### IFEEC 2017 – ECCE Asia

#### Technical Session

**Special Session**

<table>
<thead>
<tr>
<th>June 5, 2017</th>
<th>Monday</th>
</tr>
</thead>
<tbody>
<tr>
<td>13:20-15:25</td>
<td></td>
</tr>
<tr>
<td>S01</td>
<td>S02</td>
</tr>
<tr>
<td>S03</td>
<td>S04</td>
</tr>
<tr>
<td>June 6, 2017</td>
<td>Tuesday</td>
</tr>
<tr>
<td>15:15-17:20</td>
<td></td>
</tr>
<tr>
<td>S05</td>
<td>S06</td>
</tr>
<tr>
<td>June 7, 2017</td>
<td>Wednesday</td>
</tr>
<tr>
<td>08:10-10:15</td>
<td>10:30-12:35</td>
</tr>
<tr>
<td>S07</td>
<td>S08</td>
</tr>
</tbody>
</table>

**Oral Session**

<table>
<thead>
<tr>
<th>June 5, 2017</th>
<th>Monday</th>
</tr>
</thead>
<tbody>
<tr>
<td>13:20-15:25</td>
<td></td>
</tr>
<tr>
<td>O01</td>
<td>O02</td>
</tr>
<tr>
<td>O03</td>
<td>O04</td>
</tr>
<tr>
<td>O05</td>
<td>O06</td>
</tr>
<tr>
<td>O07</td>
<td>O08</td>
</tr>
<tr>
<td>15:45-17:50</td>
<td></td>
</tr>
<tr>
<td>O09</td>
<td>O10</td>
</tr>
<tr>
<td>O11</td>
<td>O12</td>
</tr>
<tr>
<td>O13</td>
<td>O14</td>
</tr>
<tr>
<td>O15</td>
<td>O16</td>
</tr>
<tr>
<td>June 6, 2017</td>
<td>Tuesday</td>
</tr>
<tr>
<td>15:15-17:20</td>
<td></td>
</tr>
<tr>
<td>O17</td>
<td>O18</td>
</tr>
<tr>
<td>O19</td>
<td>O20</td>
</tr>
<tr>
<td>O21</td>
<td>O22</td>
</tr>
<tr>
<td>O23</td>
<td></td>
</tr>
<tr>
<td>June 7, 2017</td>
<td>Wednesday</td>
</tr>
<tr>
<td>08:10-10:15</td>
<td>10:30-12:35</td>
</tr>
<tr>
<td>O24</td>
<td>O25</td>
</tr>
<tr>
<td>O26</td>
<td>O27</td>
</tr>
<tr>
<td>O28</td>
<td>O29</td>
</tr>
<tr>
<td>O30</td>
<td>O31</td>
</tr>
<tr>
<td>O32</td>
<td>O33</td>
</tr>
<tr>
<td>O34</td>
<td>O35</td>
</tr>
<tr>
<td>O36</td>
<td>O37</td>
</tr>
<tr>
<td>O38</td>
<td>O39</td>
</tr>
</tbody>
</table>

**Poster Session**

<table>
<thead>
<tr>
<th>June 6, 2017</th>
<th>Tuesday</th>
</tr>
</thead>
<tbody>
<tr>
<td>10:50-12:20</td>
<td></td>
</tr>
<tr>
<td>P101</td>
<td>P102</td>
</tr>
<tr>
<td>P103</td>
<td>P104</td>
</tr>
<tr>
<td>P105</td>
<td>P106</td>
</tr>
<tr>
<td>13:30-15:00</td>
<td></td>
</tr>
<tr>
<td>P201</td>
<td>P202</td>
</tr>
<tr>
<td>P203</td>
<td>P204</td>
</tr>
<tr>
<td>P205</td>
<td>P206</td>
</tr>
<tr>
<td>P207</td>
<td></td>
</tr>
</tbody>
</table>
Oral Technical Session

Technical Session I
Monday, June 5, 2017

S01: Special Session on Wireless Power Transfer (SS-WPT)

<table>
<thead>
<tr>
<th>Time</th>
<th>#1200</th>
<th>13:20</th>
</tr>
</thead>
<tbody>
<tr>
<td>Room</td>
<td>13:20</td>
<td>302a</td>
</tr>
<tr>
<td>Chairs</td>
<td></td>
<td>Prof. Chun T. Rim, Gwangju Institute of Science and Technology, Korea</td>
</tr>
</tbody>
</table>

**#1200**

**Maximum Efficiency Control of Wireless Power Transfer Systems with Half Active Rectifier Based on Primary Current Measurement**

Katsuhito Hata, Takehiro Imura and Yoichi Hori

*The University of Tokyo, Japan*

**#1210**

**Coreless Transmitting Coils with Metal Shield for Wide-Range Ubiquitous IPT**

Byeong G. Choi¹, Eun S. Lee¹, Yeung H. Sohn¹, Seung H. Han², Hoi R. Kim¹ and Chun T. Rim¹

¹Korea Advanced Institute of Science and Technology, Korea
²TESLAS Co. Ltd., Korea
³Gwangju Institute of Science and Technology, Korea

**#1300**

**Wide-range Ubiquitous Wi-Power Zone by Magnetic Shielding**

Eun S. Lee¹, Yeung H. Sohn¹, Sonapreetha M. R.¹, Seung H. Han² and Chun T. Rim³

¹Korea Advanced Institute of Science and Technology, Korea
²TESLAS Co. Ltd., Korea
³Gwangju Institute of Science and Technology, Korea

**#1405**

**Fast Linear Control for Maximum Energy Efficiency of Wireless Power Transfer Systems**

Zhicong Huang, Siu-Chung Wong and Chi Kong Tse

---

S02: Advanced PM Machine Control

<table>
<thead>
<tr>
<th>Time</th>
<th>#1437</th>
<th>15:00</th>
</tr>
</thead>
<tbody>
<tr>
<td>Room</td>
<td></td>
<td>302b</td>
</tr>
<tr>
<td>Chairs</td>
<td></td>
<td>Prof. Kan Akatsu, Shibaura Institute of Tech, Japan</td>
</tr>
</tbody>
</table>

**#1437**

**High Efficient Power Conversion Circuit for Inductive Power Transfer Charger in Electric Vehicles**

Minjung Kim, Dong-Myoung Joo and Byoung Kuk Lee

*Sungkyunkwan University, Korea*

---

13:20 | #1213 | **FPGA-Based Speed Controller Design for a Ceiling Fan Motor**

Ying-Shieh Kung¹, Hoang Than¹, Yi-De Lin¹ and Liang-Chiao Huang²

¹Southern Taiwan University of Science and Technology, Taiwan
²Industrial Technology Research Institute, Taiwan

---

14:35 | #1514 | **A Study of Position Sensoreless Control for IPMSM Having Non-sinusoidal Inductance Spatial Distribution Based on Pattern Matching Method**

---
<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Title</th>
<th>Authors</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>15:00</td>
<td>#1659</td>
<td>Controller Design of Servo Drives for Bandwidth Improvement</td>
<td>Hamin Song and Shinji Doki&lt;br&gt;Nagoya University, Japan</td>
<td></td>
</tr>
<tr>
<td>13:20</td>
<td>#1035</td>
<td>Design of an Auxiliary Converter for 12-Pulse Diode Rectifiers</td>
<td>Chung-Chuan Hou and Chia-Hung Tsai&lt;br&gt;Chung Hua University, Taiwan</td>
<td></td>
</tr>
<tr>
<td>13:45</td>
<td>#1168</td>
<td>A Novel Active Discontinuous PWM Control Strategy for High Efficiency Partial Switching Predictive Current-Mode Control PFC Converter</td>
<td>Yeong-Jun Choi¹, Rae-Young Kim¹ and Tae-Jin Kim²&lt;br&gt;¹Hanyang University, Korea&lt;br&gt;²LG Electronics, Korea</td>
<td></td>
</tr>
<tr>
<td>14:10</td>
<td>#1332</td>
<td>A Reduced Component Count Single-stage Electrolytic Capacitor-less Battery Charger with Sinusoidal Charging</td>
<td>Byeongwoo Kim, Minjae Kim and Sewan Choi&lt;br&gt;Seoultech, Korea</td>
<td></td>
</tr>
<tr>
<td>14:35</td>
<td>#1604</td>
<td>Stability Analysis of Direct Current Control in Current Source Rectifier</td>
<td>Dapeng Lu, Xiongfei Wang and Frede Blaabjerg&lt;br&gt;Aalborg University, Denmark</td>
<td></td>
</tr>
<tr>
<td>15:00</td>
<td>#1555</td>
<td>A Zero-Voltage-Switching Dual Boost Power Factor Correction Rectifier with Active Clamp Circuit Having Minimized Conduction Losses</td>
<td>Yeonho Jeong¹, Jae-Kuk Kim², Jin-Sik Park³, Cheon-Yong Lim¹, Moo-Hyun Park¹ and Gun-Woo Moon¹&lt;br&gt;¹Korea Advanced Institute of Science and Technology, Korea&lt;br&gt;²INHA University, Korea&lt;br&gt;³Solu-m, Korea</td>
<td></td>
</tr>
<tr>
<td>13:20</td>
<td>#1077</td>
<td>A Digital PWM Controlled KY Step-Up Converter Based on Passive Sigma-Delta Modulator</td>
<td>Xia Du¹, Chi-Seng Lam¹, Sai-Weng Sin¹, Franco Maloberti², Man-Chung Wong¹, Seng-Pan U¹,³ and Rui Paulo Martins¹,⁴&lt;br&gt;¹University of Macau, Macao&lt;br&gt;²University of Pavia, Italy&lt;br&gt;³Synopsys Macau Ltd., Macao&lt;br&gt;⁴Universidade de Lisboa, Portugal</td>
<td></td>
</tr>
<tr>
<td>13:45</td>
<td>#1080</td>
<td>A New LLC Resonant Converter with Resonant Frequency Change for High Conversion Efficiency and High Power Density</td>
<td>Cheol-O Yeon¹, Moo-Hyun Park¹, Seung-Hwan Ko¹, Cheon-Yong Lim¹, Feel-Soon Kang², Yu-jin Jang¹ and Gun-Woo Moon¹&lt;br&gt;¹Korea Advanced Institute of Science and Technology, Korea&lt;br&gt;²Hanbat National University, Korea</td>
<td></td>
</tr>
<tr>
<td>14:10</td>
<td>#1135</td>
<td>A Novel Taiwan Tech Multi-Level Converter (TMC) for High Zero-Voltage Input Power Conversion</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time</td>
<td>Session</td>
<td>Title</td>
<td>Authors</td>
<td>Location</td>
</tr>
<tr>
<td>----------</td>
<td>--------------------------</td>
<td>----------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------------</td>
<td>--------------------------------</td>
</tr>
<tr>
<td>14:35</td>
<td>#1172</td>
<td>Improved Three Switch-Active Clamp Forward Converter With Low Switching Loss</td>
<td>Chong-Eun Kim, Jae-Bum Lee, Han-Shin Youn and Gun-Woo Moon</td>
<td>National Taiwan University of Science and Technology, Taiwan</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1^st Korea Railroad Research Institute, Korea</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2^nd Korea Advanced Institute of Science and Technology, Korea</td>
<td></td>
</tr>
<tr>
<td>14:35</td>
<td>#1621</td>
<td>A Wireless V2H Apparatus with a New SiC-MOSFET and Unique Bidirectional Controlled Single-Ended Converter</td>
<td>Kodai Kuroda, Hideki Omori, Noriyuki Kimura, Toshimitsu Morizane, Kenji Fukuda and Hisato Michikoshi</td>
<td>Osaka Institute of Technology, Japan</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1^st National Institute of Advanced Industrial Science and Technology, Japan</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2^nd National Institute of Advanced Industrial Science and Technology, Japan</td>
<td></td>
</tr>
<tr>
<td>13:20</td>
<td>#1053</td>
<td>Dynamic Ramp Control in Current Mode Adaptive On-Time Control for Buck Converter on Chip</td>
<td>Wen-Wei Chen, Jiann-Fuh Chen and Tsong-Juu Juang</td>
<td>National Taiwan University of Science and Technology, Taiwan</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1^st Novatek Microelectronics Corporation, Taiwan</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2^nd National Cheng-Kung University, Taiwan</td>
<td></td>
</tr>
<tr>
<td>13:45</td>
<td>#1189</td>
<td>Unified Digital Periodic Signal Filters for Power Converter Systems</td>
<td>Yongheng Yang, Zhen Xin, Keliang Zhou and Fred Blaabjerg</td>
<td>Aalborg University, Denmark</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1^st University of Aalborg, Denmark</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2^nd University of Glasgow, United Kingdom</td>
<td></td>
</tr>
<tr>
<td>14:10</td>
<td>#1499</td>
<td>Reduction of DC-link Capacitance for Single-Phase Transformerless</td>
<td>Hoang Vu Nguyen and Dong-Choon Lee</td>
<td>Yeungnam University, Korea</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1^st National Taiwan University of Science and Technology, Taiwan</td>
<td></td>
</tr>
<tr>
<td>13:20</td>
<td>#1128</td>
<td>AC-Side Admittance Calculation for Modular Multilevel Converters</td>
<td>Luca Bessegato, Lennart Harnefors, Kalle Ilves and Staffan Norrga</td>
<td>Central South University, China</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1^st KTH Royal Institute of Technology, Sweden</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2^nd ABB Corporate Research, Sweden</td>
<td></td>
</tr>
<tr>
<td>14:10</td>
<td>#1499</td>
<td>New Virtual Space Vector Modulation Scheme to Eliminate Common-Mode Voltage with Balanced Neutral Point Voltage</td>
<td>Hoang Vu Nguyen and Dong-Choon Lee</td>
<td>Yeungnam University, Korea</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1^st National Taiwan University of Science and Technology, Taiwan</td>
<td></td>
</tr>
</tbody>
</table>
Oral Technical Session

for Three-Level NPC Inverters
Huu-Cong Vu¹, Tuyen D. Nguyen², Tae-Won Chun¹ and Hong-Hee Lee¹
¹University of Ulsan, Korea
²HoChiMinh City University of Technology, Vietnam

14:10 #1171
Grid-Connected Bi-directional Modular Multilevel Converter with D-Σ Digital Control
Tsai-Fu Wu, Tzu-Chieh Chou, Jun Wei Huang, Jia-Siang Chen and Yun Chang
National Tsing Hua University, Taiwan

14:35 #1504
Reactive Power Compensation Capability of a STATCOM based on Two Types of Modular Multilevel Cascade Converters for Offshore Wind Application
Takaaki Tanaka¹², Huai Wang¹, Ke Ma¹ and Frede Blaabjerg¹
¹Aalborg University, Denmark
²R&D Headquarters, Fuji Electric Co., Ltd, Tokyo
³Shanghai Jiao Tong University, China

15:00 #1412
Bidirectional Single-phase Solid-State Transformer using Multi Cell for Volume Reduction of High Voltage Capacitor
Jun-ichi Itoh, Kazuki Aoyagi and Toshiki Nakanishi
Nagaoka University of Technology, Japan

Storage System in DC Microgrid
Pengfeng Lin¹, Peng Wang², Qianwen Xu¹, Jianfang Xiao¹, Inam Ullah Nutkani³ and Fook Hoong Choo¹
¹Nanyang Technological University, Singapore
²Taiyuan University of Technology, China
³RMIT University, Melbourne

14:45 #1206
Seamless Transition Scheme between Grid-Tied and Stand-Alone Modes of Distributed Generation Inverters
Thanh Hai Nguyen, Khalifa Al Hosani, Naji Al Sayari and Abdul R. Beig
The Petroleum Institute, United Arab Emirates

14:10 #1116
High Step-Up Interleaved Stack DC-DC Converter with Zero Voltage Switching
Ji-Syuan Li and Jiann-Fuh Chen
National Cheng-Kung University, Taiwan

14:35 #1400
Current decomposition Based on a Double/Multiple Synochrons Reference Frames and Fryze-buchholz-depenbrock Theory for A Non-islanded Microgrid with a Finite Control Set-model Predictive Controller: a Comparative Approach
Riyadh Toman Thahab and Johnson A. Asumadu
Western Michigan University, United States

15:00 #1371
An Advanced Harmonic Extraction Technique Applied to a Three-Phase Three-Level Active Power Filter
Muhammad Kashif¹, M. J. Hossain¹, Fang Zhuo² and Shuhuai Shi²
¹Macquarie University, Australia
²Xian Jiaotong University, China

O05 : Distributed Energy Systems I
Time : 13:20-15:25 (Monday, June 5)
Room : 302c
Chairs : Prof. Yi Tang, Nanyang Technological University, Singapore
         Prof. Tsai-Fu Wu, National Tsing Hua University, Taiwan

13:20 #1055
An Integral Droop for Dynamic Power Sharing for Hybrid Energy

2017 IEEE 3rd International Future Energy Electronics Conference and ECCE Asia
<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Title</th>
<th>Authors</th>
<th>Affiliations</th>
</tr>
</thead>
<tbody>
<tr>
<td>13:20</td>
<td>#1020</td>
<td>Maximum Efficiency Control for Matrix-Converter Based IPMSM Drive Systems</td>
<td>Tian-Hua Liu, Yi Chen, and Meng-Jhe Wu</td>
<td>National Taiwan University of Science and Technology, Taiwan</td>
</tr>
<tr>
<td>13:45</td>
<td>#1113</td>
<td>Adaptive Control Method for an Induction Motor with Improved Characteristics during Regenerating Mode</td>
<td>Takanobu Yoshida, Yugo Tadano, and Masakatsu Nomura</td>
<td>Meidensha Corporation, Japan</td>
</tr>
<tr>
<td>14:10</td>
<td>#1250</td>
<td>Input Harmonic Analysis on Slim DC-Link Drive Using Harmonic State Space Model</td>
<td>Yang Feng, Jun Bum Kwon, Xiongfei Wang, and Frede Blaabjerg</td>
<td>Aalborg University, Denmark</td>
</tr>
<tr>
<td>14:35</td>
<td>#1469</td>
<td>A Dual Purpose Induction Motor Drive for a High Inertia Load with Both Quick Run-Up and Power Factor Correction Capability</td>
<td>Dayan B. Rathnayake, Sunil G. Abeyratne, and Thomas A. Lipo</td>
<td>Sri Lanka Institute of Information Technology, Sri Lanka, Florida State University, United States</td>
</tr>
<tr>
<td>15:00</td>
<td>#1580</td>
<td>Improvement of Position Control Performance of EGR Valve</td>
<td>Hyeong-Jin Kim, Hyung-Seok Park, Hong-Jun Heo, and Jang-Mok Kim</td>
<td>Pusan National University, Korea</td>
</tr>
<tr>
<td>13:20</td>
<td>#1224</td>
<td>Experience in Simulation and Measurement of Gan FET Switching Behavior</td>
<td>Chia-Wei Ku, Ching-Jan Chen, Yun-Chung Hsu, and Min-Nan Sun</td>
<td>National Taiwan University, Taiwan, Salcomp Taiwan Co. Ltd., Taiwan</td>
</tr>
<tr>
<td>13:45</td>
<td>#1348</td>
<td>Full SiC Version of the EDA5 Inverter</td>
<td>Shajjad Chowdhury, Emre Gurpin, and Alberto Castellazzi</td>
<td>The University of Nottingham, United Kingdom</td>
</tr>
<tr>
<td>14:10</td>
<td>#1386</td>
<td>Design of Magnetic Field Generator Operating at 85 kHz using SiC-MOSFET for Evaluating Electromagnetic Interference</td>
<td>Kazuki Matsubara, Keiji Wada, and Yukihsa Suzuki</td>
<td>Tokyo Metropolitan University, Japan</td>
</tr>
<tr>
<td>14:35</td>
<td>#1528</td>
<td>Electrical Performance of Directly Attached SiC Power MOSFET Bare Dies in a Half-Bridge Configuration</td>
<td>Arash E. Risser, Konstantin Kostov, and Hans-Peter Nee</td>
<td>KTH, Royal Institute of Technology, Sweden</td>
</tr>
</tbody>
</table>
15:00  
**#1134**  
*An Improved Gate Driver Based on Magnetic Coupling for Crosstalk Suppression of SiC Devices*  
Binfeng Zhang, Shaoyun Xie, Jinming Xu, Qiang Qian, Zhao Zhang and Kunshan Xu  
*Nanjing University of Aeronautics and Astronautics, China*

---

15:00  
**#1070**  
*A Novel Receiver Topology Based on Cockcroft-Walton Voltage Multiplier for Inductive Power Transfer System*  
Qi Zhu, Mei Su, Si Jie Ning, Ang Ma, Ziyi Zhao and Chun sheng Wang  
*Central South University, China*

---

**O08 : Wireless Power Transfer Technologies I**

<table>
<thead>
<tr>
<th>Time</th>
<th>Room</th>
<th>Chairs</th>
</tr>
</thead>
</table>
| 13:20-15:25   | 303d | Prof. Ron Hui, *The University of Hong Kong, Hong Kong*  
Prof. Noriyuki Kimura, *Osaka Institute of Technology, Japan* |

**S03 : Grid Tied Power Converter Technologies (tentative)**

<table>
<thead>
<tr>
<th>Time</th>
<th>Room</th>
<th>Chairs</th>
</tr>
</thead>
<tbody>
<tr>
<td>15:45-17:50</td>
<td>302a</td>
<td>Prof. Junichi Itoh, <em>Nagaoka University of Technology, Japan</em></td>
</tr>
</tbody>
</table>

---

13:20  
**#1008**  
*Resonant and Non-resonant Inductive Power Transfer Systems based on Planar Spiral Coils*  
Chung-Chuan Hou, Bo-Yen Chen, Kuo-Jui Lee, Heng-Yuan Ku, Po-Chun Chang and Tang-Jung Chen  
*Chung Hua University, Taiwan*

---

13:45  
**#1089**  
*Delta-Sigma Modulation for Maximum Efficiency Point Tracking of Wireless Power Transfer Systems*  
Hongchang Li, Jingyang Fang and Yi Tang  
*Nanyang Technological University, Singapore*

---

14:10  
**#1311**  
*Frequency Synthesizer and Phase to Analog Converter for Wireless Power Transfer Applications*  
Wen-Cheng Lai, Ho-Chang Lee, Yen-Jung Su and Sheng-Lyang Jang  
*National Taiwan University Science and Technology, Taiwan*

---

14:35  
**#1536**  
*Design and Implementation of Contactless Power Track System with Improved Inductively Coupled Structure*  
Jia-You Lee, Tsai-Hua Lin and I-Lin Chen  
*National Cheng Kung University, Taiwan*
**Oral Technical Session**

16:35  #1495  An Optimized Switching Pattern for Reducing Input Current Distortion of Matrix Converter Using Space Vector Modulation
Jumousuke Haruna, Junpei Tsuchiya, Hiroshi Ueda and Hirohito Funato
*Utsunomiya University, Japan*

Zhen Zhang, Yongheng Yang, Frede Blaabjerg and Ruiqing Ma
1Northwestern Polytechnical University, China
2Aalborg University, Denmark

17:00  #1563  Expansion of FRT Operation Range for Grid-Tied Matrix Converter System
Jun-ichi Itoh, Kyota Asai, Tsuyoshi Nagano and Takuya Kataoka
*Nagaoka University of Technology, Japan*

17:00  #1264  A Novel Harmonic Sharing Scheme in Islanded Microgrid
Lele Yu, Wei Zhang, Bainan Sun, Wei Wang and Hongpeng Liu
*Harbin Institute of Technology, China*

17:25  #1655  Reliability Oriented Design of a Grid-Connected Photovoltaic Microinverter
Yanfeng Shen, Huai Wang and Frede Blaabjerg
*Aalborg University, Denmark*

17:25  #1268  An Improved Droop Control Strategy of Three-phase Inverter for Grid Voltage Unbalance Compensation
Hongpeng Liu, Jiajie Zhou, Pengfei Li and Wei Wang
*Harbin Institute of Technology, China*

---

**S04 : Flexible Active Power Control for Photovoltaic Systems**

*Time :* 15:45-17:50 (Monday, June 5)
*Room :* 302b
*Chairs :* Prof. Yongheng Yang, *Aalborg University, Denmark*

15:45  #1198  Development of Flexible Active Power Control Strategies for Grid-Connected Photovoltaic Inverters by Modifying MPPT Algorithms
Ariya Sangwongwanich, Yongheng Yang and Frede Blaabjerg
*Aalborg University, Denmark*

16:10  #1461  Flexible Power Control Scheme for Interconnected Photovoltaics to Benefit the Power Quality and the Network Losses of the Distribution Grid
Lenos Hadjidemetriou, Lazaros Zacharia and Elias Kyriakides
*University of Cyprus, Cyprus*

---

**O09 : AC-DC Converters II**

*Time :* 15:45-17:50 (Monday, June 5)
*Room :* 303a
*Chairs :* Prof. Chia-Ling Wei, *National Cheng Kung University, Taiwan*
Dr. Pin-Yu Huang, *National Taiwan University of Science and Technology, Taiwan*

15:45  #1203  DSP-based Digital Control Techniques for Interleaved Boost PFC Converter
Pham Phu Hieu, Nguyen Duy Thuc, Yao-Ching Hsieh and Huang-Jen Chiu
*National Taiwan University of Science and Technology, Taiwan*
16:10  #1219

**Four-Switch Buck-Boost Inverter for Stand-Alone and Grid-Connected Single-Phase PV Systems**
Ashraf Ali Khan, Honnyong Cha, Usman Ali Khan and Heung-Geun Kim
*Kyungpook National University, Korea*

16:35  #1525

**A Simple THD Improving Method for CCM Boost PFC Converter Under Mixed Conduction Mode Operation**
Jung-Kyu Han\(^1\), Jae-II Baek\(^1\), Yeonho Jeong\(^1\), Cheol-O Yoon\(^1\), Gun-Woo Moon\(^1\) and Chong-Eun Kim\(^2\)
\(^1\)Korea Advanced Institute of Science and Technology, Korea
\(^2\)SOLU-M, Korea

17:00  #1605

**Mitigation of Grid-Current Distortion for LCL-Filtered Grid-Connected Voltage Source Inverter with Inverter-Side Current Control**
Zhen Xin\(^1\), Paolo Mattavelli\(^2\), WenLi Yao\(^3\), Frede Blaabjerg\(^4\) and Poh Chiang Loh\(^4\)
\(^1\)Aalborg University, Denmark
\(^2\)University of Padua, Italy
\(^3\)Northwestern Polytechnical University, China
\(^4\)The Chinese University of Hong Kong, Hong Kong

17:25  #1229

**Robust LCL Filter Design for Grid-side Current Single-Loop Controlled Grid-Connected Converters under Weak Power Grids**
Xiaopiang Li\(^1\), Jingyang Fang\(^1\), Yi Tang\(^1\) and Xiaojie Wu\(^2\)
\(^1\)Nanyang Technological University, Singapore
\(^2\)China University of Mining and Technology, China

15:45  #1173

**PWM Half-Bridge Zeta Converter Utilizing Resonant Technique for Reduced Peak Current**
Jae-II Baek\(^1\), Jeong-Soo Lee\(^1\), Keon-Woo Kim\(^1\), Jung-Kyu Han\(^1\), Gun-Woo Moon\(^1\), Jae-Bum Lee\(^2\) and Byoung-Hee Lee\(^3\)
\(^1\)Korea Advanced Institute of Science and Technology, Korea
\(^2\)Korea Railroad Research Institute, Korea
\(^3\)Hanbat National University, Korea

16:10  #1403

**Light-Load Conversion Efficiency Improvement Strategy for Phase-Shift Full-Bridge Converters**
Bin-Han Liu, Jen-Hao Teng, Meng-Yi Lin and Chung-Che Huang
*National Sun Yat-Sen University, Taiwan*

16:35  #1237

**A MHz Zero Voltage Switching (ZVS) Tapped-Inductor Buck Converter for Wide-input High Step-down Low-power Applications**
Chih-Shen Yeh, Xiaoran Zhao and Jason Lai
*Virginia Tech, United States*

17:00  #1255

**A Novel Charge Equalizer with Auxiliary Circuit to Control the Allowable Charging and Discharging Current of the Lithium-Ion Battery**
Young-Hwa Park\(^1\), See-Young
Oral Technical Session

17:25 #1273 Zero Voltage Switching over Entire Load Range and Wide Voltage Variation of Parallely-Connected Dual-Active-Bridge Converter using Power-Circulating Operation Hayato Higa and Jun-ichi Itoh Nagaoka University of Technology, Japan

17:00 #1502 Highly Dynamic Multiphase Wide Bandgap DC-DC Converter for Automotive Active Suspension Systems Deru Song¹, Kurt Schwaiger¹ Christian Korte², Christian Stark², Till Luetje², Malte Jaensch², and Stefan Goetz²
¹Porsche Engineering (Shanghai) Co., Ltd., China
²Porsche Engineering Services GmbH, Germany

O11 : Power Electronics Applications II
Time : 15:45-17:50 (Monday, June 5)
Room : 302e
Chairs : Prof. Hideki Omori, Osaka Institute of Technology, Japan
Dr. Wen-Wei Chen, Novatek Microelectronics Corporation, Taiwan

15:45 #1161 Lyapunov Law Based Model Predictive Control Scheme for Grid Connected Three Phase Three Level Neutral Point Clamped Inverter Abdul Mannan Dadu, Saad Mekhilef and Kok Soon Tey University of Malaya, Malaysia

16:10 #1162 A DC Power Supply Using Flying Capacitor Three-level PFC and LLC Resonant Three-level DC/DC Converter for Wide Input-Voltage Range and Multi Output Hidenori Tanaka, Yuji Nemoto, Ryuji Yamada, Satoru Fujita, Kansuke Fujii and Yasuhiro Okuma Fuji Electric Co., Ltd., Japan

16:35 #1121 Analysis and Control of Integrated DC Bus Voltage Conditioner for Cascade Power Converter System

17:25 #1186 Investigation of Cell Voltages and Arm Currents in Double-Star Modular Multilevel Converters Tsai-Fu Wu, Tzu-Chieh Chou, Jun Wei Huang, Jia-Siang Chen and Yun Chang National Tsing Hua University, Taiwan
<table>
<thead>
<tr>
<th>Time</th>
<th>#</th>
<th>Title</th>
<th>Authors</th>
<th>Institution(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>16:10</td>
<td>1351</td>
<td>FPGA Control of a Single-Phase T-Type NPC Grid Inverter for Low THD and Robust Performance</td>
<td>Ying-Yu Tzou and Chin-Chang Kuo</td>
<td>National Chiao Tung University, Taiwan</td>
</tr>
<tr>
<td>16:35</td>
<td>1279</td>
<td>A Unified SoC Balancing Method with Low-Bandwidth Distributed Communication in Island Microgrid</td>
<td>Guangze Shi, Yao Sun, Hua Han, Mei Su, Xiaochao Hou and Zhaoxu Luo</td>
<td>Central South University, China</td>
</tr>
<tr>
<td>16:35</td>
<td>1627</td>
<td>Total Volume Reduction of Passive Components in Grid-Connected Converters by Introducing Flying Capacitor Multilevel Topology</td>
<td>Yukihiko Sato¹, Sae Mochidate¹, Tomotake Ito² and Hidemine Obara²</td>
<td>Chiba University, Japan, Yokohama National University, Japan</td>
</tr>
<tr>
<td>17:00</td>
<td>1479</td>
<td>Mode transition scheme for optimal efficient operation of a 3-level T-type inverter</td>
<td>TaeHun Kim and WooCheol Lee</td>
<td>Hankyong National University, Korea</td>
</tr>
<tr>
<td>O13 :</td>
<td></td>
<td>Distributed Energy Systems II</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time</td>
<td></td>
<td>15:45-17:50 (Monday, June 5)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Room</td>
<td></td>
<td>302c</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chairs</td>
<td></td>
<td>Prof. Johnson A. Asumadu, Western Michigan University, United States</td>
<td>Dr. Kuo-Yuan Lo, Institute of Nuclear Energy Research Atomic Energy Council, Taiwan</td>
<td></td>
</tr>
<tr>
<td>15:45</td>
<td>1272</td>
<td>An Active Damping Technique for Multiple Grid-Connected Converters</td>
<td>Hsin-Chih Chen and Po-Tai Cheng</td>
<td>National Tsing Hua University, Taiwan</td>
</tr>
<tr>
<td>16:10</td>
<td>1041</td>
<td>Analysis of Voltage Variations of Taiwan Power System Connected with a High-Capacity Offshore Wind Farm</td>
<td>Li Wang¹, Quang-Son Vo¹, Min-Han Hsieh¹, Cheng-Tai Wu¹, Chieh-Lung Lu¹, Bing-Lin Kuan¹, Xiu-Yu Lu¹ and Anton V. Prokhorov²</td>
<td>National Cheng Kung University, Taiwan, Tomsk Polytechnic University, Russia</td>
</tr>
<tr>
<td>16:10</td>
<td>1462</td>
<td>Decentralized Control of DC Microgrid Clusters</td>
<td>Sujan Adhikari¹, Qianwen Xu¹, Yi Tang¹ and Peng Wang²</td>
<td>Nanyang Technological University, Singapore</td>
</tr>
</tbody>
</table>
### Oral Technical Session

<table>
<thead>
<tr>
<th>Time</th>
<th>#</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
</table>
| 16:35    | 1265| Comparison of Single-Phase and Three-Phase Dual-Active Bridge DC-DC Converters with Various Semiconductor Devices for Offshore Wind Turbines | Takushi Jimichi\(^1\), Murat Kaymak\(^2\) and Rik W. De Doncker\(^2\)  
\(^1\)Mitsubishi Electric Corporation, Japan  
\(^2\)RWTH Aachen University, Germany |
| 16:10    | 1532| High-Frequency Induction Heating for Small-Foreign-Metal Particles Using SiC-MOSFETs Inverter | Takuya Shijo, Shinya Kurachi, Yuki Uchino, Yujiro Noda, Hiroaki Yamada and Toshihiko Tanaka Yamaguchi University, Japan |
| 17:00    | 1423| A Coordinated Control of Grid Connected PMSG Based Wind Energy Conversion System under Symmetrical and Asymmetrical Grid Fault | Papan Dey, Manoj Datta and Nuwantha Fernando  
RMIT University, Australia |
| 17:25    | 1441| Mitigation of SSCI in DFIG Based Wind Farms through Modification of Rotor-Side Converter Controller | Selam Chernet and Massimo Bongiorno  
Chalmers University of Technology, Sweden |
| 15:45    | 1370| Optimization of Thermal Management and Power Density of Small-Scale Wind Turbine Applications Using SiC MOSFETs | Abdallah Hussein and Alberto Castellazzi  
University of Nottingham, United Kingdom |
| 15:45    | 1312| SAR ADC with a Body Effect Reduction T/H Circuit for Wireless Power Transfer Applications | Kazuya Uchida and Kan Akatsu  
Shibaura Institute of Technology, Japan |
| 15:45    | 1370| Wide Band Gap Devices and Applications II                                                   | Prof. Hirohito Funato, Utsunomiya University, Japan  
Prof. Ming-Tsong Tsai, Southern Taiwan University of Science and Technology, Taiwan |

**O15 : Wide Band Gap Devices and Applications II**

- **Time:** 15:45-17:50 (Monday, June 5)
- **Room:** 303c
- **Chairs:** Prof. Keiji Wada, Tokyo Metropolitan University, Japan  
Prof. Jim Ching-Jan Chen, National Taiwan University, Taiwan

**O16 : Wireless Power Transfer Technologies II**

- **Time:** 15:45-17:50 (Monday, June 5)
- **Room:** 303d
- **Chairs:** Prof. Hirohito Funato, Utsunomiya University, Japan  
Prof. Ming-Tsong Tsai, Southern Taiwan University of Science and Technology, Taiwan
<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>15:15</td>
<td><strong>S05</strong>: Reliable and Robust Design, Control and Energy Management for Renewable Energy and Energy Storage Systems</td>
<td>Reliably and robust design, control and energy management for renewable energy and energy storage systems. Authors: Jiarong Kan, Yunya Wu, Ling Qin, and Song Luo. Location: Nantong University, China. Chairs: Prof. Dylan Lu, University of Technology, Sydney, Australia.</td>
</tr>
<tr>
<td>15:40</td>
<td>#1631</td>
<td>The Design of Cascaded DC-DC Converters with Single-switch PWM and PFM for Standalone PV Power Applications. Authors: Junkai Zhao, Herbert Ho-Ching Iu, and Tyrone Fernando. Location: The University of Western Australia, Australia.</td>
</tr>
<tr>
<td>16:05</td>
<td>#1640</td>
<td>Development of Multi-Mode Step Down DC/DC Converters With Fault-Tolerant Capability. Authors: John Long Soon, Dylan Dah-Chuan Lu, Ling Qin, and Swamdoss Sathiakumar. Location: The University of Sydney, Australia. 1The University of Technology, Sydney, Australia. 3Nantong University, China.</td>
</tr>
<tr>
<td>16:30</td>
<td>#1635</td>
<td>Integrated Double Dual-Mosfets Photovoltaic Micro-Inverter with Current-Source Characteristic. Authors: Jiaron Kan, Yunya Wu, Ling Qin, and Song Luo. Location: Nantong University, China. Chairs: Prof. Dylan Lu, University of Technology, Sydney, Australia.</td>
</tr>
<tr>
<td>16:55</td>
<td>#1638</td>
<td>Design of a Robust PI Controller for Photovoltaic Energy Storage System in Constant Voltage Charging Mode. Authors: Song Luo, Ling Qin, Yafang Wang, and Shaojun Xie. Location: Nantong University, China. Chairs: Prof. Dylan Lu, University of Technology, Sydney, Australia.</td>
</tr>
</tbody>
</table>
Oral Technical Session

**S06:** Applications of Wide Bandgap Power Devices  
**Time:** 15:15-17:20 (Tuesday, June 6)  
**Room:** 302b  
**Chairs:** Prof. Jin Wang, The Ohio State University, United States

15:15  
#1658  
**Highly-Integrated Power Cell for High-Power Wide Band-gap Power Converters**  
Jordi Espina, Behzad Ahmadi, Lee Empringham, Lillo De Liliana, and Mark Johnson  
*University of Nottingham, United Kingdom*

15:40  
#1662  
**How to Change the Landscape of Power Electronics with Wide Bandgap Power Devices**  
Jin Wang, Chengcheng Yao, He Li, Eric Bauer, Karun Arjun Potty and Boxue Hu  
*The Ohio State University, United States*

16:05  
#1664  
**A Transformerless Single-Phase Utility Interface Converter to Attenuate Common-Mode Voltage for DC Microgrid**  
Fang Chen, Rolando Burgos and Dushan Boroyevich  
*Virginia Tech, United States*

16:30  
#1646  
**A High Efficiency Two-stage ZVS AC/DC Converter with All SiC MOSFET**  
Siliang Zhang, Guixing Lan, Zezheng Dong and Xinke Wu  
*Zhejiang University, China*

**O17:** DC-DC Converters III  
**Time:** 15:15-17:20 (Tuesday, June 6)  
**Room:** 303a  
**Chairs:** Prof. Heung-Geun Kim, Kyungpook National University, Korea  
Prof. Ray-Lee Lin, National Cheng Kung University, Taiwan

15:15  
#1269  
**A Non-Isolated Dual-Input DC-DC Converter with Wide Input Voltage Range for Renewable Energy Sources**  
Ji-Hoon Park and Jae-Kuk Kim  
*INHA University, Korea*

15:40  
#1274  
**Analytical Comparison of Dual-Input Isolated dc-dc Converter with an ac or dc Inductor for Renewable Energy Systems**  
Zhe Zhang, Maria C. Mira and Michael A. E. Andersen  
*Technical University of Denmark, Denmark*

16:05  
#1319  
**Design for Nonlinear Current Reference Deadbeat Control for Boost Converter**  
Aviti Thadei Mushi, Sakahisa Nagai, Hidemine Obara and Atsuo Kawamura  
*Yokohama National University, Japan*

16:30  
#1443  
**Ripple Current Cancellation for Boost Converters**  
Chia-Chou Chang, Jyun-chun Huang, Chen-Chan Lee and Yaow-Ming Chen  
*National Taiwan University, Taiwan*

16:55  
#1318  
**Design Criteria for Parallel Connected-Buck Converters in DC Microgrid Loaded by CPLs**  
Yulin Li, Mi Dong, Zhangjie Liu, Shuo Wang, Qi Zhu and Mei Su  
*Central South University, China*
**Oral Technical Session**

**O18 : Power Electronics Applications III**

*Time:* 15:15-17:20 (Tuesday, June 6)

*Room:* 303b

*Chairs:* Prof. Hideki Ayano, *Tokyo National College of Technology*, Japan
Prof. Tzung-Lin Lee, *National Sun Yat-sen University*, Taiwan

---

15:15 #1120

**LLC Circuit Based Ripple Current Suppression Method for Single Phase Bidirectional DC-AC DAB Converter**

Jiang You¹, Mahinda Vilathgamuwa², Negareh Ghasemi² and Wynand Malan²

¹*Harbin Engineering University*, China
²*Queensland University of Technology*, Australia

---

15:40 #1228

**A ZVS-PWM Single-Phase Inverter Using a ZVS Transformer-Isolated Step-Up/Down DC Link**

Chien-Ming Wang and Guan-Yu Chen

*National Ilan University*, Taiwan

---

16:05 #1257

**Loss Analysis and Optimized Design of DC-DC Converter for Battery Module**

Meng-Yuan Tsai, Tsorg-Juu Liang and Yu-Meng Lin

*National Cheng Kung University*, Taiwan

---

16:30 #1234

**A Phase-Shift Resonant Power System with Novel Plasma Impedance Measurement Methodology for Plasma Cleaning Applications**

Ming-Hsien Cheng, Tsorg-Juu Liang and Shih Ming Chen

*National Cheng Kung University*, Taiwan

---

16:55 #1350

**A Single-Phase Current-Source Bidirectional Converter for V2G application**

Peng Yang, Tao Peng, Hui Wang, Hua Han, Jian Yang and Hao Wang

*Central South University*, China

---

**O19 : PV Systems I**

*Time:* 15:15-17:20 (Tuesday, June 6)

*Room:* 302e

*Chairs:* Prof. Katherine A. Kim, *Ulsan National Institute of Science and Technology*, Korea
Prof. Faa-Jeng Lin, *National Central University*, Taiwan

---

15:15 #1006

**Real-Time Simulation of Maximum Power Point Tracking Control Using Fuzzy Logic for Stand Alone PV System**

Ying-Yi Hong¹, Angelo A. Beltran Jr.², and Arnold C. Paglinawan³

¹*Chung Yuan Christian University*, Taiwan
²*Adamson University*, Philippines
³*Mapua Institute of Technology*, Philippines

---

15:40 #1018

**Power Control of Single-Stage Three-Phase Grid-Tied Photovoltaic System During Grid Faults Using Recurrent Fuzzy Cerebellar Model Articulation Controller**

Faa-Jeng Lin¹ and Kuang-Chin Lu²

¹*National Central University*, Taiwan
²*Chunghwa Telecom Co. Ltd.*, Taiwan

---

16:05 #1185

**Interharmonics from Grid-Connected PV Systems: Mechanism and Mitigation**

Ariya Sangwongwanich, Yongheng Yang, Dezso Sera and Frede Blaabjerg

*Aalborg University*, Denmark
### Oral Technical Session

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Title</th>
<th>Authors</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>16:30</td>
<td>#1095</td>
<td>A Current Sensorless MPPT Algorithm For A New PV Array Controller</td>
<td>Jiachen Li, Xiangyu Peng, Jiali Wang, Qun Wang, Zhengyu Lyu, Damin Zhang</td>
<td>Zhejiang University, China</td>
</tr>
<tr>
<td>16:30</td>
<td>#1558</td>
<td>A Reactive Power Control Strategy of the Grid-Connected Inverter for Microgrid Application</td>
<td>Li-Yuan Liu, Gao Jun-Ting and Kuo-Yuan Lo</td>
<td>Institute of Nuclear Energy Research Atomic Energy Council, Taiwan</td>
</tr>
<tr>
<td>16:55</td>
<td>#1407</td>
<td>Forecasting Based Power Ramp-Rate Control For PV Systems Without Energy Storage</td>
<td>Xiaoyang Chen, Yang Du and Huiqing Wen</td>
<td>Xi'an Jiaotong-Liverpool University, China</td>
</tr>
<tr>
<td>15:15</td>
<td>#1007</td>
<td>Design and Implementation of a Smart Home Energy Saving System with Active Loading Feature Identification and Power Management</td>
<td>Che-min Lin and Ming-Tang Chen</td>
<td>National Kaohsiung University of Applied Science, Taiwan</td>
</tr>
</tbody>
</table>
| 15:40 | #1379   | Adaptive Mixed Strategy Load Management in dc Microgrids for Wireless Communications Systems | Rui Hu\(^1\), Alexis Kwasinski\(^2\) and Andres Kwasinski\(^1\) | 1University of Pittsburgh, United States  
2Rochester Institute of Technology, United States |
| 16:05 | #1511   | A Localized NARX Neural Network Model for Short-term Load Forecasting Based upon Self-Organizing Mapping | Hanshen Li\(^1\), Yuan Zhu\(^2\), Jinglu Hu\(^3\) and Zhe Li\(^1\) \(^3\) | Shanghai Jiao Tong University, China  
3Waseda University, Japan |
| 15:15 | #1225   | Decoupled Control Strategy for Oscillating Water Column Wave Energy System based on Doubly-Fed Induction Generator | Ahmed Kadry Abdelsalam\(^1\), Salwa M. Yousry\(^1\), Yasser G. Dessouky\(^1\), Hadi M. Elhelw\(^1\) and Sarah Bandara Tennakoon\(^2\)  
1Arab Academy for Science and Technology, Egypt  
2Staffordshire university, England |
| 15:40 | #1378   | Power Flow Control of Triple Active Bridge DC/DC Converter using GaN Power Device for Low-Voltage DC Power Distribution System | Yue Yu\(^1\), Keisuke Masumoto\(^3\), Keiji | 1University of Pittsburgh, United States  
3Waseda University, Japan |
Oral Technical Session

16:05 #1341
Optimal Decentralized Economical-sharing Criterion and Scheme for AC Microgrids
Lang Li, Huwen Ye, Zhangjie Liu, Ming Liu, Mei Su and Jiaming Wang
Central South University, China

O22: Impact of Smart-Grid Technologies
Time: 15:15-17:20 (Tuesday, June 6)
Room: 302d
Chairs: Prof. Michael Tse, The Hong Kong Polytechnic University, Hong Kong
Prof. Cheng-Yu Tang, Feng Chia University, Taiwan

15:15 #1131
A Stochastic Model for Cascading Failures in Smart Grid under Cyber Attack
Dong Liu, Xi Zhang and Chi Kong Tse
The Hong Kong Polytechnic University, Hong Kong

15:40 #1214
Single-Phase UPFC Topology Using Autotransformer Structure based on Two Half-Bridge Converters
Sang-Hoon Lee¹, Myeong-Chan Kang¹ and Young-Doo Yoon²
¹Myongji University, Korea
²Hanyang University, Korea

16:05 #1471
Droop Control of a Bipolar DC Microgrid for Load Sharing and Voltage Balancing
Zhe Zhang, Donghan Shi, Chi Jin, Leong Hai Koh, Fook Hoong Choo, Yi Tang and Peng Wang
Nanyang Technological University, Singapore

16:30 #1166
Stabilization Methods of DC Microgrid with Distributed Control Considering Communication Delay
Yuwen Nie, Mi Dong, Wenbin Yuan, Jian Yang, Zhangjie Liu and Hua Han
Central South University, China

16:55 #1328
Research on Suppression Mechanism of STATCOM on Power Oscillations
Liansong Xiong, Dongjie Wang
Nanjing Institute of Technology, China

O23: Electric Vehicles
Time: 15:15-17:20 (Tuesday, June 6)
Room: 303d
Chairs: Prof. Huang-Jen Chiu, National Taiwan University of Science and Technology, Taiwan
Prof. Chun-Lien Su, National Kaohsiung Marine University, Taiwan

15:15 #1216
Vehicle Stability Control of 4WD Electric Vehicle using Combined Adaptive Sliding Mode Controller and Control Allocation Method
Ramadhani Kurniawan Subroto
Brawijaya University, Indonesia

15:40 #1230
A Microcontroller-based Battery Test System with Energy Recycling Technique
Chang-Hua Lin¹, Wan-Ju Lin¹, Xiang-Ming Wu¹ and Wen-Ching Shih²
¹National Taiwan University of Science and Technology, Taiwan
²Tatung University, Taiwan

16:05 #1588
Power Quality Measurements of Distribution Systems with LRT Ultra-Fast Charging Infrastructures
## Oral Technical Session

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Title</th>
<th>Authors</th>
<th>Affiliations</th>
</tr>
</thead>
<tbody>
<tr>
<td>16:30</td>
<td>#1589</td>
<td>Compensation Performance of Smart Charger With Constant DC Capacitor</td>
<td>Fuka Ikeda¹, Kei Nishikawa¹, Hiroaki Yamada¹, Toshihiko Tanaka¹ and Masayuki Okamoto²</td>
<td>¹Yamaguchi University, Japan ²National Institute of Technology, Ube College, Japan</td>
</tr>
<tr>
<td></td>
<td>#1606</td>
<td>Effect on Voltage Dividing Class E Amplifier by Parasitic Capacitances of Drive Circuit</td>
<td>Katsutoshi Hirayama¹, Tadashi Suetsugu², Hidenori Maruta¹ and Fujio Kurokawa¹</td>
<td>¹Nagasaki University, Japan ²Fukuoka University, Japan</td>
</tr>
<tr>
<td></td>
<td>#1645</td>
<td>Novel Efficiency-Optimal Frequency Modulation for High Power Density DC/AC Converter Systems</td>
<td>Dominik Neumayr¹, Dominik Bortis¹, Enes Hatipoglu¹, Johann W. Kolar¹ and Gerald Deboy²</td>
<td>¹ETH Zurich, Switzerland ²Infineon, Switzerland</td>
</tr>
</tbody>
</table>

## Technical Session IV

### Wednesday, June 7, 2017

<table>
<thead>
<tr>
<th>Session</th>
<th>Title</th>
<th>Authors</th>
<th>Affiliations</th>
</tr>
</thead>
<tbody>
<tr>
<td>S07</td>
<td>Resonant Inverter and Converter</td>
<td>Nguyen Kien Trung and Kan Akatsu</td>
<td>Shibaura Institute of Technology, Japan</td>
</tr>
<tr>
<td>Time</td>
<td>08:10-10:15 (Wednesday, June 7)</td>
<td>Prof. Hirotaka Koizumi, Tokyo University of Science, Japan</td>
<td>Prof. Hiroom Sekiya, Tokyo University of Science, Japan</td>
</tr>
<tr>
<td>Room</td>
<td>302a</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chairs</td>
<td>Prof. Sewan Choi, Seoul National University of Science and Technology, Korea</td>
<td>Prof. En-Chih Chang, I-Shou University, Taiwan</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>08:10 #1476 Driver Design for 3kW 13.56 MHz Multiphase Resonant Inverter</td>
<td>Nguyen Kien Trung and Kan Akatsu</td>
<td>Shibaura Institute of Technology, Japan</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>08:35 #1577 Proposal and Analysis of Class-E/F Rectifier</td>
<td>Takumi Murayama¹, Xiuqin Wei², Hiroo Sekiya¹</td>
<td>¹Chiba University, Japan ²Chiba Institute of Technology, Japan</td>
</tr>
</tbody>
</table>
### Oral Technical Session

#### Applications

<table>
<thead>
<tr>
<th>Title</th>
<th>Authors</th>
<th>Affiliations</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fault Tolerant Control of Three Phase 2-Parallel AC/DC PWM Converter Systems</td>
<td>Jin Woo Park¹, Jun-Hyung Jung¹, Jung-Deug Son¹ and Jang-Mok Kim¹</td>
<td>¹Pusan National University, Korea ²Korea University of Technology and Education, Korea</td>
<td>09:00</td>
</tr>
<tr>
<td>Phase Leading Input Capacitor Compensation using a Variable Inductor with High Efficiency in a CRM Boost PFC</td>
<td>Cheon-Yong Lim, Yeonho Jeong, Dong-Kwan Kim, Cheol-O Yeon, Jung-Kyu Han and Gun-Woo Moon</td>
<td>Korea Advanced Institute of Science and Technology, Korea</td>
<td>09:25</td>
</tr>
<tr>
<td>Digital ZVS BCM current controlled single-phase full-bridge inverter using DSP TMS320F28035</td>
<td>Jiali Wang, Dehua Zhang, Jiachen Li, Zhengyu Lv, Yuling Li</td>
<td>Zhejiang University, China</td>
<td>09:50</td>
</tr>
</tbody>
</table>

### DC-DC Converters IV

<table>
<thead>
<tr>
<th>Title</th>
<th>Authors</th>
<th>Affiliations</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>A Duty-Cycle Control Method to Ensure Soft-Switching Operation of a High-Power Three-Phase Dual-Active Bridge Converter</td>
<td>Jingxin Hu, Zhiqing Yang, Nils Soltaiu and Rik W. De Doncker</td>
<td>RWTH Aachen University, Germany</td>
<td>#1362</td>
</tr>
<tr>
<td>A comparative study of phase-shift control schemes in a bidirectional series resonant converter</td>
<td>Li Xiaodong¹, Hu Song¹ and Bhat K.S. Ashoka²</td>
<td>¹Macau University of Science and Technology, Macao ²University of Victoria, Canada</td>
<td>#1372</td>
</tr>
<tr>
<td>Loss distribution and thermal behaviour of the Y-source converter for a wide power and voltage range</td>
<td>Brwene Salah Gadalla¹², Erik Schaltz¹, Yam Siwakoti³ and Frede Blaabjerg¹</td>
<td>¹Aalborg University, Denmark ²Arab Academy for Science, technology and maritime transport, Egypt ³University of Technology Sydney, Australia</td>
<td>#1201</td>
</tr>
<tr>
<td>Transient Suppression of Wide Feedback Gain Changeable Control DC-DC Converter</td>
<td>Yudai Furukawa, Takuya Shirakawa, Hirokazu Nakamura and Fujio Kurokawa</td>
<td>Nagasaki University, Japan</td>
<td>#1427</td>
</tr>
</tbody>
</table>
### Oral Technical Session

#### Session IV: Power Electronics Applications IV

- **Time:** 08:10-10:15 (Wednesday, June 7)
- **Room:** 303b
- **Chairs:** Prof. Atsuo Kawamura, *Yokohama National University*, Japan  
  Prof. Chun-An Cheng, *I-Shou University*, Taiwan

<table>
<thead>
<tr>
<th>#</th>
<th>Title</th>
<th>Presenters</th>
</tr>
</thead>
</table>
| #1233 | 1MHz Multi Sampling Quasi Multi-rate Deadbeat Control Method with Rocket I/O Network Feedback | Tomoki Yokoyama, Takuma Yoshino, Ryunosuke Araumi and Kazu Imai  
  *Tokyo Denki University*, Japan |
| #1364 | Elimination of DC and Harmonic Current Injection Due to Grid Voltage Measurement Errors in Three-phase Grid-Connected Inverter | Quoc Nam Trinh, Peng Wang and Fook Hoong Choo  
  *Nanyang Technological University*, Singapore |
  and Sheng-Yuan Ou²  
  ¹*Feng Chia University*, Taiwan  
  ²*National Taipei University of Technology*, Taiwan |
| #1493 | Novel Hybrid Modulation Based Bidirectional Electrolytic Capacitor-less Three-phase Inverter for Fuel Cell Vehicles | Xuewei Pan¹, Xin Zhou¹, Zixuan Peng¹, Anirban Ghoshal¹, Akshay Kumar Rathore¹  
  ¹*Harbin Institute of Technology*, China  
  ²*National University of Singapore*, Singapore  
  ³*Concordia University*, Canada |
| #1498 | A New PV Converter for Grid Connection through a High-Leg Delta Transformer Using Cooperative Control of Boost Converters and Inverters | Daiki Yamaguchi and Hideaki Fujita  
  *Tokyo Institute of Technology*, Japan |

#### Session II: PV Systems II

- **Time:** 08:10-10:15 (Wednesday, June 7)
- **Room:** 302e
- **Chairs:** Prof. Angelo A. Beltran Jr., *Adamson University*, Philippines  
  Prof. Yao-Ching Hsieh,  
  *National Taiwan University of Science and Technology*, Taiwan

<table>
<thead>
<tr>
<th>#</th>
<th>Title</th>
<th>Presenters</th>
</tr>
</thead>
</table>
| #1187 | Differential Power Processing Converter Design for a Photovoltaic-Powered Charging Bag | Hyunji Lee and Katherine A. Kim  
  *Ulsan National Institute of Science and Technology*, Korea |
| #1184 | LED Driving Circuit with Stand-Alone Photovoltaic Power | Hsuan Liao¹, Jiann-Fuh Chen², Tsung-Hsi Wu³ and You-Chun Huang³  
  ¹*Delta Electronics, Inc.*, Taiwan  
  ²*National Cheng-Kung University*, Taiwan  
  ³*National Sun Yat-sen University*, Taiwan |
| #1451 | Optimal Control of PV Ramp Rate using Multiple Energy Storage System | Qian Zhao¹, Liang Xian¹, Sudhin Roy¹, Xin Kong¹ and Ashwin M Khandakone²  
  ¹*Experimental Power Grid Centre for Science and Technology*, Taiwan  
  ²*National University of Singapore*, Singapore |
Oral Technical Session

09:00 #1231
A MPPT Control Strategy of Solar Power Systems for Low Irradiance Conditions
Chang-Hua Lin¹, Hwa-Dong Liu¹, Wei-Xuan Cheng², Wen-Ching Shih³, Liang-Rui Chen³
¹National Taiwan University of Science and Technology, Taiwan
²Tatung University, Taiwan
³National Changhua Normal University of Education, Taiwan

09:25 #1422
Sampling Frequency Influence on Magnetic Characteristic Evaluation under High Frequency GaN Inverter Excitation
Wilmar Martinez¹, Shunya Odawara² and Keisuke Fujisaki²
¹Shimane University, Japan
²Toyota Technological Institute, Japan

09:50 #1449
An Equivalent Circuit Model of Li-ion Battery Based on Electrochemical Principles Used in Grid-Connected Energy Storage Applications
Yang Li, Mahinda Vilathgamuwa, Troy W. Farrell, San Shing Choi and Ngoc Tham Tran
Queensland University of Technology, Australia

08:01 #1301
A novel operation mode for PV-storage independent Microgrids with MPPT based droop control
Wenbin Yuan, Jian Yang, Yao Sun, Hua Han, Xiaochao Hou and Mei Su
Central South University, China

08:35 #1062
A Gate Driver IC for High-Current and High-Speed IGBTs used in HEV and EV Inverters
Naoki Sakurai and Koichi Yahata
Hitachi Automotive Systems, Ltd., Japan

08:10 #1030
Design of Low-Power and High Slew-rate Error Amplifier for Fast Transient CMOS Buck Converters
Pang-Jung Liu and Yu-Chi Hsu
National Taipei University of Technology, Taiwan

08:35 #1011
Finite Element Analysis of Resolver-to-Digital Conversion System
Chung-Chuan Hou¹, Han-Wei Lin¹ and Chih-Hsun Peng²
¹Chung Hua University, Taiwan
²Industrial Technology Research Institute, Taiwan

08:10 #1011
Finite Element Analysis of Resolver-to-Digital Conversion System
Chung-Chuan Hou¹, Han-Wei Lin¹ and Chih-Hsun Peng²
¹Chung Hua University, Taiwan
²Industrial Technology Research Institute, Taiwan

08:10 #1011
Finite Element Analysis of Resolver-to-Digital Conversion System
Chung-Chuan Hou¹, Han-Wei Lin¹ and Chih-Hsun Peng²
¹Chung Hua University, Taiwan
²Industrial Technology Research Institute, Taiwan

08:10 #1011
Finite Element Analysis of Resolver-to-Digital Conversion System
Chung-Chuan Hou¹, Han-Wei Lin¹ and Chih-Hsun Peng²
¹Chung Hua University, Taiwan
²Industrial Technology Research Institute, Taiwan

08:10 #1011
Finite Element Analysis of Resolver-to-Digital Conversion System
Chung-Chuan Hou¹, Han-Wei Lin¹ and Chih-Hsun Peng²
¹Chung Hua University, Taiwan
²Industrial Technology Research Institute, Taiwan
Oral Technical Session

08:35  #1474  Local Demagnetization Fault Diagnosis for Surface Permanent Magnet based Marine Propulsion Motor
Elango Jeyasankar, Kazi Ahsanullah, Sanjib Kumar Panda and Xu Zhenzhen
National University of Singapore, Singapore

09:00  #1534  Holistic electrical machine optimization for system integration
David Gerada¹, Chris Gerada, Dmitry Golovanov¹, Zeyuan Xu¹, Luca Papini¹, Michele Degano¹ and He Zhang²
¹University of Nottingham, United Kingdom
²University of Nottingham Ningbo, China

09:25  #1382  Model Predictive Flux Control of Three-Level Inverter-Fed Induction Motor Drives Based on Space Vector Modulation
Yongchang Zhang and Yuning Bai
North China University of Technology, China

09:50  #1384  Direct Power Control of Doubly Fed Induction Generator Based on Extended Power Theory Under Unbalanced Grid Condition
Yongchang Zhang and Donglin Xu
North China University of Technology, China

08:10  #1158  Optimum Capacity of Energy Storage System Considering Solar Radiation Forecast Error and Demand Response
Masahiro Furukakoi¹, Mohammad Masih Sediqi¹, Shah Danish Mir Sayed¹, Motin Howlader Abdul⁴, Tomonobu Senjyu¹, M. A. Moustafa Hassan² and Toshihisa Funabashi³
¹University of the Ryukyus, Japan
²Cairo University, Japan
³Nagoya University, Japan
⁴University of Hawaii, United States

09:00  #1522  A Study on Ultracapacitor-based Systems for Compensation of Power Deficiency and Saving Energy: Design, Control and Simulation
Serkan Öztürk, Mehmet Hakan Akşit and İşık Çadırcı
Hacettepe University, Turkey

09:25  #1530  Adaptive Control of Energy Storage Systems for Power Smoothing Applications
Meng Lexuan, Tomislav Dragicevic and Josep Guerrero
Aalborg University, Denmark

09:50  #1590  A Positioning Method of Distributed Power System for Minimum Voltage Variation in a DC Microgrid
Byoung-Sun Ko¹, Gi-Young Lee¹, Rae-Young Kim¹, Ju-Yong Kim¹
¹University of the Ryukyus, Japan
08:10  #1170
Dead-Time Effects Compensation for PMSM Drives - an Adaptive Linear Neuron approach
Ming-Yang Cheng, Yi-Chieh Pai, Jun-Ping Chang and Tsorng-Juu Liang
National Cheng Kung University, Taiwan

08:35  #1177
Predictive Pulse Pattern Control of an Inverter with LCL Filter: A Nonlinear Transformation Approach
Stefan Almer
ABB, Switzerland

09:00  #1323
Mesh-based Lumped Parameter Model with MOR for Thermal Analysis of Virtual Prototyping for Power Electronics Systems with Comparison to FDM
Wenbo Wang1, Xibo Yuan1, Paul L. Evans2 and Philip H. Mellor1
1University of Bristol, United Kingdom
2University of Nottingham, United Kingdom

09:25  #1330
High Efficiency wet-processed green phosphorescent organic light-emitting diodes
Meenu Singh, Deepak kumar Dubey and Jwo Huei Jou
National Tsing Hua University, Taiwan

09:50  #1331
Novel 100% Renewable Energy Power System Considering Real-Time Pricing
Shota Tobaru, Foday Conteh and Tomonobu Senjyu
University of the Ryukyus, Japan
| Time  | Session | Presentation Title                                                                 | Authors                                                                                       | Affiliations                                                                 |
|-------|---------|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|
| 11:20 | #1639   | Wake Effects on Lifetime Distribution in DFIG-based Wind Farms                    | Jie Tian\textsuperscript{1,2}, Dao Zhou\textsuperscript{1}, Chi Su\textsuperscript{1,2},       |
|       |         |                                                                                    | Frede Blaabjerg\textsuperscript{1} and Zhe Chen\textsuperscript{1,2}                         |
|       |         |                                                                                    | \textsuperscript{1}Aalborg University, Denmark                                               |
|       |         |                                                                                    | \textsuperscript{2}Sino-Danish Centre for Education and Research, Denmark                     |
| 10:55 | #1500   | Power Decoupling Control Method for an Isolated Single-Phase AC-to-DC Converter    | Shohei Komeda and Hideaki Fujita                                                             |
|       |         | Based on High-Frequency Cycloconverter Topology                                    | Tokyo Institute of Technology, Japan                                                          |
| 11:45 | #1641   | High Reliability Converter for LED Torch                                           | Sen Song, Yihua Hu, Guipeng Chen and Kai Ni                                                 |
|       |         |                                                                                    | University of Liverpool, United Kingdom                                                       |
| 11:20 | #1650   | A Voltage Control Method for an Active Capacitive DC-link Module with Series-Connected Circuit | Haoran Wang, Huai Wang and Frede Blaabjerg                                                  |
|       |         |                                                                                    | Aalborg University, Denmark                                                                   |
| 11:45 | #1512   | An Improved Current Compensation Method for High PF and Low THD in Digital Boost    | Moo-Hyun Park\textsuperscript{1}, Cheol-O Yeon\textsuperscript{1},                           |
|       |         | Power Factor Corrector                                                             | Jin-Sik Park\textsuperscript{2}, Jae-II Baek\textsuperscript{1}, Yeonho                      |
|       |         |                                                                                    | Jeong\textsuperscript{3} and Gun-Woo Moon\textsuperscript{1}                                  |
|       |         |                                                                                    | \textsuperscript{1}Korea Advanced Institute of Science and Technology, Korea                   |
|       |         |                                                                                    | \textsuperscript{2}Solu-m, Korea                                                              |
|       | #1564   | Control strategy of single-phase 3LNPC-CR                                          | Xiaolan Lin, Xu Peng, Pengcheng Han, Xiaoqiong He, Zeliang Shu and Shibin Gao                 |
|       |         |                                                                                    | Southwest Jiaotong University, China                                                          |
| O32   | AC-DC Converters IV                                                                 | Prof. Fengjiang Wu, Nanyang Technological University, Singapore                             |
|       | Time    | 10:30-12:35 (Wednesday, June 7)                                                     | Prof. Cheng-Yu Tang, Feng Chia University, Taiwan                                            |
|       | Room    | 302b                                                                                |                                                                                                |
|       | Chairs  | Prof. Fengjiang Wu, Nanyang Technological University, Singapore                     | Prof. Cheng-Yu Tang, Feng Chia University, Taiwan                                            |
| 10:30 | #1204   | Elimination of neutral point potential oscillations in the four pole neutral point | Sheng-Hsiung Lin, Ming-Tang Chen, Jih-Jia Chen and Dong-Jhen Lin                             |
|       |         | clamped converter                                                                   | National Kaohsiung University of                                                               |

**O33 :** DC-DC Converters V

- **Time:** 10:30-12:35 (Wednesday, June 7)
- **Room:** 303a
- **Chairs:**
  - Prof. Xiaodong Li, Macau University of Science and Technology, Macau
  - Prof. Ching-Ming Lai, National Taipei University of Technology, Taiwan
10:55 #1446
Current Ripple Modeling of an Interleaved High Step-Up Converter with Coupled Inductor
Wilmar Martinez¹, Masayoshi Yamamoto¹, Camilo A. Cortes², Jun Imaoka³, Kazuhiro Umetani⁴
¹Shimane University, Japan
²Universidad Nacional de Colombia, Colombia
³Kyushu University, Japan
⁴Okayama University, Japan

11:20 #1447
Dynamic Performance of Triple-Active Bridge Converter rated at 400 V, 10 kW, and 20 kHz
Shota Nakagawa, Junichi Arai, Ryosuke Kasashima, Koya Nishimoto, Yuichi Kado and Keiji Wada
Tokyo Metropolitan University, Japan

11:45 #1457
Three-Switch LLC Resonant Converter for High Efficiency Adapter With Universal Input Voltage
Jeong-Soo Lee¹, Chong-Eun Kim², Jae-Won Choi¹, Jae-II Baek¹, Cheol-O Yeon¹ and Gun-Woo Moon¹
¹Korea Advanced Institute of Science and Technology, Korea
²SOLU-M, Korea

12:10 #1460
A Flyback Converter using power-MOSFETs to Achieve High Frequency Operation beyond 10 MHz
Tatsuki Ohsato, Nobuo Satoh and Hiroo Sekiya
Chiba University, Japan
12:10 #1503
Experimental Verification of “Hardware Fail-safe Chopper” for Electrical Wheelchair
Toshimitsu Hirai, Hidemine Obara, Sakahisa Nagai, Shunnosuke Kosuge and Atsuo Kawamura
Yokohama National University, Japan

12:10 #1455
A Novel and Reliable Modulation Strategy for Active Neutral-Point Clamped Five-Level Converter
Jiatao Yang, Sijia Yang and Rui Li
Shanghai Jiao Tong University, China

10:30 #1325
Multi-Objective Optimization for Operation and Equipment Capacity of Off-Grid Smart House
Yasuaki Miyazato¹, Shota Tobaru¹, Tomonobu Senjyu¹, Abdul Motin Howlader² and Toshihisa Funabashi³
¹University of the Ryukyus, Japan
²University of Hawaii, United States
³Nagoya University, Japan

10:55 #1196
A Study and Implementation of Three-level Boost Converter with MPPT for PV Application
Wei-Cheng Lin, Marojahan Tampubolon, Jing-Yuan Lin, Yao-Ching Hsieh and Huang-Jen Chiu
National Taiwan University of Science and Technology, Taiwan

11:20 #1199
Photovoltaic Panel Orientation Study for Tube-Enclosed Transportation Systems
Junyoung Yeom, Katherine A. Kim and Kyoungjun Kwon
Ulsan National Institute of Science and Technology, Korea

11:45 #1302
Design of NPC1 power stack beyond megawatt for 1500V inverter application
Xin Hao¹, Kwok-wai Ma², Jia Zhao³ and Xin-Yu Sun¹
¹Infineon technology China Co., Ltd., China
²Infineon Technologies Hong Kong, Hong Kong
³Infineon Integrated Circuit, China
### Oral Technical Session

**Chonbuk National University, Korea**

11:45  #1548
**Modular Integrated SiC MOSFET Matrix Converter**
Attahir Murtala Aliyu¹, Philippe Lasserre², Nicola Delmonte² and Alberto Castellazzi¹
¹University of Nottingham, United Kingdom
²PRIMES Association, France
³University of Parma, Italy

12:10  #1072
**Magnetic Components Design of LCL Filter in the Grid Connected Power Converter**
Yitao Liu¹, Dianheng Jin¹, Huazhi Wang¹, Guibin Wang¹, Jianchun Peng¹ and Shan Yin¹
¹Shenzhen University, China
²China Academy of Engineering Physics, China

---

**O37 :**  Sensor and Sensor-less Control for Motor Drives
**Time :**  10:30-12:35 (Wednesday, June 7)
**Room :**  302c
**Chairs :**  Prof. Dong-Choon Lee, Yeungnam University, Korea
Prof. Shih-Chin Yang, National Taiwan University, Taiwan

10:30  #1226
**Sensorless Control of a Reluctance Synchronous Machine in the Whole Speed Range without Voltage Pulse Injections**
Matthias Hofer, Mario Ninkowitz, Manfred Schroedl
Technische Universität Wien, Austria

10:55  #1375
**Development of a Position Sensorless Synchronous Reluctance Motor Drive**
Shih-Wei Su, Chang-Ming Liaw, Kai-Wei Hu, Chiu-Fa Lee and Yu-Te Su
National Tsing Hua University, Taiwan

---

**O38 :**  Power Electronics Applications VI
**Time :**  10:30-12:35 (Wednesday, June 7)
**Room :**  302d
**Chairs :**  Prof. Seung-Ki Sul, Seoul National University, Korea
Prof. En-Chih Chang, I-Shou University, Taiwan

11:20  #1470
**Position Sensing of Permanent Magnet Machine Position Sensorless Drive at High Speed with Low Sample over Rotor Operating Frequency Ratio**
Guan Ren Chen, Shih-Chin Yang and Kang Li
National Taiwan University, Taiwan

11:45  #1064
**Enhanced Position Observer with a Selective Harmonic Error Eliminator and an Error Feed-forward Compensator for Sensor-less Surface-Mounted Permanent Magnet Synchronous Motor Drives**
Bing Liu, Bo Zhou and Tianheng Ni
Nanjing University of Aeronautics and Astronautics, China

10:30  #1209
**Integrated Power Factor Correction and Voltage Fluctuation Mitigation of Microgrid Using STATCOM**
Mohammad M. Hashempour and Tzung-Lin Lee
National Sun Yat-sen University, Taiwan

10:55  #1595
**A Novel LED Driver with Power Factor Correction Suitable for Streetlight Applications**
Chun-An Cheng, Chien-Hsuan Chang, Hung-Liang Cheng and Man-Tang Chang
I-Shou University, Taiwan

11:20  #1636  A Thermal Dissipation Characteristics of Integrated In-wheel Motor Using SiC Power Module  Shota Iizuka and Kan Akatsu  Shibaura Institute of technology, Japan

11:45  #1338  A New Anti-islanding Method for Indirect Current Control of Grid Connected Inverter  Sungyoul Park, Minho Kwon and Sewan Choi  Seoul National University of Science and Technology, Korea

11:45  #1661  A Monolithic Isolated Gate Driver with On-chip Transformer  Jau-Jr Lin and Kai-Chieh Lin  National Changhua University of Education, Taiwan

12:10  #1578  Concept of Unified Mode Control for Non-inverting Buck-Boost Converter  Jianjun Ma¹, Miao Zhu¹, Guanghui Li², Xiuyi Li¹ and Xu Cai¹  ¹Shanghai Jiao Tong University, China  ²China Electric Power Research Institute, China

12:10  #1494  Design and Implementation of Communication Network and System Management for Hybrid AC/DC Microgrid Module  Xuewei Pan¹, Qianwen Xu², Tianyang Zhao², Fan Yang¹ and Peng Wang²  ¹Harbin Institute of Technology, China  ²Nanyang Technological University, Singapore

10:30  #1358  Control Hardware-in-the-Loop Simulation Test-bed of Power Management System for Ship? Power System Applications  Sang-kyu Kwak¹, Sang Jung Lee¹, Hyung jun Jeon² and Jee Hoon Jung¹  ¹Ulsan National Institute of Science and Technology, Korea  ²Hyundai Heavy Industries, Korea

10:55  #1574  Development of an 1.2 kW Thermoelectric Generation System for Industrial Waste Heat Recovery  Shan Yu Cheng¹, Yi-Hwa Liu¹ and Shun-Chung Wang² and Bo-Ruei Peng²  ¹National Taiwan University of Science and Technology, Taiwan  ²Lunghua University of Science and Technology, Taiwan
<table>
<thead>
<tr>
<th>Poster Technical Session</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Poster I</strong></td>
</tr>
<tr>
<td><strong>Tuesday, June 6, 2017</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>P101</th>
<th>Power Converting Technologies I</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time</td>
<td>10:50-12:20 (Tuesday, June 6)</td>
</tr>
<tr>
<td>Room</td>
<td>301</td>
</tr>
<tr>
<td>Chairs</td>
<td>Prof. Ching-Ming Lai, National Taipei University of Technology, Taiwan</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>P101_1</th>
<th>#1081</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Investigation of an Isolated PFC Converter with Bridgeless and Single-Stage</strong></td>
<td></td>
</tr>
<tr>
<td>Jinping Wang¹, Liangkui Hou¹ and Kehan Wu²</td>
<td></td>
</tr>
<tr>
<td>¹Hefei University of Technology, China</td>
<td></td>
</tr>
<tr>
<td>²Anhui Provincial Electric Power Company Training Center, China</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>P101_2</th>
<th>#1223</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Design of Boost Power Factor Corrector with GaN HEMT Devices</strong></td>
<td></td>
</tr>
<tr>
<td>Yuan-Chao Niu, Cheng-Jhen Yang and Yaow-Ming Chen</td>
<td></td>
</tr>
<tr>
<td>National Taiwan University, Taiwan</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>P101_3</th>
<th>#1266</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Neutral-Point Voltage Balance Control and Oscillation Suppression for VIENNA Rectifier</strong></td>
<td></td>
</tr>
<tr>
<td>Jiajun Liu, Wenlong Ding, Qiu Han, Chenghui Zhang and Bin Duan</td>
<td></td>
</tr>
<tr>
<td>Shandong University, China</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>P101_4</th>
<th>#1337</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Efficiency Optimization for Active Storage Unit with Adaptive Digital Control</strong></td>
<td></td>
</tr>
<tr>
<td>Lei Bai, Kunqi Li, Yu Wu, Qi Hui and Xiaoyong Ren</td>
<td></td>
</tr>
<tr>
<td>Nanjing University of Aeronautics and Astronautics, China</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>P101_5</th>
<th>#1581</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A Totem-Pole PFC using hybrid Pulse-Width-Modulation Scheme</strong></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>P101_6</th>
<th>#1023</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ultrahigh Step-Down Converter with Active Clamp</strong></td>
<td></td>
</tr>
<tr>
<td>K. I. Hwu¹, W. Z. Jiang¹ and Y. T. Yau²</td>
<td></td>
</tr>
<tr>
<td>¹National Taipei University of Technology, Taiwan</td>
<td></td>
</tr>
<tr>
<td>²Asian Power Devices Inc., Taiwan</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>P101_7</th>
<th>#1054</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Design a Wide Output Range Power Supplies with Assisted Linear Amplifier</strong></td>
<td></td>
</tr>
<tr>
<td>Char Yong Siow, Ming-Tsung Tsai, Ching-Lung Chu and Syuan-Neng Jhao</td>
<td></td>
</tr>
<tr>
<td>Southern Taiwan University of Science and Technology, Taiwan</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>P101_8</th>
<th>#1123</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Design and Implementation of a Low-Ripple High Voltage Converter</strong></td>
<td></td>
</tr>
<tr>
<td>Jiann-Fuh Chen, Chih Pin Hu and Tsung-Hsun Lee</td>
<td></td>
</tr>
<tr>
<td>National Cheng Kung University, Taiwan</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>P101_9</th>
<th>#1245</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ZVT Interleaved Synchronous Buck Converter with Passive Soft-Switching Cell</strong></td>
<td></td>
</tr>
<tr>
<td>Jong-Young Lee¹, Soon-Ryung Lee¹, Chung-Yuen Won¹, Je-Hyun Yi² and Bo-Hyung Cho³</td>
<td></td>
</tr>
<tr>
<td>¹Sungkyunkwan University, Korea</td>
<td></td>
</tr>
<tr>
<td>²Seoul National University, Korea</td>
<td></td>
</tr>
<tr>
<td>³Korea University, Korea</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>P101_10</th>
<th>#1349</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Quadratic Flying-Capacitor Boost Converter and Comparative Evaluation</strong></td>
<td></td>
</tr>
<tr>
<td>Kunal Kundanam, Yan Zhang, Jinhun Liu, Zhuo Dong and Xinying Li</td>
<td></td>
</tr>
<tr>
<td>Xi'an Jiaotong University, China</td>
<td></td>
</tr>
<tr>
<td>Poster Technical Session</td>
<td></td>
</tr>
<tr>
<td>--------------------------</td>
<td></td>
</tr>
</tbody>
</table>
| **P101_11** #1410 | Transformer-Less Bidirectional PWM Converter Integrating Cell Voltage Equalizer Using Voltage Multiplier for Series Connected Energy Storage Cells  
Kazuki Yashiro and Masatoshi Uno  
*Ibaraki University, Japan* |
| **P101_12** #1456 | High Step-up DC-DC Converter with Multi-Cell Diode-Capacitor Network and Coupling Inductor  
Yan Zhang, Zhuo Dong, Jinjun Liu, Xinying Li and Kaicheng Ding  
Xi'an Jiaotong University, China |
| **P101_13** #1506 | Impact of Transformer Stray Capacitance on the Conduction Loss in a GaN-Based LLC Resonant Converter  
Naizeng Wang, Haiyang Jia, Mofan Tian, Zhenwei Li, Guangzhao Xu and Xu Yang  
Xi'an Jiaotong University, China |
| **P101_14** #1521 | Voltage-mode Variable Frequency Control for Single-inductor Dual-output Buck Converter with Fast Transient Response  
Zhou Shuhan, Guohua Zhou, Duo Xu, Xiang Ran and Shungang Xu  
Southwest Jiaotong University, China |
| **P101_15** #1531 | Digital Average Voltage Control for Switching DC-DC Converters with Improved Dual-Edge Modulation  
Hongbo Zhao, Zhou Guohua, Wei Zhang, Duo Xu and Hongbo Ma  
Southwest Jiaotong University, China |
| **P101_16** #1584 | A Novel Isolated DC-DC Converter with Integrated Magnetic Components for EV and HEV Applications |
| **P101_17** #1014 | Research on the Seamless Transfer Strategy with Real-time Phase Angle Difference Adjustment for VSG  
Tianyang Zhao, Xiangning Xiao and Chang Yuan  
*North China Electric Power University, China* |
| **P101_18** #1076 | Verification of Carrier Noise Diffusion Technique Using a Zero-sequence Voltage at Zero-speed Drive  
Hideki Ayano, Shuta Oka and Yoshihiro Matsui  
*Tokyo National College of Technology, Japan* |
| **P101_19** #1091 | Fault Analysis of RT-LAB Semi-Physical Simulation for EAST Fast Control Power Supply  
Haihong Huang, Xinyi Liu, Haixin Wang and Hongbin Wu  
*Hefei University of Technology, China* |
| **P101_20** #1145 | A Novel DFT Algorithm Used in Active Power Filter Under Frequency Distortion  
Ling Feng, Yong Wang and Weiyan Yao  
*Shanghai Jiao Tong university, China* |
| **P101_21** #1188 | An Accurate Phase Detection Method for Realizing ZVS of High Frequency Inverter in Wireless Power Transmission  
Yongbin Jiang, Yue Wang, Junwen Liu, Xiang Li and Laili Wang  
Xi'an Jiaotong University, China |
A Single-Phase Single-Stage Buck-Boost AC-AC with Both In-Phase and Out-of-Phase Voltage Operations and No Commutation Problem
Hafiz Furqan Ahmed, Honnyong Cha and Heung-Geun Kim
Kyungpook National University, Korea

A Single-Port, Miniature Low-Dropout Active Damping Device for Differential Mode Noise Suppression and System Stabilization
Ke-wei Wang and Henry Shu-hung Chung
City University of Hong Kong, Hong Kong

High-frequency Solid State Transformer Power Conversion Technologies for Energy Internet
Liang Wang¹, Donglai Zhang¹, Yi Wang¹ and Huan Liu²
¹Power Electronic & Motion Control Research Harbin, Institute of Technology Center, China
²China Helicopter Research and Development Institute, China

Robust Tracking Method of a DC-AC PWM Converter for Green Energy Applications
En-Chih Chang, Hung-Liang Cheng, Rong-Ching Wu and Jia-Jin Chen
I-Shou University, Taiwan

Comparison of 1.4-kW Power Factor Correction Converters
Pai-Hsiang Chuang, Liang-Rui Chen, Wei-Ju Chen and Chia-Hsuan Wu
National Changhua University of Education, Taiwan

Dynamic Performance Improvement of Single-Phase STATCOM with Drastically Reduced Capacitance
Zjin He, Long Zhang, Takanori Isebe and Hiroshi Tadano
University of Tsukuba, Japan

Design and Implementation of a Single-Phase Buck-Boost Inverter
Chien-Hsuan Chang, Chun-An Cheng, Chu-Cheng Chi and Yen-Yu Chen
I-Shou University, Taiwan

Sensorless Active Damping Method of LCL-Filter in Grid-Connected Parallel Inverters for Battery Energy Storage Systems
Won-Yong Sung, Hyo Min Ahn, Jung-Hoon Ahn, Chang-Yeol Oh and Byoung Kuk Lee
Sungkyunkwan University, Korea

Two-stage Interleaved Three-level DC/AC Converter with Neutral Point Voltage Balancing
Chung Ming Young and Ting-Ruei Fan
National Taiwan University of Science and Technology, Taiwan

A Novel Circuit Topology for the VSC-HVDC Submodules Testing
Yang Xuan and Xu Yang
Xi’an Jiaotong University, China

Low-Complexity Two-Voltage-Based Model Predictive Control for a Single-Phase Cascaded H-Bridge Inverter
Chen Qi¹, Xiyou Chen¹, Pengfei Tu² and Peng Wang³
**Poster Technical Session**

1. **Dalian University of Technology, China**
2. **Nanyang Technological University, China**
3. **Taiyuan University, China**

**P101_33 #1388**

**New Pre-charging Scheme for MMC-Based Back-to-back HVDC System operated in Nearest Level Control**

Jae-Hyuk Kim, Yoon-Seok Lee and Byung-Moon Han

*Myong-ji University, Korea*

**P101_34 #1602**

**Reduction of Capacitor Ripple Voltage and Current in Modular Multilevel Converter Based Variable Speed Drives**

Shambhu Sau, Saikat Karmakar and B. G. Fernandes

*Indian Institute of Technology Bombay, India*

**P101_35 #1417**

**Low Switching Loss and Harmonics PWM for Three-phase Grid-connected PV Inverter**

Keng-Yuan Chen¹, Zheng Chen¹², Yu-Lin Xie¹ and Xing-kui Mao²

¹Yuan Ze University, Taiwan
²Fuzhou University, China

**P101_36 #1643**

**Unified Control Scheme Design for Both the PWM Rectifier and the Inverter in the Uninterruptible Power Supply (UPS) System**

Keyan Shi, Xiaojun Wang, Dezhi Dong, Dehong Xu and Changsheng Hu

*Zhejiang University, China*

**P101_37 #1644**

**A simulation Method to Verify Control Programs for a UPS System**

Xiaojun Wang, Keyan Shi, Dezhi Dong, Pingping Chen, Dehong Xu and Changsheng Hu

*Zhejiang University, China*

**P101_38 #1652**

**A New Real-Time Perfect Condition Monitoring for High-Power Converters**

Mokhtar Aly¹, Emad M. Ahmed² and Masahito Shoyama³

¹Kyushu University, Japan
²Aswan University, Japan
³Waseda University, Japan

**P101_39 #1657**

**Single Phase PWM Converter with Integrated Energy Buffer**

Jonathan Robinson

*Mitsubishi Electric*, France

**P102 : Renewable Energy Research and Applications I**

**P102_1 #1040**

**Analysis of Neutral-Point Voltage with Fundamental Oscillation for Three-Level PV Converter under Imbalanced Grid Conditions**

Yang Li, Xu Yang, Wenjie Chen and Tao Liu

*Xian Jiaotong University, China*

**P102_2 #1101**

**Design of a Novel MPPT Algorithm based on the Two Stage Searching Method for PV Systems under Partial Shading**

Sonia Veerapen, Huiqing Wen and Yang Du
**Poster Technical Session**

**P102_3**

#1133

**PWM- and PFM-Controlled Switched Capacitor Converter-Based Multipport Converter Integrating Voltage Equalizer for Photovoltaic Systems**

Masatoshi Uno and Kazuki Sugiyama

*Ibaraki University, Japan*

**P102_9**

#1278

**Design and Simulations of a Variable Field Wind Turbine Generator with Soft Magnetic Composite Technology**

Chang-Shien Lin¹, Chern-Lin Chen² and Wen-Shyue Chen²

¹Institute of Nuclear Energy Research, Taiwan

²National Taipei University of Technology, Taiwan

---

**P102_4**

#1244

**Novel Maximum Power Point Tracker for PV Systems Using Interval Type-2 fuzzy Logic Controller**

Cheng-Yan Chuang, Po-Syun Chen, Chin-Cheng Hsu, Jiuh-Yu Li, Jiann-Fuh Chen and Chih-Lung Lin

*National Cheng Kung University, Taiwan*

---

**P102_5**

#1442

**Power Quality Analysis of Grid Connected Solar Power Inverter**

Natthanon Phannil, Atthapol Ngaopitakkul and Chaiyan Jettanasen

*King Mongut's Institute of Technology Ladkrabang, Thailand*

---

**P102_6**

#1539

**A Novel Modulation Control for Quasi-Z-Source Inverters**

Bo-Ruei Peng, Shun-Chung Wang and Yi-Hwa Liu

*Lungghwa University of Science and Technology, Taiwan*

---

**P102_7**

#1582

**Photovoltaic Multilevel Inverter with Distributed Maximum Power Point Tracking and Dynamic Circuit Reconfiguration**

Chuang Wang¹, Zhongxi Li², David L.K. Murphy², Zunchao Li¹, Angel V. Peterchev² and Stefan M. Goetz²

¹Xi'an Jiaotong University, China

²Duke University, China

---

**P102_8**

#1063

**Adaptive Peak Power Tracking for Back-to-Back Wind Energy Conversion System**

Wei-Chih Liang and Le-Ren Chang-Chien

*National Cheng Kung University, Taiwan*

---

**P102_10**

#1406

**Model Predictive Control of PMSG-Based Wind Turbines for Frequency Regulation in an Isolated Grid**

Haixin Wang¹, Junyou Yang¹, Yiming Ma¹, Zhe Chen² and Zuoxia Xing¹

¹Shenyang University of Technology, China

²Department of Energy Technology, China

---

**P102_11**

#1572

**Efficiency Analysis of 5MW Wind Turbine System in an All-DC Wind Park**

Wataru Kitagawa¹, Mohammadamin Bahmani² and Torbjörn Thiringer²

¹Nagoya Institute of Technology, Japan

²Chalmers University of Technology, Sweden

---

**P102_12**

#1034

**Comparison of Dynamic Power Sharing Characteristics between Virtual Synchronous Generator and Droop Control in Inverter-Based Microgrid**
A Seamless Transfer Strategy Based on Special Master and slave DGs
Xin Meng, Zeng Liu, Jinjun Liu, Teng Wu, Shike Wang and Baojin Liu
Xu'an Jiaotong University, China

An Optimal Control Method of Virtual Angular Acceleration to Improve Transient Response Based on Virtual Synchronous Generator
Ningyi Xu
Xu'an Jiaotong University, China

Mode transition Strategies for PV-ESS Multi-Microgrids with Three-Phase/Single-Phase Architecture
Jiajun Peng, Ping Yang, Zhirong Xu and Zhiji Zeng
South China University of Technology, China

A Consistent Dynamic Response Control Strategy for Virtual Synchronous Generator
Mingxuan Li , Yue Wang, Ningyi Xu, Wenti Wang , Jiliang Li
Xu'an Jiaotong University, China

Frequency Scanning-Based Impedance Stability Criterion for Grid-Connected Inverters System
Yanbo Wang and Xiongfeng Wang
Aalborg University, Denmark

Coordinate Control of Distributed Generation and Power Electronics Loads in Microgrid
Guangqian Ding , Song Zhang , Qingzhi Jian , Feng Gao , Xingong

Variable Carrier Deadbeat Control Method for Three Phase Utility Interactive Inverter
Tomoki Yokoyama, Kousuke Seki, Yuhei Shimizu, Ryosuke Kikuchi and Shinichiro Yago
Tokyo Denki University, Japan

A Novel Transient Power Control Strategy for Inverters in Voltage Control Mode
Wenti Wang , Yue Wang, Mingxuan Li, Ningyi Xu , Zhigang Li
Xu'an jiaotong university, China

Analysis and Design of Cutoff Frequency for Power Calculation Low-Pass Filters in Droop Control
Ronghui An, Jinjun Liu, teng Wu, shike Wang and Baojin LIU
Xu'an Jiaotong University, China

A Development of the Detection Unit of Fuel Cell Impedance
Hyun Seok Park, Min Ho Shin, Tae Ho Eom and Chung-Yuen Won
Sungkyunkwan University, Korea

Analysis on Uncontrolled Generation in Electronic Vehicles and a Battery Protection Method
Chao Gong, Jinglin Liu, Zexiu Han, Haozheng Yu
Northwestern Polytechnical University, China

A seamless transfer strategy based on indirect current control and droop control
Xin Meng¹, Zeng Liu¹, Jinjun Liu², Teng Wu¹, Shike Wang¹, Baojin LIU²
P102_25  #1368
A Novel Unbalanced Power Sharing Control Method for an Islanded Microgrid
Baojin Liu, Zeng Liu, Jinjun Liu, Teng Wu and Ronghui An
Xi’an Jiaotong University, China

P102_26  #1339
The Optimization Analysis of Impulse Injection Method for Impedance Measurement in Three-Phase Power Electronic Systems
Zipeng Liu, Jinjun Liu, Zeng Liu, Teng Liu and Yiming Tu
Xi’an Jiaotong University, China

P103_3  #1517
The Characteristic Evaluation of the Method to Improve the Voltage Phase Resolution of Model Predictive Control for Current Control System of PMSM
Masahiro Shimaoka, Shinji Doki and Shizuka Yokoyama
Nagoya University, Japan

P103_4  #1017
Sensorless Harmonic Speed Control and Detection of Bearing Faults in Repetitive Mechanical Systems
Van Trang Phung and Mario Pacas
University of Siegen, Germany

P103_5  #1167
Low and Zero Speed Position Estimation of Dual Three-Phase PMSMs Based on the Excitation of PWM Waveforms
Muhammad Ahmad, Zhang Wen and Qiang Gao
Shanghai Jiao Tong University, China

P103_1  #1146
Design and Evaluation of “Short-range Frequent-charging Type” and “Night-charging Type” BE Bus
Wei-hsiang Yang, Isao Tsukui, Eisuke Izutsu, Yushi Kamiya and Yasuhiro Daisho
Waseda University, Japan

P103_6  #1612
Compensation of Misalignment Effect of Hall Sensors for BLDC Motor Drives
Do-Hyeon Park¹, Anh Tan Nguyen¹, Dong-Choon Lee¹ and Hyong-Gun Lee²
¹Yeungnam University, Korea
²LC-TEK Co., Ltd., Korea

P103_2  #1398
Rototor Flux-oriented Control of PMSM with Synchronized Carrier SVPWM for Traction Application with Very Low Switching Frequency and Zero sequence Voltage Injection
Guibin Li, Yongdong Li and Mengting Tang
Xinjiang University, China

P103_7  #1140
Semi-physical Real-time Test Platform for Aviation Power System
Meiqi Wang¹, Lie Xu², Lingquan Zeng¹, Kui Wang², Zedong Zheng² and Yongdong Li²
¹Northeast electric power university, China
²Tsinghua university, China
### Poster Technical Session

<table>
<thead>
<tr>
<th>Poster</th>
<th>Session</th>
<th>Title</th>
<th>Authors</th>
<th>Institution</th>
</tr>
</thead>
<tbody>
<tr>
<td>P103_8</td>
<td>#1322</td>
<td>A Modified Online Rotor Time Constant Updating Algorithm in Induction Motor Drive</td>
<td>Peng Peng Cao, Xing Zhang and Shuying Yang</td>
<td>Hefei University of Technology, China</td>
</tr>
<tr>
<td>P104_1</td>
<td>#1277</td>
<td>A 3-D Near-Field Modeling of Different Winding Modes for Electromagnetic Interference</td>
<td>Kaihua Deng, Wenjie Chen, Jiacheng Jiang and Heyuan Qi</td>
<td>Xi’an Jiaotong University, China</td>
</tr>
<tr>
<td>P104_2</td>
<td>#1357</td>
<td>Introduction of SiC MOSFETs in converters based on Si IGBTs: a reliability and efficiency analysis</td>
<td>Diane-Perle Sadik, Juan Colmenares, Jan-Henning Jürgensen, Hans-Peter Nee, Florian Giezendanner and Per Ranstad</td>
<td>1KTH Royal Institute of Technology, Sweden, 2GE General Electric, Sweden</td>
</tr>
<tr>
<td>P104_3</td>
<td>#1607</td>
<td>An Effective Transformer Simulation Technique using PSIM Magnetic Elements</td>
<td>Hee-Su Choi, Sung-Jin Choi</td>
<td>University of Ulsan, Korea</td>
</tr>
<tr>
<td>P104_4</td>
<td>#1585</td>
<td>A Low Latency Simultaneous Quantization Vernier Delay-line-based ADC for Digital Control Single-Inductor-Multiple-Output DC-DC Converter</td>
<td>Yanqi Zheng, Xian Tang, Bin Li, YaoFeng Yan and Zhaohui Wu</td>
<td>1The South China University of Technology, China, 2Tsinghua University, China</td>
</tr>
<tr>
<td>P104_5</td>
<td>#1071</td>
<td>5KW DC-Coupling Distribution Power Generation System Based on Photovoltaic and Aqueous Hybrid Ion Battery</td>
<td>Yao-Jen Chang, Ya-Tsung Feng, Wen Jung Chiang, Ren-Jie Chang, Ming-Hong Chiueh and Terry Holtz</td>
<td></td>
</tr>
</tbody>
</table>

---

### Devices and Components I

<table>
<thead>
<tr>
<th>Poster</th>
<th>Session</th>
<th>Title</th>
<th>Authors</th>
<th>Institution</th>
</tr>
</thead>
<tbody>
<tr>
<td>P105_1</td>
<td>#1439</td>
<td>Converter Design of Square Wave Micro-grid in Rural Areas</td>
<td>Zhu Ye, Malcolm McCulloch, Dehong Xu and Changsheng Hu</td>
<td>1Zhejiang University, China, 2University of Oxford, UK</td>
</tr>
<tr>
<td>P105_2</td>
<td>#1271</td>
<td>Electricity Load Forecasting Method for Large Consumers</td>
<td>Zijian Huang, Hongxia Guo, Ping Yang and Zhirong Xu</td>
<td>South China University of Technology, China</td>
</tr>
<tr>
<td>P105_3</td>
<td>#1508</td>
<td>Phasor Measurement Unit Placement for Wide Area Instability Detection and Prediction</td>
<td>Javier A. López and Chan-nan Lu</td>
<td>National Sun Yat-sen University, Taiwan</td>
</tr>
<tr>
<td>P105_5</td>
<td>#1071</td>
<td>5KW DC-Coupling Distribution Power Generation System Based on Photovoltaic and Aqueous Hybrid Ion Battery</td>
<td>Yao-Jen Chang, Ya-Tsung Feng, Wen Jung Chiang, Ren-Jie Chang, Ming-Hong Chiueh and Terry Holtz</td>
<td></td>
</tr>
</tbody>
</table>
### A Decentralized Multi-Framed Droop-Controller for Improving Harmonic Power Sharing in an Islanded Microgrid

Yan Du, Beilei Zhang, Xiangzhen Yang, Meiqin Mao, Liuchen Chang and Hua Li  
Hefei University of Technology, China  
University of New Brunswick, Fredericton, Canada

<table>
<thead>
<tr>
<th>Poster Number</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>P105_6</td>
<td>#1651</td>
</tr>
<tr>
<td></td>
<td>A Decentralized Multi-Framed Droop-Controller for Improving Harmonic Power Sharing in an Islanded Microgrid</td>
</tr>
<tr>
<td></td>
<td>Yan Du, Beilei Zhang, Xiangzhen Yang, Meiqin Mao, Liuchen Chang and Hua Li</td>
</tr>
<tr>
<td></td>
<td>Hefei University of Technology, China</td>
</tr>
<tr>
<td></td>
<td>University of New Brunswick, Fredericton, Canada</td>
</tr>
</tbody>
</table>

### High Performance and Emerging Technologies I

**Time:** 10:50-12:20 (Tuesday, June 6)  
**Room:** 301  
**Chairs:** Prof. Ming-Tsung Tsai, Southern Taiwan University of Science and Technology, Taiwan

<table>
<thead>
<tr>
<th>Poster Number</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>P106_1</td>
<td>#1179</td>
</tr>
<tr>
<td></td>
<td>Research on Steady State Voltage Stability of Power System With Distributed Static Series Compensator</td>
</tr>
<tr>
<td></td>
<td>Yi Tang, Yuqian Liu, Jianfeng Dai, Jingbo Zhao, Qun Li and Kequan Liu</td>
</tr>
<tr>
<td></td>
<td>Southeast University, China</td>
</tr>
<tr>
<td></td>
<td>State Grid Jiangsu Electric Power Company Research Institute, China</td>
</tr>
<tr>
<td></td>
<td>State Grid Gansu Electric Power Company, China</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Poster Number</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>P106_2</td>
<td>#1291</td>
</tr>
<tr>
<td></td>
<td>Dynamic Improvement of Wireless Power Transfer Systems with Maximum Energy Efficiency Tracking by Sliding Mode Control</td>
</tr>
<tr>
<td></td>
<td>Yun Yang, Wenxing Zhong, Siew-Chong Tan and Shu-Yuen Ron Hui</td>
</tr>
<tr>
<td></td>
<td>The University of Hong Kong, Hong Kong</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Poster Number</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>P106_3</td>
<td>#1549</td>
</tr>
<tr>
<td></td>
<td>Feasibility Study on Simultaneous Induction Heating of Agitating Impeller and Container of Mixer</td>
</tr>
</tbody>
</table>

### Wireless Power Transfer Using Near-Field Communication for Mobile Devices

Arnold C. Paglinawan, Leonardo C. Valiente, Jr., Angelo A. Beltran Jr., Anthea Victoria Mabalot, Christopher Lemel Verdida and Janiver A. Verdida  
Mapua Institute of Technology, Philippines

<table>
<thead>
<tr>
<th>Poster Number</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>P106_4</td>
<td>#1139</td>
</tr>
<tr>
<td></td>
<td>Wireless Power Transfer Using Near-Field Communication for Mobile Devices</td>
</tr>
<tr>
<td></td>
<td>Arnold C. Paglinawan, Leonardo C. Valiente, Jr., Angelo A. Beltran Jr., Anthea Victoria Mabalot, Christopher Lemel Verdida and Janiver A. Verdida</td>
</tr>
<tr>
<td></td>
<td>Mapua Institute of Technology, Philippines</td>
</tr>
</tbody>
</table>

### An Active Common-mode Filter for Reducing Radiated Noise from Power Cables

Shotaro Takahashi, Satoshi Ogasawara, Masatsugu Takemoto, Koji Orikawa and Michio Tamate  
Hokkaido University, Japan |

<table>
<thead>
<tr>
<th>Poster Number</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>P106_5</td>
<td>#1305</td>
</tr>
<tr>
<td></td>
<td>An Active Common-mode Filter for Reducing Radiated Noise from Power Cables</td>
</tr>
<tr>
<td></td>
<td>Shotaro Takahashi, Satoshi Ogasawara, Masatsugu Takemoto, Koji Orikawa and Michio Tamate</td>
</tr>
<tr>
<td></td>
<td>Hokkaido University, Japan</td>
</tr>
</tbody>
</table>

### PoF Based Reliability Prediction for Cascaded H-Bridge Converter in Drive Application

Qianwen Xu, Pengfei Tu, Chaoyu Dong, Chen Qi, Shunfeng Yang, Shuhan Yao and Peng Wang  
Nanyang Technological University, Singapore  
Tianjin University, China  
Dalian University of Technology, China  
Singapore-ETH Centre, Singapore

<table>
<thead>
<tr>
<th>Poster Number</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>P106_6</td>
<td>#1478</td>
</tr>
<tr>
<td></td>
<td>PoF Based Reliability Prediction for Cascaded H-Bridge Converter in Drive Application</td>
</tr>
<tr>
<td></td>
<td>Qianwen Xu, Pengfei Tu, Chaoyu Dong, Chen Qi, Shunfeng Yang, Shuhan Yao and Peng Wang</td>
</tr>
<tr>
<td></td>
<td>Nanyang Technological University, Singapore</td>
</tr>
<tr>
<td></td>
<td>Tianjin University, China</td>
</tr>
<tr>
<td></td>
<td>Dalian University of Technology, China</td>
</tr>
<tr>
<td></td>
<td>Singapore-ETH Centre, Singapore</td>
</tr>
</tbody>
</table>

### Diode Reverse Recovery Analysis of Cockcroft-Walton Voltage Multiplier for High Voltage Generation

Saijun Mao, Pengcheng Zhang, Jelena Popovic and Jan Abraham Ferreira  
GE, China

<table>
<thead>
<tr>
<th>Poster Number</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>P106_7</td>
<td>#1601</td>
</tr>
<tr>
<td></td>
<td>Diode Reverse Recovery Analysis of Cockcroft-Walton Voltage Multiplier for High Voltage Generation</td>
</tr>
<tr>
<td></td>
<td>Saijun Mao, Pengcheng Zhang, Jelena Popovic and Jan Abraham Ferreira</td>
</tr>
<tr>
<td></td>
<td>GE, China</td>
</tr>
</tbody>
</table>
Investigation of Optimal IGBT Switching Behaviours under Advanced Gate Control
Kun Tan¹, Tao Xie², Zhiqiang Wang², Bing Ji² and Paul Leffley¹
¹University of Leicester, United Kingdom
²Dalian University, China

Small-Signal Model and Feedback Controller Design of Constant-Voltage and Constant-Current Output Control for Phase-Shifted Full-Bridge converter
Kai-Jun Pai, Zhi-Hao Li and Lin-De Qin
Tungnan University, Taiwan

A Unidirectional Snubber Less Fully Soft-switched Single Stage Three Phase High Frequency Link DC/AC Converter
Anirban Pal and Kaushik Basu
IISc, Bangalore, India

Independent Voltage Outputs Control for VIENNA Rectifier Considering Multiple Loads Situations
Wenlong Ding, Jiajun Liu, Han Qiu, Bin Duan and Chenghui Zhang
Shandong University, China

A Highly Reliable and Efficient Differential Type Buck-Boost DC-AC Converter
Fazal Akbar, Honnyong Cha, Ashraf Ali Khan and Heung-Geun Kim
Kyungpook National University, Korea

A Study of an Active EMI Filter For High Current AC-DC
YiLin Sha¹, Wenjie Chen¹, Heyuan Qi¹, Yaqiang Han¹, Changsheng Pei² and Yongfa Zhu²
¹Xi’an Jiaotong University, China
²Huawei Technology Co., Ltd, China
A Reliable AC-AC Converter with Inverting and Non-Inverting Operations
Usman Ali Khan, Honnyong Cha, Ashraf Ali Khan and Heung-Geun Kim
*Kyungpook National University*, Korea

Multi-Port Converter Integrating Two PWM Converters for Multi-Power-Source Systems
Hikaru Nagata and Masatoshi Uno
*Ibaraki University*, Japan

DC/DC Converter Circuit to Solve Unbalanced Power by Multiple Input Transformer
Soon-Sang Hwang, Young Do Yoo, Taejin Ko, Seung-Tae Lee and Hag-Wone Kim
1*Dongah Elecomm*, Korea
2*Korea National University of Transportation*, Korea

A Novel Driving Method Based on the Integration of Pulse Transformer for Ultra-high Voltage Input Applications
Xiliang Chen, Wenjie Chen, YiLin Sha, Zifeng Zhao, Yaqiang Han and Xiang Li
1*Xi’an Jiaotong University*, China
2*TBEA SUNOASIS Co., Ltd*, China

Stability Analysis and Ramp Compensation of V2 Controlled Buck Converter in Pseudo-Continuous Conduction Mode
Minrui Leng, Guohua Zhou, Zhenhua Li, Shaohuan Zeng and Ping Yang
*Southwest Jiaotong University*, China

Full ZVS Soft-Start of a SiC Medium Voltage Series Resonant DC-DC Converter Using Variable Frequency Variable Duty Cycle Control
Li Wang, Qianlai Zhu, Wensong Yu and Alex Q. Huang
*North Carolina State University*, United States

A High-Power DC-DC Converter for Electric Vehicle Battery Charger
Il-Oun Lee and JinHak Kim
1*Myongji University*, Korea
2*Keimyung University*, Korea

Design of Wide-Supply-Voltage-Range Bandgap Reference Circuits for Voltage Regulators
Ming-Hsien Shih, Hung-Hsien Wu and Chia-Ling Wei
*National Cheng Kung University*, Taiwan

Three-Port Model for High Bandwidth Linear Regulator and Related Applications
Mingyu Liu and Donglai Zhang
*Shenzhen Graduate School of Harbin Institute of Technology*, China

High Efficiency Synchronous Pulse Laser Driver System
Fu-Zen Chen, Jia-You Wang, Yu-Cheng Song and Fu-Shun Ho
1*National Kaohsiung University of Applied Sciences*, Taiwan
2*Industrial Technology Research Institute*, Taiwan
<table>
<thead>
<tr>
<th>Poster Technical Session</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>P201_20</strong>  #1150</td>
</tr>
<tr>
<td>Tuning of Power System Stabilizer for Large Nuclear Turbine-Generator</td>
</tr>
<tr>
<td>Qipin Xu¹, Shaoxing Zhao¹ and Chao Huang²</td>
</tr>
<tr>
<td>¹StateGrid Electric Power Research Institute, China</td>
</tr>
<tr>
<td>²Suzhou Nuclear Power Research Institute, Shenzhen, China</td>
</tr>
<tr>
<td><strong>P201_21</strong>  #1281</td>
</tr>
<tr>
<td>A Novel Fixed Off-Time Control Method for Single-Phase Micro-Inverter Without Sensing Inductor Current</td>
</tr>
<tr>
<td>Zhen Zhang, Junming Zhang, Shuai Shao, Xinke Wu and Kuang Sheng Zhejiang University, China</td>
</tr>
<tr>
<td><strong>P201_22</strong>  #1304</td>
</tr>
<tr>
<td>Active Droop Compensation Circuit for Solid State Pulsed Power Modulator with Long Pulse Width</td>
</tr>
<tr>
<td>Chan-Hun Yu¹, Sung-Roc Jang¹, Hyoung-Suk Kim¹ and Hong-Je Ryoo²</td>
</tr>
<tr>
<td>¹Korea Electrothcnology Research Institute, Korea</td>
</tr>
<tr>
<td><strong>P201_23</strong>  #1342</td>
</tr>
<tr>
<td>A Single-Phase DVR Equipped With a High-Frequency Isolated Soft-Switching Converter</td>
</tr>
<tr>
<td>Maoh-Chin Jiang, Bing-Jyun Shih and Yi-Hsien Chiang</td>
</tr>
<tr>
<td>National Ilan University, Taiwan</td>
</tr>
<tr>
<td>²National Formosa University, Taiwan</td>
</tr>
<tr>
<td><strong>P201_24</strong>  #1360</td>
</tr>
<tr>
<td>A Novel Cost-Effective Two-Level Inverter with Combined Use of Thyristors and IGBTs</td>
</tr>
<tr>
<td>Dezhì Chen¹, Liwei Fang¹, Baodong Bai¹, Zhilong Jiang¹, Byung-il Kwon² and Wenliang Zhao³</td>
</tr>
<tr>
<td>¹Shenyang University of Technology, China</td>
</tr>
<tr>
<td>²Hanyang University, China</td>
</tr>
<tr>
<td>Poster Technical Session</td>
</tr>
<tr>
<td>--------------------------</td>
</tr>
<tr>
<td><strong>P201_30</strong> #1038</td>
</tr>
<tr>
<td>The Evolution and Variation of Sub-Module Topologies with DC-Fault Current Clearing Capability in MMC-HVDC</td>
</tr>
<tr>
<td>Lang Huang¹, Xu Yang¹, Peng Xu¹, Fan Zhang¹, Xin Ma¹, Tao Liu², Xiang Hao² and Weizeng Liu²</td>
</tr>
<tr>
<td>Xi’an Jiaotong University, China</td>
</tr>
<tr>
<td>²New Energy Research Institute, China</td>
</tr>
<tr>
<td>³Dalian University of Technology, Singapore</td>
</tr>
</tbody>
</table>

| **P201_31** #1057 | **P201_36** #1448 |
| A Distributed Voltage Balancing Method for Modular Multilevel Converter | Improved Charge Control Algorithm Considering Temperature of Li-ion Battery |
| Bing Xia, Yaohua Li, Zixin Li, Fei Xu and Ping Wang | Tae Ho Eom, Min Ho Shin, Jun Mo Kim, Jeong Lee and Chung-Yuen Won |
| Chinese Academy of Sciences, China | Sungkyunkwan University, Korea |

| **P201_32** #1147 | **P201_37** #1665 |
| Novel CoolMosfet Clamping Three-Level Neutral-Point-Clamping Inverter for Low and Medium Power Applications | Influence of CCM and DCM Operation on Converter Efficiency and Power Density of a Single-Phase Grid-Tide Inverter |
| Muhammad Sohaib Tahir, Jialong Xu and Yong Wang | Rene Barrera-Cardenas, Jiantao Zhang, Takanori Isobe and Hiroshi Tadano |
| Shanghai Jiao Tong university, China | University of Tsukuba, Japan |

| **P201_33** #1212 | **P201_38** #1303 |
| Modulation of Three-Level T-type Inverter Supplied by Series Battery Banks at different SOC condition | An Additional Stabilizer for Mitigating the Instability in DC/DC Cascaded System with Constant Power Loads |
| Fang-Ta Liu, Mohammad M. Hashempour and Tzun-Lin Lee | Yiming Tu, Zeng Liu, Jinjun Liu, Teng Liu and Zipeng Liu |
| National Sun Yat-sen University, Taiwan | Xi’an Jiaotong University, China |

| **P201_34** #1459 | **P202** |
| Submodule Voltage Fluctuation Elimination in Modular Multilevel Converter with Integrated Super Capacitor Energy Storage System | Renewable Energy Research and Applications II |
| Shuguang Song, Jinjun Liu, Shaodi Ouyang and Xingxing Chen | Time: 13:30-15:00 (Tuesday, June 6) |
| Xi’an Jiaotong University, China | Room: 301 |
| Chairs: Prof. Li Wang, National Cheng Kung University, Taiwan |

| **P202_1** #1097 | Design and Demonstration of a SiC-Based 800-V/10-kV 1-MW Solid-State Transformer for Grid-Connected Photovoltaic |

---

2017 IEEE 3rd International Future Energy Electronics Conference and ECCE Asia
**Poster Technical Session**

**P202_2**  
#1108  
A Novel SVPWM Method with Periodically-Balanced Zero-Sequence Voltage Impulse for Three-Phase Three-Level Photovoltaic Inverters  
Lei Ming\(^1\), Rende Zhao\(^1\), Jinkui He\(^1\) and Zhen Xin\(^2\)  
\(^1\)China University of Petroleum, China  
\(^2\)Aalborg University, Denmark

**P202_3**  
#1222  
The Redundancy Fault-Tolerant Control Strategies for Modular Solid State Transformer with DC Bus  
Peng Xu, Xin Ma, Lang Huang, Yang Xuan, Fan Zhang, Xu Yang, Shenhua Zhang, Dian Yuwen, Xiang Hao and Zhi Li  
Xi'an Jiaotong University, China

**P202_4**  
#1262  
An Integrated Controller to Perform LVRT Operation in PV Systems Connected to a LV Grid During Balanced and Unbalanced Faults  
Huma Khan, Subin John Chacko, Baylon G. Fernandes and Anil Kulkarni  
Indian Institute of Technology, India

**P202_5**  
#1515  
Control of PV Battery Hybrid System Using Cascaded H Bridge Converter  
Qinghao Zhang  
Tsinghua University, China

**P202_6**  
#1567  
Micro-Inverter Based on Quasi-Z-Source Inverter Integrating Switchless Voltage Equalizer for Photovoltaic Panels under Partial Shading  
Masatoshi Uno and Toshiki Shinohara  
Ibaraki University, Japan

**P202_7**  
#1596  
A Multiterminal Energy Interconnection System Based on MMC and Its Unbalanced Power Control  
Ping Liu, Xing Zhang, Fusheng Wang, Liang Liu, Yilin Lv, Fei Li and Pengpeng Cao  
Hefei university of technology, China

**P202_8**  
#1103  
Black Start Technology for Local Power Grid via PMSG-based Wind Power Generation  
Jianfeng Dai\(^1\), Yi TANG\(^1\), Qi Wang, Xianbo Du\(^2\), Chenglong Li\(^2\) and Lixin Fan\(^3\)  
\(^1\)Southeast University, China  
\(^2\)Jiangsu Frontier Electric Technology Co., Ltd, China  
\(^3\)State Grid Jiangsu electric power company, China

**P202_9**  
#1367  
Dynamic Simulation and Analysis of Connecting a 5 MW Wind Turbine to the Distribution System Feeder that Serves to a Wind Turbine Testing Site  
Yu-Jen Liu\(^1\), Pin-An Chen\(^1\), Pei-Hsiu Lan\(^2\) and Yen-Tang Chang\(^3\)  
\(^1\)National Chung Cheng University, Taiwan  
\(^2\)Taiwan Electric Research & Testing Center, Taiwan  
\(^3\)Bureau of Standards, Metrology& Inspection (BSMI), Taiwan

**P202_10**  
#1413  
A Fast Method for Wind-integrated Power System’s Static Security Analysis in the Planning Stage  
Yuan Zhu, Hanshen Li and Jinglu Hu  
Waseda University, Japan
<table>
<thead>
<tr>
<th>Poster Technical Session</th>
</tr>
</thead>
</table>
| **P202_11** #1028  
**Reliability and economic evaluation model of power distribution network under large scale EV’s access**  
Le Chen, Hongzhi Zhang, Xiangning Lin, Mengqi Yu and Zheyuan Zhang  
*Huazhong University of Science and Technology, China* |
| **P202_16** #1365  
**Harmonic Resonance Assessment of Multiple Paralleled Grid-Connected Inverters System**  
Yanbo Wang, Xiongfei Wang, Frede Blaabjerg and Zhe Chen  
*Aalborg University, Denmark* |
| **P202_12** #1129  
**Analysis of Load Electricity Consumption on a Low-Voltage Distribution System with Community Energy Storages**  
Yu-Jen Liu, Cheng-Wei Lin and Shang-I Chen  
*National Chung Cheng University, Taiwan* |
| **P202_17** #1409  
**Black-Start Strategy for Three-Phase/Single-Phase Hybrid Multi-Microgrids Based on Generalized Minimum Spanning Tree Algorithm**  
Zhiji Zeng and Ping Yang  
*South China University of Technology, China* |
| **P202_13** #1276  
**Adaptive Parameter Control Strategy of VSG for Improving System Transient Stability**  
Fan Wei, Yan Xiangwu and Hua Tianqi  
*North China Electric Power University, China* |
| **P202_18** #1458  
**Compensation of Current Harmonics Caused by Local Nonlinear Load for Grid-Connected Converter**  
Chanho Sin, Desmon Petrus Simatupang and Jaeho Choi  
*Chungbuk National University, Korea* |
| **P202_14** #1283  
**Research on Power Point Tracking Algorithm Considered Spinning Reserve Capacity in Grid-connected Photovoltaic System Based on VSG Control Strategy**  
Tianqi Hua, Xiangwu Yan and Wei Fan  
*North China Electric Power University, China* |
| **P202_19** #1509  
**Adaptive Generation Control for Islanded AC Microgrid Frequency Regulation**  
M.A. Mohammed Manaz and Chan-nan Lu  
*National Sun Yat-sen University, Taiwan* |
| **P202_15** #1336  
**An Enhanced Virtual Synchronous Generator Strategy For Suppressing Grid Voltage Sag**  
Min Liu, Guochun Xiao, Fangzhou Zhao, Daochu Yang, Shuai Su, Xiaoli Han, Youyuan Wang and Baohui Ma  
*Xian Jiaotong University, China* |
| **P202_20** #1046  
**Development of a Modular Single-Stage Grid-Connected Fuel-Cell Inverter System with Power Management and Remote Monitoring Interface**  
Ching-Ming Lai and Yu-Jen Lin  
*National Taipei University of Technology, Taiwan* |
| **P202_21** #1626  
**Suppression Control of Pressure Fluctuation caused by Purge Operation in a Fuel Cell System Fueled by Hydrogen Generated**  
*P202_21* |
**Poster Technical Session**

**P202_22** #1663

*Transient Stability Analysis for an Island with Diesel Generators and Wind Generators*

Chih-Chieh Yeh\(^1\), Chao-Shun Chen\(^1\), Cheng-Ting Hsu\(^2\) and Tsun-Jen Cheng\(^2\)

\(^1\)National Sun Yat-sen University, Taiwan
\(^2\)Southern Taiwan University of Science and Technology, Taiwan

---

**P203 :** Lighting Technologies and Applications

Time : 13:30-15:00 (Tuesday, June 6)
Room : 301
Chairs : Prof. Ray-Lee Lin, National Cheng Kung University, Taiwan

---

**P204_1** #1309

*Fault-Tolerant Control of Excitation Fault in Doubly Salient Electromagnetic Machine Drive*

Lan Yang, Bo Zhou, Xingwei Zhou and Kaimiao Wang

Nanjing University of Aeronautics and Astronautics, China

---

**P204_2** #1513

*Energy- and Resource Saving Synchronous Reluctance Machine for the use in Circulation Pumps*

Sven Urschel and Juri Dolgirev

University of Applied Sciences Kaiserslautern, Germany

---

**P204_3** #1546

*Development of a Speed Ripple Reduction Algorithm for an Oil Cooler Compressor*

Jae Suk Lee, Gwang-Hyun Shin and Seon-Hwan Hwang

Kyungnam University, Korea

---

**P204_4** #1092

*A Rotor Position Estimation Method Based on Fuzzy PI for SPMSM Sensor-Less Control*

Tianheng Ni\(^1\), Jiansong Chen\(^2\), Bo Zhou\(^1\), Bing Liu\(^1\), Rong Zhou\(^2\) and Wenjie Bai\(^2\)

\(^1\)Yamaguchi University, Japan
\(^2\)National Institute of Technology, Ube College, Japan

---
<table>
<thead>
<tr>
<th>Poster Technical Session</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>P204_5</strong></td>
</tr>
<tr>
<td><strong>#1211</strong></td>
</tr>
<tr>
<td>Sensorless Vector Control of Multiphase Induction Machine Based on Full-Order Observer and Harmonic Suppression</td>
</tr>
<tr>
<td>Zhong Peng(^1), Zedong Zheng(^1), Cheng Zi Liu(^2) and Dong Yong Li(^1)</td>
</tr>
<tr>
<td>(^1)Tsinghua University, China</td>
</tr>
<tr>
<td>(^2)Beijing Jiaotong University, China</td>
</tr>
</tbody>
</table>

| **P204_6**               | **P205_2**               |
| **#1112**                | **#1327**               |
| An Improved Adaptive Fuzzy PID Controller for PMSM and a Novel Stability Analysis Method | A New Macro-Model of Thyristor for HVDC Converter Valve |
| Jinglin Liu, Chao Gong, Zexiu Han and Eryang Zhang | Zhigang Zhang\(^1\), Feng Wang\(^1\), Fang Zhuo\(^1\), Yating Gou\(^1\), Shuhuai Shi\(^1\), Feng Ji\(^1\), Wenmin Ouyang\(^2\) and Yuanliang Lan |
| Northwestern Polytechnical University, China | \(^1\)Xi'an Jiaotong University, China |
| \(^2\)Global Energy Interconnection Research Institute, China |

| **P204_7**               | **P205_3**               |
| **#1249**                | **#1387**               |
| Active Damping Control Methods for Three-Phase Slim DC-link Drive System- An overview and investigation | Magnetic Design and Experimental Evaluation of Integrated Magnetic Components used in Interleaved Multi-phase DC/DC Converter with Phase Drive Control |
| Yang Feng, Dong Wang, Frede Blaabjerg, Xiongfei Wang, Pooya Davari and Kaiyuan Lu | Jun Imaoka\(^1\), Kenkichiro Okamoto\(^3\), Shota Kimura\(^2\), Daigoro Ebisimoto\(^2\), Masayoshi Yamamoto\(^2\) and Masahito Shoyama\(^1\) |
| Aalborg University, Denmark | \(^1\)Kyushu University, Japan |
| \(^2\)Shimane University, Japan |

| **P204_8**               | **P205_4**               |
| **#1634**                | **#1060**               |
| Jaejin Han, Byeong-Heon Kim and Seung-Ki Sul | Duan Zhuolin, Fan Tao, Zhang Dong and Wen Xuhui |
| Seoul National University, Korea | Chinese Academy of Sciences, China |

| **P204_9**               |                  |
| **#1660**                |                  |
| Regenerative Hybrid Battery Power Module for BLDC Motor Drive |                  |
| Yu Lin Juan, Tsair Rong Chen, Yao Sheng Lin, Shu Ming Chen and Li Ling Chen |                  |
| National Changhua University of Education, Taiwan |                  |

<table>
<thead>
<tr>
<th><strong>P205</strong></th>
<th>Devices and Components II</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Time</strong></td>
<td>13:30-15:00 (Tuesday, June 6)</td>
</tr>
<tr>
<td><strong>Room</strong></td>
<td>301</td>
</tr>
<tr>
<td><strong>Chairs</strong></td>
<td>Prof. Jiann-Fuh Chen, National Cheng-Kung University, Taiwan</td>
</tr>
<tr>
<td>Poster Technical Session</td>
<td></td>
</tr>
<tr>
<td>--------------------------</td>
<td></td>
</tr>
<tr>
<td><strong>P206 :</strong> Smart-Grid Technologies II</td>
<td></td>
</tr>
<tr>
<td><strong>Time :</strong> 13:30-15:00 (Tuesday, June 6)</td>
<td></td>
</tr>
<tr>
<td><strong>Room :</strong> 301</td>
<td></td>
</tr>
<tr>
<td><strong>Chairs :</strong> Prof. Cheng-Yu Tang, Feng Chia University, Taiwan</td>
<td></td>
</tr>
<tr>
<td><strong>P206_1</strong> #1248</td>
<td></td>
</tr>
<tr>
<td><strong>A Novel Control Method Based on Consensus Algorithm for Microgrids</strong></td>
<td></td>
</tr>
<tr>
<td>Hong Yu He¹, Bei Han¹, Guojie Li¹, Keyou Wang¹ and Shaojie Liu²</td>
<td></td>
</tr>
<tr>
<td>¹Shanghai Jiao Tong University, China</td>
<td></td>
</tr>
<tr>
<td>²Shanghai Electric Power Company, China</td>
<td></td>
</tr>
</tbody>
</table>

| **P207 :** High Performance and Emerging Technologies II  |
| **Time :** 13:30-15:00 (Tuesday, June 6)  |
| **Room :** 301  |
| **Chairs :** Prof. Ming-Tsung Tsai, Southern Taiwan University of Science and Technology, Taiwan  |
| **P207_1** #1594  |
| **Study on Zero-Crossing Conducted Noise Issue of Totem-Pole Bridgeless PFC Converter**  |
| Baihua Zhang¹, Jun Imaoka¹, Masahito Shoyama¹, Satoshi Tomioka² and Eiji Takegami²  |
| ¹Kyushu University, Japan  |
| ²TDK-Lambda Corporation, Japan  |

| **P207_2** #1541  |
| **Novel Multi-Coil Resonator Design for Wireless Power Transfer through Reinforced Concrete Structure with Rebar Array**  |
| Yujin Jang, Jung-Kyu Han, Jae-II Baek, Ji-Min Kim, Hoon Sohn and Gun-Woo Moon  |
| Korea Advanced Institute of Science and Technology, Korea  |

<p>| <strong>P207_3</strong> #1579  |
| <strong>Design of Series-Parallel Combined Resonant Circuit with Rotary Transformer Used for Ultrasonic Spindle Drive</strong>  |</p>
<table>
<thead>
<tr>
<th>Poster Technical Session</th>
</tr>
</thead>
</table>
| **P207_4**  #1552  
Packaging and Integration of DBC-based SiC Hybrid Packaging Power Module in 379-W/in² DC / DC Converter  
Jun Imaoka¹, Myoungsik Nam¹, Masahito Shoyama¹ and Hideaki Fujita²  
¹Kyushu University, Japan  
²Orii and Mec Corporation, Japan |
| **P207_5**  #1399  
Generation and Storage of Electrical Energy from Piezoelectric Materials  
Panapong Songsukthawan and Chaiyan - Jettanasen  
King Mongkut's Institute of Technology Ladkrabang, Thailand |
| **P207_6**  #1598  
A Review of High Frequency High Voltage Generation Architecture  
Saijun Mao¹, Jelena Popovic², Chengmin Li³ and Wuhua Li³  
¹GE, Netherlands  
²Delft University of Technology, Netherlands  
³Zhejiang University, China |
| **P207_7**  
Power Packaging Design Considerations for High Frequency High Voltage Generator  
Saijun Mao¹, Tingting Song¹, Jelena Popovic², Chengmin Li³ and Wuhua Li³  
¹GE, Netherlands  
²Delft University of Technology, Netherlands  
³Zhejiang University, China |
| **P207_8**  #1497  
Impact of the Wire Tightness Degree on Circular Pad with Different Coil Size in IPT System  
Wenjing Li¹, Jianghua Lu¹, Bo Li¹, Guorong Zhu¹, Wu Chen²  
¹Automation, Wuhan University of Technology, China  
²Southeast University, China |
| **P207_9**  #1473  
High frequency conducted EMI modeling of a series-series resonant WPT system  
Heyuan Qi, Wenjie Chen, Yilin Sha, Yaqiang Han, Hongchang Li and Xu Yang  
Xi'an Jiaotong University, China |