., China)

[TuG2-4] 14:45 ~ 15:10

Coordinated Secondary Control for Balanced Discharge Rate of Energy Storage System in Islanded Microgrids
Yajuan Guan, Josep M. Guerrero, and Juan C. Vasquez (Aalborg Univ., Denmark)

[TuG2-5] 15:10 ~ 15:35

A Seamless Transfer Algorithm Based on Frequency Detection and Feedforward Control Method in Distributed Generation System
Kiryong Kim, Dongsul Shin (Pusan Nat'l Univ., Korea), Jong-Pil Lee, Tae-Jin Kim, Dong-Wook Yoo (Korea Electrotechnology Research Institute, Korea), and Hee-Je Kim (Pusan Nat'l Univ., Korea)

Session Title: [TuH2] 03 : Soft Switching Converters (2)
Date & Time: June 2 (Tue.) / 13:30~15:35
Room: Room H (Rosemary)
Session Chairs: Prof. Huang-Jen Chiu (Nat'l Taiwan Univ. of Science and Tech., Taiwan)
Prof. Sewan Choi (Seoul Nat'l Univ. of Science and Tech., Korea)

[TuH2-1] 13:30 ~ 13:55

A Strategic Control Scheme of Phase-Shift Full Bridge Converter for Improving Light-load Efficiency in Server Power System
Yeonho Jeong, Jong-Woo Kim, Cheon-Yong Lim, Dong-Kwan Kim, Jae-Il Baek, and Gun-Woo Moon (KAIST, Korea)

[TuH2-2] 13:55 ~ 14:20

Dual Control Used in Series-Loaded Resonant Converter with SiC Devices
G. Tolstoy (KTH Royal Institute of Technology, Sweden), P. Ranstad (Alstom Power, Sweden), J. Colmenares (KTH Royal Institute of Technology, Sweden), F. Giezendanner (Alstom Power, Sweden), and H-P. Nee (KTH Royal Institute of Technology, Sweden)

[TuH2-3] 14:20 ~ 14:45

Design and Implementation of High Switching Frequency LLC Resonant Converter for High Power Density
Hwa-Pyeong Park, Hyun-Jun Choi, and Jee-Hoon Jung (Ulsan Nat'l Institute of Science and Technology, Korea)

[TuH2-4] 14:45 ~ 15:10

A Two-stage Control Scheme for a Dual-Bridge Series Resonant Converter
Yi-jue Zhang, Ming Lu, and Xiaodong Li (Macau Univ. of Science and Technology, Macao)

[TuH2-5] 15:10 ~ 15:35

New Parallel Loaded Resonant Converter with Wide Input and Output Voltage Range
Minjae Kim, Shinyoung Noh, and Sewan Choi (Seoul Nat'l Univ. of Science and Technology, Korea)

Session Title: [TuA3] 09 : Multilevel Power Converters (3)
Date & Time: June 2 (Tue.) / 15:50~17:55
Room: Room A (Pine)
Session Chairs: Prof. Axel Mertens (Leibniz Univ. Hannover, Germany)
 Prof. Rae-Young Kim (Hanyang Univ., Korea)

[TuA3-1] 15:50 ~ 16:15

A New Discontinuous PWM Method of Three-Level Inverter for Neutral-Point Voltage Ripple Reduction

Seungjong Yoo, June-Seok Lee, and Kyo-Beum Lee (Ajou Univ., Korea)

[TuA3-2] 16:15 ~ 16:40

Active DC-link Stabilization for Constant Power Load

Xinda Song, Jiancheng Fang, Chenjun Cui, and Shaohua Chen (Beihang Univ., China)

[TuA3-3] 16:40 ~ 17:05

An Efficient Method to Calculate Optimal Pulse Patterns for Multi-Level Converters

Reza Fotouhi, Alexey Sorokin, Ralph Kennel (Technical Univ. of Munich, Germany), and Hendrik du Toit Mouton (Univ. of Stellenbosch, South Africa)

[TuA3-4] 17:05 ~ 17:30

One-Cycle Control of Five-Level Diode Clamped STATCOM

In Wha Jeong (Samsung Electro-Mechanics, Korea), Mikhail Slepchenkov, and Keyue Smedley (Univ. of California, USA)

[TuA3-5] 17:30 ~ 17:55

Spectral Analysis of Multilevel PWM Strategies Using a One-Dimensional Fourier Series

B. P. McGrath (RMIT Univ., Australia) and H. du T. Mouton (Univ. of Stellenbosch, South Africa)

Session Title: [TuB3] 01: Power Semiconductor Devices and Packaging (1)
Date & Time: June 2 (Tue.) / 15:50~17:55
Room: Room B (Sequoia)
Session Chairs: Prof. Graham Town (Macquarie Univ., Australia)
 Prof. Jeehoon Jung (UNIST, Korea)

[TuB3-1] 15:50 ~ 16:15

The Advanced 7th Generation IGBT Module for High Power Density Technology

J. Kawabata, Y. Kusunoki, Y. Onozawa, Y. Nishimura, Y. Kobayashi, and O. Ikawa (Fuji Electric Co., Ltd., Japan)

[TuB3-2] 16:15 ~ 16:40

Modeling of Temperature Dependent Parasitic Gate Turn-On in Silicon IGBTs

R. Bonyadi, O. Alatis, S. Jahdi, J. Ortiz Gonzalez, L. Ran, and P. A. Mawby (Univ. of Warwick, UK)

[TuB3-3] 16:40 ~ 17:05

Analysis of GaN HEMT Switching Behavior

Jennifer Lautner and Bernhard Piepenbreier (Univ. of Erlangen-Nuremberg, Germany)

[TuB3-4] 17:05 ~ 17:30

1-MHz Isolated Bipolar Half-bridge GaN Gate Driver for SiC MOSFETs

Taekyun Kim, Minsoo Jang, and Vassilios G. Agelidis (The Univ. of New South Wales, Australia)

[TuB3-5] 17:30 ~ 17:55

Drain-Side Discrete-Distributed Layout Influences on Reliability Issues in the 0.25 μm 60-V Power pLDMOS

Shen-Li Chen and Yu-Ting Huang (Nat'l United Univ., Taiwan)

Session Title:	[TuC3] 11 : Motor Control and Drives (3)
Date & Time:	June 2 (Tue.) / 15:50~17:55
Room:	Room C (Cedar)
Session Chairs:	Prof. Bulent Sarlioglu (Univ. of Wisconsin-Madison, USA) Prof. Jangmok Kim (Pusan Nat'l Univ., Korea)

[TuC3-1]	15:50 ~ 16:15
----------	---------------

Induction Motor Control System Using Bidirectional Quasi-Z Source Inverter

Sang-hyup Han, Heung-Geun Kim, Bon-Gwan Gu, Honnyong Cha (Kyungpook Nat'l Univ., Korea), Tae-won Chun (Ulsan Univ., Korea), and Eu-Chul Nho (Pukyong Nat'l Univ., Korea)

[TuC3-2]	16:15 ~ 16:40
----------	---------------

Mechanical Resonance Suppression in Servo System Based on The Fractional Order Low-pass Filter

Ming Yang, Yongjian Fu, Xin Lv, and Dianguo Xu (Harbin Institute of Technology, China)

[TuC3-3]	16:40 ~ 17:05
----------	---------------

Vibration Reduction Method in SRM with a Smoothing Voltage Commutation by PWM

Akiko Tanabe and Kan Akatsu (Shibaura Institute of Technology, Japan)

[TuC3-4]	17:05 ~ 17:30
----------	---------------

Low Voltage Modulation Method in Six-step Operation of Three Phase Inverter

Sungho Jung and Jung-Ik Ha (Seoul Nat'l Univ., Korea)

[TuC3-5]	17:30 ~ 17:55
----------	---------------

Control Strategies for a High-Performance 2x27 MVA Machine Test Bench with Multilevel IGCT Converters

Bo Qu, Jingkui Shi, Hongwu She, Jie Shen, Stefan Schroeder, Zhuohui Tan (GE Global Research, China), Kunlun Chen, Jianmei Zhang, Yulong Li, Fan Zhang, and Richard Zhang (GE Power Conversion, China)

Session Title:	[TuD3] 13 : Renewable Green Energy (2)
Date & Time:	June 2 (Tue.) / 15:50~17:55
Room:	Room D (Spruce)
Session Chairs:	Prof. Katherine Kim (UNIST, Korea) Prof. Hanju Cha (Chungnam Nat'l Univ., Korea)

[TuD3-1]	15:50 ~ 16:15
----------	---------------

DC Current Offset Compensation Technique in Grid Connected Inverters

S. A. Azmi, M. A. Roslan (Universiti Malaysia, Malaysia), G. P. Adam, and B. W. Williams (Univ. of Strathclyde, UK)

[TuD3-2]	16:40 ~ 17:05
----------	---------------

Current Balancing Control of High Power Parallel-Connected AFE with Small Current Ripples

Xinbo Cai, Zhenbin Zhang (Technische Universität München, Germany), Liang Cai (STEP Electric Corporation, China), and Ralph Kennel (Technische Universität München, Germany)

[TuD3-3]	16:15 ~ 16:40
----------	---------------

A Cascaded-Boost Topology for Electrolyte-less Power Conditioning System Suitable for PV Residential Applications

Ashraf Ahmed, Mohammad Irfan, and Joung-hu Park (Soongsil University, Korea)

[TuD3-4]	17:05 ~ 17:30
----------	---------------

Power Conversion System for Low Power High Altitude Wind Power Generating System

Jeevan Adhikari, Prasanna IV, Godwin Ponraj, and S. K. Panda (Nat'l Univ. of Singapore, Singapore)

[TuD3-5]	17:30 ~ 17:55
----------	---------------

Current Sensorless Single-Switch Voltage Equalizer Using Multi-Stacked Buck-Boost Converters for Photovoltaic Modules under Partial Shading

M. Uno (Ibaraki Univ., Japan) and A. Kukita (Japan Aerospace Exploration Agency, Japan)

Session Title: [TuE3] 08 : DC/AC Inverters (3)
Date & Time: June 2 (Tue.) / 15:50~17:55
Room: Room E (Juniper)
Session Chairs: Prof. Ahmet M. Hava (Middle East Technical Univ., Turkey)
 Dr. Sangshin Kwak (Chung-ang Univ., Korea)

[TuE3-1] 15:50 ~ 16:15

Analysis and Design of LCL Filter with Passive Damping Circuits for Three-Phase Grid-Connected Inverters

Hyo-Min Ahn, Chang-Yeol Oh, Won-Yong Sung, Jung-Hoon Ahn, and Byoung-Kuk Lee (Sungkyunkwan Univ., Korea)

[TuE3-2] 16:15 ~ 16:40

Modular Plug'n' Play Control Architectures for Three-phase Inverters in UPS Applications

Chi Zhang, Josep M. Guerrero, Juan C. Vasquez (Aalborg Univ., Denmark), and Carsten Seniger (Leaneco A/S, Denmark)

[TuE3-3] 16:40 ~ 17:05

DC-Bus Ripple Current Characterization of Three-Phase 2/3L-VSIs Considering the Spectral Characteristics

Ziya Özkan and Ahmet M. Hava (Middle East Technical Univ., Turkey)

[TuE3-4] 17:05 ~ 17:30

Modified SVM to Meet CMV and DC Current Ripple Reduction

Abbas Dehghani, Khalil El Khamlichi Drissi, and Christophe Pasquier (Blaise Pascal Univ., France)

[TuE3-5] 17:30 ~ 17:55

Research on Stability of Grid-Connected LCLFiltered Inverter with Capacitor Current Feedback Active Damping Control

Jinming Xu, Shaojun Xie, Jiarong Kan, and Binfeng Zhang (Nanjing Univ. of Aeronautics and Astronautics, China)

Session Title: [TuF3] 10 : Electric Machines, Actuators and Sensors (1)
Date & Time: June 2 (Tue.) / 15:50~17:55
Room: Room F (Cypress)
Session Chairs: Prof. Braz Cardoso Filho (UFMG, Brazil)
 Dr. In-Soung Jung (Korea Electronics Tech. Inst., Korea)

[TuF3-1] 15:50 ~ 16:15

Modelling and Analysis of a Nine-phase Induction Motor with Third Harmonic Current Injection

R. R. Bastos, R. M. Valle (Federal Univ. of Minas Gerais, Brazil), S. L. Nau (WEG Motors, Brazil), and B. J. Cardoso Filho (Federal Univ. of Minas Gerais, Brazil)

[TuF3-2] 16:15 ~ 16:40

Variable Characteristics DC Motor by Changing Brush Lead Angle to Expand the Operation Range

Daichi Takura and Kan Akatsu (Shibaura institute of technology, Japan)

[TuF3-3] 16:40 ~ 17:05

Design and Performance of a New Hybrid Switched Reluctance Motor for Hammer Breaker Application

Zhenyao Xu, Dong-Hee Lee, and Jin-Woo Ahn (Kyungsung Univ., Korea)

[TuF3-4] 17:05 ~ 17:30

Design Optimization of Surface Permanent Magnet Machines With Fractional Slot Concentrated Windings

Seun Guy Min and Bulent Sarlioglu (Univ. of Wisconsin - Madison, USA)

[TuF3-5] 17:30 ~ 17:55

BEMF Characteristic Analysis of IPM Type Motor According to Demagnetization Pattern of Permanent Magnet

Dong-Hyeok Kang, Jun-Kyu Park, Seung-Ho Hyun, and Jin Hur (Univ. of Ulsan, Korea)

Session Title: [TuG3] 22: (Organized Session) Microgrid (1)
Date & Time: June 2 (Tue.) / 15:50~17:55
Room: Room G (Lavender)
Session Chairs: Prof. Meiqin Mao (Hefei Univ. of Tech., China)
 Prof. Jaeho Choi (Chungbuk Nat'l Univ., Korea)

[TuG3-1] 15:50 ~ 16:15

Load Power Estimation Based Secondary Control for Microgrids

Teng Wu, Jinjun Liu, Zeng Liu, Shike Wang, and Baojin Liu (Xi'an Jiaotong Univ., China)

[TuG3-2] 16:15 ~ 16:40

Fuzzy Droop Control Loops Adjustment for Stored Energy Balance in Distributed Energy Storage System

Nelson Díaz, Dan Wu, Tomislav Dragicevic, Juan Vásquez, and Josep Guerrero (Aalborg Univ., Denmark)

[TuG3-3] 16:40 ~ 17:05

Frequency Control of Converter Fed Micro-grid for Flexible Frequency Operation

Jaewan Suh (Korea Univ., Korea), Dong-Hee Yoon (Kyungil Univ., Korea), Yoon-Sung Chom (Catholic Univ. of Daegu, Korea), and Gilsoo Jang (Korea Univ., Korea)

[TuG3-4] 17:05 ~ 17:30

Virtual Synchronous Machine-based Control of a Single-phase Bi-directional Battery Charger for Providing Vehicle-to-Grid Services

Jon Are Suul (Norwegian Univ. of Science and Technology, Norway), Salvatore D'arco (SINTEF Energy Research, Norway), and Giuseppe Guidi (SINTEF Energy Research, Norway)

[TuG3-5] 17:30 ~ 17:55

Micro-Grids with Resilient Features and Its Stability Issues

T. Funabashi, S. Igarashi, Y. Manabe, T. Kato, M. Kurimoto, and Y. Suzuoki (Nagoya Univ., Japan)

Session Title: [TuH3] 03 : Soft Switching Converters (3)
Date & Time: June 2 (Tue.) / 15:50~17:55
Room: Room H (Rosemary)
Session Chairs: Prof. Johann Kolar (ETH Zurich, Switzerland)
 Prof. Byungcho Choi (Kyungpook Nat'l Univ., Korea)

[TuH3-1] 15:50 ~ 16:15

Gate Driving Method for Synchronous Rectifiers in Phase-Shifted Full-Bridge Converter

Jae-II Baek (KAIST, Korea), Chong-Eun Kim (Samsung Electro-Mechanics, Korea), Jae-Bum Lee, Han-Shin Youn, and Gun-Woo Moon (KAIST, Korea)

[TuH3-2] 16:15 ~ 16:40

Novel Modulation Strategy for a CLC Resonant Dual Active Bridge

W. L. Malan, D. M. Vilathgamuwa, G. R. Walker (Queensland Univ. of Technology, Australia), D. J. Thrimawithana, and U. K. Madawala (Auckland Univ., New Zealand)

[TuH3-3] 16:40 ~ 17:05

Proposal of DAB Converter for Partial Boost Circuit and Test Verification by Means of the Preceding Fabrication

Yukinori Tsuruta and Atsuo Kawamura (Yokohama Nat'l Univ., Japan)

[TuH3-4] 17:05 ~ 17:30

Identifying ZVS Soft Switching Boundaries for Bi-Directional Dual Active Bridge DC-DC Converters using Frequency Domain Analysis

J. Riedel (Robert Bosch (SEA) Pte Ltd., Singapore), D. G. Holmes, and B. P. McGrath (RMIT Univ., Australia)

[TuH3-5] 17:30 ~ 17:55

Double Step-down Dual Active Bridge DC-DC Converter

Su-Han Kim, Hyemin Kang, Honnyong Cha, Seongyong Jeong, and Heung-Geun Kim (Kyungpook Nat'l Univ., Korea)

Session Title: [WeA1] 23: (Organized Session) Grid Applications of High Power Converters
Date & Time: June 3 (Wed.) / 08:30~10:35
Room: Room A (Pine)
Session Chairs: Prof. Ahmet M. Hava (Middle East Technical Univ., Turkey)
 Prof. Yongsug Suh (Chonbuk Nat'l Univ., Korea)

[WeA1-1] 08:30 ~ 08:55

Control of Cascaded H-Bridges STATCOM based on the Power Flow Management

Ping-Heng Wu, Chia-Tse Lee, Hsin-Chin Chen, and Po-Tai Cheng (Nat'l Tsing Hua Univ., Taiwan)

[WeA1-2] 08:55 ~ 09:20

Grid Connected CM Noise Considerations of a Three-Phase Multi-Stage SST

Awneesh Tripathi, Sachin Madhusoodhanan, Krishna Mainali, Arun Kadavelugu, Dhaval Patel (North Carolina State Univ., USA), Kamalesh Hatua (Indian Institute of Technology Madras, India), and Subhashish Bhattacharya (North Carolina State Univ., USA)

[WeA1-3] 09:20 ~ 09:45

Cascaded Multilevel SST Medium Voltage Converter for Solar Applications

N. C. Foureaux, B. J. Cardoso Filho (Federal Univ. of Minas Gerais, Brazil), and J. A. S. Brito (COELBA, Brazil)

[WeA1-4] 09:45 ~ 10:10

Design and Implementation of 20 kW D-Σ Digital Controlled Three-Phase Four-Wire Multi-Function Inverter System

T.-f. Wu, P.-h. Li, C.-W. Hsu (Elegant Power Electronics Applied Research Laboratory, Taiwan), and Y.-R. Chang (Engineering Division Institute of Nuclear Energy Research Atomic Energy Council, Taiwan)

[WeA1-5] 10:10 ~ 10:35

Capacitor Volume Evaluation based on Ripple Current in Modular Multilevel Converter

Toshiki Nakanishi and Jun-ichi Itoh (Nagaoka Univ. of Technology, Japan)

Session Title: [WeB1] 01: Power Semiconductor Devices and Packaging (2)
Date & Time: June 3 (Wed.) / 08:30~10:35
Room: Room B (Sequoia)
Session Chairs: Dr. Martin Schulz (Infineon Technologies, Germany)
 Dr. Chong-Man Yun (TRinno Tech., Korea)

[WeB1-1] 08:30 ~ 08:55

Switching Noise Suppression for Hybrid IGBT Modules

Nan Zhu, Dehong Xu, Xingyao Zhang, Min Chen (Zhejiang Univ., China), Seiki Igarashi, and Tatsuhiko Fujihira (Fuji Electric Co., Ltd, Japan)

[WeB1-2] 08:55 ~ 09:20

Modular Power Converter Integration based on Non-Conventional Power Switch Assembly and Interconnects

A. K. Solomon, A. Castellazzi (Univ. of Nottingham, UK), N. Delmonte, and P. Cova (Univ. of Parma, Italy)

[WeB1-3] 09:20 ~ 09:45

Development of 1700V Hybrid Module with Si-IGBT and SiC-SBD for High Efficiency

T. Takaku, H. Wang, N. Matsuda, S. Igarashi, T. Nishimura, S. Miyashita, and O. Ikawa (Fuji Electric Co., Ltd., Japan)

[WeB1-4] 09:45 ~ 10:10

Comprehensive Investigation on Current Imbalance among Parallel Chips Inside MW-Scale IGBT Power Modules

Rui Wu (Aalborg Univeristy, Denmark), Lyudmila Smirnova (Lappeenranta Univ. of Technology, Finland), Huai Wang, Francesco Iannuzzo, and Frede Blaabjerg (Aalborg Univeristy, Denmark)

[WeB1-5] 10:10 ~ 10:35

A 600V FS-IGBT using Locally Isolated P-well Structures for Improved Short Circuit Ruggedness

Jisun Kim, Sooseong Kim, Kwang-Hoon Oh, and Chongman Yun (TRinno Technology Co., Ltd., Korea)

Session Title: [WeC1] 19 : Electric and Hybrid Vehicles
Date & Time: June 3 (Wed.) / 08:30~10:35
Room: Room C (Cedar)
Session Chairs: Prof. Jason Lai (Virginia Polytechnic Inst. and State Univ., USA)
 Prof. Jangmok Kim (Pusan Nat'l Univ., Korea)

[WeC1-1] 08:30 ~ 08:55

The Electric Variable Transmission without Slip Ring for the Hybrid Electric Vehicle Driving Structure
 Yeongrack Son and Jung-Ik Ha (Seoul Nat'l Univ., Korea)

[WeC1-2] 08:55 ~ 09:20

A Single-Phase, Zero-Torque, Drivetrain Integrated On-Board Charger Control Method for Plug-In Hybrid and Electric Vehicles
 Murat Senol and Rik W. De Doncker (RWTH Aachen Univ., Germany)

[WeC1-3] 09:20 ~ 09:45

High-Efficiency Step-down Converter for On-board Thermoelectric Generators on Heavy Duty Vehicles
 A. Risseh and H-P. Nee (KTH Royal Institute of Technology, Sweden)

[WeC1-4] 09:45 ~ 10:10

A High Power Density and Efficiency Bi-Directional DC/DC Converter for Electric Vehicles
 Xiaoyu Jia, Dehong Xu, Shuailin Du, Changsheng Hu, Min Chen, and Ping Lin (Zhejiang Univ., China)

[WeC1-5] 10:10 ~ 10:35

Carrier Based PWM for Three-Phase Three-Switch Buck-Type Rectifier in EV Rapid Charging System
 Beokseok Chae, Taewon Kang, Tahyun Kang, and Yongsug Suh (Jeonbuk Nat'l Univ., Korea)

Session Title: [WeD1] 33: (Organized Session) Wind Energy Grid-Adaptive Technology (2)
Date & Time: June 3 (Wed.) / 08:30~10:35
Room: Room D (Spruce)
Session Chairs: Dr. Eduard Muljadi (Nat'l Renewable Energy Laboratory, USA)
 Prof. Yong-Cheol Kang (Chonbuk Nat'l Univ., Korea)

[WeD1-1] 08:30 ~ 08:55

Hierarchical Control Scheme for Improving Transient Voltage Recovery of a DFIG-Based WPP
 Jinho Kim (Chonbuk Nat'l Univ., Korea), Eduard Muljadi (Nat'l Renewable Energy Laboratory, USA), and Yong Cheol Kang (Chonbuk Nat'l Univ., Korea)

[WeD1-2] 08:55 ~ 09:20

Comparison of Voltage Source and Current Source Based Converter in 5MW PMSG Wind Turbine Systems
 Tahyun Kang, Taewon Kang, Beomseok Chae, Kihyun Lee, and Yongsug Suh (Chonbuk Nat'l Univ., Korea)

[WeD1-3] 09:20 ~ 09:45

Reactive Power Oriented Thermal Control for Anti-Condensation of Wind Power Converter in DFIG Wind Energy Conversion System
 Jianwen Zhang, Gen Chen, Haisong Wang, Gang Han, and Xu Cai (Shanghai Jiao Tong Univ., China)

[WeD1-4] 09:45 ~ 10:10

Three Control Options for Integrating Wind Power System using Hybrid Energy Storage System
 SangMin Kim, Jae Woong Shim, Youngho Cho, and Kyeon Hur (Yonsei Univ., Korea)

[WeD1-5] 10:10 ~ 10:35

A Novel Centralized Voltage Control to Allocate the Reactive Power in Wind Power Plants
 Hwanik Lee, Heewon Shin, Dohyuk Kim (Korea Univ., Korea), Yongcheol Kang (Chonbuk Nat'l Univ., Korea), and Byongjun Lee (Korea Univ., Korea)

Session Title: [WeE1] 07 : AC/AC Converters
Date & Time: June 3 (Wed.) / 08:30~10:35
Room: Room E (Juniper)
Session Chairs: Prof. Tomoki Yokoyama (Tokyo Denki Univ., Japan)
 Prof. Honnyong Cha (Kyungpook Nat'l Univ., Korea)

[WeE1-1] 08:30 ~ 08:55

A Novel Buck-Boost AC-AC Converter with Inverting and Non-inverting Operation and No Commutation Problem
 Hafiz Furqan Ahmed, Honnyong Cha, Zeeshan Aleem, Ashraf Ali Khan, and Heung-Geun Kim (Kyungpook Nat'l Univ., Korea)

[WeE1-2] 08:55 ~ 09:20

Hierarchical Model Predictive Control of Modular Multilevel Matrix Converter for Low Frequency AC Transmission
 Lang Huang, Xu Yang, Bin Zhang, Liang Qiao, Hongchang Li, and Mofan Tian (Xi'an Jiaotong Univ., China)

[WeE1-3] 09:20 ~ 09:45

A SVM Method for Five-leg Indirect Matrix Converters with Open-End Winding Load
 Quoc-Hoan Tran (Univ. of Ulsan, Korea), Tuyen D. Nguyen (Ho Chi Minh City Univ. of Technology, Vietnam), and Hong-Hee Lee (Univ. of Ulsan, Korea)

[WeE1-4] 09:45 ~ 10:10

Comparison of Power Losses in Single-Phase to Three-Phase AC/DC/AC PWM Converters
 Hoang Vu Nguyen and Dong-Choon Lee (Yeungnam Univ., Korea)

[WeE1-5] 10:10 ~ 10:35

Dynamic Voltage Restorer Using PWM AC-AC Converter with Switching Cell Structure
 SanghunKim, Heung-Geun Kim, and Honnyong Cha (Kyungpook Nat'l Univ., Korea)

Session Title: [WeF1] 21 : Other Selected Topics in Power Electronics (1)
Date & Time: June 3 (Wed.) / 08:30~10:35
Room: Room F (Cypress)
Session Chairs: Prof. Seyedhossein Hosseini (Univ. of Tabriz, Iran)
 Prof. Younghoon Cho (Konkuk Univ., Korea)

[WeF1-1] 08:30 ~ 08:55

Novel High Speed Railway Uninterruptible Flexible Connector Based On Modular Multilevel Converter Structure
 Xu Tian, Qirong Jiang, Yingdong Wei (Tsinghua Univ., China), Junmin Zhang, and Yitao Wei (Pinggao Group, China)

[WeF1-2] 08:55 ~ 09:20

Sensorless Start-up Method of LCI System for Gas-Turbine
 Hyunsung An and Hanju Cha (Chungnam Nat'l Univ., Korea)

[WeF1-3] 09:20 ~ 09:45

Linear AC LED Driver with the Multi-Level Structure and Variable Current Regulator
 Yuichi Noge (Tokyo Metropolitan College of Industrial Technology, Japan)

[WeF1-4] 09:45 ~ 10:10

Design of a New Extended Zeta Converter with High Voltage Gain for Photovoltaic Applications
 Seyed Hossein Hosseini, Rasoul Shalchi Alishah, and Naser Vosoughi Kurdkandi (Univ. of Tabriz, Iran)

[WeF1-5] 10:10 ~ 10:35

Adaptive Damping Scheme of LCL Filter Resonance under Inductance Variation for a Single-Phase Grid-Connected Inverter
 Young-Chan Cho, Ki-Young Choi, and Rae-Young Kim (Hanyang Univ., Korea)

Session Title:	[WeG1] 15 : Distributed Generation (1)
Date & Time:	June 3 (Wed.) / 08:30~10:35
Room:	Room G (Lavender)
Session Chairs:	Prof. Marko Hinkkanen (Aalto Univ., Finland) Prof. Kyeon Hur (Yonsei Univ., Korea)

[WeG1-1]	08:30 ~ 08:55
-----------------	----------------------

An Improved Inverter-Side Current Feedback Control for Grid-Connected Inverters with LCL Filters

Jinming Xu, Shaojun Xie, Jiarong Kan, and Lin Ji (Nanjing Univ. of Aeronautics and Astronautics, China)

[WeG1-2]	08:55 ~ 09:20
-----------------	----------------------

Rapid Synchronization Technique for Enhanced Low Voltage Ride-through Operation of a Distributed Energy Resource

Rohit Parashar and Vivek Agarwal (Indian Institute of Technology Bombay, India)

[WeG1-3]	09:20 ~ 09:45
-----------------	----------------------

Droop Method for High-Capacity Parallel Inverters using Virtual Impedance

Kyosun Jung, Kyungbae Lim, Donghwan Kim, and Jaeho Choi (Chungbuk Nat'l Univ., Korea)

[WeG1-4]	09:45 ~ 10:10
-----------------	----------------------

Enhanced Stand-Alone Operating Characteristics of an Engine Generator Interconnected through the Inverter using Virtual Synchronous Generator Control

Y. Banjo, Y. Miura, T. Ise (Osaka Univ., Japan), and T. Shintai (Yanmar Co., Ltd., Japan)

[WeG1-5]	10:10 ~ 10:35
-----------------	----------------------

Synchronous Frequency Resonance of Virtual Synchronous Generators and Damping Control

Jinhua Wang, Yuxiang Wang, Yunjie Gu, Wuhua Li, and Xiangning He (Zhejiang Univ., China)

Session Title:	[WeH1] 04 : Hard Switching Converters (1)
Date & Time:	June 3 (Wed.) / 08:30~10:35
Room:	Room H (Rosemary)
Session Chairs:	Prof. Grahame Holmes (RMIT Univ., Australia) Prof. Jung-Wook Roh (Kookmin Univ., Korea)

[WeH1-1]	08:30 ~ 08:55
-----------------	----------------------

Current Source Gate Drive Circuits with Low Power Consumption for High Frequency Power Converters

Ayato Sagehashi, Keisuke Kusaka, Koji Orikawa, and Jun-ichi Itoh (Nagaoka Univ. of Technology, Japan)

[WeH1-2]	08:55 ~ 09:20
-----------------	----------------------

Design of Control IC for Multiphase Interleaved Buck Converter with Alternate Phase-Shedding

Ji-Shiang Lee, Chun-Yu Huang, Tsorng-Juu Liang, and Kai-Hui Chen (Nat'l Cheng Kung Univ., Taiwan)

[WeH1-3]	09:20 ~ 09:45
-----------------	----------------------

Stability Analysis of PWM Converters Connected to General Load Subsystems

Syam Kumar Pidaparthi and Byungcho Choi (Kyungpook Nat'l Univ., Korea)

[WeH1-4]	09:45 ~ 10:10
-----------------	----------------------

A Digital Leading Phase Current Reduction (LPCR) Technique for CCM Boost PFC in Light Load Conditions

Han-Shin Youn, Jae-Bum Lee, Jae-Il Baek, Jong-Woo Kim, Cheol-O Yeon, and Gun-Woo Moon (KAIST, Korea)

[WeH1-5]	10:10 ~ 10:35
-----------------	----------------------

Investigation of Dead-Time Behaviour in GaN DC-DC Buck Converter with a Negative Gate Voltage

Philipp Marc Roschatt, Richard A. McMahon (Univ. of Cambridge, UK), and Stephen Pickering (Jaguar Land Rover Ltd., UK)

Session Title: [WeA2] 28: (Organized Session) Special Applications of MMC
Date & Time: June 3 (Wed.) / 14:10~16:15
Room: Room A (Pine)
Session Chairs: Prof. Alfred Rufer (EPFL Ecole Polytechnique Fédérale de Lausanne, Switzerland)
 Prof. Woojin Choi (Soongsil Univ., Korea)

[WeA2-1] 14:10 ~ 14:35

Which is More Suitable for MMCC-Based Medium-Voltage Motor Drives, a DSCC Inverter or a TSBC Converter?

Yuhei Okazaki, Wataru Kawamura, Makoto Hagiwara, Hirofumi Akagi (Tokyo Institute of Technology, Japan), Takashi Ishida, Masahiko Tsukakoshi, and Ritaka Nakamura (Toshiba Mitsubishi-Electric Industrial Systems Corporation, Japan)

[WeA2-2] 14:35 ~ 15:00

Operation and Control of Single-to-Three-Phase Direct AC/AC Modular Multilevel Converters under Asymmetric Grid Conditions

Michail Vasiladiotis, Nicolas Cherix, and Alfred Rufer (École Polytechnique Fédérale de Lausanne, Switzerland)

[WeA2-3] 15:00 ~ 15:25

Semi-Full-Bridge Submodule for Modular Multilevel Converters

K. Ilves (ABB Corporate Research, Sweden), L. Bessegato (KTH, Sweden), L. Harnefors (ABB Corporate Research, Sweden), S. Norrga, and H.-P. Nee (KTH, Sweden)

[WeA2-4] 15:25 ~ 15:50

Survey on the Hexverter Topology - A Modular Multilevel AC/AC Converter

Dennis Karwatzki, Lennart Baruschka, and Axel Mertens (Leibniz Universität Hannover, Germany)

[WeA2-5] 15:50 ~ 16:15

DC Fault Protection for Modular Multilevel Converter HVDC using Asymmetrical Unipolar Full-bridge Submodule

Heejin Kim, Jaesik Kang, Sangmin Kim (Yonsei Univ., Korea), Chan-Ki Kim (Korea Electric Power Research Institute, Korea), and Kyeon Hur (Yonsei Univ., Korea)

Session Title: [WeB2] 06 : Uncontrolled Rectifiers and AC/DC Converters (2)
Date & Time: June 3 (Wed.) / 14:10~16:15
Room: Room B (Sequoia)
Session Chairs: Dr. Takaharu Takeshita (Nagoya Inst. of Tech., Japan)
 Prof. Woojin Choi (Soongsil Univ., Korea)

[WeB2-1] 14:10 ~ 14:35

A Compact and High Efficient LED Driver Compatible with Electronic Ballast by Synchronous Voltage Doubler Rectifier

Duy T. Nguyen, Eun S. Lee, Sonapreetha. M. R., and Chun T. Rim (KAIST, Korea)

[WeB2-2] 14:35 ~ 15:00

Study on Energy Matching Methods for Ultra High-Speed Generator System Based on Qualitative Modelling Analysis

Zhang Xiangjun, Li gengyao, Liu Hankui, Wang Yijie, and Xu Dianguo (Harbin Institute of Technology, China)

[WeB2-3] 15:00 ~ 15:25

Soft-Switching Single Stage Isolated AC-DC Converter for Single-Phase High Power PFC Applications

Chushan Li (Ryerson Univ., Canada), Yu Zhang (Huazhong Univ. of Science and Technology, China), and David Xu (Ryerson Univ., Canada)

[WeB2-4] 15:25 ~ 15:50

Selection of IGBTs for Controlling Rectifier and Inverter Based Upon a Novel Analytical Approach for Loss Calculation

Dezhi Chen, Byung-il Kwon (Hanyang Univ., Korea), and Baodong Bai (Shenyang Univ. of Technology, China)

[WeB2-5] 15:50 ~ 16:15

Direct Power Control of PWM Rectifier With Optimal Duty Ratio Under Unbalanced Network

Yongchang Zhang, Changqi Qu, Zhengxi Li (North China Univ. of Technology, China), Yingchao Zhang, and Longhan Cao (Chongqing Communication Institute, China)

Session Title:	[WeC2] 12 : Sensorless and Sensor-Reduction Control (1)
Date & Time:	June 3 (Wed.) / 14:10~16:15
Room:	Room C (Cedar)
Session Chairs:	Prof. Gaolin Wang (Harbin Inst. of Tech., China) Prof. Seung-Ki Sul (Seoul Nat'l Univ., Korea)

[WeC2-1]	14:10 ~ 14:35
-----------------	----------------------

Adaptive Notch Filter Based Harmonic Self-Compensated Sliding-Mode Observer for Position Sensorless IPMSM Drives
Guoqiang Zhang, Gaolin Wang, Ronggang Ni, and Dianguo Xu (Harbin Institute of Technology, China)

[WeC2-2]	14:35 ~ 15:00
-----------------	----------------------

Increased Signal-to-Noise Ratio of Sensorless Control Using Current Oversampling
Bastian Weber, Karsten Wiedmann, and Axel Mertens (Leibniz Universität Hannover, Germany)

[WeC2-3]	15:00 ~ 15:25
-----------------	----------------------

Design of IPMSM with Eccentric Rotor and Search Coils for Absolute Position Sensorless Drive
Yong-Cheol Kwon, Seung-Ki Sul (Seoul Nat'l Univ., Korea), Noor Aamir Baloch, Shinya Morimoto, and Motomichi Ohto (Yaskawa Electric Corporation, Japan)

[WeC2-4]	15:25 ~ 15:50
-----------------	----------------------

A Capacitor Current Control for Stand-alone Inverters Using an Inductor Current Observer
Jung-Muk Choe (Virginia Tech., USA), Byeng-Joo Byen (Konkuk Univ., Korea), Seungryul Moon, and Jih-Sheng Lai (Virginia Tech., USA)

[WeC2-5]	15:50 ~ 16:15
-----------------	----------------------

Sensorless Robust Predictive Current Control for Induction Motor Using a Speed Adaptive Full-Order Observer
Bo Wang, Hongbo Wang, Yong Yu, Xin Lv, Gaolin Wang, and Dianguo Xu (Harbin Institute of Technology, China)

Session Title:	[WeD2] 18 : Energy Storage and Management Systems (1)
Date & Time:	June 3 (Wed.) / 14:10~16:15
Room:	Room D (Spruce)
Session Chairs:	Prof. Meiqin Mao (Hefei Univ. of Tech., China) Prof. Sungwoo Bae (Yeungnam Univ., Korea)

[WeD2-1]	14:10 ~ 14:35
-----------------	----------------------

A Mixed SOC Estimation Algorithm Using Enhanced OCV Reset and the DCIR Iterative Calculation Reset
Dong-Jin Lim, Jae-Gu Kim, Jung-Hoon Ahn, Dong-Hee Kim, and Byoung-Kuk Lee (Sungkyunkwan Univ., Korea)

[WeD2-2]	14:35 ~ 15:00
-----------------	----------------------

Economic Power Dispatch of Distributed Generators in a Grid-Connected Microgrid
Adriana C. Luna, Nelson L. Diaz (Aalborg Univ., Denmark), Fabio Andrade (Universidad de Puerto Rico, Puerto Rico), Moisés Graells (Universitat Politècnica de Catalunya, Spain), Josep M. Guerrero, and Juan C. Vasquez (Aalborg Univ., Denmark)

[WeD2-3]	15:00 ~ 15:25
-----------------	----------------------

SOC/SOH Estimation Method for AGM VRLA Battery by Combining ARX Model for Online Parameters Estimation and DEKF Considering Hysteresis and Diffusion Effects
Ngoc-Tham Tran, Kim-Hung Nguyen, Van-Long Pham, Abdul Basit Khan, and Woojin Choi (Soongsil Univ., Korea)

[WeD2-4]	15:25 ~ 15:50
-----------------	----------------------

Frequency Control using Real-Time Pricing for Isolated Power Systems
Takahiro Uehara, Gul Ahmad Ludin (Univ. of the Ryukyus, Japan), Manoj Datta (RMIT Univ., Australia), and Tomonobu Senjyu (Univ. of the Ryukyus, Japan)

[WeD2-5]	15:50 ~ 16:15
-----------------	----------------------

Active Cell Balancing Circuit for Series-connected Battery Cells
Seonwoo Jeon (Yeungnam Univ., Korea), Jae-Jung Yun (Daegu Univ., Korea), and Sungwoo Bae (Yeungnam Univ., Korea)

Session Title: [WeE2] 08 : DC/AC Inverters (4)
Date & Time: June 3 (Wed.) / 14:10~16:15
Room: Room E (Juniper)
Session Chairs: Prof. Brendan McGrath (RMIT Univ., Australia)
 Prof. Seon-Hwan Hwang (Kyungnam Univ., Korea)

[WeE2-1] 14:10 ~ 14:35

Frequency Adaptive Observer to Extract AC-Coupled Signals for Grid Synchronization

Yongsoo Park, Hyeon-Sik Kim, and Seung-Ki Sul (Seoul Nat'l Univ., Korea)

[WeE2-2] 14:35 ~ 15:00

Optimal Interleaving Angle Determination in Multi Paralleled Converters Considering the DC Current Ripple and Grid Current THD

Lorand Bede, Ghanshyamsinh Gohil, Tamas Kerekes, and Remus Teodorescu (Aalborg Univ., Denmark)

[WeE2-3] 15:00 ~ 15:25

Minimization of Voltage and Current Total Harmonic Distortion for a Single-Phase Multilevel Inverter Staircase Modulation

Kenessary Koishybay, Yakov L. Familant, and Alex Ruderman (Nazarbayev Univ., Kazakhstan)

[WeE2-4] 15:25 ~ 15:50

Effect of Inductor Saturation on the Harmonic Currents of Grid-Connected Three-Phase VSI in PV Application

J. Viinamäki, J. Jokipii, and T. Suntio (Tampere Univ. of Technology, Finland)

[WeE2-5] 15:50 ~ 16:15

A Novel Modulation Strategy for Diode-assisted Buck-boost VSI with Maximum Voltage Gain and Minimum Switching Frequency

Yan Zhang, Xiaolong Ma, Jinjun Liu, Zhuo Dong, Shah Zaman, and Jiuqiang Han (Xi'an Jiao Tong Univ., China)

Session Title: [WeF2] 21 : Other Selected Topics in Power Electronics (2)
Date & Time: June 3 (Wed.) / 14:10~16:15
Room: Room F (Cypress)
Session Chairs: Prof. Chun-An Cheng (I-Shou Univ., Taiwan)
 Prof. Jin Hur (Univ. of Ulsan, Korea)

[WeF2-1] 14:10 ~ 14:35

A Novel Integrated 2-in-1 Transformer

Eun-Soo Kim, Cheol-Ha Kang, Kyung-jong Yoo, Jong-seob Won (Jeonju Univ., Korea), and Young-Soo Lee (LG Innotek, Korea)

[WeF2-2] 14:35 ~ 15:00

Dynamics Assessment of Grid-Synchronization Algorithms for Single-Phase Grid-Connected Converters

Yang Han, Mingyu Luo (Univ. of Electronic Science and Technology of China, China), and Josep M. Guerrero (Aalborg Univ., Denmark)

[WeF2-3] 15:00 ~ 15:25

A Transformer-Coupled, Series-Resonant Topology for the Induction Heating of Aluminum Cookware

Andrew Amrhein and Jih-Sheng (Jason) Lai (Virginia Polytechnic Institute and State Univ., USA)

[WeF2-4] 15:25 ~ 15:50

A Novel Single-Stage LED Driver with Coupled Inductors and Interleaved PFC

Chun-An Cheng, Chien-Hsuan Chang, Hung-Liang Cheng, and Ching-Hsien Tseng (I-Shou Univ., Taiwan)

[WeF2-5] 15:50 ~ 16:15

High Frequency AC-LED Driving for Street Light

Byeoung-Geuk Kang, Yongoh Choi, and Se-Kyo Chung (Gyeongsang Nat'l Univ., Korea)

Session Title: [WeG2] 15 : Distributed Generation (2)
Date & Time: June 3 (Wed.) / 14:10~16:15
Room: Room G (Lavender)
Session Chairs: Prof. Toshifumi Ise (Osaka Univ., Japan)
 Dr. Soo Hyoung Lee (Korea Electrotechnology Research Inst., Korea)

[WeG2-1] 14:10 ~ 14:35

Global Synchronous Pulse Width Modulation of Distributed Inverters

Tao Xu, Feng Gao (Shandong Univ., China), and Ran Wei (State Grid Jining Electric Power Supply Company, China)

[WeG2-2] 14:35 ~ 15:00

Parameter Estimation of an LCL Filter for Control of Grid Converters

Jussi Koppinen, Jarno Kukkola, and Marko Hinkkanen (Aalto Univ., Finland)

[WeG2-3] 15:00 ~ 15:25

Anti-Islanding Accelerated by Grid Unbalance Component

Byeong-Heon Kim, and Seung-Ki Sul (Seoul Nat'l Univ., Korea)

[WeG2-4] 15:25 ~ 15:50

A Novel Control Strategy for Smooth Transition between Stand-Alone and Grid-Connected Operations of Distributed Generation

Quoc Nam Trinh, Peng Wang, Fok Hoong Choo, Chi Jin, XueWei Pan (Nanyang Technological Univ., Singapore), and Hong Hee Lee (Univ. of Ulsan, Korea)

[WeG2-5] 15:50 ~ 16:15

A Novel Reclosing and Rebreaking DC Solid State Circuit Breaker

Jin-young Kim, Seung-soo Choi, and In-dong Kim (Pukyong Nat'l Univ., Korea)

Session Title: [WeH2] 04 : Hard Switching Converters (2)
Date & Time: June 3 (Wed.) / 14:10~16:15
Room: Room H (Rosemary)
Session Chairs: Prof. Yukihiro Sato (Chiba Univ., Japan)
 Prof. Jin Woo Lee (Doowon Technical Univ. College, Korea)

[WeH2-1] 14:10 ~ 14:35

Minimum Flying Capacitor for N-level Capacitor DC/DC Boost Converter

Asmarashid Ponniran, Koji Orikawa, and Jun-ichi Itoh (Nagaoka Univ. of Technology, Japan)

[WeH2-2] 14:35 ~ 15:00

A Novel Voltage-Boosting Converter with Leakage Inductance Energy Recycling

K. I. Hwu, W. Z. Jiang, and L. C. Yang (Nat'l Taipei Univ. of Technology, Taiwan)

[WeH2-3] 15:00 ~ 15:25

Line-to-Line Voltage based Modulation Scheme for Single-Phase Reduced Switch AC-DC-AC Converters to Achieve Improved Performance

Zian Qin, Poh Chiang Loh, and Frede Blaabjerg (Aalborg Univ., Denmark)

[WeH2-4] 15:25 ~ 15:50

Hybrid Serial-Output Converter Topology for Volume and Weight Restricted LED Lighting Applications

T. McRae and A. Prodić (Univ. of Toronto, Canada)

[WeH2-5] 15:50 ~ 16:15

An Improved Control Strategy for Z-source Inverter with Maximum Boost Capability and Minimum Switching Frequency

Yan Zhang, Xiaolong Ma, Jinjun Liu, Zhuo Dong, and Jiuqiang Han (Xi'an Jiao Tong Univ., China)

Session Title: [WeA3] 09 : Multilevel Power Converters (4)
Date & Time: June 3 (Wed.) / 16:30~18:10
Room: Room A (Pine)
Session Chairs: Prof. Rainer Marquardt (Univ. of Bundeswehr, Germany)
 Prof. Tae-Won Chun (Univ. of Ulsan, Korea)

[WeA3-1] 16:30 ~ 16:55

Fault-Tolerant Strategy using Neutral-Shift Method for Cascaded Multilevel Inverters Based on Level-Shifted PWM
 Seok-Min Kim, June-Seok Lee, and Kyo-Beum Lee (Ajou Univ., Korea)

[WeA3-2] 16:55 ~ 17:20

Setup and Performance of a Combined Hardware-in-loop and Software-inloop Test for MMC-HVDC Control and Protection System
 Chang Lin, Dong Liu, Xueguang Wu, Zhiyuan He (State Grid Smart Grid Research Institute, China), Weihua Wang, and Wei Li (Opal-RT Technologies Inc., Canada)

[WeA3-3] 17:20 ~ 17:45

Improved DC Voltage Utilization for the Star-Connected Cascaded H-bridges Converter under Unbalanced Voltage Sags
 Hsin-Chih Chen and Po-Tai Cheng (Nat'l Tsing Hua Univ., Taiwan)

[WeA3-4] 17:45 ~ 18:10

Two Operational Modes of the Modular Multilevel DC Converter
 K. Huang and J. A. Ferreira (Delft Univ. of Technology, Netherlands)

Session Title: [WeB3] 31: (Organized Session) Power Conversion and Applications (1)
Date & Time: June 3 (Wed.) / 16:30~18:10
Room: Room B (Sequoia)
Session Chairs: Prof. Tadashi Suetsugu (Fukuoka Univ., Japan)
 Prof. Byung-il Kwon (Hanyang Univ., Korea)

[WeB3-1] 16:30 ~ 16:55

Suppression Method of Motor-Surge-Voltage using the Surge Suppression Cable
 Kenta Narita and Toshihisa Shimizu (Tokyo Metropolitan Univ., Japan)

[WeB3-2] 16:55 ~ 17:20

A High Power Density Three Phase AC-DC Converter for More Electric Aircraft (MEA)
 Amit K. Singh, Pritam Das, and S. K. Panda (Nat'l Univ. of Singapore, Singapore)

[WeB3-3] 17:20 ~ 17:45

Performance Characteristics of Single-Stage AC-DC Full-Bridge Converter
 S. Hattori, F. Kurokawa (Nagasaki Univ., Japan), and K. Ueno (Isahaya Electronics Corporation, Japan)

[WeB3-4] 17:45 ~ 18:10

A Decoupled PQ Control Strategy of Voltage-Controlled Inverters
 Yang Chen, Jinbin Zhao, Jinlong Wang, Keping Qu (Shanghai Univ. of Electric Power, China), Shuuichi Ushiki, and Masaaki Ohshima (Origin Electric Co., Ltd., Japan)

Session Title:	[WeC3] 12 : Sensorless and Sensor-Reduction Control (2)
Date & Time:	June 3 (Wed.) / 16:30~18:10
Room:	Room C (Cedar)
Session Chairs:	Prof. Kazuhiro Ohyama (Fukuoka Inst. of Tech., Japan) Prof. Kwangwoon Lee (Mokpo Nat'l Maritime Univ., Korea)

[WeC3-1]	16:30 ~ 16:55
-----------------	----------------------

Current Feedback with Decoupling Scheme for Single-Phase UPS Using a Single Current Sensor

Youngjin Lee (Samsung SDI, Korea), Younghoon Cho (Konkuk Univ., Korea), Jung-Muk Choe (Virginia Tech., USA), and Gyu-Ha Choe (Konkuk Univ., Korea)

[WeC3-2]	16:55 ~ 17:20
-----------------	----------------------

Optimized Sensorless DTC of PMSM for Electric Vehicles by using a Switching Command Synchronized Evaluation at Standstill and Low Speed

O. Lehmann, N. K. Nguyen, J. Schuster, and J. Roth-Stielow (Univ. of Stuttgart, Germany)

[WeC3-3]	17:20 ~ 17:45
-----------------	----------------------

Robustness Improvement for Adaptive Full Order Observer in Sensorless Induction Motor Drives

Hongbo Wang, Wei Sun, Yong Yu, Gaolin Wang, and Dianguo Xu (Harbin Institute of Technology, China)

[WeC3-4]	17:45 ~ 18:10
-----------------	----------------------

Adaptive Sensorless Control of High Speed PMSM with Back EMF Constant Variation

Jin-Woo Lee (Doowon Technical Univ. College, Korea)

Session Title:	[WeD3] 13 : Renewable Green Energy (3)
Date & Time:	June 3 (Wed.) / 16:30~18:10
Room:	Room D (Spruce)
Session Chairs:	Prof. Noriyuki Kimura (Osaka Inst. of Tech., Japan) Prof. Chung-Yuen Won (Sungkyunkwan Univ., Korea)

[WeD3-1]	16:30 ~ 16:55
-----------------	----------------------

Improved Beta Parameter based MPPT Method in Photovoltaic System

Xingshuo Li, Huiqing Wen, and Chenhao Zhao (Xian Jiaotong-Liverpool Univ., China)

[WeD3-2]	16:55 ~ 17:20
-----------------	----------------------

Enhanced Grid Integration of Renewable Power Plants by Grid Impedance Measurement

Thanh Trung Do, Hauke Langkowski, Detlef Schulz, and Michael Jordan (Helmut-Schmidt-Univ., Germany)

[WeD3-3]	17:20 ~ 17:45
-----------------	----------------------

Datasheet-based Circuit Parameter Extraction Method for Maximum Power Point Simulation of Photovoltaic Array

Jun-Young Park and Sung-Jin Choi (Univ. of Ulsan, Korea)

[WeD3-4]	17:45 ~ 18:10
-----------------	----------------------

Benchmarking of Small-Signal Dynamics of Single-Phase PLLs

Chong Zhang (China Electric Power Research Institute, China), Xiongfei Wang, Frede Blaabjerg (Aalborg Univ., Denmark), and Weisheng Wang (China Electric Power Research Institute, China)

Session Title: [WeE3] 08 : DC/AC Inverters (5)
Date & Time: June 3 (Wed.) / 16:30~18:10
Room: Room E (Juniper)
Session Chairs: Dr. Thanh Hai Nguyen (Yeungnam Univ., Korea)
 Prof. Hag Wone Kim (Korea Nat'l Univ. of Transportation, Korea)

[WeE3-1] 16:30 ~ 16:55

Performance Analysis of the Three Transistor Voltage Source Inverter Using Different PWM Techniques

S. M. Sajjad Hossain Rafin (Hanyang Univ., Korea), Thomas A. Lipo (Florida State Univ., USA), and Byung-il Kwon (Hanyang Univ., Korea)

[WeE3-2] 16:55 ~ 17:20

Impedance Coordinative Control for Cascaded Converter in Bidirectional Application

YanJun Tian, Fujin Deng, Zhe Chen (Aalborg Univ., Denmark), Xiaofeng Sun (Yanshan Univ., China), and Yanting Hu (Univ. of Chester, UK)

[WeE3-3] 17:20 ~ 17:45

Research on Optimization Design of High Efficient Low Noise SiC-MOSFETs Inverters

K. Yamaguchi and K. Katsura (IHI Corporation, Japan)

[WeE3-4] 17:45 ~ 18:10

The Pareto Optimal Control of Inverter based on Multi-objective Immune Algorithm

Jiaxin Yuan, Gang Xue, Zhen Zhao, and Baichao Chen (WuHan Univ., China)

Session Title: [WeF3] 26: (Organized Session) Advanced Motor Design Technology
Date & Time: June 3 (Wed.) / 16:30~18:10
Room: Room F (Cypress)
Session Chairs: Dr. Se-hyun Rhyu (Korea Electronics Tech. Inst., Korea)
 Prof. Jin Hur (Univ. of Ulsan, Korea)

[WeF3-1] 16:30 ~ 16:55

A Design of Multi Flux Permanent-magnet Machine for Electric Bicycles

J. M. Seo, S. H. Rhyu, I. S. Jung (Korea Electronics Technology Institute), and H. K. Jung (Seoul Nat'l Univ., Korea)

[WeF3-2] 16:55 ~ 17:20

A Concentrated Flux Type Ferrite Magnet Motor with Improved Torque Density

Jae-Sik Jeong, Hae-Joong Kim, and Jung-Pyo Hong (Hanyang Univ., Korea)

[WeF3-3] 17:20 ~ 17:45

Analysis of an Armature Reaction Effect in the Case of a Special Spoke Type BLDC Motor using a Ferrite Permanent-Magnet

Chae Lim Jeong, Il Man Seo, Hyung Kyu Kim, and Jin Hur (Univ. of Ulsan, Korea)

[WeF3-4] 17:45 ~ 18:10

Flux filter LSPM Motor for the Prevention of Demagnetizing in Permanent Magnet

Jeong-Jong Lee, Young-Kyoun Kim, Se-Hyun Rhyu, and In-Soung Jung (Korea Electronics Technology Institute, Korea)

Session Title: [WeG3] 22: (Organized Session) Microgrid (2)
Date & Time: June 3 (Wed.) / 16:30~18:10
Room: Room G (Lavender)
Session Chairs: Prof. Josep M. Guerrero (Aalborg Univ., Denmark)
Prof. Jaeho Choi (Chungbuk Nat'l Univ., Korea)

[WeG3-1] 16:30 ~ 16:55

Unified Control based Seamless Transfer of Microgrids

Zeng Liu and Jinjun Liu (Xi'an Jiaotong Univ., China)

[WeG3-2] 16:55 ~ 17:20

A Unified Grid Current Control for Grid-Interactive DG Inverters in Microgrids

Xiongfei Wang, Poh Chiang Loh, and Frede Blaabjerg (Aalborg Univ., Denmark)

[WeG3-3] 17:20 ~ 17:45

Characteristic Analysis of Three-Phase Four-Leg Inverter based Load Unbalance Compensator for Stand-Alone Microgrid

G. H. Kim (Korea Electrotechnology Research Institute, Korea), C. Hwang (Changwon Nat'l Univ., Korea), J. H. Jeon, G. S. Byeon, J. B. Ahn, and C. H. Jo (Korea Electrotechnology Research Institute, Korea)

[WeG3-4] 17:45 ~ 18:10

Q-learning Algorithm Based Multi-Agent Coordinated Control Method for Microgrids

Yuanyuan Xi (Hefei Univ. of Technology, China), Liuchen Chang (Univ. of New Brunswick, Canada), Meiqin Mao, Peng Jin (Hefei Univ. of Technology, China), Nikos Hatziaargyriou (Nat'l Technical Univ. of Athens, Greece), and Haibo Xu (GuangDong EAST Power Co., Ltd., China)

Session Title: [WeH3] 03 : Soft Switching Converters (4)
Date & Time: June 3 (Wed.) / 16:30~18:10
Room: Room H (Rosemary)
Session Chairs: Prof. Bor-Ren Lin (Nat'l Yunlin Univ. of Science and Tech., Taiwan)
Prof. In-Dong Kim (Pukyong Nat'l Univ., Korea)

[WeH3-1] 16:30 ~ 16:55

LLC Resonant Converter with High Voltage Gain Using Auxiliary LC Resonant Circuit

Dong-Kwan Kim, Cheol-O Yeon, Jae-Hyun Kim, Yeonho Jeong, and Gun-Woo Moon (KAIST, Korea)

[WeH3-2] 16:55 ~ 17:20

A Comparison of Three-Phase High-Frequency Transformer Isolated LCC and LCL-Type DC-DC Resonant Converter Topologies

M. Almaray and A. K. S. Bhat (Univ. of Victoria, Canada)

[WeH3-3] 17:20 ~ 17:45

Dynamic Control and Performance of an Isolated Dual-Active-Bridge DC-DC Converter

Kazuto Takagi and Hideaki Fujita (Tokyo Institute of Technology, Japan)

[WeH3-4] 17:45 ~ 18:10

A Novel Hybrid Converter for 6.6kW On Board Charger

Van-Long Tran, Sunho Yu, Dai-Duong Tran, and Woojin Choi (Soongsil Univ., Korea)

Session Title: [ThA1] 25: (Organized Session) Recent Advances Toward the Development of High-Voltage Direct Current (HVdc) Multi-Terminal Networks
Date & Time: June 4 (Thu.) / 08:30~10:35
Room: Room A (Pine)
Session Chairs: Prof. Pavol Bauer (Delft Univ. of Tech., Netherlands)
 Prof. Rae-Young Kim (Hanyang Univ., Korea)

[ThA1-1] 08:30 ~ 08:55

Elimination of MMC Differential Currents via a feedback LTI Control System

Abel Ferreira (CINERGIA, Spain), Rodrigo Teixeira-Pinto, Oriol Gomis-Bellmunt (CITCEA-UPC, Spain), and Miquel Teixidó (CINERGIA, Spain)

[ThA1-2] 08:55 ~ 09:20

Providing DC Fault Ride-Through Capability to H-Bridge MMC-Based HVDC Networks

E. Kontos, R. Teixeira Pinto, and P. Bauer (Delft Univ. of Technology, Netherlands)

[ThA1-3] 09:20 ~ 09:45

Model and Hardware Acceleration Simulation of Multi-Terminal VSC-HVDC

Fei Xu, Ping Wang, Zixin Li, Fanqiang Gao, Fangzun Chu, Yaohua Li (Chinese Academy of Science, China)

[ThA1-4] 09:45 ~ 10:10

Loss Evaluation for Modular Multilevel Converters with Different Switching Strategies

Arman Hassanpoor, Staffan Norrga, and Alireza Nami (KTH Royal Institute of Technology, Sweden)

[ThA1-5] 10:10 ~ 10:35

A Virtual Resistance Based Reactive Power Sharing Strategy for Networked Microgrid

Yixin Zhu, Baoquan Liu, Feng Wang, Fang Zhuo (Xi'an Jiaotong Univ., China), and Yangjie Zhao (Xi'an High Voltage Apparatus Research Institute, China)

Session Title: [ThB1] 20 : Fault Diagnosis and Fault Tolerant Control
Date & Time: June 4 (Thu.) / 08:30~10:35
Room: Room B (Sequoia)
Session Chairs: Prof. Dianguo Xu (Harbin Inst. of Tech., China)
 Prof. Kyo-Beum Lee (Ajou Univ., Korea)

[ThB1-1] 08:30 ~ 08:55

An IGBT Open-Circuit Fault Detection Method for Modular Multilevel Converters

Binbin Li, Yi Zhang, Rongfeng Yang, Gaolin Wang, and Dianguo Xu (Harbin Institute of Technology, China)

[ThB1-2] 08:55 ~ 09:20

The Higher Order Spectrum Analysis for Fault Pattern Extraction of Induction Motors

Bo Liang (Sheffield Hallam Univ., UK)

[ThB1-3] 09:20 ~ 09:45

Imbalanced Fault Detection using Real Time Symmetrical Coordinate Calculation with Memorized Data

Noriyuki Kimura, Xiao-xiao Yu, Koji Niijima, Toshimitsu Morizane, and Hideki Omori (Osaka Institute of Technology, Japan)

[ThB1-4] 09:45 ~ 10:10

Fault Tolerant Control Method of Seven-Phase BLDC Motor in Asymmetric Fault Condition due to Open Phase

Jong-Joo Moon (Pusan Nat'l Univ., Korea), Won Lee (Agency for Defense Development, Korea), Sang-Woo Park, and Jang-Mok Kim (Pusan Nat'l Univ., Korea)

[ThB1-5] 10:10 ~ 10:35

Performance Evaluation of Busbar Protection Schemes under Different Fault Scenarios

X. Xu (Xian Jiaotong-Liverpool Univ., China), H. Li (The Univ. of Manchester, UK), and H. Wen (Xian Jiaotong-Liverpool Univ., China)

Session Title: [ThC1] 11 : Motor Control and Drives (4)
Date & Time: June 4 (Thu.) / 08:30~10:35
Room: Room C (Cedar)
Session Chairs: Prof. Gaolin Wang (Harbin Inst. of Tech., China)
 Prof. Kwanyuhl Cho (Korea Nat'l Univ. of Transportation, Korea)

[ThC1-1] 08:30 ~ 08:55

Double-sided Air Gap Control of Module-based Permanent Magnet Synchronous Machine for Low-speed and High-torque Applications

Chan-Nyeong Heo, Byeong-Guk Jeong, Seon-Hwan Hwang (Kyungnam Univ., Korea), and Deok-Je Bang (Korea Electro technology Research Institute, Korea)

[ThC1-2] 08:55 ~ 09:20

Initial Position Estimation of Permanent Magnet Synchronous Motors Based on Variation Behavior of Winding Inductances

Gaojun Meng, Haitao Yu, MinQiang Hu, and Lei Huang (Southeast Univ., Korea)

[ThC1-3] 09:20 ~ 09:45

High Voltage Driving Method by using Cluster Inverters for SRM

K. Miyane and K. Akatsu (Shibaura Institute of Technology, Japan)

[ThC1-4] 09:45 ~ 10:10

On a Synchronous-Reluctance Motor Speed Drive with Intuitive Commutation Tuning

Kai-Wei Hu, Chang-Ming Liaw (Nat'l Tsing Hua Univ., Taiwan), Chiu-Fa Lee, and Yu-Te Su (Super Success Technology Corporation, Taiwan)

[ThC1-5] 10:10 ~ 10:35

Substitution of the Universal Motor Drives With Electrolytic Capacitorless PMSM Drives In Home Appliances

Dianov Anton, Kim Namsu, Kim Youngkwan, and Lim Seungmoo (Samsung Electronics, Korea)

Session Title: [ThD1] 18 : Energy Storage and Management Systems (2)
Date & Time: June 4 (Thu.) / 08:30~10:35
Room: Room D (Spruce)
Session Chairs: Prof. Woonki Na (California State Univ., Fresno, USA)
 Prof. Jonghoon Kim (Chosun Univ., Korea)

[ThD1-1] 08:30 ~ 08:55

Analysis and Control of a Three-level Power Energy Storage System with Dual Active Bridge DC-DC Converter

Zhihong Zhao and Jianfeng Zhao (Southeast Univ., China)

[ThD1-2] 08:55 ~ 09:20

Intelligent Charger with Online Battery Diagnosis Function

Van-Tuan Doan, Van-Binh Vu, Hai-Nam Vu, Duc-Hung Tran, and Woojin Choi (Soongsil Univ., Korea)

[ThD1-3] 09:20 ~ 09:45

Multi-Phase Sliding Mode Control Power Converter for Electrical Vehicle Applications

Woonki Na, Pengyuan Chen (California State Univ., USA), and Hoon Lee (Caterpillar Inc., USA)

[ThD1-4] 09:45 ~ 10:10

DC/DC Converter Development for Battery Energy Storage Supporting Railway DC Feeder System

Z. Li, S. Hoshina (Toshiba-Mitsubishi Electric Industrial Systems Corporation, Japan), N. Satake, and M. Nogi (Toshiba Corporation, Japan)

[ThD1-5] 10:10 ~ 10:35

Power Dispatch Capability of Wind-Battery Hybrid Power System

Cong-Long Nguyen and Hong-Hee Lee (Univ. of Ulsan, Korea)

Session Title: [ThE1] 05 : Wireless Power Transfer (1)
Date & Time: June 4 (Thu.) / 08:30~10:35
Room: Room E (Juniper)
Session Chairs: Prof. Mahinda Vilathgamuwa (Queensland Univ. of Tech., Australia)
 Prof. Jeehoon Jung (UNIST, Korea)

[ThE1-1] 08:30 ~ 08:55

Experimental Verification of Wireless In-Wheel Motor Using Magnetic Resonance Coupling

Motoki Sato, Gaku Yamamoto, Takehiro Imura, and Hiroshi Fujimoto (The Univ. of Tokyo, Japan)

[ThE1-2] 08:55 ~ 09:20

A Multilevel Converter Topology Based Bidirectional Inductive Power Transfer System With Improved Characteristics

Bac Xuan Nguyen (Nanyang Technological Univ., Singapore), D. Mahinda Vilathgamuwa (Queensland Univ. of Technology, Australia), Gilbert Foo, Peng Wang, and Andrew Ong (Nanyang Technological Univ., Singapore)

[ThE1-3] 09:20 ~ 09:45

Loss Analysis and Power Improvement of Non-resonant Type Capacitive Power Transfer System With Three-level Operation

T. Kitabayashi, H. Funato, J. Haruna, Y. Tsuruta, and K. Yamaichi (Utsunomiya Univ., Japan)

[ThE1-4] 09:45 ~ 10:10

A Sectional Matrix Method for IPT Coil Shape Optimization

Venugopal Prasanth, Pavol Bauer, and J. A. Ferreira (Delft Univ. of Technology, Netherlands)

[ThE1-5] 10:10 ~ 10:35

PCB Design for 13.56MHz Half-Bridge Class D Inverter for Wireless Power Transfer System

Nguyen Kien Trung, Takuya Ogata, Shinichi Tanaka, and Kan Akatsu (Shibaura Institute of Technology, Japan)

Session Title: [ThF1] 30: (Organized Session) Advanced Design and Analysis Technologies of Electric Machines for Industry Field Application

Date & Time: June 4 (Thu.) / 08:30~10:35

Room: Room F (Cypress)

Session Chairs: Prof. Jang-Young Choi (Chungnam Nat'l Univ., Korea)

Prof. Sang-Yong Jung (Sungkyunkwan Univ., Korea)

[ThF1-1] 08:30 ~ 08:55

Comparative Analysis of Surface-mounted and Interior Permanent Magnet Synchronous Motor for Compressor of Air-conditioning System in Electric Vehicles

Hyung-Il Park, Jang-Young Choi, Kyoung-Hun Jeong, and Sung-Kook Cho (Chungnam Nat'l Univ., Korea)

[ThF1-2] 08:55 ~ 09:20

A Study on Reduction of End Cogging Force by Armature Offset Distance of Double-sided PMLSM

Eui-Jong Park and Yong-Jae Kim (Chosun Univ., Korea)

[ThF1-3] 09:20 ~ 09:45

Reduction of Permanent Magnet Eddy Current Loss in Interior Permanent Magnet Synchronous Motor According to Rotor Design Optimization

Tae-Yong Lee (Sungkyunkwan Univ., Korea), Yong-Jae Kim (Chosun Univ., Korea), and Sang-Yong Jung (Sungkyunkwan Univ., Korea)

[ThF1-4] 09:45 ~ 10:10

Analysis and Design of High Speed Permanent Magnet Synchronous Motor for Turbo Blower System

Jung-Hyung Park, Tae-Yong Lee (Sungkyunkwan Univ., Korea), and Jeong-Man Kim (Chungnam Nat'l Univ., Korea)

[ThF1-5] 10:10 ~ 10:35

Dual SRF based Torque Ripple Mitigation Strategy for a Fault Tolerant PMSM Drive System

Byeng-joo Byen, Seunghoon Baek, Younghoon Cho, and Gyu-Ha Choe (Konkuk Univ., Korea)

Session Title: [ThG1] 24: (Organized Session) Super UPS: DC Microgrid for High Surety Power
Date & Time: June 4 (Thu.) / 08:30~10:35
Room: Room G (Lavender)
Session Chairs: Prof. Dehong Xu (Zhejiang Univ., China)
 Prof. Kyeon Hur (Yonsei Univ., Korea)

[ThG1-1] 08:30 ~ 08:55

Experimental study of a 400 V Class DC Microgrid for Commercial Buildings

M. Noritake, K. Yuasa, T. Takeda (NTT Facilities, Inc., Japan), K. Shimomachi, R. Hara, H. Kita (Hokkaido Univ., Japan), and T. Matsumura (Nagoya Univ., Japan)

[ThG1-2] 08:55 ~ 09:20

Test-bed Implementation of DC Microgrid in Islanding Mode

Dong-Keun Jeong (Pusan Nat'l Univ., Korea), Ju-Won Baek (Korea Electrotechnology Research Institute, Korea), Jin-Tae Cho (Korea Electric Power Research Institute, Korea), Hee-Je Kim (Pusan Nat'l Univ., Korea), and Jee-Hoon Jung (Ulsan Nat'l Institute of Science and Technology, Korea)

[ThG1-3] 09:20 ~ 09:45

Topology of Super Uninterruptible Power Supply with Multiple Energy Sources

Keyan Shi, Haijin Li, Changsheng Hu, and Dehong Xu (Zhejiang Univ., China)

[ThG1-4] 09:45 ~ 10:10

Control Strategy of Multiple Energy Storages System for DC Microgrid

Hye-Jin Kim, Chang Yoon Chun, Kyung-Jun Lee, Paul Jang, and Bo-Hyung Cho (Seoul Nat'l Univ., Korea)

[ThG1-5] 10:10 ~ 10:35

Integration Strategy for Bi-directional and Uni-directional Converters Aiming for Zero Power Pollution in Residential Applications

Joshua Ivaldi (Univ. of Connecticut, USA), Sungmin Park (United Technologies Research Center, USA), and Sung-Yeul Park (Univ. of Connecticut, USA)

Session Title: [ThH1] 32: (Organized Session) Recent Advances in Power-Supply-on-Chips (PSoC's)
Date & Time: June 4 (Thu.) / 08:30~10:35
Room: Room H (Rosemary)
Session Chairs: Dr. Hanh-Phuc Le (Lion Semiconductor Inc., USA)
 Prof. Jaeha Kim (Seoul Nat'l Univ., Korea)

[ThH1-1] 08:30 ~ 08:55

GaN FET-based Synchronous Buck Converter with 10-bit 4-MHz Digital Pulse Width Modulator

Yoonjaek Lee, Juyun Lee, and Jaeha Kim (Seoul Nat'l Univ., Korea)

[ThH1-2] 08:55 ~ 09:20

Digital Dead-Time Control for an Integrated Tri-Mode Buck-Boost DC-DC Converter

J. S. Yu, G. Jin (Univ. of Toronto, Canada), S. L. Cheng (Tianjin Univ., China), and W. T. Ng (Univ. of Toronto, Canada)

[ThH1-3] 09:20 ~ 09:45

High Power Efficiency, 8V~20V Input Range DC-DC Buck Converter with Phase-Locked Loop

HongJin Kim, Hyung-gu Park, Jae-hyung Jang, Young-Jun Park, YoungGun Pu, and Kang-Yoon Lee (Sungkyunkwan Univ., Korea)

[ThH1-4] 09:45 ~ 10:10

Fully Integrated Power Conversion and the Enablers

Hanh-phuc Le (Lion Semiconductor Inc, USA)

[ThH1-5] 10:10 ~ 10:35

Design of 93% Energy Efficiency Buck-Type Capacitor Charger IC in 250nm CMOS

Minbok Lee and Jaeha Kim (Seoul Nat'l Univ., Korea)

Session Title: [ThA2] 27: (Organized Session) High Power and Utility Applications
Date & Time: June 4 (Thu.) / 14:10~16:15
Room: Room A (Pine)
Session Chairs: Prof. King Jet Tseng (Nanyang Technological Univ., Singapore)
 Prof. Byoung-Kuk Lee (Sungkyunkwan Univ., Korea)

[ThA2-1] 14:10 ~ 14:35

Analysis of Voltage Rise Phenomenon in Distribution Lines Associated with Grid-Connected Renewable Energy System
 Yeonho Ok (Power21 Corp., Korea), Jaeho Choi (Chungbuk Nat'l Univ., Korea), Mancheol Shin (Power21 Corp., Korea), and Youngkwan Choi (K-Water Corp., Korea)

[ThA2-2] 14:35 ~ 15:00

Towards a Fault-Tolerant Grid Interface System for DC Power Distribution Networks in Green Buildings
 H. G. Yap (Nanyang Technological Univ., Singapore) and K. J. Tseng (Berkeley Education Alliance for Research in Singapore, Singapore)

[ThA2-3] 15:00 ~ 15:25

Commutation Compensation for Matrix based Rectifiers due to Leakage Inductances of Isolation Transformer
 Tao Zhao, Jianhui Su (Hefei Univ. of Technology, China), Dewei (David) Xu (Ryerson Univ., Canada), and Meiqin Mao (Hefei Univ. of Technology, China)

[ThA2-4] 15:25 ~ 15:50

Duality of PWM Strategies between Current and Voltage Source AC/DC Converters for Suppressing DC Ripple
 Junpei Isozaki, Balaji Veerasamy, Wataru Kitagawa, and Takaharu Takeshita (Nagoya Institute of Technology, Japan)

[ThA2-5] 15:50 ~ 16:15

A Three-Port Power Flow Controller for HVDC Grids
 Mike Ranjram and Peter W. Lehn (Univ. of Toronto, Canada)

Session Title: [ThB2] 01: Power Semiconductor Devices and Packaging (3)
Date & Time: June 4 (Thu.) / 14:10~16:15
Room: Room B (Sequoia)
Session Chairs: Prof. Grahame Holmes (RMIT Univ., Australia)
 Dr. Chong-Man Yun (TRinno Tech., Korea)

[ThB2-1] 14:10 ~ 14:35

Application Benefits Achieved Utilizing IGBT5-Based Power Semiconductors
 Martin Schulz, Dirk Brieke, Raghavan Nagarajan (Infineon Technologies, Germany), and Zhen Bo Zhao (Infineon Technologies, China)

[ThB2-2] 14:35 ~ 15:00

The Design of an Integrated Power Control Unit for Hybrid/Electric Vehicle
 Sanghoon Kwak, Taehwan Chung, Gunsoo Kang, and Jinhwan Jung (Hyundai Motor Company, Korea)

[ThB2-3] 15:00 ~ 15:25

Analysis of Power Device Failure Under Avalanche Mode Conduction
 P. Alexakis, O. Alatise, J. Hu, S. Jahdi, J. Ortiz Gonzalez, L. Ran, and P. A. Mawby (Univ. of Warwick, UK)

[ThB2-4] 15:25 ~ 15:50

Active Gate Charge Control Strategy for Series-Connected IGBTs
 Fan Zhang, Yu Ren, Mofan Tian, and Xu Yang (Xi'an Jiaotong Univ., China)

[ThB2-5] 15:50 ~ 16:15

Optimal Utilization of Low Voltage GaN HEMT in High Frequency Boost Converter
 Wenbo Wang, Frans Pansier, Jelena Popovic, and J. A. Ferreira (Delft Univ. of Technology, Netherlands)

Session Title: [ThC2] 11 : Motor Control and Drives (5)
Date & Time: June 4 (Thu.) / 14:10~16:15
Room: Room C (Cedar)
Session Chairs: Prof. Ralph Kennel (Technische Universität München, Germany)
 Prof. Young-doo Yoon (Myongji Univ., Korea)

[ThC2-1] 14:10 ~ 14:35

A Novel On-line MRAS Scheme of Rotor Resistance Identification using Rotor Flux in Synchronous Reference Frame for Induction Motor

Seung-Myung Lee, Shin-Won Kang, and Rae-Young Kim (Hanyang Univ., Korea)

[ThC2-2] 14:35 ~ 15:00

Suppression of Mechanical Resonance Using Torque Disturbance Observer for Two-Inertia System with Backlash

Ming Yang, Weilong Zheng, Kaixuan Yang, and Dianguo Xu (Harbin Institute of Technology, China)

[ThC2-3] 15:00 ~ 15:25

Assessments of Dead Beat Current Control for High Speed Permanent Magnet Synchronous Motor Drives

M. Tang, A. Gaeta (Univ. of Nottingham, UK), K. Ohya (Fukuoka Institute of Technology, Japan), P. Zanchehtta, and G. Asher (Univ. of Nottingham, UK)

[ThC2-4] 15:25 ~ 15:50

Analysis of Parameter Variations on Mono Inverter Dual Parallel SPMSM Drive System

Yongjae Lee and Jung-Ik Ha (Seoul Nat'l Univ., Korea)

[ThC2-5] 15:50 ~ 16:15

Restarting Strategy for Induction Machine Driven with Medium-Voltage Inverter

Seung-cheol Choi, Jeongjoon Lee, Chanook Hong, and Anno Yoo (LSIS Co., Ltd., Korea)

Session Title: [ThD2] 13 : Renewable Green Energy (4)
Date & Time: June 4 (Thu.) / 14:10~16:15
Room: Room D (Spruce)
Session Chairs: Prof. Toshiji Kato (Doshisha Univ., Japan)
 Prof. Seung-Ho Song (Kwangwoon Univ., Korea)

[ThD2-1] 14:10 ~ 14:35

PWM Switched Capacitor Converter Integrating Voltage Equalizers for Series-Connected Energy Storage Cells and Photovoltaic Modules

M. Uno (Ibaraki Univ., Japan) and A. Kukita (Japan Aerospace Exploration Agency, Japan)

[ThD2-2] 14:35 ~ 15:00

Novel Fixed Frequency Predictive Hysteresis Maximum Power Point Tracking Control for Photovoltaic Applications

Omar Abdel-Rahim, Hirohito Funato, and Junnosuke Haruna (Utsunomiya Univ., Japan)

[ThD2-3] 15:00 ~ 15:25

A Single-Stage High Gain Current Source Inverter for Grid-Connected Photovoltaic System

Meiqin Mao, Yajun Zheng (Hefei Univ. of Technology, China), Liuchen Chang (Univ. of New Brunswick, Canada), and Haibo Xu (Guangdong EAST Power Co., Ltd., China)

[ThD2-4] 15:25 ~ 15:50

Comparison of System Architecture and Converter Topology for a Solar Powered Electric Vehicle Charging Station

G. R. Chandra Mouli, P. Bauer, and M. Zeman (Delft Univ. of Technology, Netherlands)

[ThD2-5] 15:50 ~ 16:15

Photovoltaic Hot Spot Mitigation Using Voltage-Threshold Control At The Panel Level

Katherine A. Kim (Ulsan Nat'l Institute of Science and Technology, Korea), Jonathan Ehlmann (SunPower Corporation, USA), and Philip T. Krein (Univ. of Illinois, USA)

Session Title: [ThE2] 05 : Wireless Power Transfer (2)
Date & Time: June 4 (Thu.) / 14:10~16:15
Room: Room E (Juniper)
Session Chairs: Prof. Masahito Shoyama (Kyushu Univ., Japan)
 Prof. Jeehoon Jung (UNIST, Korea)

[ThE2-1] 14:10 ~ 14:35

Application of Wireless Electromagnetic Resonance Technology to Rotary Transformer Used in Ultrasonic Spindle
 Yuki Inoue, Yafei Gao, Masahito Shoyama (Kyushu Univ., Japan), and Hideaki Fujita (Orii & Mec Corporation, Japan)

[ThE2-2] 14:35 ~ 15:00

Design and Evaluation of Contactless Inductive Energy Transfer System
 Hengyang Luo and Huiqing Wen (Xian Jiaotong-Liverpool Univ., China)

[ThE2-3] 15:00 ~ 15:25

Optimization of Double Spiral Metamaterial for Wireless Power Transfer
 J. P. K. Sampath, A. Alphones (Nanyang Technological Univ., Singapore), and D. M. Vilathgamuwa (Queensland Univ. of Technology, Australia)

[ThE2-4] 15:25 ~ 15:50

Stability Analysis of Constant Power Load and Load Voltage Control Method for Wireless In-Wheel Motor
 Daisuke Gunji, Takehiro Imura, and Hiroshi Fujimoto (The Univ. of Tokyo, Japan)

[ThE2-5] 15:50 ~ 16:15

Analysis and Comparison of EE-type and CC-type Cores for Wireless Power Transfer Systems
 Chung-Chuan Hou, Yu-Hsiang Teng, Wen-Pin Chang, and Kuei-Yuan Chang (Chung Hua Univ., Taiwan)

Session Title: [ThF2] 02: Modeling, Simulation and EMI (3)
Date & Time: June 4 (Thu.) / 14:10~16:15
Room: Room F (Cypress)
Session Chairs: Prof. Ruiyun Fu (Mercer Univ., USA)
 Prof. Younghoon Cho (Konkuk Univ., Korea)

[ThF2-1] 14:10 ~ 14:35

Full Simulation Modeling for Electrical Analysis of All Electric Ships with Medium Voltage DC Power System
 Hyun-Keun Ku, Hye-Rim Seo, and Jang-Mok Kim (Pusan Nat'l Univ., Korea)

[ThF2-2] 14:35 ~ 15:00

EMI Modeling and Experiment of a GaN Based LLC Half-Bridge Converter
 Mofan Tian, Yuan Hao, Kangping Wang, Yang Xuan, Lang Huang, Jingjing Sun, and Xu Yang (Xi'an Jiaotong Univ., China)

[ThF2-3] 15:00 ~ 15:25

A Fast Steady-State Loss Model of a Modular Multilevel Converter for Optimization Purposes
 A. Papadopoulos, S. Rodrigues, E. Kontos, T. Todorovic, and P. Bauer (Delft Univ. of Technology, Netherlands)

[ThF2-4] 15:25 ~ 15:50

Dynamic Characteristics of Three-Phase Z-Source-Based Photovoltaic Inverter with Asymmetric Impedance Network
 Juha Jokipii and Teuvo Suntio (Tampere Univ. of Technology, Finland)

[ThF2-5] 15:50 ~ 16:15

Challenges in Developing an Accurate Predictive Model for Electrochemical Energy Storage Devices
 J. H. Chang, A. Huzayyin, K. Lian, and F. Dawson (Univ. of Toronto, Canada)

Session Title:	[ThG2] 17 : Power Quality (1)
Date & Time:	June 4 (Thu.) / 14:10~16:15
Room:	Room G (Lavender)
Session Chairs:	Prof. Fang Zhuo (Xi'an Jiaotong Univ., China) Prof. Sungwoo Bae (Yeungnam Univ., Korea)

[ThG2-1]	14:10 ~ 14:35
----------	---------------

A Fast and Accurate Detection Method of Instantaneous Reactive Current in Single-phase Power System

Xiaokang Liu, Liansong Xiong, Fang Zhuo, Ying Chen, and Minghua Zhu (Xi'an Jiaotong Univ., China)

[ThG2-2]	14:35 ~ 15:00
----------	---------------

Towards a Smart Distribution Transformer for Smart Grid

Taeyong Kang (Texas A&M Univ., USA), Somasundaram Essakiappan (The Univ. of North Carolina at Charlotte, USA), Prasad Enjeti (Texas A&M Univ., USA), and Sewan Choi (Seoul Nat'l Univ. of Science & Technology, Korea)

[ThG2-3]	15:00 ~ 15:25
----------	---------------

D- Σ Digital Control for Three-Phase Active Power Filter

T.-F. Wu (Nat'l Tsing Hua Univ., Taiwan), H.-C. Hsieh (Nat'l Chung Cheng Univ., Taiwan), and C.-H. Chang (Nat'l Tsing Hua Univ., Taiwan)

[ThG2-4]	15:25 ~ 15:50
----------	---------------

Adaptive DC Voltage Control for Single-phase Hybrid Filter with PV Integration Capability

ChenPei Zheng, NingYi Dai, ManChung Wong, ChiKong Wong (Univ. of Macau, Macao), and Miao Zhu (Shanghai Jiao Tong Univ., China)

[ThG2-5]	15:50 ~ 16:15
----------	---------------

Interharmonic Mitigation of Adjustable Speed Drives using an Active DC-Link Capacitor

H. Soltani, P. C. Loh, F. Blaabjerg (Aalborg Univ., Denmark), and F. Zare (Danfoss Power Electronics A/S, Denmark)

Session Title:	[ThH2] 03 : Soft Switching Converters (5)
Date & Time:	June 4 (Thu.) / 14:10~16:15
Room:	Room H (Rosemary)
Session Chairs:	Prof. Bor-Ren Lin (Nat'l Yunlin Univ. of Science and Tech., Taiwan) Prof. Sungjin Choi (Univ. of Ulsan, Korea)

[ThH2-1]	14:10 ~ 14:35
----------	---------------

Tap Changing Transformer based Dual Active Bridge Bi-Directional DC-DC Converter

Shiva S. M., Naga Brahmendra Yadav Gor la, Pritam Das, and Sanjib Kumar Panda (Nat'l Univ. of Singapore, Singapore)

[ThH2-2]	14:35 ~ 15:00
----------	---------------

Digital Implementation of Optimal SR ON-time Control and Asymmetric Duty Control in LLC Resonant Converter

Cheol-O Yeon, Dong Kwan Kim, Jae-Bum Lee, Jong-Woo Kim, Cheon-Yong Lim, and Gun-Woo Moon (KAIST, Korea)

[ThH2-3]	15:00 ~ 15:25
----------	---------------

Simulation Study of the Three-Level Boost DC-DC Converter with Full ZVS for PV Application

Vasiliy Vorobei (Chernihiv Nat'l Univ. of Technology, Ukraine), Janis Zakis (Riga Technical Univ., Latvia), Oleksandr Husev (Tallinn Univ. of Technology, Estonia), Oleksandr Veligorskyi, and Oleksandr Savenko (Chernihiv Nat'l Univ. of Technology, Ukraine)

[ThH2-4]	15:25 ~ 15:50
----------	---------------

A Soft Switching PFC Converter Operating Discrete Conduction Mode with Reduced Losses of the Auxiliary Circuit

S. Hata, Y. Miura, and T. Ise (Osaka Univ., Japan)

[ThH2-5]	15:50 ~ 16:15
----------	---------------

Design of Output Filter in LLC Resonant Converters for Ripple Current Reduction in Battery Charging Applications

Sang-Min Park, Dong-Hee kim, Dong-Myoung Joo, Min-Jung kim, and Byoung-Kuk Lee (Sungkyunkwan Univ., Korea)

Session Title: [ThA3] 16 : DC Transmission and Distribution
Date & Time: June 4 (Thu.) / 16:30~18:10
Room: Room A (Pine)
Session Chairs: Prof. Joachim Böcker (Universität Paderborn, Germany)
 Dr. Juwon Baek (Korea Electrotechnology Research Inst., Korea)

[ThA3-1] 16:30 ~ 16:55

A Novel Submodule Topology of MMC for Blocking DC-Fault Currents in HVDC Transmission Systems

Thanh Hai Nguyen and Dong-Choon Lee (Yeungnam Univ., Korea)

[ThA3-2] 16:55 ~ 17:20

Impedance Interaction Modeling and Analysis for Bidirectional Cascaded Converters

YanJun Tian, Fujin Deng, Zhe Chen (Aalborg Univ., Denmark), Xiaofeng Sun (Yanshan Univ., China), and Yanting Hu (Univ. of Chester, UK)

[ThA3-3] 17:20 ~ 17:45

Definition of a Voltage-Source Converter DC-Side Admittance and Its Impact on DC-Network Stability

Gustavo Pinares and Massimo Bongiorno (Chalmers Univ. of Technology, Sweden)

[ThA3-4] 17:45 ~ 18:10

DC Arc Fault Detection Method for DC Microgrid Using Branch Monitoring

Kyung-Jun Lee, Gab-Su Seo, and Bo-Hyung Cho (Seoul Nat'l Univ., Korea)

Session Title: [ThB3] 31: (Organized Session) Power Conversion and Applications (2)
Date & Time: June 4 (Thu.) / 16:30~18:10
Room: Room B (Sequoia)
Session Chairs: Prof. Fujio Kurokawa (Nagasaki Univ., Japan)
 Prof. Sanjib Kumar Panda (Nat'l Univ. of Singapore, Singapore)

[ThB3-1] 16:30 ~ 16:55

Novel Architecture of EER Transmitter with Class-E Amplifier

Tadashi Suetsugu (Fukuoka Univ., Japan), Xiuqin Wei (Nagasaki Univ., Japan), and Shotaro Kuga (Fukuoka Univ., Japan)

[ThB3-2] 16:55 ~ 17:20

Electric Spring for Voltage and Power Stability and Power Factor Correction

Jayantika Soni and Sanjib Kumar Panda (Nat'l Univ. of Singapore, Singapore)

[ThB3-3] 17:20 ~ 17:45

Loss Comparison of Inductors Used for Buck-chopper Circuit

Yoshihiro Miwa and Toshihisa Shimizu (Tokyo Metropolitan Univ., Japan)

[ThB3-4] 17:45 ~ 18:10

Dynamic PID Gain Changing Control for DC-DC Converter

Y. Furukawa, D. Mitsutake, T. Shirakawa, H. Maruta, and F. Kurokawa (Nagasaki Univ., Japan)

Session Title:	[ThC3] 11 : Motor Control and Drives (6)
Date & Time:	June 4 (Thu.) / 16:30~18:10
Room:	Room C (Cedar)
Session Chairs:	Prof. Kan Akatsu (Shibaura Inst. of Tech., Japan) Prof. Jung-Ik Ha (Seoul Nat'l Univ., Korea)

[ThC3-1]	16:30 ~ 16:55
-----------------	----------------------

Nonlinear Control Design of LSM Drive System Using Adaptive Modified Recurrent Laguerre Orthogonal Polynomial NN Backstepping Control

Chih-Hong Lin and Jun-Kai Chen (Nat'l United Univ., Taiwan)

[ThC3-2]	16:55 ~ 17:20
-----------------	----------------------

Soft Start and Synchronous Switching of Permanent Magnet Synchronous Machines without Damping Windings

Ronggang Ni, Gaolin Wang, Hanlin Zhan, Guoqiang Zhang, and Dianguo Xu (Harbin Institute of Technology, China)

[ThC3-3]	17:20 ~ 17:45
-----------------	----------------------

Enhancement of Parameter Estimation Accuracy Using Current Shaping in PM Machine Drive

Jin-Woong Kim and Jung-Ik Ha (Seoul Nat'l Univ., Korea)

[ThC3-4]	17:45 ~ 18:10
-----------------	----------------------

Priority based Current Control Design in High Speed Sensorless PMSM Drives

Seungryul Moon, Jung-Muk Choe (Virginia Tech, USA), Younghoon Cho (Konkuk Univ., Korea), and Jih-sheng Lai (Virginia Tech., USA)

Session Title:	[ThD3] 13 : Renewable Green Energy (5)
Date & Time:	June 4 (Thu.) / 16:30~18:10
Room:	Room D (Spruce)
Session Chairs:	Prof. Hirohito Funato (Utsunomiya Univ., Japan) Prof. Sung-yeul Park (Univ. of Connecticut, USA)

[ThD3-1]	16:30 ~ 16:55
-----------------	----------------------

Probabilistic Calculation of Total Transfer Capability (TTC) for Power Systems with Wind Farms using Evolutionary Algorithms

M. R. Aghaebrahimi, R. Kazemi Golkhandan, and S. Ahmadian (Univ. of Birjand, Iran)

[ThD3-2]	16:55 ~ 17:20
-----------------	----------------------

Appraisal of VSC based MTDC System Topologies for Offshore Wind Farms

Ali Raza, Xu Dianguo, Su Xunwen, and D. Li Weixing (Harbin Institute of Technology, China)

[ThD3-3]	17:20 ~ 17:45
-----------------	----------------------

A Novel Circulating Current Control Strategy for Parallel Full-Scale Wind Power Converters

J. Lyu, J. Zhang, G. Han, and X. Cai (Shanghai Jiao Tong Univ., China)

[ThD3-4]	17:45 ~ 18:10
-----------------	----------------------

Sliding-Mode-Control-Based DC/DC Converters Design and Implementation for Hybrid Proton Exchange Membrane Fuel Cell/Battery Power System

Ya-Xiong Wang, Fei-Fei Qin, Kai Ou, and Young-Bae Kim (Chonnam Nat'l Univ., Korea)

Session Title: [ThE3] 08 : DC/AC Inverters (6)
Date & Time: June 4 (Thu.) / 16:30~18:10
Room: Room E (Juniper)
Session Chairs: Prof. Tsorng-Juu Liang (Nat'l Cheng Kung Univ., Taiwan)
 Prof. Woo-Cheol Lee (Hankyong Nat'l Univ., Korea)

[ThE3-1] 16:30 ~ 16:55

Harmonic Currents Control of Three-phase Four-wire Grid-connected PWM Inverter Based on High-Order Repetitive Controller

Kim Jaesuk and Sul Seung-Ki (Seoul Nat'l Univ., Korea)

[ThE3-2] 16:55 ~ 17:20

Benchmarking of Phase Locked Loop based Synchronization Techniques for Grid-Connected Inverter Systems

Yongheng Yang (Aalborg Univ., Denmark), Lenos Hadjidemetriou (Univ. of Cyprus, Cyprus), Frede Blaabjerg (Aalborg Univ., Denmark), and Elias Kyriakides (Univ. of Cyprus, Cyprus)

[ThE3-3] 17:20 ~ 17:45

Design and Implementation of a 500 kHz Switching PWM Inverter without a Dead-Time

Keiji Wada and Takuya Fujii (Tokyo Metropolitan Univ., Japan)

[ThE3-4] 17:45 ~ 18:10

High-Performance Complex Controller for High-Power Converters with Low Pulse Ratios

Jingkui Shi, Jie Shen, Bo Qu, Hongwu She, and Zhuohui Tan (GE Global Research, China)

Session Title: [ThF3] 10 : Electric Machines, Actuators and Sensors (2)
Date & Time: June 4 (Thu.) / 16:30~18:10
Room: Room F (Cypress)
Session Chairs: Dr. Hiroaki Yamada (Yamaguchi Univ., Japan)
 Prof. Cheewoo Lee (Pusan Nat'l Univ., Korea)

[ThF3-1] 16:30 ~ 16:55

Detection of Eccentricity Fault Using Slot Leakage Flux Monitoring

Hanfeng Wang, Xiaohua Bao, Chong Di, and Zhiheng Cheng (Hefei Univ. of Technology, China)

[ThF3-2] 16:55 ~ 17:20

Advanced Cooling Concepts for Ultra-High-Speed Machines

A. Tüysüz, M. Steichen (ETH Zurich, Switzerland), C. Zwysig (Celeroton AG, Switzerland), and Johann W. Kolar (ETH Zurich, Switzerland)

[ThF3-3] 17:20 ~ 17:45

High-frequency Induction Heating for Tiny Foreign Metals

Shinya Kurachi, Naoki Yamamoto, Hiroaki Yamada, Toshihiko Tanaka (Yamaguchi Univ., Japan), Eiji Hiraki (Okayama Univ., Japan), Yukiharu Yamada, Tatsuya Nagao, Yasuhiro Miyake, and Yujiro Noda (Ube Industries, Ltd., Japan)

[ThF3-4] 17:45 ~ 18:10

Optimal Design of a Switched Reluctance Generator for Small Wind Power System using a Genetic Algorithm

Hye-Ung Shin and Kyo-Beum Lee (Ajou Univ., Korea)

Session Title:	[ThG3] 17 : Power Quality (2)
Date & Time:	June 4 (Thu.) / 16:30~18:10
Room:	Room G (Lavender)
Session Chairs:	Prof. Jinjun Liu (Xi'an Jiaotong Univ., China) Prof. Kyo-Beum Lee (Ajou Univ., Korea)

[ThG3-1]	16:30 ~ 16:55
----------	---------------

Analysis of Phase Error Effects between Virtual Two-phase Voltages in SRF-PLL Based on APF

Ui-Seok Seong and Seon-Hwan Hwang (Kyungnam Univ., Korea)

[ThG3-2]	16:55 ~ 17:20
----------	---------------

Dynamic Symmetrical Components Analysis and Compensation for Unbalanced Distribution Systems

Woei-Luen Chen, Bing-Syuan Lin, and Meng-Jie Wang (Chang Gung Univ., Taiwan)

[ThG3-3]	17:20 ~ 17:45
----------	---------------

A Dual Mode Operated Boost Inverter and Its Control Strategy for Ripple Current Reduction in Single-Phase Uninterruptible Power Supplies

Y. Tang (Nanyang Technological Univ., Singapore), W. Yao (Northwestern Polytechnic Univ., China), and F. Blaabjerg (Aalborg Univ., Denmark)

[ThG3-4]	17:45 ~ 18:10
----------	---------------

Multi-Objective Optimization of ATCTr Considering Optimum Placement and Weather Conditions in Distribution Systems

Ryuto Shigenobu, Atsushi Yona, and Tomonobu Senjyu (Univ. of the Ryukyus, Japan)

Session Title:	[ThH3] 04 : Hard Switching Converters (3)
Date & Time:	June 4 (Thu.) / 16:30~18:10
Room:	Room H (Rosemary)
Session Chairs:	Prof. Huang-Jen Chiu (Nat'l Taiwan Univ. of Science and Tech., Taiwan) Prof. Nam-Sup Choi (Chonnam Nat'l Univ., Korea)

[ThH3-1]	16:30 ~ 16:55
----------	---------------

Analysis of Coupled-Inductor Configuration for an Interleaved High Step-Up Converter

Wilmar Martinez, Jun Imaoka, Yuki Itoh, Masayoshi Yamamoto (Shimane Univ., Japan), and Kazuhiro Umetani (Okayama Univ., Japan)

[ThH3-2]	16:55 ~ 17:20
----------	---------------

Compact SEPIC Converter Using a GaN HEMT

Z. Saif, V. Ahmad, and G. E. Town (Macquarie Univ., Australia)

[ThH3-3]	17:20 ~ 17:45
----------	---------------

High Step-Up, High Power Density Boost Converter Integrated with Switched Capacitor-Diode Cell

Yafei Hu and Adrian Ioinovici (Sun Yat-sen Univ., China)

[ThH3-4]	17:45 ~ 18:10
----------	---------------

A Basic Study on Chip Size Determination of MOSFETs to Minimize Total Power Loss

Y. Ikegami, H. Obara, and Y. Sato (Chiba Univ., Japan)

Session Title: Poster Session I
Date & Time: June 3 (Wed.) / 13:10~14:10
Room: Seminar Room (1F)
Session Chairs: Prof. Kyo-Beum Lee (Ajou Univ., Korea)
 Prof. Jong-Soo Kim (Daejin Univ., Korea)

[P1-1] 13:10 ~ 14:10

An Accurate Small-Signal Model of a Three-Phase VSI-Based Photovoltaic Inverter with LCL-Filter

A. Aapro, T. Messo, and T. Suntio (Tampere Univ. of Technology, Finland)

[P1-2] 13:10 ~ 14:10

Analysis and Accurate Modeling of a Flyback Converter on Conducted EMI

Weichang Cheng, Xiaoying He, Shen Xu, and Weifeng Sun (Southeast Univ., China)

[P1-3] 13:10 ~ 14:10

A Novel Impedance Measurement Method for Three-Phase Power Electronic Systems

Qingyu Dou, Zeng Liu, Jinjun Liu (Xi'an Jiaotong Univ., China), and Weihai Bao (Southwest Electric Power Design Institute, China)

[P1-4] 13:10 ~ 14:10

New Measurement Base De-embedded CPU Load Model for Power Delivery Network Design

Motochika Okano (Kyushu Institute of Technology, Japan), Koji Watanabe (Toshiba Digital Media Engineering Corporation, Japan), Masamichi Naitoh, and Ichiro Omura (Kyushu Institute of Technology, Japan)

[P1-5] 13:10 ~ 14:10

Analysis of a DC/DC Converter with Wide ZVS Range and Low Circulating Current

Bor-Ren Lin, Jia-Sheng Chen, and Jeng-Yu Chen (Nat'l Yunlin Univ. of Science and Technology, Taiwan)

[P1-6] 13:10 ~ 14:10

Control Optimization of a Dual Resonant Converter for 15-75V Input Voltage Application

S. Larousse, H. Razik, R. Cellier, P. Lombard, and P. Volay (Univ. of Lyon, France)

[P1-7] 13:10 ~ 14:10

Isolated Double Step-down DC-DC Converter

Su-Han Kim, Honnyong Cha, Hafiz Furqan Ahmed, and Heung-Geun Kim (Kyungpook Nat'l Univ., Korea)

[P1-8] 13:10 ~ 14:10

Small Signal Modeling, Analysis and Control of Naturally Clamped Soft-switching Current-fed Three-Phase Bidirectional DC/DC Converter

Xuwei Pan, Peng Wang, Quoc Nam Trinh (Nanyang Technological Univ., Singapore), and Akshay Kumar Rathore (Nat'l Univ. of Singapore, Singapore)

[P1-9] 13:10 ~ 14:10

Stability Analysis and Evaluation of ESR for Hysteresis Controlled Buck Converter

Jinlong Wang, Jinbin Zhao, Jianfeng Dai, Keqing Qu, and Tiankai Ye (Shanghai Univ. of Electric Power, China)

[P1-10] 13:10 ~ 14:10

A New High Efficient 2-Phase and 3-Phase Interleaved Power Factor Correction Boost Converter Typed Intelligent Power Module with High Switching Capability for Low Power Home Appliances

SungUn Shim, Byoungcho Choo, Junbae Lee, and Daewoong Chung (LS Power Semitech, Korea)

[P1-11] 13:10 ~ 14:10

Feasible Study of Wireless Power Charging System for EDS-Based Superconducting Magnetic Levitation Train Using HTS Receiver

Yoon Do Chung (Suwon Science College, Korea) and Chang Young Lee (Korea Railroad Institute, Korea)

[P1-12] 13:10 ~ 14:10

Enabling Fail-Safe and Initial Charge Limitation in Uncontrolled Rectifiers by Applying Virtual-Air-Gap Variable Reactors

Yucheng Zhang, Roshan Shrestha (South Dakota School of Mines and Technology, USA), and Ruiyun Fu (Mercer Univ., USA)

[P1-13]	13:10 ~ 14:10
Current Sector Control for a Three-Phase Three-Level PFC Rectifier	
O. Tubburee and Y. Kumsuwan (Chiang Mai Univ., Thailand)	
[P1-14]	13:10 ~ 14:10
Integrated Magnetic Core Switching Cell AC-AC Converters	
Ashraf Ali Khan, Honnyong Cha, Hafiz Furqan Ahmed, and Heung-Geun Kim (Kyungpook Nat'l Univ., Korea)	
[P1-15]	13:10 ~ 14:10
A Single-Phase Isolated High Step-Down AC-AC Converter with No Commutation Problem Using Switching Cell and Coupled Inductor	
Hafiz Furqan Ahmed, Honnyong Cha, Ashraf Ali Khan, and Heung-Geun Kim (Kyungpook Nat'l Univ., Korea)	
[P1-16]	13:10 ~ 14:10
A High Frequency Isolated Single-Phase Impedance-Source AC-AC Converter	
Hafiz Furqan Ahmed, Zeeshan Aleem, Honnyong Cha, and Heung-Guen Kim (Kyungpook Nat'l Univ., Korea)	
[P1-17]	13:10 ~ 14:10
Design and Implementation of Electronic Ballast for Electrodeless Fluorescent Lamp with Primary-Side Control	
Chang-Hua Lin (Tatung Univ., Taiwan), Chien-Ming Wang (Nat'l Ilan Univ., Taiwan), Liang-Cheng Lee (St. John's Univ. of Science & Technology, Taiwan), and Ting Ou-Yang (Tatung Univ., Taiwan)	
[P1-18]	13:10 ~ 14:10
A Flexible Five-level Cascaded H-bridge Inverter for Photovoltaic Grid-connected Systems	
Bo Sun (Aalborg Univ., Denmark), Fengjiang Wu (Harbin institute of technology, China), Mehdi Savaghebi, and Josep M. Guerrero (Aalborg Univ., Denmark)	
[P1-19]	13:10 ~ 14:10
Studies on the Long-Distance Ignition Circuit for HID Lamps	
Woo-Cheol Lee and Tae-Hun Kim (Hankyong Nat'l Univ., Korea)	
[P1-20]	13:10 ~ 14:10
A Novel Stability Analysis Method for the DC-AC Inverter with Nonlinear Loads Based on Harmonic Balance and Floquet Theory	
Hong Li, Jing Bian, Jianing Shang, Trillion Q. Zheng, and Ruxiang Hao (Beijing Jiaotong Univ., China)	
[P1-21]	13:10 ~ 14:10
Comparative Evaluation of Coupling L-CL Filter for Interleaved Three-Phase Voltage Source Inverters	
Dongsul Shin (Pusan Nat'l Univ., Korea), Jong-Pil Lee, Tae-Jin Kim, Dong-Wook Yoo (Korea Electrotechnology Research Institute, Korea), and Hee-Je Kim (Pusan Nat'l Univ., Korea)	
[P1-22]	13:10 ~ 14:10
Power Decoupling Method for Single Phase Differential Buck Converter	
Wenli Yao (Northwestern Polytechnical Univ., China), Yi Tang (Nanyang Technological Univ., Singapore), Xiaobin Zhang (Northwestern Polytechnical Univ., China), Xiongfei Wang (Aalborg Univ., Denmark), Poh Chiang Loh (Aalborg Univ., Denmark), and Frede Blaabjerg (Aalborg Univ., Denmark)	
[P1-23]	13:10 ~ 14:10
An Improved Single Switched Post Regulator for Multiple Output Isolated Converters	
Sang-Gab Park, Seung-Hee Ryu, Kwang-Seung Cho, and Byoung-Kuk Lee (Sungkyunkwan Univ., Korea)	
[P1-24]	13:10 ~ 14:10
Research on a High Power Inverter with Low Frequency Modulation Index by Selective Harmonic Mitigation Technique	
Jiankun Cao, Shaojun Xie, and Jinming Xu (Nanjing Univ. of Aeronautics and Astronautics, China)	
[P1-25]	13:10 ~ 14:10
A Simple and Practical Voltage Balance Method for a Solid-State Transformer using Cascaded H-bridge Converters	
Hyeok-Jin Yun (Pusan Nat'l Univ., Korea), Ho-Sung Kim, Myung-Hyo Ryu, Ju-Won Baek (Korea Electrotechnology Research Institute, Korea), and Hee-Je Kim (Pusan Nat'l Univ., Korea)	

[P1-26]	13:10 ~ 14:10
The Stability Issue of the Voltage Regulators Using a Ripple-Based Constant On-Time Controller with DC Offset-Correction Circuit	
Yu-Hsuan Lu, Dan Chen, Sheng-Fu Hsiao, Ching-Jan Chen (Nat'l Taiwan Univ., Taiwan), and Hung-Shou Nien (Richtek Technology Corp., Taiwan)	
[P1-27]	13:10 ~ 14:10
A Downhole Multi-Parameter Monitoring System for Electrical Submersible Pump	
Miaoxin Jin, Qiang Gao, Pengmiao Zhang, Xiaolu Li, Gang Li, and Dianguo Xu (Harbin Institute of Technology, China)	
[P1-28]	13:10 ~ 14:10
Resonant Suppression of Flexible System Using Band-stop Filter	
PeiJun Wu, ShaoKang Ma (Tsinghua Univ., China), Qiao Chen (Avic Qingan Group, China), Geng Yang, and XuChun Li (Tsinghua Univ., China)	
[P1-29]	13:10 ~ 14:10
Offline Inductance Identification of PMSM with Adaptive Inverter Nonlinearity Compensation	
Gaolin Wang, Ying Wang, Jiangbo Qi, Ronggang Ni (Harbin Institute of Technology, China), Wei Chen (Shanghai STEP Electric Corporation, China), and Dianguo Xu (Harbin Institute of Technology, China)	
[P1-30]	13:10 ~ 14:10
Torque Ripple Reduction of an Interior PM Synchronous Motor for Electronic Power Steering	
Myung Joon Nam, Jong Hyun Kim, Kwan Yuhl Cho, and Hag Wone Kim (Korea Nat'l Univ. of Transportation, Korea)	
[P1-31]	13:10 ~ 14:10
Power Loss Reduction of DC Link Capacitor for Multi-phase Motor Drive Systems through Shifted Control	
Bruno Basler and Thomas Greiner (Pforzheim Univ., Germany)	
[P1-32]	13:10 ~ 14:10
Super-Twisting Sliding Mode Observer Based Speed Sensorless Torque Control for PMSG Used in Wind Turbines	
Leilei Guo, Xing Zhang, Shuying Yang, Zhen Xie, Lifeng Qi (Hefei Univ. of Technology, China), and Lingxiang Wang (Hefei Sungrow Power Supply Co., Ltd., China)	
[P1-33]	13:10 ~ 14:10
A Feedforward Compensation Based Decoupling Control Strategy for Grid-Connected Inverter with LCL Filter	
K. Qu, T. Ye, J. Zhao, and X. Chen (Shanghai Univ. of Electric Power, China)	
[P1-34]	13:10 ~ 14:10
Adaptive Quasi-PRD Control Method of Grid-Connected PV Inverter Under Weak Grid	
Xiaojiao Cao, Guihua Liu, Weinan Xu, and Wei Wang (Harbin Institute of Technology, China)	
[P1-35]	13:10 ~ 14:10
Common Mode Leakage Current Analysis for Transformerless PV System with Long DC Side Cables	
Xiaomei Song, Wenjie Chen, Yang Xuan, Bin Zhang, and Jiao Zhang (Xi'an Jiaotong Univ., China)	
[P1-36]	13:10 ~ 14:10
Reactive Power Allocation Control Scheme for Multiple Grid Connected Inverters	
Yong-Duk Lee and Sung-Yeul Park (Univ. of Connecticut, USA)	
[P1-37]	13:10 ~ 14:10
Modeling and Analysis of Harmonic Resonance in Microgrid and Research of Active Harmonic Resistance Method	
Cheng Nie, Wan Jun Lei, Yue Wang, Hua Jia Wang, and Kai Zhang (Xi'an Jiaotong Univ., China)	
[P1-38]	13:10 ~ 14:10
Optimized Control Strategy for Hybrid Energy System	
Kyungkyu Lee, Boguen An, Muhammad Wardi Hadi, Jaeho Choi (Chungbuk Nat'l Univ., Korea), and Yujin Song (Korea Institute of Energy Research, Korea)	

[P1-39]	13:10 ~ 14:10
Analysis on the Voltage Stability and the Allowed Penetration Capacity of Distributed Generations in Yuhang Power Grid	
X. Hu, X. Zhang (Zhejiang Qunli Electric Co., Ltd., China), X. Lou, X. Meng (Chongqing Univ., China), J. Zhang (Zhejiang Qunli Electric Co., Ltd., China), T. Li, and S. Pan (Chongqing Univ., China)	
[P1-40]	13:10 ~ 14:10
Evaluating Optimum Tilt Angle for PV Modules using Solar Radiation Models in Wuhan, China	
Fen Li, Nianjun Ma, Jinbin Zhao, Keping Qu, Xingwu Yang (Shanghai Univ. of Electric Power, China), and Zhenghong Chen (Hubei Provincial Meteorological Service Center, China)	
[P1-41]	13:10 ~ 14:10
Modeling and Analysis for Output Impedance of Buck Converters	
Xiaolong Yue, Shuhao Yang, Yin Chen, Fang Zhuo, and Yuning Pei (Xi'an Jiaotong Univ., China)	
[P1-42]	13:10 ~ 14:10
Maintaining PCC Voltage in a Distributed Generation System Even during Power Output Fluctuation and Unbalanced Voltage Conditions	
Ji-Hoon Im (Korea Electric Power Research Institute, Korea), Seung-Ho Song, and Chan-Sol Park (Kwangju Univ., Korea)	
[P1-43]	13:10 ~ 14:10
A Study on the DC Distribution System for Small Scale Residential Buildings	
J. W. Baek, H. S. kim, M. H. Ryu, J. H. Kim, and T. J. Kim (Korea Electrotechnology Research Institute, Korea)	
[P1-44]	13:10 ~ 14:10
The Voltage-doubler Rectifier Type Full-bridge Converter Built in Voltage-balancing Circuit for Bipolar LVDC Distribution System	
Ki-Woong Shin, Hee-Jun Lee, Seok-Jin Hong, Seung-Wook Hyun (Sungkyunkwan Univ., Korea), Young-Real Kim (Anyang Univ., Korea), and Chung-Yuen Won (Sungkyunkwan Univ., Korea)	
[P1-45]	13:10 ~ 14:10
Output Voltage Balancing Methods of 3-level NPC Rectifier for Low Voltage DC Distribution	
Ho-Sung Kim, Ju-Won Baek (Korea Electrotechnology Research Institute, Korea), Jintae Cho, Jaehan Kim, and Juyong Kim (Korea Electric Power Research Institute, Korea)	
[P1-46]	13:10 ~ 14:10
Improved Model Predictive Control for H-bridge Cascaded STATCOM	
Xu Rong, Yu Yong, Wu Jian, Yang Rongfeng, Xu Dianguo, Chen He, Yu Yunnan, and Ni Ronggang (Harbin Institute of Technology, China)	
[P1-47]	13:10 ~ 14:10
A Parallel Power Quality Conditioner without Harmonic Detection	
Yan-jun Zhang, Zhen Yang, Sheng-fei Yang, and Rong Zhang (Shanghai Marine Equipment Research Institute, China)	
[P1-48]	13:10 ~ 14:10
The True Unity Power Factor Converter - A Practical Filterless Solution for Sinusoidal Currents	
Thiago M. Parreiras (GE Power Conversion, Brazil), Júlio C. G. Justino (DEE/CEFET-MG, Brazil), and Braz de J. Cardoso Filho (DEE/EE-UFGM, Brazil, Brazil)	
[P1-49]	13:10 ~ 14:10
An LCCL Filter and Its Application to a Half-Bridge APF	
Jingyang Fang, Guochun Xiao, and Yan Zhang (Xi'an Jiaotong Univ., China)	
[P1-50]	13:10 ~ 14:10
A Novel Reclosing and Rebreaking AC Thyristor Circuit Breaker	
Jin-young Kim, Seung-soo Choi, and In-dong Kim (Pukyong Nat'l Univ., Korea)	
[P1-51]	13:10 ~ 14:10
Adaptive PI gain Control to Realize Sinusoidal Ripple Current Charging	
Jen-Guey Chen, Yong-Duk Lee, and Sung-Yeul Park (Univ. of Connecticut, USA)	

[P1-52] 13:10 ~ 14:10

Study on Squeezing Control of Regenerative Power on Yamanote Line Series E231 Train in DC Traction Power Supply System

Kosuke Kumagai, Tetsuo Fujita, Masashi Nakahira, Yoshiki Mizuguchi, and Hideki Sonoda (East Japan Railway Company, Japan)

[P1-53] 13:10 ~ 14:10

Operation State Evaluation of Electric Vehicle Based on Factor Regression Analysis and Layered Radar Chart

L. Xie, Q. Guo (Qunli Electric Incorporated Company, China), J. Wang, N. Wei (Chongqing Univ., China), J. Zhang, T. Li (Qunli Electric Incorporated Company, China), and S. Pan (Chongqing Univ., China)

[P1-54] 13:10 ~ 14:10

Wireless Temperature Measurement System with RF Transceiver and Powerless Sensor

Soon-Young Hong, Hong-Sung Kim, Jae-Kee Jeong (Hanbit EDS Co., Ltd., Korea), and Ki-Bok Kim (Korea Research Institute of Standards and Science, Korea)

Session Title:	Poster Session II
Date & Time:	June 4 (Thu.) / 13:10~14:10
Room:	Seminar Room (1F)
Session Chairs:	Prof. Jin Woo Lee (Doowon Technical Univ. College, Korea) Prof. Sungjin Choi (Univ. of Ulsan, Korea)

[P2-1] 13:10 ~ 14:10

Modeling and Analysis of Electromagnetic Radiation from Solar Cell in Photovoltaic Generation System

Wenjie Chen, Yiming Duan, Lei Guo, and Yang Xuan (Xi'an Jiaotong Univ., China)

[P2-2] 13:10 ~ 14:10

Research on Modulation Wave of Multilevel Inverter Based on 3-D Space Rectangular Coordinate System

A. Lu Yuan-hong and B. Zheng Trillion Q (Beijing Jiaotong Univ., China)

[P2-3] 13:10 ~ 14:10

A Single Phase Power Electronic Transformer Considering Harmonic Compensation in Scott Traction System

Shaodi Ouyang, Jinjun Liu, Xinyu Wang, Shuguang Song, Xueyu Hou, and Teng Wu (Xi'an Jiaotong Univ., China)

[P2-4] 13:10 ~ 14:10

Precise Model Analysis for 3-phase High Power Converter using the Harmonic State Space Modeling

JunBum Kwon, Xiongfei Wang, Frede Blaabjerg, and Claus Leth Bak (Aalborg Univ., Denmark)

[P2-5] 13:10 ~ 14:10

Research on Dual-Operation Mode of 3-Level LLC Resonant Converter

A. Zhenwei Li, B. Lei Zhao, C. Yuan Liu, and D. Haoyu Li (Harbin Institute of Technology, China)

[P2-6] 13:10 ~ 14:10

A Novel Method of Phase-Shifted Full-Bridge Converter to Improve Efficiency under Light Load Condition

Lei Zhao, Haoyu Li, Yanxue Yu, and Yutian Wang (Harbin Institute of Technology, China)

[P2-7] 13:10 ~ 14:10

Design and Analysis of GaN FET-based Resonant dc-dc Converter

Dong-Sik Kim (Daejin Univ., Korea), Dong-Myoung Joo, Byoung-Kuk Lee (Sungkyunkwan Univ., Korea), and Jong-Soo Kim (Daejin Univ., Korea)

[P2-8] 13:10 ~ 14:10

Output Impedance Network Based Design in 10MHz Isolated DC-DC Converter of Class $\Phi 2$

Yongsu Han, Kyung-Hwan Lee, Euihoon Chung, and Jung-Ik Ha (Seoul Nat'l Univ., Korea)

[P2-9]	13:10 ~ 14:10
Dynamic Analysis of Hysteresis Control Buck Converter with Enhanced Feedback Ripple	
Z. Liu, J. Zhao, K. Qu, and F. Li (Shanghai Univ. of Electric Power, China)	
[P2-10]	13:10 ~ 14:10
Implementation of 10[W] Level Wireless Power Transfer System with 6.78 MHz Class-D Inverter	
Soon-Young Hong, Hong-Sung Kim, Jae-Kee Jeong, and Ki-Bok Kim (Hanbit EDS Co., Ltd., Korea)	
[P2-11]	13:10 ~ 14:10
An Efficient Reactive Power Regulation based DPC Method for AC/DC Converters	
Huang Jingjing (Xi'an Univ. of Technology, China), Sun Yuangang (Xi'an Shiyou Univ., China), Tong Xiangqian, and Li Ning (Xi'an Univ. of Technology, China)	
[P2-12]	13:10 ~ 14:10
Controller Design and Implementation of a Three-Phase Active Front End using SiC based MOSFETs	
Frerk Haase, Alireza Kouchaki, and Morten Nymand (Univ. of Southern Denmark, Denmark)	
[P2-13]	13:10 ~ 14:10
Phase Leading Input Current Compensation in Digitally Controlled Critical Mode Boost PFC	
Jong-Woo Kim (KAIST, Korea), Jung-Pil Moon (Samsung Electronics, Korea), Han-shin Youn, Yeon-Ho Jeong, and Gun-Woo Moon (KAIST, Korea)	
[P2-14]	13:10 ~ 14:10
An SVD-based SVM with Common-mode Voltage Reduction for Direct Matrix Converters	
Quanxue Guan, Xiaohong Wang, Zhuoli Zhao (South China Univ. of Technology, China), and Lina Wang (Univ. of Nottingham, UK)	
[P2-15]	13:10 ~ 14:10
A Single-Stage Resonant Buck-Boost AC Voltage Regulator	
Chien-Ming Wang (Nat'l Ilan Univ., Taiwan), Chang-Hua Lin (Tatung Univ., Taiwan), and Guan-Yu Chen (Nat'l Ilan Univ., Taiwan)	
[P2-16]	13:10 ~ 14:10
Analysis and Improvement on Input Characteristics of VIENNA Converter with Inductive Filter and One-Cycle-Control Method	
Peng Mao (Nanjing Univ. of Information Science & Technology, China), Shaojun Xie (Nanjing Univ. of Aeronautics & Astronautics, China), Hongyun Jia, Yonghong Zhang (Nanjing Univ. of Information Science & Technology, China), and Jinming Xu (Nanjing Univ. of Aeronautics & Astronautics, China)	
[P2-17]	13:10 ~ 14:10
Suppressing Harmonics of Differential-Mode Voltage with a Variable Capacitance Filter in Single-Phase Inverters	
Jin Huang (Huazhong Univ. of Science and Technology, China), Haixia Shi (Wuhan Textile Univ., China), and Rui Xiong (Huazhong Univ. of Science and Technology, China)	
[P2-18]	13:10 ~ 14:10
A Method for Microgrid Connected Fuel Cell Inverters Seamless Transitions Between Voltage Source and Current Source Modes	
Rongliang Shi, Xing Zhang, Haizhen Xu, Fang Liu, Wenchao Li, Fubin Mao (Hefei Univ. of Technology, China), and Yong Yu (Sungrow Power Supply Co., Ltd., China)	
[P2-19]	13:10 ~ 14:10
Theory Analysis of Harmonic Current Generation and Harmonic Current Extraction of Three-phase Grid-connected Inverter	
Shaohua Sun (Qingdao Univ. of Science and Technology, China), Hongqi Ben (Harbin Institute of Technology, China), Yingge Li, Leyi Wang (Qingdao Univ. of Science and Technology, China), and Shuai Yu (Harbin Institute of Technology, China)	
[P2-20]	13:10 ~ 14:10
New Reliable Inverter with Intelligent Power Module	
Euney Jung, Jin-Ha Hwang (Ruby Co., Ltd., Korea), Ju-Kwang Lee (Korea Univ. of Technology and Education, Korea), and Gyu-Bum Joung (Woosuk Univ, Korea)	

[P2-21]	13:10 ~ 14:10
Design and Implementation of a Two-Switch Buck-Boost Typed Inverter with Universal and High-Efficiency Features	
Chien-Hsuan Chang, Chun-An Cheng, En-Chih Chang, and Hung-Liang Cheng (I-Shou Univ., Taiwan)	
[P2-22]	13:10 ~ 14:10
Optimal Design of EMI Filters for PV System based on Parasitic Parameter and Stability Analysis	
Jiao Zhang, Wenjie Chen, Bin Zhang, Xiaomei Song (Xi'an Jiaotong Univ., China), and Hao Huang (Sungrow Power Supply, China)	
[P2-23]	13:10 ~ 14:10
A Carrier-Based Medium Vector PWM Strategy for Three-level Inverters in Transformerless Photovoltaic Systems	
Nam-Sup Choi (Chonnam Nat'l Univ., Korea), Eun-Chul Lee, and Kang-Soon Ahn (Willings Co., Ltd., Korea)	
[P2-24]	13:10 ~ 14:10
A New Cascaded Multilevel Converter Topology with Energy Exchange Unit for STATCOM Application	
Rongfeng Yang, Yinglin Zhang, Binbin Li, Rong xu, Yong yu, and Dianguo Xu (Harbin Institute of Technology, China)	
[P2-25]	13:10 ~ 14:10
A Novel Direct Power Control Strategy of Three-level NPC Rectifier without Abnormal Instantaneous Reactive Power Fluctuation	
Li Ning, Huang Jingjing, Zhang Hui (Xi'an Univ. of technology, China), Wang Yue, and Wang Zhao'an (Xi'an Jiaotong Univ., China)	
[P2-26]	13:10 ~ 14:10
A Narrow Pulse Compensation Method for Neutral-Point-Clamped Three-Level Converters Considering Neutral-Point Balance	
Bo Guan and Chenchen Wang (Beijing Jiaotong Univ., China)	
[P2-27]	13:10 ~ 14:10
Selective Harmonic Elimination for Cascaded Multilevel Inverters Using Grey Wolf Optimizer Algorithm	
Phan Quoc Dzong, Nguyen The Tien, Nguyen Dinh Tuyen (Vietnam Nat'l Univ., Vietnam), and Hong-Hee Lee (Univ. of Ulsan, Korea)	
[P2-28]	13:10 ~ 14:10
Experimental Verification of Regenerative Control for 6/4 Switched Reluctance Motor	
H. Ikeda, A. Isozaki (Nishi-Nippon Institute of Technology, Japan), K. Tsuzaki, and T. Hanamoto (Kyushu Institute of Technology, Japan)	
[P2-29]	13:10 ~ 14:10
Energy Optimal Control of an Electrically Excited Synchronous Motor used as Traction Drive	
Quoc Khanh Nguyen, Johannes Schuster, and Jörg Roth-Stielow (Univ. of Stuttgart, Germany)	
[P2-30]	13:10 ~ 14:10
The Configuration of Electric Vehicle System using Isolated DC-DC Converter for a Low-Voltage and High-Current Type Battery	
Chang-Hyun Shin, Do-Yun Kim, An-Yeol Ko (Sungkyunkwan Univ., Korea), Il-Kuen Won, Young-Real Kim (Anyang Univ., Korea), and Chung-Yuen Won (Sungkyunkwan Univ., Korea)	
[P2-31]	13:10 ~ 14:10
Research on Intelligent Power Supply Control Based on Sensor-less Temperature Identification of Electric Submersible Motor	
Haicong Zhang, Jianxiong Yu, Qingyue Jiang, Ligu Wang, and Dianguo Xu (Harbin Institute of Technology, China)	
[P2-32]	13:10 ~ 14:10
Design and Implementation of a High Power Three-Level T-Type Inverter for a Photovoltaic System	
Yang Xuan, Mofan Tian, Xiaomei Song, Wenjie Chen, and Xu Yang (Xi'an Jiaotong Univ., China)	
[P2-33]	13:10 ~ 14:10
A Unify Unbalance Compensation Strategy for Islanded Microgrid with Unbalanced Condition	
Hongtao Shi, Fang Zhuo, Zhiqing Geng, and Dong zhang (Xi'an Jiaotong Univ., China)	

[P2-34]	13:10 ~ 14:10
Neutral Point Voltage-Balanced Control Method Based on Discontinuous Pulse Width Modulation for a NPC 3-level Inverter	
Shaoliang An, Lu Lai, Xiangdong Sun, Yanru Zhong, Biying Ren, and Qi Zhang (Xi'an Univ. of Technology, China)	
[P2-35]	13:10 ~ 14:10
A Novel Control Method for Photovoltaic Grid-connected Micro-inverters to Achieve High Efficiency in Light Load	
Yue Zhang, Zhiliang Zhang (Nanjing Univ. of Aeronautics and Astronautics, China), and Gang Yang (Jiangsu Electric Power Company Nanjing Power Supply Company, China)	
[P2-36]	13:10 ~ 14:10
Analysis of the Operating Principle and Parameter Design for the Modular Multilevel DC/DC Converter	
Binbin Li, Shaolei Shi, Yibo Zhang, Rongfeng Yang, Gaolin Wang, and Dianguo Xu (Harbin Institute of Technology, China)	
[P2-37]	13:10 ~ 14:10
Improved High Current Source of Synthetic Test Circuit for HVDC Thyristor Valve	
J. H. Jung, H. S. Kim, B. J. Koo, J. H. Kim, E. C. Nho (Pukyong Nat'l Univ., Korea), B. M. Han (Myongji Univ., Korea), Y. H. Chung, and S. T. Baek (LSIS Co., Ltd., Korea)	
[P2-38]	13:10 ~ 14:10
Development of HVDC Circuit Breaker with Fast Interruption Speed	
Byoung-Choul Kim, Young-Hwan Chung, Hui-Dong Hwang (Hyosung Co., Korea), and Hyung-Soo Mok (Konkuk Univ., Korea)	
[P2-39]	13:10 ~ 14:10
Finite Set Model Predictive Control Method of Shunt Hybrid Power Filter	
B. Gutierrez and S.-S. Kwak (Chung-Ang Univ., Korea)	
[P2-40]	13:10 ~ 14:10
Comparative Analysis of APF and HPF for Utility Harmonic Compensation	
B. Gutierrez and S.-S. Kwak (Chung-Ang Univ., Korea)	
[P2-41]	13:10 ~ 14:10
A Modular Three-Phase Voltage Regulator With Fictitious DC-Link	
Maoh-Chin Jiang, Yi-Ru Jiang, and Tai-Chun Liu (Nat'l Ilan Univ., Taiwan)	
[P2-42]	13:10 ~ 14:10
Research on Hybrid Dynamic Capacitor - a Novel Approach to VAR Compensation and Resonance Suppression	
Zhang Kai, Lei Wanjun, Cheng Nie, and Yue Wang (Xi'an jiaotong Univ., China)	
[P2-43]	13:10 ~ 14:10
3-phase Voltage Sag and Outage Generator for the Test of STS in Power System	
H. S. Kim, J. H. Jung, J. W. Bae, B. G. Seo, D. W. Sun, H. S. Jeong, E. C. Nho (Pukyong Nat'l Univ., Korea), H. G. Kim (Kyungpook Nat'l Univ., Korea), and T. W. Chun (Univ. of Ulsan, Korea)	
[P2-44]	13:10 ~ 14:10
Resonance Elimination of LLCL Filters Based on Virtual Resistor for Single-Phase PWM Inverters	
Cheol-Ju Bae, Payam Alemi, and Dong-Choon Lee (Yeungnam Univ., Korea)	
[P2-45]	13:10 ~ 14:10
DC-Link Fluctuation Compensation Method for PV Generation System Combined Energy Storage	
Bong-Yeon Choi, Jung-Min Park, Jun-Hyeok Jegal, Soon-Ryung Lee, and Chung-Yuen Won (Sungkyunkwan Univ., Korea)	
[P2-46]	13:10 ~ 14:10
Active Cell Balancing Circuit Based on the Forward Converter with an RCD Circuit	
Youngchul Lee (Yeungnam Univ., Korea), Jae-Jung Yun (Daegu Univ., Korea), and Sungwoo Bae (Yeungnam Univ., Korea)	

[P2-47]	13:10 ~ 14:10
Comparative Analysis of the DWT-based Denoising Technique Selection in Noise-Riding DCV of the Li-Ion Battery Pack Jonghoon Kim (Chosun Univ., Korea), Chang-Yoon Chun, and B. H. Cho (Seoul Nat'l Univ., Korea)	
[P2-48]	13:10 ~ 14:10
Power Sharing Strategy of A Series-parallel-connected EV Charger Guozhen Hu, Huang Lei, Xuejun Ma (HuBei Polytechnic Univ., China), and Guorong Zhu (WuHan Univ. of Technology, China)	
[P2-49]	13:10 ~ 14:10
Control Method of Modular Interleaved Boost Converter for SOC Balancing in EV Sung-Hoon Bae, Seong-Chon Choi, Bum-Jun Kim (Sungkyunkwan Univ., Korea), Young-Ryul Kim (Anyang Univ., Korea), and Chung-Yuen Won (Sungkyunkwan Univ., Korea)	
[P2-50]	13:10 ~ 14:10
Experimental Results of Series or Parallel Changeover System Using Battery with EDLC for Electric Vehicle Kyungmin Sung, Naoya Watanabe, and Kyohei Kawamura (Nat'l Institute of Technology, Japan)	
[P2-51]	13:10 ~ 14:10
Fault Tolerant Operation of the Modular High Frequency Converter A. Mayer, M. Schulz, C. Rolff, and R. Marquardt (Universität der Bundeswehr, Germany)	
[P2-52]	13:10 ~ 14:10
Diagnosis Technique for Stator Winding Inter-Turn Fault in BLDC Motor using Detection Coil Seung-Tae Lee, Kyung-Tae Kim, and Jin Hur (Univ. of Ulsan, Korea)	
[P2-53]	13:10 ~ 14:10
System Clock Reduction Based on Multiple Sampling for Digital Switching Power Supplies Y. T. Yau, K. I. Hwu, and W. Z. Jiang (Nat'l Taipei Univ. of Technology, Taiwan)	
[P2-54]	13:10 ~ 14:10
Hybrid Type X-Ray Generator for Fluoroscopy X-Ray System Available in Low-Capacity AC Power Source Young-Min Seo, Min-Soo Byun (DRGEM Co., Ltd., Korea), and Soon-Chan Hong (Dankook Univ., Korea)	
[P2-55]	13:10 ~ 14:10
Junction Temperature Estimation for an Advanced Active Power Cycling Test U. M. Choi, F. Blaabjerg (Aalborg Univ., Denmark), and S. Jørgensen (Grundfos Holding A/S, Denmark)	