

Technical Oral Sessions

S01	S02	S03	S04	S05
AC-DC Converter I	AC-DC Converter II	Power Quality	Distributed Energy System I	Energy Storage
S06	S07	S08	S09	S10
Electric Machines and Drives	DC-DC Converter I	DC-DC Converter II	AC and DC Motor Drives	Power Electronic Devices and Components I
S11	S12	S13	S14	S15
Electric Vehicles	LED Driver System	DC-DC Converter III	Power Converter Applications	Distributed Energy System II
S16	S17	S18	S19	S20
PV System I	Power Electronics Applications I	Power Integrated Circuits	Multilevel Converters I	Multilevel Converters II
S21	S22	S23	S24	S25
PV System II	Wind Power System	Power Electronics Applications II	Lighting Driver System	Converter Topologies
S26	S27	S28	S29	S30
Sensor and Sensor-less Control for Motor Driver	Impact of Renewable Energy System	Modeling and Control I	Modeling and Control II	Power Electronic Devices and Components II

Technical Poster Sessions

P01	P02
Power Converter and Applications	Applications of Power Electronics

Technical Oral Sessions

S01	Converter I: AC-DC Converter I
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Time: Monday, Nov. 4, 2013, 13:20 – 15:10

Place: An Ping (Level B2)

Chair(s): Prof. Takaharu Takeshita, *Nagoya Institute of Technology*,
Japan
Prof. Huang-Jen Chiu, *National Taiwan University of Science
and Technology*, Taiwan

13:20 – 13:42

[1096](#)

**A Bridgeless Active-Clamp Power Factor Correction
Isolated SEPIC Converter with Mixed DCM/CCM
Operation**

Yie-Tone Chen and Sheng-Zhi Mo
National Yunlin University of Science and Technology, Taiwan

13:42 – 14:04

[1159](#)

**Isolated Quasi Z-Source Bridgeless Power Factor
Correction with Coupled Inductor**

Quang Trong Nha, Huang-Jen Chiu, Yu-Kang Lo,
Pham Phu Hieu, and Mohammed Mahmood Alam
National Taiwan University of Science and Technology,
Taiwan

14:04 – 14:26

[1174](#)

**Discharge Operation of Single-Stage Buck Bi-Directional
AC/DC Converter**

Yuya Fujishima, Wataru Kitagawa, and Takaharu Takeshita
Nagoya Institute of Technology, Japan

14:26 – 14:48

[1193](#)

**Design of Single Bidirectional Switch Single Phase
Rectifier with Reduced Size DC Side Capacitor**

Saif Al-Zubaidi, Mohammed Zaki Ahmed, and Paul Davey
University of Plymouth, UK

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S02	Converter II: AC-DC Converter II
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Time: Monday, Nov. 4, 2013, 13:20 – 15:10
Place: Fu Cheng (Level B2)
Chair(s): Prof. Mutsuo Nakaoka, *Kyungnam University*, Republic of Korea
Prof. Ching-Tsai Pan, *National Tsing Hua University*, Taiwan

13:20 – 13:42 [1199](#)
Self-Commissioning of Digital-Controlled Power Factor Corrector with Critical Current Mode
Yen-Shin Lai, Shang-Wei Chen, and Zih-Jie Su
National Taipei University of Technology, Taiwan

13:42 – 14:04 [1202](#)
Study on an Interleaved Buck Power Factor Corrector with GaNFET and Integrated Inductor
Chih-Chung Huang, Yu-Chen Liu, Tian-Fu Pan, Po-Jung Tseng, Chia-Hua Chang, Yu-Kang Lo, and Huang-Jen Chiu
National Taiwan University of Science and Technology, Taiwan

14:04 – 14:26 [1239](#)
Analysis and Design of a ZVS Boost/Buck-boost Dual Mode PFC Converter with Universal Input and Wide Output Voltages
Yuanjun Zhang, Xianmian Ge, and Xinke Wu
Zhejiang University, China

14:26 – 14:48 [1251](#)
Study and Implementation of a Two-phase Interleaved Bridgeless Buck Power Factor Corrector
Yu-Chen Liu, Tian-Fu Pan, Po-Jung Tseng, Chih-Chung Huang, Yu-Kang Lo, and Huang-Jen Chiu
National Taiwan University of Science and Technology, Taiwan

14:48 – 15:10 [1149](#)
A ZVS-PWM Interleaved Boost Rectifier
Chien-Ming Wang¹, Chien-Min Lu¹, Jyun-Che Li¹, and Chang-Hua Lin²
¹*National Ilan University*, Taiwan
²*Tatung University*, Taiwan

S03

Power Converter for Utility Interface I: Power Quality

Time: Monday, Nov. 4, 2013, 13:20 – 15:10

Place: East Gate (Level B1)

Chair(s): Prof. Daolian Chen, *Fuzhou University*, China
Prof. Po-Tai Cheng, *National Tsing-Hua University*, Taiwan

13:20 – 13:42

[1008](#)

Three-Level Hybrid Active Power Filter with Quasi-Resonant DC-Link Technique in Three-Phase Four-Wire System

Bin Zhang, Io-Keong Lok, Ning-Yi Dai, Man-Chung Wong, and Chi-Kong Wong
University of Macau, China

13:42 – 14:04

[1051](#)

An Error Current Tracking Control Method of Three-Level Active Power Filter

Zhang Chenyu, Mei Jun, and Zheng Jianyong
Southeast University, China

14:04 – 14:26

[1114](#)

Voltage Perturbations Compensator on the Base of Three-Phase Hybrid Transformer

Grzegorz Benysek and Jacek Kaniewski
University of Zielona Góra, Poland

14:26 – 14:48

[1192](#)

A shunt Active Power Filter for Harmonic Isolation in a Cloud Computing Facility

Jhong-Wei Huang¹, Po-Tai Cheng¹, Jen-Chuan Liao², and Wen-Yin Tsai²

¹*National Tsing Hua University*, Taiwan

²*Delta Electronics Inc.*, Taiwan

14:48 – 15:10

[1249](#)

Closed-loop Control Modeling and Dynamic Performance Analysis of 400Hz Active Filter

Zhong Chen, Zhihui Wang, Mengnan Li, and Miao Chen
Nanjing University of Aeronautics and Astronautics, China

S04	Power Converter for Utility Interface II: Distributed Energy System I
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Time: Monday, Nov. 4, 2013, 13:20 – 15:10
Place: West Gate (Level B1)
Chair(s): Prof. Masafumi Miyatake, *Sophia University*, Japan
Prof. Yaow-Ming Chen, *National Taiwan University*, Taiwan

- 13:20 – 13:42 [1110](#)
**The Effectiveness Evaluation of the newly Improved
PSO-based MPPT Controlling Multiple PV Arrays**
Vanxay Phimmasone, Yuta Kondo, Natsuki Shiota, and
Masafumi Miyatake
Sophia University, Japan
- 13:42 – 14:04 [1134](#)
**Research on Grid-connected Interleaved Inverter with L
Filter**
Wenxi Yao, Zhengyu Lu, Huang Long, and Bin Li
Zhejiang University, China
- 14:04 – 14:26 [1177](#)
**An Active Power Conditioner with a Multi-Mode Power
Control Strategy for a Microgrid**
Y.-T. Chen¹, Y.-F. Chen¹, C.-Y. Tang¹, Y.-M. Chen¹, and
Y.-R. Chang²
¹*National Taiwan University*, Taiwan
²*Atomic Energy Council*, Taiwan
- 14:26 – 14:48 [1196](#)
**Rapid Reactive Power Control Method for Parallel
Inverters Using Resistive-Capacitive Output Impedance**
Yandong Chen, An Luo, Jie Zhou, Lisha Bai, and
Chunming Tu
Hunan University, China
- 14:48 – 15:10 [1209](#)
**Optimal Load Sharing using Droop Control and Fuzzy
Control in Uninterruptible Smart House**
Masaya Miyagi¹, Shuta Morinaga¹, Yuhei Shiroma¹, and
Toshihisa Funabashi²
¹*University of the Ryukyus*, Japan
²*Meidensha Corporation*, Japan

S05

Power Electronics Applications I: Energy Storage

Time: Monday, Nov. 4, 2013, 13:20 – 15:10

Place: South Gate (Level B1)

Chair(s): Prof. Zhengming Zhao, *Tsinghua University*, China
Prof. En-Chih Chang, *I-Shou University*, Taiwan

13:20 – 13:42

[1075](#)

Design of Active Balance Circuit for Lithium Battery Pack

Yong-Nong Chang¹, Yu-Siang Shen¹, Hung-Liang Cheng², and Shun-Yu Chan³

¹*National Formosa University*, Taiwan

²*I-Sou University*, Taiwan

³*Cheng Shiu University*, Taiwan

13:42 – 14:04

[1173](#)

A Microcontroller-Based Fast Charger with State-Of-Charge Estimation for LiCoO₂ Battery

Chang-Hua Lin¹, Min-Hsuan Hung¹, Chien-Ming Wang², and Chien-Yeh Ho³

¹*Tatung University*, Taiwan

²*National Ilan University*, Taiwan

³*LungHwa University of Science and Technology*, Taiwan

14:04 – 14:26

[1257](#)

On the Flywheel/Battery Hybrid Energy Storage System for DC Microgrid

K. W. Hu and C. M. Liaw

National Tsing Hua University, Taiwan

14:26 – 14:48

[1224](#)

Wireless Power Transfer Based on MHz Inverter through PCB Antenna

Natthaphon Phokhaphan¹, Krit Choeisai¹, Kenji Noguchi², Takahiro Araki², Keisuke Kusaka², Koji Orikawa², and Jun-ichi Itoh²

¹*Khon Kaen University*, Thailand

²*Nagaoka University of Technology*, Japan

S06	Electric Machines and Drives
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Time: Monday, Nov. 4, 2013, 13:20 – 15:10

Place: North Gate (Level B1)

Chair(s): Prof. Adisa A. Jimoh, *Tshwane University of Technology*,
South Africa

13:20 – 13:42

[1166](#)

Performance Analysis of a Three-Phase Induction Motor with Double-Triple Winding Layout

Mbika Muteba¹ and Adisa A. Jimoh²

¹*Vaal University of Technology*, South Africa

²*Tshwane University of Technology*, South Africa

13:42 – 14:04

[1267](#)

48V Power Assist Recuperation System (PARS) with a Permanent Magnet Motor, Inverter and DC-DC Converter

Changsung Sean Kim, Kyeounghun Park, Hantae Kim,

Geunhong Lee, Kwanghyun Lee, Hyun Jik Yang,

Hansam Cho, Minsup Song, and Youngdong Son

SAMSUNG Electro-Mechanics Co., Ltd., Korea

14:04 – 14:26

[1250](#)

A Dead-Time Compensation method on A PWM Control Scheme for a 6 Switches Two PMSMs Drive Inverter

Junnosuke Haruna, Sho Ikegami, and Nobukazu Hoshi

Tokyo University of Science, Japan

S07

Converter III: DC-DC Converter I

Time: Monday, Nov. 4, 2013, 15:30 – 17:20

Place: An Ping (Level B2)

Chair(s): Prof. Sewan Choi, *Seoul Tech*, Republic of Korea
Prof. Chien-Hung Tsai, *National Cheng Kung University*,
Taiwan

15:30 – 15:52

[1039](#)

**Low Cross Regulation Voltage-Mode Controlled
Single-Inductor Dual-Outputs (SIDO) Voltage Regulator**

Hsi-Jui Wang¹ and Le-Ren Chang-Chien²

¹*Holtek Semiconductor, Inc.*, Taiwan

²*National Cheng Kung University*, Taiwan

15:52 – 16:14

[1215](#)

Loss Analysis of Half-Bridge LLC Resonant Converter

Chun-Hsu Yang, Tsorng-Juu Liang, Kai-Hui Chen,

Ji-Shiuan Li, and Ji-Shiang Lee

National Cheng Kung University, Taiwan

16:14 – 16:36

[1218](#)

**A Bidirectional Three-Phase Push-Pull Converter With
Dual Asymmetrical PWM Method**

Minho Kwon, Junsung Park, and Sewan Choi

Seoul National University of Science and Technology, Korea

16:36 – 16:58

[1242](#)

**The Analysis and Optimization of the Transformer on
Common-mode Conduction EMI in LLC Converter**

Qingbin Chen and Wei Chen

Fuzhou University, China

S08

Converter IV: DC-DC Converter II

Time: Monday, Nov. 4, 2013, 15:30 – 17:20

Place: Fu Cheng (Level B2)

Chair(s): Prof. Makoto Hagiwara, *Tokyo Institute of Technology*, Japan
Prof. Yie-Tone Chen, *National Yunlin University of Science & Technology*, Taiwan

15:30 – 15:52

[1248](#)

High Efficiency Isolated DC-DC Converter Combining Resonant and Phase-Shifted Topologies for Electrical Vehicle Chargers

Wensong Yu¹, Hongmei Wan¹, Jih-Sheng Lai¹,
Hidekazu Miwa², Wei-Han Lai², Nan-Hsiung Tseng³,
Chi-Seng Lee³, Chin-Hone Lin³, and Ya-Wen Shih³

¹*Virginia Polytechnic Institute and state University, USA*

²*Enertronics, Inc., USA*

³*Industrial Technology Research Institute, Taiwan*

15:52 – 16:14

[1088](#)

Design and Implementation of Digital Power Converter for Wind Energy Conversion System

Chih-Chiang Hua, Wei-Tze Chen, and Yi-Hsiung Fang
National Yunlin University of Science and Technology, Taiwan

16:14 – 16:36

[1057](#)

A Transformer-less Interleaved Four-Phase Current-Fed Converter with New Voltage Multiplier Topology

Ching-Tsai Pan, Chen-Feng Chuang, and Chia-Chi Chu
National TsingHua University, Taiwan

16:36 – 16:58

[1082](#)

Research of Efficient DC-DC Converter Based on SiC Power Devices and ZVS Soft Switches

Xiaodan Xi, Shaokai Liu, and Jiexin Kuang
Zhejiang University, China

16:58 – 17:20

[1087](#)

Zero Voltage Switching High Step-Up DC-DC Converter with Coupled-inductor

Sheng-Kai Kao, Jiann-Fuh Chen, and Yi-Ping Hsieh
National Cheng Kung University, Taiwan

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S09

Motor Drives I: AC and DC Motor Drives

Time: Monday, Nov. 4, 2013, 15:30 – 17:20

Place: East Gate (Level B1)

Chair(s): Prof. Kan Akatsu, *Shibaura Institute of Technology*, Japan
Prof. Tian-Hua Liu, *National Taiwan University of Science and Technology*, Taiwan

15:30 – 15:52

[1010](#)

Implementation of Position and Force Controllers for a Micro-Hand Based on Adaptive Inverse Control

Wan-Cheng Wang, Tian-Hua Liu, Yuddy Syaifudin, and Tsan-Kai Wang
National Taiwan University of Science and Technology, Taiwan

15:52 – 16:14

[1103](#)

Fast Starting Method using both Inverter and Delta-Star Starter for Weaving Machine Drive Systems

Masakazu Kato¹, Koji Orikawa¹, Jun-ichi Itoh¹, and Noboru Saitoh²

¹*Nagaoka University of Technology*, Japan

²*HOKUETSU DENKEN Co.,Ltd*, Japan

16:14 – 16:36

[1182](#)

An Improved Model-Free Predictive Current Control for Four-Switch Three-Phase Inverter-Fed Synchronous Reluctance Motor Drives

Fu-Wen Chan, Chih-I Peng, Cheng-Kai Lin, and Hsing-Cheng Yu

National Taiwan Ocean University, Taiwan

16:36 – 16:58

[1232](#)

High Efficiency SRM drive using a Current Source Inverter

Tomohiro Takahashi, Takanori Nagai, and Kan Akatsu
Shibaura Institute of Technology, Japan

S10	Power Electronic Devices and Components I
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Time: Monday, Nov. 4, 2013, 15:30 – 17:20
Place: West Gate (Level B1)
Chair(s): Prof. Keiji Wada, *Tokyo Metropolitan University*, Japan

- 15:30 – 15:52 [1263](#)
T-type 3-level IGBT Power Module Using Authentic Reverse Block-ing IGBT (RB-IGBT) for Renewable Energy Applications
Shuangching Chen, David H Lu, Hiroki Wakimoto, Haruo Nakazawa, and Masahito Otsuki
Fuji Electric Co. Ltd., Japan
- 15:52 – 16:14 [1044](#)
A Study of Coil Structure of Inductive Power Collection System for Moving Vehicle
Daisuke Shimode, Toshiaki Murai, and Shunsuke Fujiwara
Central Japan Railway Company, Japan
- 16:14 – 16:36 [1121](#)
Discussion on Design Optimization of Inductor Loss Focused on Copper Loss and Iron Loss
Kazuto Emori, Toshihisa Shimizu, and Yoshio Bizen
Tokyo Metropolitan University, Japan
- 16:36 – 16:58 [1143](#)
An Inductive Power Transfer through Metal Object
OdunAyo Imoru¹, Anoop Jassal², Henk Polinder², Evert Nieuwkoop³, Jacob Tsado⁴, and Adisa A. Jimoh¹
¹*Tshwane University of Technology*, South Africa
²*Delft University of Technology*, Netherlands
³*The Netherlands Organization for Applied Scientific Research*, Netherlands
⁴*Federal University of Technology*, Nigeria
- 16:58 – 17:20 [1005](#)
Digital Implementation of GaN-Based Inverter for Permanent Magnet Electrodynamic Shaker
Hung-Chi Chen and Jhen-Yu Liao
National Chiao Tung University, Taiwan

S11	Power Electronics Applications II: Electric Vehicles
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Time: Monday, Nov. 4, 2013, 15:30 – 17:20
Place: South Gate (Level B1)
Chair(s): Prof. Hideaki Fujita, *Tokyo Tech*, Japan
Prof. Zhengyu Lu, *Zhejiang Univeristy*, China

- 15:30 – 15:52 [1055](#)
Review of Current Quality Compensators for High Power Unidirectional Electric Vehicle Battery Charger
Chi-Seng Lam¹, Chi-Yung Chung^{1,2}, and Man-Chung Wong¹
¹*University of Macau*, China
²*The Hong Kong Polytechnic University*, China
- 15:52 – 16:14 [1109](#)
Proposal of Negawatt Cost and the extention to Kilometrage Cost
Kanade Endo and Atsuo Kawamura
Yokohama National University, Japan
- 16:14 – 16:36 [1111](#)
Implementation of a Bidirectional Three-Phase Dual-Active-Bridge DC Converter for Electric Vehicle Applications
Fu-Ming Ni and Tzung-Lin Lee
National Sun Yat-sen University, Taiwan
- 16:36 – 16:58 [1129](#)
Monitoring And Analysis of Power Quality in Electric Vehicle Charging Stations
Qiushuo Li, Shun Tao, Xiangning Xiao, and Jianfeng Wen
North China Electric Power University, China
- 16:58 – 17:20 [1132](#)
An Integrated Derived Boost-Flyback Converter for Fuel Cell Hybrid Electric Vehicles
Kuo-Ching Tseng¹, Jian-Ting Lin¹, and Chun-An Cheng²
¹*National Kaohsiung First University of Science and Technology*, Taiwan
²*I-Shou University*, Taiwan

S12	Lighting Technologies and Applications I: LED Driver System
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Time: Monday, Nov. 4, 2013, 15:30 – 17:20
Place: North Gate (Level B1)
Chair(s): Prof. Chang-Hua Lin, *Tatung University*, Taiwan

- 15:30 – 15:52 [1003](#)
A Novel Power Feeding Circuit for LED Buck Driver
Tse-Ju Liao and Chern-Lin Chen
National Taiwan University, Taiwan
- 15:52 – 16:14 [1054](#)
A Primary Side Controlled Single-Stage Flyback LED Driver with High Power Factor and High Accuracy
Yahui Leng, Yulin Wang, Junmin Jiang, and Lenian He
Zhejiang University, China
- 16:14 – 16:36 [1178](#)
A Nanosecond Current Pulse Driver for Light Emitting Diode
Tse-Ju Liao, Yu-Chen Liu, and Chern-Lin Chen
National Taiwan University, Taiwan
- 16:36 – 16:58 [1190](#)
Bridgeless Electrolytic Capacitor-less Valley Fill AC/DC Converter for Twin-Bus Type LED Lighting Applications
Hongbo Ma¹, Cong Zheng², Wensong Yu², and Jih-Sheng (Jason) Lai²
¹*Southwest Jiaotong University*, China
²*Virginia Polytechnic and State University*, USA
- 16:58 – 17:20 [1200](#)
High-efficiency Quasi-two-stage Converter with Current Sharing for Multi-channel LED Driver
Ting Jiang, Junming Zhang, Kuang Sheng, and Zhaoming Qian
Zhejiang University, China

S13

Converter V: DC-DC Converter III

Time: Tuesday, Nov. 5, 2013, 13:20 – 15:10

Place: An Ping (Level B2)

Chair(s): Prof. Jason Lai, *Virginia Polytechnic Institute and State University, USA*
Prof. Yuang-Shung Lee, *Fu Jen Catholic University, Taiwan*

13:20 – 13:42

[1116](#)

Predictive Digital Current Mode Controlled DC-DC Converter with Duty Calibration Technique

Yung-Chien Chang and Chien-Hung Tsai
National Cheng-Kung University, Taiwan

13:42 – 14:04

[1122](#)

Multiphase High Gain Boost Converter with Switched-Capacitor and Coupled-Inductor

Yuang-Shung Lee, Wei-Ting Hong, and Tzu-Han Chou
Fu Jen Catholic University, Taiwan

14:04 – 14:26

[1106](#)

A Novel Active Clamp High Step-Up DC-DC Converter with Coupled-Inductor for Fuel Cell System

Po-Hsin Tseng, Jiann-Fuh Chen, and Yi-Ping Hsieh
National Cheng Kung University, Taiwan

14:26 – 14:48

[1107](#)

An Atmospheric Pressure Plasma Power Supply with Digital Constant Power Control

Ming-Hsien Cheng and Tsorng-Juu Liang
National Cheng Kung University, Taiwan

Time: Tuesday, Nov. 5, 2013, 13:20 – 15:10

Place: Fu Cheng (Level B2)

Chair(s): Prof. Jinjun Liu, *Xi'an Jiaotong university*, China
Prof. Chien-Ming Wang, *National Ilan University*, Taiwan

13:20 – 13:42

[1072](#)

Analysis of Class E_M Amplifier With Considering Non-Zero Current Fall Time of Drain Current

Zhicai Zhang¹, Tomoharu Nagashima¹, Xiuqin Wei²,
Tadashi Suetsugu², Hiroo Sekiya¹, and Naoki Oyama²

¹*Chiba University*, Japan

²*Fukuoka University*, Japan

13:42 – 14:04

[1256](#)

A ZCS-PWM Interleaved Forward Converter

Chien-Ming Wang¹, Chien-Min Lu¹, Jyun-Che Li¹,
Chang-Hua Lin², and Chien-Yeh Ho³

¹*National Ilan University*, Taiwan

²*Tatung University*, Taiwan

³*Lunghwa University of Science and Technology*, Taiwan

14:04 – 14:26

[1012](#)

A Novel Simple Voltage Regulation Method for Uninterruptible Power Supply without Transformer and Voltage Divide Capacitor

Atsushi Hirota¹, Bin Guo², Saad Mekhilef³, and
Mutsuo Nakaoka^{3,4}

¹*Akashi National College of Technology*, Japan

²*Panasonic*, Japan

³*University of Malaya*, Malaysia

⁴*Kyungnam University*, Korea-South

14:26 – 14:48

[1053](#)

An Improved Switched-inductor Quasi-Z-source Inverter

Deng Kai¹, Mei Jun¹, Zheng Jianyong¹, He Wei², and
Bao Huping²

¹*Southeast University*, China

²*Jiangsu Fangcheng Electric Science and Technology Co., Ltd*, China

14:48 – 15:10

[1085](#)

Design of a Single-Switch DC-DC Converter for PV-Battery Powered Pump System

Le An and Dylan Dah-Chuan Lu
The University of Sydney, Australia

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S15

**Power Converter for Utility Interface III:
Distributed Energy System II**

Time: Tuesday, Nov. 5, 2013, 13:20 – 15:10

Place: East Gate (Level B1)

Chair(s): Prof. Hirofumi Akagi, *Tokyo Institute of Technology*, Japan
Prof. Chia-Chi Chu, *National Tsing Hua University*, Taiwan

13:20 – 13:42

[1212](#)

**Autonomous Power Management and Load Sharing in
Isolated Micro-Grids by Consensus-Based Droop Control
of Power Converters**

Lin-Yu Lu and Chia-Chi Chu

National Tsing Hua University, Taiwan

13:42 – 14:04

[1229](#)

**Coordinate Control System for Photovoltaic-based DC
Microgrid**

Ying Huang, Yu Peng, Meng Huang, Jianjun Sun, and
Xiaoming Zha

Wuhan University, China

14:04 – 14:26

[1024](#)

**Unidirectional Buck DC-DC converter mode photovoltaic
grid-connected inverters with high frequency link**

Jie Zhang, Fusong Huang, Bin Yan, and Daolian Chen

Fuzhou University, China

14:26 – 14:48

[1047](#)

**Quadratic High Gain Boost Converter for Grid-Tie PV
System Application**

Yuang-Shung Lee, Tzu-Han Chou, Ling-Chia Yu, and
Hsin-Wei Huang

Fu Jen Catholic University, Taiwan

S16	Power Converter for Utility Interface IV: PV System I
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Time: Tuesday, Nov. 5, 2013, 13:20 – 15:10
Place: West Gate (Level B1)
Chair(s): Prof. Chung-Chuan Hou, *Chung Hua University*, Taiwan
Prof. Masahito Shoyama, *Kyushu University*, Japan

- 13:20 – 13:42 [1056](#)
A Novel High Step-Up DC-DC Converter with Zero DC Bias Current Coupled-Inductor for Microgrid System
Chia-Hua Yeh, Yi-Ping Hsieh, and Jiann-Fuh Chen
National Cheng Kung University, Taiwan
- 13:42 – 14:04 [1112](#)
A Discontinuous PWM for Three Level Converters with Constant Common-Mode Voltage
Chung-Chuan Hou
Chung Hua University, Taiwan
- 14:04 – 14:26 [1169](#)
A Novel Low Voltage Ride Through Strategy of Two-Stage Grid-Connected Photovoltaic Inverter
Shuzheng Wang, Xiaojun Yao, and Jianfeng Zhao
Southeast University, China
- 14:26 – 14:48 [1175](#)
A hybrid PWM modulation scheme for PV inverter
Cheng Yan, Chao Sun, Yangfan Zhang, Min Chen, Dehong Xu
Zhejiang University, China
- 14:48 – 15:10 [1180](#)
DSP-Based Simple and Efficient Synchronizer for Three-Phase Grid-Connected Renewable Energy Systems
Gamal M. Dousoky¹ and Masahito Shoyama²
¹*Minia University, Egypt*
²*Kyushu University, Japan*

S17	Power Electronics Applications III: Power Electronics Applications I
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Time: Tuesday, Nov. 5, 2013, 13:20 – 15:10

Place: South Gate (Level B1)

Chair(s): Prof. Chi-Seng Lam, *University of Macau*, China
Prof. Maoh-Chin Jiang, *National Ilan University*, Taiwan

13:20 – 13:42 [1042](#)
Design of Static Self Shunt Excitation System for Giant Hydro Generator

Qipin Xu, Yixiang Shao, Qiantao Huo, and Shaoxing Zhao
State Grid Electric Power Research Institute, China

13:42 – 14:04 [1065](#)
A Soft-Switching Single-Phase Three-Arm Unified Power Quality Conditioner

Maoh-Chin Jiang, Huang-Kai Fu, Shyh-Shing Perng, Kao-Yi Lu, and Bing-Jyun Shih
National Ilan University, Taiwan

14:04 – 14:26 [1158](#)
A New Close-loop Based Capacitor Voltage Control Method for Modular Multilevel Converter with the Switching Frequency of 150 Hz

Sixing Du, Jinjun Liu, and Teng Liu
Xi'an Jiaotong University, China

14:26 – 14:48 [1237](#)
Three-loop Digital Control Strategy Combining PI and Quasi-PR Controller for High Tracking Precision Power Supply Used in ZnO Characteristics Testing

Lang Huang, Xiang Hao, Xu Yang, Ting Liu, Ruiliang Xie, and Tao Liu
Xi'an Jiaotong University, China

S18	Power Integrated Circuits
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Time: Tuesday, Nov. 5, 2013, 13:20 – 15:10
Place: North Gate (Level B1)
Chair(s): Prof. Tadashi Suetsugu, *Fukuoka University*, Japan
Prof. Chia-Ling Wei, *National Cheng Kung University*, Taiwan

- 13:20 – 13:42 [1019](#)
Design and Implementation of a Current-Mode DC-DC Converter for LED Driving
Chi-Yuan Huang, Shu-Fen Kang, and Chien-Hung Tsai
National Cheng-Kung University, Taiwan
- 13:42 – 14:04 [1102](#)
Self-Adaptive Zero Current Prediction (SAZCP) Technique for Auxiliary Winding-free Boost Power Factor Correction Controller
Chih-Wei Chang, Che-Hao Meng, and Ke-Horng Chen
National Chiao Tung University, Taiwan
- 14:04 – 14:26 [1125](#)
Microcontroller Power Integrity Black-Box Model
Shih-Yi Yuan¹ and Cheng-Chang Chen²
¹*Feng Chia University*, Taiwan
²*Bureau of Standards, Metrology and Inspection*, Taiwan
- 14:26 – 14:48 [1162](#)
IC Design of Primary-Side Control for Flyback Converter
Ying-Ting Lin, Tsorng-Juu Liang, and Kai-Hui Chen
National Cheng Kung University, Taiwan

S19	Converter VII: Multilevel Converters I
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Time: Tuesday, Nov. 5, 2013, 15:30 – 17:20
Place: An Ping (Level B2)
Chair(s): Prof. Toshihisa Shimizu, *Tokyo Metropolitan University*, Japan
Prof. Chun-An Cheng, *I-Shou University*, Taiwan

- 15:30 – 15:52 [1066](#)
Experimental Verification of a Modular Multilevel Cascade Converter Based on Triple-Star Bridge-Cells (MMCC-TSBC) for Motor Drives
Wataru Kawamura, Makoto Hagiwara, and Hirofumi Akagi
Tokyo Institute of Technology, Japan
- 15:52 – 16:14 [1071](#)
Detailed Design, Integration and Testing of Submodule for 1000V/85kVA Modular Multilevel Converter
Yunfei Xu, Xiangning Xiao, Yonghai Xu, Yunbo Long, and Chang Yuan
North China Electric Power University, China
- 16:14 – 16:36 [1091](#)
Isolated Dual Boost Bridgeless Power Factor Correction AC-DC Converter
Mohammed Mahmood, Huang-Jen Chiu, Yu-Kang Lo, Quang Trong Nha, Pham Phu Hieu, and Irwan Purnama
National Taiwan University of Science and Technology, Taiwan
- 16:36 – 16:58 [1092](#)
A Speed-Sensorless Startup of an Induction Motor Driven by a Modular Multilevel Cascade Inverter (MMCI-DSCC) – Applications to Quadratic-Torque Loads Like Fans, Blowers, and Compressors
Yuhei Okazaki, Makoto Hagiwara, and Hirofumi Akagi
Tokyo Institute of Technology, Japan
- 16:58 – 17:20 [1133](#)
A Single-Phase to Three-Phase Direct AC/AC Modular Multilevel Cascade Converter Based on Double-Star Bridge-Cells (MMCC-DSBC)
Nuntawat Thitichaiworakorn, Makoto Hagiwara, and Hirofumi Akagi
Tokyo Institute of Technology, Japan

S20

Converter VIII: Multilevel Converters II

Time: Tuesday, Nov. 5, 2013, 15:30 – 17:20

Place: Fu Cheng (Level B2)

Chair(s): Prof. Kitagawa Wataru, *Nagoya Institute of Technology*, Japan
Prof. Tzung-Lin Lee, *National Sun Yat-sen University*, Taiwan

15:30 – 15:52

[1171](#)

Harmonic Reduction Technique with a Five-level Inverter for Four Pole Induction Motor Drive

Kiran Kumar Nallamekala, Meher Kalyan U, and Sivakumar K
Indian Institute of Technology Hyderabad, India

15:52 – 16:14

[1183](#)

A Front-to-Front (FTF) System Consisting of Two Modular Multilevel Cascade Converters Based on Double-Star Chopper-Cells

Firman Sasongko, Makoto Hagiwara, and Hirofumi Akagi
Tokyo Institute of Technology, Japan

16:14 – 16:36

[1223](#)

A Novel Partial Units Energy Feedback Cascaded Multilevel Inverter with Bypass Control

Juntao Yao, Fei Liu, Jinwu Gong, and Shangsheng Li
Wuhan University, China

16:36 – 16:58

[1117](#)

A Hybrid Communication Method for Unit Control Of Cascade Multilevel Converters

Zhao Shengkai, Tan Shulong, Li Xiaojun, Geng Hua, and Yang Geng
Tsinghua University, China

S21	Power Converter for Utility Interface V: PV System II
-----	--

Time: Tuesday, Nov. 5, 2013, 15:30 – 17:20
Place: East Gate (Level B1)
Chair(s): Prof. Ching-Shan Leu, *National Taiwan University of Science and Technology*, Taiwan

- 15:30 – 15:52 [1181](#)
A DSP-based Grid-tied Solar Cascode-micro-inverter
Tai-Hung Wang, Yu-Chen Liu, Shih-Jen Cheng, Yu-Kang Lo, and Huang-Jen Chiu
National Taiwan University of Science and Technology, Taiwan
- 15:52 – 16:14 [1185](#)
The Current Control of PV Inverter for Three-Phase Unbalanced Fault with Lagrange Multiplier
W.-T. Kuo¹, Y.-C. Hsu¹, C. W. Liu¹, Y.-M. Chen¹, Y.-R. Chang², and H.-L. Huang²
¹*National Taiwan University*, Taiwan
²*Institute of Nuclear Energy Research*, Taiwan
- 16:14 – 16:36 [1187](#)
LLC Converter with Taiwan Tech Center-Tapped Rectifier (LLC-TCT) for Solar Power Conversion Applications
Ching-Shan Leu, Pin-Yu Huang, and Wei-Kai Wang
National Taiwan University of Science and Technology, Taiwan
- 16:36 – 16:58 [1214](#)
High Efficiency two-stage Cascaded Converter with Energy Storage Device for Renewable Energy Sources
Hwa-Seok Lee, Chan-In Kim, Sun-Jae Park, and Joung Hu Park
Soongsil University, South Africa
- 16:58 – 17:20 [1253](#)
A Dual-Buck Based Equalizer Operating in Burst-mode for Split Phase Inverter
Lanhua Zhang¹, Jason Dominic¹, Bin Gu¹, Jih-Sheng Lai¹, and Chien-liang Chen²
¹*Virginia Polytechnic Institute and State University*, USA
²*International Rectifier*, USA

S22

**Power Converter for Utility Interface VI:
Wind Power System**

Time: Tuesday, Nov. 5, 2013, 15:30 – 17:20

Place: West Gate (Level B1)

Chair(s): Prof. Katsumi Nishida, *Ube National College of Technology*,
Japan
Prof. Li Wang, *National Cheng Kung University*, Taiwan

15:30 – 15:52

[1098](#)

**Cost-effective High-reliability Power-Conditioning
System used for Grid Integration of Variable-speed Wind
Turbine**

Katsumi Nishida¹, Tarek Ahmed², Saad Mekhilef³, and
Mutsuo Nakaoka⁴

¹*Ube National College of Technology*, Japan

²*JUST University*, Jordan

³*University of Malaya*, Malaysia

⁴*Kyungnam University*, South Korea

15:52 – 16:14

[1254](#)

**Control of DFIG with New Space-Vector based Hysteresis
Current Regulator Title**

DanVu Nguyen and Goro Fujita

Shibaura Institute of Technology, Japan

16:14 – 16:36

[1009](#)

**Damping Improvement of a DFIG-based Wind Turbine
Generator Connected to an Infinite Bus Using a Fuzzy
Logic Controller**

Li Wang and Nguyen Thi Ha

National Cheng Kung University, Taiwan

16:36 – 16:58

[1011](#)

**Analysis of Voltage Variations of Taiwan Power System
Connected with a Large-Scale Offshore Wind Farm**

Li Wang, Min-Han Hsieh, Cheng-Tai Wu, and Chieh-Lung Lu

National Cheng Kung University, Taiwan

S23

**Power Electronics Applications IV:
Power Electronics Applications II**

Time: Tuesday, Nov. 5, 2013, 15:30 – 17:20
Place: South Gate (Level B1)
Chair(s): Prof. Jun-ichi Itoh, *Nagaoka University of Technology*, Japan
Prof. Chih-Chiang Hua, *National Yunlin University of Science and Technology*, Taiwan

- 15:30 – 15:52 [1050](#)
Analysis and Mitigation Countermeasures of a New SSO Phenomenon
Chao Luo, Xiangning Xiao, Jingjing Lu, Jian Zhang, and Chang Yuan
North China Electric Power University, China
- 15:52 – 16:14 [1150](#)
Techniques for Reduction of Common-Mode EMI Based on the Concepts of Current Balance on the Power Transformer Windings
Hung-I Hsieh and Sheng-Fang Shih
National Chiayi University, Taiwan
- 16:14 – 16:36 [1077](#)
Design Optimization and Analysis of AFPM Synchronous Motor Considering Electrical and Thermal Parameters
Amin Mahmoudi¹, Solmaz Kahourzade¹, Hew Wooi Ping¹, and Ali Gandomkar²
¹*University of Malaya, Malaysia*
²*Yeungnam University, Korea*
- 16:36 – 16:58 [1131](#)
An Investigation into Series Power Tapping Options of HVDC Transmission Lines
André Hartshorne¹, Hendrik du Toit Mouton¹, and Udaya K. Madawala²
¹*University of Stellenbosch, South Africa*
²*University of Auckland, New Zealand*
- 16:58 – 17:20 [1201](#)
Design of the effective Linear Generator using Mechanical Vibration Energy
Daisuke Yamamoto, Kazuya Hirasawa, and Shunsuke Ohashi
Kansai University, Japan

S24	Lighting Technologies and Applications II: Lighting Driver System
-----	--

Time: Tuesday, Nov. 5, 2013, 15:30 – 17:20
Place: North Gate (Level B1)
Chair(s): Prof. Junming Zhang, *Zhejiang University*, China
Prof. Hongbo Ma, *Southwest Jiaotong University*, China

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- | | |
|---------------|---|
| 15:30 – 15:52 | 1138
Single-Stage High-Power-Factor LED Driver with ZVS and Current-Sharing Features
Chien-Hsuan Chang, En-Chih Chang, Hung-Liang Cheng, and Fang-Ying Liu
<i>I-Shou University</i> , Taiwan |
| 15:52 – 16:14 | 1208
Stability Analysis of a Constant Off-time Peak-Current Mode LED Driver
Yan-Mou Chen ¹ , Dan Chen ¹ , Chung-Ping Ku ¹ , and Chun-Hung Lin ²
¹ <i>National Taiwan University</i> , Taiwan
² <i>Alpha & Omega Semiconductor</i> , Taiwan |
| 16:14 – 16:36 | 1211
Design and Implementation of Retrofit LED Lamp for Fluorescent Lamp Driven by Electronic, Electromagnetic Ballast and AC Mains
Tsorng-Juu Liang, Wei-Jing Tseng, Wan-Rong Chen, and Jiann-Fuh Chen
<i>National Cheng Kung University</i> , Taiwan |
| 16:36 – 16:58 | 1172
A Novel Impulsed-Power for Field Emission Lighting with Phase-Locked Loop Feedback Mechanism
Chang-Hua Lin ¹ , Min-Hsuan Hung ¹ , Chien-Ming Wang ² , and Liang-Cheng Lee ³
¹ <i>Tatung University</i> , Taiwan
² <i>National Ilan University</i> , Taiwan
³ <i>St. John's University of S. & T.</i> , Taiwan |
| 16:58 – 17:20 | 1240
Development of Lamp-Power-Dependent Models for High-Intensity-Discharge Lamps
Chun-An Cheng ¹ , Hung-Liang Cheng ¹ , Tsung-Yuan Chung ¹ , and Kuo-Ching Tseng ²
¹ <i>I-Shou University</i> , Taiwan
² <i>National Kaohsiung First University of Science and Technology</i> , Taiwan |

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S25

Converter IX: Converter Topologies

Time: Wednesday, Nov. 6, 2013, 08:30 – 10:20

Place: East Gate (Level B1)

Chair(s): Prof. Tsai-Fu Wu, *Nation Tsing Hau Univerisity*, Taiwan

08:30 – 08:52

[1123](#)

An Inductor-Less Three-Phase to Single-Phase Boost Converter for Multi-Pole Permanent Magnet Synchronous Generators

Hideaki Fujita

Tokyo Institute of Technology, Japan

08:52 – 09:14

[1124](#)

A Single-stage High Power Factor Bridgeless Forward Converter with an Improved Constant On-time Control

Zhou Lan, Xiaogao Xie, Hanjing Dong, and Shirong Liu

Hangzhou Dianzi University, China

09:14 – 09:36

[1144](#)

The Origin of Converters

Tsai-Fu Wu

National Tsing Hua University, Taiwan

09:36 – 09:58

[1151](#)

LLC Converter with Taiwan Tech Voltage Doubler Rectifier (LLC-TVD) for Large-Size LED-Backlit LCD Display Applications

Pin-Yu Huang, Ching-Shan Leu, Wei-Chun Lin, and

Keng-Hung Liao

National Taiwan University of Science and Technology, Taiwan

09:58 – 10:20

[1236](#)

Dynamic Control and Analysis of Dc-Capacitor Voltage Fluctuations in Three-phase Active Power Filters

Tomoyuki Mannen¹, Hideaki Fujita¹, Kunihiro Akiyama²,

Yasuo Nakashima², and Teruhisa Toyota²

¹*Tokyo Institute of Technology, Japan*

²*Shizuki Electric, Japan*

S26

**Motor Drives II:
Sensor and Sensor-less Control for Motor Driver**

Time: Wednesday, Nov. 6, 2013, 08:30 – 10:20

Place: West Gate (Level B1)

Chair(s): Prof. Faa-Jeng Lin, *National Central University*, Taiwan

08:30 – 08:52

[1015](#)

Predictive Torque and Flux Control of a Four-Switch Inverter-Fed IM Drive

Md. Habibullah and Dylan Dah-Chuan Lu
The University of Sydney, Australia

08:52 – 09:14

[1045](#)

Intelligent Fault Tolerant Control of Six-Phase Motor Drive System

Ying-Chih Hung¹ and Faa-Jeng Lin²
¹*TECO Electric & Machinery Co., Ltd.*, Taiwan
²*National Central University*, Taiwan

09:14 – 09:36

[1089](#)

Design and Implementation of a Regenerative Braking System for Electric Bicycles with a DSP Controller

Chih-Chiang Hua, Shih-Jyun Kao, and Yi-Hsiung Fang
National Yunlin University of Science & Technology, Taiwan

09:36 – 09:58

[1126](#)

An Inductance Estimation Method for Sensorless IPMSM Drives Based on Multiphase SVPWM

Minglei Gu, Satoshi Ogasawara, and Masatsugu Takemoto
Hokkaido University, Japan

09:58 – 10:20

[1128](#)

Novel PWM Scheme with Multiphase SVPWM for Reducing Current Ripple

Minglei Gu, Satoshi Ogasawara, and Masatsugu Takemoto
Hokkaido University, Japan

S27	Power Converter for Utility Interface VII: Impact of Renewable Energy System
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Time: Wednesday, Nov. 6, 2013, 08:30 – 10:20

Place: South Gate (Level B1)

Chair(s): Prof. Senjyu Tomonobu, *University of the Ryukyus*, Japan

08:30 – 08:52

[1167](#)

**Digital Control for a Three-Phase Transformerless
Bi-directional Photovoltaic Inverter with Wide Inductance
Variation**

T.-F. Wu¹ and Hui-Chung Hsieh²

¹*National Tsing Hua University, Taiwan*

²*National Chung Cheng University, Taiwan*

08:52 – 09:14

[1238](#)

**Optimal Scheduling Method of Distributed Generators and
Plug-in Electric Vehicle for Reconfigurable Distribution
Systems**

Shun Taira¹, Zakaria Ziadi¹, and Toshihisa Funabashi²

¹*University of the Ryukyus, Japan*

²*Meidensha Corporation, Japan*

09:14 – 09:36

[1245](#)

**Analysis of Modular Multilevel Converters under Unbalanced
Grid Conditions with different Load Current Control
Strategies and Lagrange-based Differential Current Control**

Gilbert Bergna^{1,2,3}, Jon Are Suul^{3,4}, Erik Berne², Philippe Egrot²,
Jean-Claude Vannier¹, and Marta Molinas³

¹*École Supérieure d'Électricité, France*

²*Électricité de France, France*

³*Norwegian University of Science of Technology, Norway*

⁴*SINTEF Energy, Norway*

09:36 – 09:58

[1246](#)

**Assessment of Impact of Distributed Generators, Plug-in
Electric Vehicle and Battery Energy Storage System on
Power Distribution Losses**

Shun Taira¹, Zakaria Ziadi¹, and Toshihisa Funabashi²

¹*University of the Ryukyus, Japan*

²*Meidensha Corporation, Japan*

09:58 – 10:20

[1222](#)

**Optimal Scheduling Method of Controllable Loads in
DC-Smart House with Deregulated Electricity Market**

Akihiro Yoza¹ and Toshihisa Funabashi²

¹*University of the Ryukyus, Japan*

²*Meidensha Corporation, Japan*

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S28**Converter X: Modeling and Control I**

Time: Wednesday, Nov. 6, 2013, 10:30 – 12:20

Place: East Gate (Level B1)

Chair(s): Prof. Siva Kumar K, *IIT Hyderabad*, India

Prof. Ming-Yang Cheng, *National Cheng Kung University*, Taiwan

10:30 – 10:52

[1058](#)

**Modeling and Simulation of Micro-grid including
Inverter-interfaced Distributed Resources Based on Dynamic
Phasors**

Wei Hu¹, Jianjun Sun¹, Minghai Gao¹, Xiaoming Zha¹, Fei Liu¹,
Chang Lin², and Weiwei Ma²

¹*Wuhan University*, China

²*State Grid Smart Grid Research Institute*, China

10:52 – 11:14

[1064](#)

**LLC Resonant Converter Operated at Constant Switching
Frequency and Controlled by Means of a Switched-Capacitor
Circuit**

Yafei Hu¹, Amara Amara², and Adrian Ioinovici³

¹*Sun Yat-sen University*, China

²*Institut Supérieur d'Electronique de Paris*, France

³*Holon Institute of Technology*, Israel

11:14 – 11:36

[1101](#)

**Modeling and Design of Cable Compensation for a Primary
Side Regulation (PSR) Flyback Converter**

Chun-Shih Huang and Shinn-Shyong Wang

Richtek Technology Corporation, Taiwan

11:36 – 11:58

[1105](#)

**Quasi-periodicity of a Buck-Boost Converter with the
Nonlinearity of the Diode and the MOSFET**

Chun-Hsien Wu and Ming-Yang Cheng

National Cheng Kung University, Taiwan

Time: Wednesday, Nov. 6, 2013, 10:30 – 12:20

Place: West Gate (Level B1)

Chair(s): Prof. Dylan Dah-Chuan Lu, *The University of Sydney*,
Australia

10:30 – 10:52

[1184](#)

A Fixed-Frequency Quasi Sliding-Mode Repetitive Control (QSMRC) for Voltage Source Inverters

Qinwei Liu, Yuxi Wang, Wei Liu, and Hao Ma
Zhejiang University, China

10:52 – 11:14

[1191](#)

An Adaptive Sampling Method for a Highly Reliable Digital Control Power Converter

Aromhack Saysanasongkham¹, Masayuki Arai²,
Satoshi Fukumoto¹, Shun Takeuchi¹, and Keiji Wada¹
¹*Tokyo Metropolitan University, Japan*
²*Nihon University, Japan*

11:14 – 11:36

[1206](#)

Physical Modeling and Simulation of Inrush Current in Power Transformers of More Electric Aircraft

Y. Ji and M. R. Kuhn
German Aerospace Center, Germany

11:36 – 11:58

[1244](#)

Digital Control of PWM Inverter using Ultra High Speed Network for Feedback Signals based on Rocket I/O Protocol

Yasuhiro Ueda and Tomoki Yokoyama
Tokyo Denki University, Japan

11:58 – 12:20

[1258](#)

Model and Control of Diode-assisted Buck-boost Voltage Source Inverter

Yan Zhang, Jinjun Liu, Xiaolong Ma, and Junjie Feng
Xi'an Jiao Tong University, China

S30	Power Electronic Devices and Components II
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Time: Wednesday, Nov. 6, 2013, 10:30 – 12:20
Place: South Gate (Level B1)
Chair(s): Prof. Wei-Chou Hsu, *National Cheng Kung University*, Taiwan
Prof. Shoyama Masahito, *Kyushu University*, Japan

- 10:30 – 10:52 [1073](#)
Influences of Source Pick-up and Well Engineering on the ESD Robustness of LV Process nMOSTs
Shen-Li Chen, Min-Hua Lee, Yi-Sheng Lai, and Chun-Ju Lin
National United University, Taiwan
- 10:52 – 11:14 [1074](#)
Layout-type Dependence on ESD/LU Reliabilities for LVTnSCR Devices
Shen-Li Chen, Chun-Ju Lin, Min-Hua Lee, and Yi-Sheng Lai
National United University, Taiwan
- 11:14 – 11:36 [1041](#)
Resonance Analysis for DC-Side Laminated Bus-Bar of a High Speed Switching Circuit
Akihiro Hino and Keiji Wada
Tokyo Metropolitan University, Japan
- 11:36 – 11:58 [1080](#)
The Power Monitor System Combined Green Energy
Shu-Cheng Gu, Cheng Ching-Hung, and Gwo-Jia Jong
National Kaohsiung University of Applied Sciences, Taiwan
- 11:58 – 12:20 [1226](#)
A Real Time V_{ce} Measurement Issues for High Power IGBT Module in Converter Operation
Pramod Ghimire¹, Angel Ruiz de Vega¹, Stig Munk-Nielsen¹,
Bjørn Rannestad², and Paul Bach Thøgersen²
¹*Aalborg University, Denmark*
²*kk-electronic a/s, Denmark*

Technical Poster Sessions

P01 Power Converter and Applications

Time: Monday, Nov. 4, 2013, 17:10 – 18:10

Place: Far Eastern Grand Ballroom (Level B2)

Chair(s): Dr. Changsung Sean KIM, *SAMSUNG ELECTRO-MECHANICS CO., LTD.*, Republic of Korea
Prof. Huang-Jen Chiu, *National Taiwan University of Science and Technology*, Taiwan

[1018](#)

Design of a Fast-Transient Current-Mode Buck DC–DC Converter

Chia-Chieh Wong, Hung-Hsien Wu, Ming-Hsien Shih, and Chia-Ling Wei
National Cheng Kung University, Taiwan

[1234](#)

Design of a digitally-controlled LLC resonant converter with synchronous rectification

Yu-Shan Cheng¹, Jing-Hsiao Chen¹, Yi-Hua Liu¹, Kuo-Liang Huang¹, and Zong-Zhen Yang²
¹*National Taiwan University of Science and Technology*, Taiwan
²*Industrial Technology Research Institute*, Taiwan

[1090](#)

A Novel High Step-Up DC-DC Converter with Coupled-inductor

Tsai-Jie Lin, Jiann-Fuh Chen, and Yi-Ping Hsieh
National Cheng Kung University, Taiwan

[1135](#)

The Harmonic Elimination Strategy for a 24-Pulse Converter with Unequal-Impedance Phase-Shift Transformers

Der-Chun Shih¹, Ling-Chung Hung², and Chung-Ming Young¹
¹*National Taiwan University of Science and Technology*, Taiwan
²*Lite-On Technology. Corp.*, Taiwan

[1084](#)

A Hybrid Modulation Method for Improved Modular Multilevel Converter applied for Power Quality Compensation in Medium Voltage

Yunbo Long, Xiangning Xiao, Yonghai Xu, Yunfei Xu, and Baolai Yu
North China Electric Power University, China

P01	Power Converter and Applications
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Time: Monday, Nov. 4, 2013, 17:10 – 18:10
Place: Far Eastern Grand Ballroom (Level B2)
Chair(s): Dr. Changsung Sean KIM, *SAMSUNG*
ELECTRO-MECHANICS CO., LTD., Republic of Korea
Prof. Huang-Jen Chiu, *National Taiwan University of Science and Technology*, Taiwan

[1095](#)

Design of LCL Filter for Harmonic Suppression in Co-phase Railway Power Quality Conditioner

Keng-Weng Lao, Man-Chung Wong, NingYi Dai, and Chi-Kong Wong
University of Macau Faculty of Science and Technology, China

[1068](#)

Control and Analysis of the Low Voltage DC Grid

J. B. Wang¹ and D. Kao²
¹*Chien Hin University of Science and Technology*, Taiwan
²*AcBel Polytech Inc.*, Taiwan

[1194](#)

A Deadbeat Control Method for Circulating Current between

Parallel-Connected Inverters

Huagen Xiao¹, An Luo¹, Lisha Bai¹, Chunming Tu², Juan Zhou², and Qing Liu²
¹*Hunan University*, China
²*Natural Electric Power Conversion and Control Engineering Technology Research Center*, China

[1220](#)

A Novel Power Management Strategy for Single Phase Storage-equipped Grid-connected PV Generation System

Junchao Ma¹, Fanbo He¹, Zhengming Zhao¹, Feikong¹, and Chongjian Li²
¹*Tsinghua University*, China
²*Research and Design Institute of Metallurgical Industry*, China

[1170](#)

A Fault Tolerant Dual Inverter Configuration for Islanded Mode Photovoltaic Generation System

Madhukar Rao A, Umesh B S, and Sivakumar K
Indian Institute of Technology Hyderabad, India

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P01	Power Converter and Applications
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Time: Monday, Nov. 4, 2013, 17:10 – 18:10
Place: Far Eastern Grand Ballroom (Level B2)
Chair(s): Dr. Changsung Sean KIM, *SAMSUNG*
ELECTRO-MECHANICS CO., LTD., Republic of Korea
Prof. Huang-Jen Chiu, *National Taiwan University of Science and Technology*, Taiwan

[1197](#)

Research and Review on Quasi-Z Source grid connected Inverter

Ruizhe Huang and Daolian Chen
Fuzhou University, China

[1060](#)

PWAM Control of Bidirectional LLC Resonant Converter

Tianyang Jiang, Junming Zhang, Yousheng Wang,
Zhaoming Qian, and Kuang Sheng
Zhejiang University, China

[1195](#)

Direct Methanol Fuel Cell Systems with Tri-stage Energy Management and Maximum Power Point Tracking

Yu-Hsiang Huang, Shih-Jen Cheng, Yu-Kang Lo,
Huang-Jen Chiu, Shu-Wei Kuo, and Tai-Hung Wang
National Taiwan University of Science and Technology,
Taiwan

[1198](#)

Construction and Control of an Energy Recycling Electronic Load System

Hao Ma and Qian Guo
Zhejiang University, China

P02	Applications of Power Electronics
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Time: Monday, Nov. 4, 2013, 17:10 – 18:10
Place: Far Eastern Grand Ballroom (Level B2)
Chair(s): Prof. Grzegorz Benysek, *University of Zielona Gora*, Poland
Prof. Le-Ren Chang-Chien, *National Cheng Kung University*,
Taiwan

[1188](#)

Study on a New Power Modulation Strategy of HVDC to Improve Transient Stability in China Southern Power Grid

Huang Zhenlin¹, Zeng Yihao¹, Guan Lin¹, and Cao Jiandong²

¹*South China University of Technology, China*

²*Guangdong Power Grid, China*

[1219](#)

Power Loss Modelling of MOSFET Inverter for Low-Power Permanent Magnet Synchronous Motor Drive

Y. Yao, D. C. Lu, and D. Verstraete

University of Sydney, Australia

[1227](#)

Current Control for Single-Phase Grid-Connected Inverters by Splitting the Elements of LLCL Filter

Wenjun Liu, Fei Liu, Jianjun Sun, and Xiaoming Zha

Wuhan University, China

[1020](#)

A DC Capacitor Voltages Balancing Control Strategy for Cascade D-STATCOM

Pengkang Xie¹, Kun Yang¹, Chun Zhao², and Guozhu Chen¹

¹*Zhejiang University, China*

²*Hunan Electric Power Corporation Research Institute, China*

[1038](#)

Power Conditioner Interconnection Test System of Distributed Resources Based on IEEE 1547 Standard

Yu-Jen Liu, Pei-Hsiu Lan, Hong-Hsun Lin, Teng-Yi Chiu, and Hung-Wei Chen

Taiwan Electric Research and Testing Center, Taiwan

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P02	Applications of Power Electronics
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Time: Monday, Nov. 4, 2013, 17:10 – 18:10
Place: Far Eastern Grand Ballroom (Level B2)
Chair(s): Prof. Grzegorz Benysek, *University of Zielona Gora*, Poland
Prof. Le-Ren Chang-Chien, *National Cheng Kung University*,
Taiwan

[1241](#)

**Research on Testing Platform for New Energy
Grid-connected Devices**

Shuang Zhao¹, Jianjun Sun¹, Liang Qin¹, Xiaoming Zha¹, and
Kai Ding²

¹*Wuhan University, China*

²*Hubei Power Company Electric Power Research Institute,
China*

[1204](#)

**Torsional Vibration Suppression of the PMSG-based
Wind Turbine Generator using H_{∞} Observer**

Shuta Morinaga¹ and Toshihisa Funabashi²

¹*University of the Ryukyus, Japan*

²*Meidensha Corporation, Japan*

[1034](#)

**Generalized DQ Model of the Permanent Magnet
Synchronous Motor Based on Extended Park
Transformation**

Jinhai Liu and Wei Chen

Fuzhou University, China

[1161](#)

**Prediction of State of Charge for Li–Co Batteries with
Fuzzy Inference System based Fuzzy Neural Networks**

Ho-Ta Lin and Tsorng-Juu Liang

National Cheng-Kung University, Taiwan

[1046](#)

Detection on SOC of VRLA Battery with EIS

Pin-Chien Wu, Wen-Chien Hsu, and Jiann-Fuh Chen

National Cheng-Kung University, Taiwan

P02	Applications of Power Electronics
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Time: Monday, Nov. 4, 2013, 17:10 – 18:10
Place: Far Eastern Grand Ballroom (Level B2)
Chair(s): Prof. Grzegorz Benysek, *University of Zielona Gora*, Poland
Prof. Le-Ren Chang-Chien, *National Cheng Kung University*,
Taiwan

[1130](#)

Measurement of Resistance Characteristics of Power Cables in the Very High Frequency Band for Improving Electromagnetic Interference Analysis

Yutaro Fujimori, Satoshi Ogasawara, and
Masatsugu Takemoto
Hokkaido University, Japan

[1142](#)

Common-Mode EMI Suppression in a Unipolar PWM Inverter using Genetic-Based Gating Signals Tuning

En-Chih Chang, Chien-Hsuan Chang, Hung-Liang Cheng,
and Tzu-Chun Yeh
I-Shou University, Taiwan

[1186](#)

Evaluation on Chamber Volume and Performance for Simple Calorimetric Power Loss Measurement by Two Chambers

Koji Orikawa, Atsushi Nigorikawa, and Jun-ichi Itoh
Nagaoka University of Technology, Japan