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Location: Room 104B
March 19, 2013 8:30 - 12:00
Session Chairs: Fariborz Musavi, Delta-Q Technologies Corp
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Location: Room 103B
March 19, 2013 8:30 - 12:00
Session Chairs: Dusty Becker, Emerson
Chris Jones, Emerson

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Location: Room 103A
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Session Chairs: Chuck Mullett, Onsemi
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**Session Chairs:** Jaber Abu Qahouq, *University of Alabama*  
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Location: Room 104A
March 19, 2013 8:30 - 12:00
Session Chairs: Yaosuo Xue, Siemens
Jin Wang, Ohio State University

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Location: Room 102A
March 19, 2013 8:30 - 12:00
Session Chairs: Gerry Moschopoulos, Western University, Canada
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**Session T08: DC-DC Converters for Powering VLSI Devices**

**Location:** Room 104A
**March 20, 2013 8:30 - 10:10**

**Session Chairs:** Amir Rahimi, *International Rectifier*
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March 20, 2013 8:30 - 10:10
Session Chairs: Hemal Shah, Jin Wang, Ohio State University

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Location:  Room 104B  
March 20, 2013 8:30 - 10:10  
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Session T11:  High Performance Devices in Circuits  
Location:  Room 104C  
March 20, 2013 8:30 - 10:10  
Session Chairs:  Liang Zhou, Transphorm, Inc.  
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Location: Room 103A  
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Session Chairs: Ernie Parker, Crane Aerospace & Electronics  
Douglas Hopkins, NC State University

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Location: Room 104B
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Session Chairs: Amir Rahimi, International Rectifier
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Location: Room 103B
March 20, 2013 14:00 - 17:30
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Location: Room 104A
March 20, 2013 14:00 - 17:30
Session Chairs: Maryame Saeedifard, Purdue University
Wei Qiao, University of Nebraska-Lincoln

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Session Chairs: Tianjun Fu, John Deere
Kent Wanner, Phoenix International

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Zhiyu Shen, Virginia Polytechnic Institute and State University, United States
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Session T20: Grid-tied Power Converters
Location: Room 102B
March 20, 2013 14:00 - 17:30
Session Chairs: Hui Li, Florida State University
Yi Huang, Ametek

Design and Optimization of 99% CEC Efficiency Soft-Switching Photovoltaic Inverter

Baifeng Chen, Virginia Polytechnic Institute and State University, United States
Jih-Sheng Lai, Virginia Polytechnic Institute and State University, United States
Chien-Liang Chen, International Rectifier, United States
Wensong Yu, Virginia Polytechnic Institute and State University, United States
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A Technique for Voltage-Source Inverter Seamless Transitions Between Grid-Connected and Standalone Modes

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A Dynamic Voltage Restorer with a Selective Harmonic Mitigation and Robust Peak Detection

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Session Chairs: Dusty Becker, Emerson
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Session Chairs: Morgan Kiani, Texas Christian University
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Session Chairs: Adel Nasiri, University of Wisconsin-Dallas
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Session Chairs: Cahit Gezgin, International Rectifier
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Session Chairs:  Yu Du, ABB
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Liming Liu, Florida State University

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Session Chairs: Baiming Shao, Mercedes Benz R&D North America
Amir Rahimi, International Rectifier

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Digital Control of a Bi-Directional DC-DC Converter for Automotive Applications
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Ultra-Fast on-Chip Load-Current Adaptive Linear Regulator for Switch Mode Power Supply Load Transient Enhancement
Yikai Wang, University of Texas at Dallas, United States
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Seiya Abe, International Center for the Study of East Asian Development, Japan
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Session Chairs: Berker Bilgin, McMaster University
Omer Onar, Oak Ridge National Laboratory

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Drazen Dujic, ABB Switzerland Ltd, Switzerland
Gina Steinke, ABB Switzerland Ltd, Switzerland
Enea Bianda, ABB Switzerland Ltd, Switzerland
Francisco Canales, ABB Switzerland Ltd, Switzerland
Silvia Lewdeni-Schmid, ABB Switzerland Ltd, Switzerland
Chuanhong Zhao, ABB Switzerland Ltd, Switzerland
Juergen K. Steinke, ABB Switzerland Ltd, Switzerland

Optimal Trajectory Control of LLC Resonant Converters for Soft Start-Up

Weiyi Feng, Virginia Polytechnic Institute and State University, United States
Fred C. Lee, Virginia Polytechnic Institute and State University, United States

Session T30: Power Systems and EMI
Location: Room 103B
March 21, 2013 14:00 - 17:30
Session Chairs: Mahesh Krishnamurthy, IIT
Jim Spangler, Spangler Prototype

A New Current Injection Method for Impedance Measurement Using Superposed Modulated Square Pulse

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Fang Zhuo, Xi'an Jiaotong University, China
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Session Chairs: Babak Fahimi, University of Texas-Dallas
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Session Chairs: Bilal Akin, University of Texas at Dallas
Cahit Gezgin, International Rectifier

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Session Chairs: Matthew Wilkowski, Enpirion
Stephen Carlsen, Raytheon

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Khai Ngo, Virginia Polytechnic Institute and State University, United States
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Location: Room 104A
March 21, 2013 14:00 - 17:30
Session Chairs: Dusty Becker, Emerson
Chris Jones, Emerson

Stability Analysis and Design of Stable DC Distribution Systems Through Positive Feed-Forward Control Using a Novel Passivity-Based Stability Criterion
Antonino Riccobono, University of South Carolina, United States
Enrico Santi, University of South Carolina, United States

Simplified Small-Signal Stability Analysis for Optimized Power System Architecture
S. Vesti, Universidad Politécnica de Madrid, Spain
J.A. Oliver, Universidad Politécnica de Madrid, Spain
R. Prieto, Universidad Politécnica de Madrid, Spain
J.A. Cobos, Universidad Politécnica de Madrid, Spain
T. Suntio, Tampere University of Technology, Finland

Small Signal Analysis of $V^2$ Control Using Current Mode Equivalent Circuit Model
Yingyi Yan, Virginia Polytechnic Institute and State University, United States
Fred C. Lee, Virginia Polytechnic Institute and State University, United States
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Shuilin Tian, Virginia Polytechnic Institute and State University, United States

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Paolo Mattavelli, Virginia Polytechnic Institute and State University, United States
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FPGA Based Real Time Electro-Thermal Modeling of Power Electronic Converters
Luis Herrera, Ohio State University, United States
Cong Li, Ohio State University, United States
Xiu Yao, Ohio State University, United States
Da Jiao, Ohio State University, United States
Jin Wang, Ohio State University, United States

Small-Signal Analysis of the Asymmetrical Half-Bridge Converter with Two Transformers
M. Arias, Universidad de Oviedo, Spain
M. Fernández, Universidad de Oviedo, Spain
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J. Sebastián, Universidad de Oviedo, Spain

A New Large Signal Average Model for Variable Frequency Pulse-Width Modulators
Jason Houston, Intersil Corporation, United States
Weihong Qiu, Intersil Corporation, United States
Chun Cheung, Intersil Corporation, United States

Small-Signal Analysis of DCM Flyback Converter in Frequency-Foldback Mode of Operation
Laszlo Huber, Delta Products Corporation, United States
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Fariborz Musavi, Delta-Q Technologies Corp

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Fariborz Musavi, Delta-Q Technologies Corp., Canada
Marian Craciun, Delta-Q Technologies Corp., Canada
Deepak Gautam, Delta-Q Technologies Corp., Canada
Murray Edington, Delta-Q Technologies Corp., Canada
Wilson Eberle, University of British Columbia, Canada
William G. Dunford, University of British Columbia, Canada

Optimized Magnetic Design for Inductive Power Transfer Coils
R. Bosshard, ETH Zürich, Switzerland
J. Mühlethaler, ETH Zürich, Switzerland
J.W. Kolar, ETH Zürich, Switzerland
I. Stevanović, ABB Switzerland Ltd., Switzerland

A Semi-Bridgeless Boost Power Factor Corrected Converter with an Auxiliary Zero Voltage Switching Circuit for Electric Vehicle Battery Chargers
Md. Muntasir Ul Alam, University of British Columbia, Canada
Wilson Eberle, University of British Columbia, Canada
Fariborz Musavi, Delta-Q Technologies Corp., Canada

Session D01: AC-DC Converters
Location: Grand Ballroom
March 21, 2013 11:30 - 14:00
Session Chairs: Gerry Moschopoulos, Western University, Canada
Srujan Kusumba, GE

A Novel Strategy for Three-Phase/Switch/Level (Vienna) Rectifier Under Severe Unbalanced Grids
Ming Zhang, Zhejiang University, China
Bin Li, Zhejiang University, China
Long Huang, Zhejiang University, China
Wenxi Yao, Zhejiang University, China
Zhengyu Lu, Zhejiang University, China
Lijun Hang, University of Tennessee, United States
Leon M. Tolbert, University of Tennessee, United States

A New Single-Phase Single-Stage Multilevel PFC AC-DC Converter with Flying Capacitor
Mehdi Narimani, University of Western Ontario, Canada
Gerry Moschopoulos, University of Western Ontario, Canada

A Novel Integrated Buck-Flyback PFC Converter with High Power Factor
Xiaogao Xie, Hangzhou Dianzi University, China
Zhou Lan, Hangzhou Dianzi University, China
Hanjing Dong, Hangzhou Dianzi University, China
Chen Zhao, Hangzhou Dianzi University, China
Shirong Liu, Hangzhou Dianzi University, China
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A. Vazquez, University of Oviedo, Spain
A. Rodriguez, University of Oviedo, Spain
M. Fernandez, University of Oviedo, Spain
M.M. Hernando, University of Oviedo, Spain
J. Sebastian, University of Oviedo, Spain

Comparative Analysis of Performance for Single-Phase AC-DC Converters Using FPGA for UPS Applications
Raphael A. da Cámara, Federal Rural University of Semiárido, Brazil
Paulo P. Praça, Federal University of Ceará, Brazil
Renê P.T. Bascopé, Federal University of Ceará, Brazil
Cicero M.T. Cruz, Federal University of Ceará, Brazil

Evaluation of Primary Side Control Schemes for Flyback Converter with Constant Current Output
Xiliang Chen, Zhejiang University, China
Tianyang Jiang, Zhejiang University, China
Siyang Zhao, Zhejiang University, China
Hulong Zeng, Zhejiang University, China
Junming Zhang, Zhejiang University, China

A Two-Switch AC-DC Buck-Boost Quasi-Resonant Front-End Converter
Dunisha Wijeratne, University of Western Ontario, Canada
Gerry Moschopoulos, University of Western Ontario, Canada

Multilevel Multistate Switching Cells PEBBs as the Basis for the Implementation of Advanced Rectifiers
Márcio S. Ortmann, Federal University of Santa Catarina, Brazil
Wagner Hoffmann, Federal University of Santa Catarina, Brazil
Samir A. Mussa, Federal University of Santa Catarina, Brazil
Marcelo L. Heldwein, Federal University of Santa Catarina, Brazil

A Study of Nonlinear Controllers for AC/DC Boost PFC Converters
Majid Pahlevaninezhad, Queen's University, Canada
Pritam Das, Murata Power Solutions, Canada
Gerry Moschopoulos, University of Western Ontario, Canada
Praveen Jain, Queen's University, Canada

Switched-Capacitor Step-Down Rectifier for Low-Voltage Power Conversion
Wei Li, Massachusetts Institute of Technology, United States
David J. Perreault, Massachusetts Institute of Technology, United States

Single-Phase and Three-Phase Non-Isolated Bidirectional DC-DC-AC Converters
E.C. dos Santos Jr., Indiana University-Purdue University Indianapolis, United States
M. Darabi, Indiana University-Purdue University Indianapolis, United States
Single-Stage Interleaved Active-Clamping Forward Converter Employing Two Transformers ................................................................. 1898
Yu-Kang Lo, National Taiwan University of Science and Technology, Taiwan
Huang-Jen Chiu, National Taiwan University of Science and Technology, Taiwan
Jing-Yuan Lin, National Taiwan University of Science and Technology, Taiwan
Chao-Fu Wang, National Taiwan University of Science and Technology, Taiwan
Chien-Yu Lin, National Taiwan University of Science and Technology, Taiwan
Bin Gu, National Taiwan University of Science and Technology, Taiwan

An Improved Bridgeless SEPIC PFC Rectifier with Optimized Magnetic Utilization, Minimized Circulating Losses, and Reduced Sensing Noise .................................................. 1906
Cong Zheng, Virginia Polytechnic Institute and State University, United States
Hongbo Ma, Southwest Jiaotong University, China
Bin Gu, Virginia Polytechnic Institute and State University, United States
Rui Chen, Virginia Polytechnic Institute and State University, United States
Eric Faraci, Virginia Polytechnic Institute and State University, United States
Wensong Yu, Virginia Polytechnic Institute and State University, United States
Jih-Sheng Lai, Virginia Polytechnic Institute and State University, United States
Hyun-Soo Koh, Virginia Polytechnic Institute and State University, United States

Input Impedance and Current Feedforward Control for Leading-Lagging Phase Admittance Cancellation in the AC-DC Boost Converter ........................................................ 1912
Sung Min Park, University of Connecticut, United States
Sung-Yeul Park, University of Connecticut, United States

Dual Active Bridge Based Battery Charger for Plug-in Hybrid Electric Vehicle with Charging Current Containing Low Frequency Ripple .......................................................... 1920
Lingxiao Xue, Virginia Polytechnic Institute and State University, United States
Daniel Diaz, Universidad Politécnica de Madrid, Spain
Zhiyu Shen, Virginia Polytechnic Institute and State University, United States
Fang Luo, Virginia Polytechnic Institute and State University, United States
Paolo Mattavelli, Virginia Polytechnic Institute and State University, United States
Dushan Boroyevich, Virginia Polytechnic Institute and State University, United States

Session D02: DC-DC Converters
Location: Grand Ballroom
March 21, 2013 11:30 - 14:00
Session Chairs: Amir Rahimi, International Rectifier
Zobair Roohani, International Rectifier Co.

A New Fuel Cell Power Conditioning System with Extended Life Time and Minimized DC-Bus Capacitor ................................................................. 1926
Xiaohu Liu, Florida State University, United States
Zhan Wang, Florida State University, United States
Hui Li, Florida State University, United States

Experimental Investigation and Loss Calculation for a Bi-Directional Isolated DC/DC Converter Using Series Voltage Compensation .......................................................... 1931
Satoshi Miyawaki, Nagaoka University of Technology, Japan
Jun-Ichi Itoh, Nagaoka University of Technology, Japan
Kazuki Iwaya, TDK-Lambda Corporation, Japan
A Dual-Channel Current Source Driver for Complementary Switches ........................................ 1939
Darryl J. Tscharn, Queen’s University, Canada
Praveen K. Jain, Queen’s University, Canada

Performance of Distributed DC Power System Using Quasi Z-Source Inverter Based DC/DC Converters .......................................................... 1946
Yam P. Siwakoti, Macquarie University, Australia
Graham E. Town, Macquarie University, Australia

Highly-Reliable Double-Switch Cell Equalizer Using Parallel-Resonant Inverter and Voltage Multiplier for Series-Connected Supercapacitors/Lithium-Ion Cells .......... 1954
Masatoshi Uno, Japan Aerospace Exploration Agency, Japan
Akio Kukita, Japan Aerospace Exploration Agency, Japan

Yi Zhang, University of Texas at Dallas, United States
Dongsheng Ma, University of Texas at Dallas, United States

Yihua Hu, Zhejiang University, China
Yan Deng, Zhejiang University, China
Jiangtao Long, Zhejiang University, China
Xiaoxun Lu, Zhejiang University, China
Xiangning He, Zhejiang University, China

Bidirectional Dual-Active-Bridge DC-DC Converter with Triple-Phase-Shift Control .......... 1972
H. Wen, Masdar Institute of Science and Technology, U.A.E.
W. Xiao, Masdar Institute of Science and Technology, U.A.E.

Supercapacitor Assisted LDO (SCALDO) Technique- an Extra Low Frequency Design Approach to High Efficiency DC-DC Converters and How It Compares with the Classical Switched Capacitor Converters .......................................................... 1979
Kosala Kankanmage, University of Waikato, New Zealand
Nihal Kulatana, University of Waikato, New Zealand

Application Specific Efficiency Improvement for an Industrial Point of Load Converter .... 1985
Hendrik Tech, Friedrich-Alexander University of Erlangen-Nuremberg, Germany
Christian Oeder, Friedrich-Alexander University of Erlangen-Nuremberg, Germany
Daniel Kuebrich, Friedrich-Alexander University of Erlangen-Nuremberg, Germany
Thomas Duerbaum, Friedrich-Alexander University of Erlangen-Nuremberg, Germany

A 6kW, 200kHz Boost Converter with Parallel-Connected SiC Bipolar Transistors .......... 1991
Jacek Rabkowski, KTH Royal Institute of Technology / Warsaw Univ. of Technology, Sweden / Poland
Dimosthenis Peftitsis, KTH Royal Institute of Technology, Sweden
Mariusz Zdanowski, Warsaw University of Technology, Poland
Hans-Peter Nee, KTH Royal Institute of Technology, Sweden

A DC-DC Converter with Dual Flyback Converter Topology ........................................... 1999
Farnaz Ghodousipour, Western University, Canada
Navid Golbon, Western University, Canada
Gerry Moschopoulos, Western University, Canada
Resonant DC-DC Converter for High Efficiency Bidirectional Power Conversion 2005
Eun-Soo Kim, Jeonju University, Korea, South
Seung-Min Lee, Jeonju University, Korea, South
Jun-Hyoung Park, Jeonju University, Korea, South
Young-Jae Noh, Jeonju University, Korea, South
Han Xu, Jeonju University, Korea, South
Young-Soo Kong, Jeonju University, Korea, South

A Novel Soft Starting Strategy of an LLC Resonant DC/DC Converter for Plug-in Hybrid Electric Vehicles 2012
Wei Guo, Kettering University, United States
Kevin Bai, Kettering University, United States
Allan Taylor, Kettering University, United States
Jeff Patterson, Magna E-Car USA LP, United States
James Kane, Magna E-Car USA LP, United States

Unified PWM Control to Minimize Conduction Losses Under ZVS in the Whole Operating Range of Dual Active Bridge Converters 2016
Jun Huang, Xi’an Jiaotong University, China
Yue Wang, Xi’an Jiaotong University, China
Yuan Gao, Xi’an Jiaotong University, China
Wanjun Lei, Xi’an Jiaotong University, China
Yufei Li, Xi’an Jiaotong University, China

Techniques for Reducing Parasitic Loss in Switched-Capacitor Based DC-DC Converter 2023
Avishek Biswas, Indian Institute of Technology Kharagpur, India
Monodeep Kar, Indian Institute of Technology Kharagpur, India
Pradip Mandal, Indian Institute of Technology Kharagpur, India

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Xi Lu, Michigan State University, United States
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Location: Grand Ballroom
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Session Chairs: Jin Wang, Ohio State University
Liming Liu, Florida State University

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Gustavo B. Lima, Universidade Federal de Uberlândia, Brazil
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Ernane A.A. Coelho, Universidade Federal de Uberlândia, Brazil
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David A. Guzman P., University of Arkansas, United States
Juan Carlos Balda, University of Arkansas, United States

PLL-Less Control for Hybrid Active Impedance
R.B. Gonzatti, Federal University of Itajubá, Brazil
S.C. Costa Ferreira, Federal University of Itajubá, Brazil
Carlos H. da Silva, Federal University of Itajubá, Brazil
L.E. Borges Da Silva, Federal University of Itajubá, Brazil
G. Lambert-Torres, Federal University of Itajubá, Brazil
L.G. Fernandez Silva, CPFL Energia, Brazil

A Control Method of Hybrid Filter for Continuous Reactive Power Compensation in a Substation
Yen-Ching Wang, National Sun Yat-Sen University, Taiwan
Tzung-Lin Lee, National Sun Yat-Sen University, Taiwan

Novel Method for Real Time Overhead Power Line Segments High Frequency Impedance Measurement Based on Signal Injection
Amir Mehdi Pasdar, University of Akron, United States
Yilmaz Sozer, University of Akron, United States
Iqbal Husain, North Carolina State University, United States

Cost Effective BESS Design for Building Power Systems
Yong-Duk Lee, University of Connecticut, United States
Sung-Yeul Park, University of Connecticut, United States

Operation and Design Considerations of FID at Distribution Voltages
Jason Watterson, North Carolina State University, United States
Leonard White, North Carolina State University, United States
Subhashish Bhattacharya, North Carolina State University, United States
Chris Widener, Florida State University, United States
Matthew Bosworth, Florida State University, United States
Oleg Vodyakho, Florida State University, United States
Mischa Steurer, Florida State University, United States
Dominik Neumayr, Florida State University, United States
Chris Edrington, Florida State University, United States

Robust Predictive Current Control of a Grid-Connected Inverter with Harmonics Compensation
Hye-Seong Heo, Infineon Technologies, Korea, South
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Zhen Yu, Texas Instruments Inc., United States

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Tae-Jin Kim, Korea Electrotechnology Research Institute, Korea, South
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Tae-Jin Kim, Korea Electrotechnology Research Institute, Korea, South
Dong-Wook Yoo, Korea Electrotechnology Research Institute, Korea, South

Session D04: Motor Drives & Inverters
Location: Grand Ballroom
March 21, 2013 11:30 - 14:00
Session Chairs: Babak Fahimi, University of Texas-Dallas
Mahesh Krishnamurthy, IIT

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Arto Sankala, Lappeenranta University of Technology, Finland
Juha-Pekka Ström, Lappeenranta University of Technology, Finland
Julius Luukko, Lappeenranta University of Technology, Finland
Pertti Silventoinen, Lappeenranta University of Technology, Finland
Risto Komulainen, Vacon Plc., Finland
Hannu Sarén, Vacon Plc., Finland
Nicklas Södö, Vacon Plc., Finland
Dan Isaksson, Vacon Inc., United States

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Jianwu Zhao, Nanjing University of Aeronautics and Astronautics, China
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Session D05: Devices & Components
Location: Grand Ballroom
March 21, 2013 11:30 - 14:00
Session Chairs: Ernie Parker, Crane Aerospace & Electronics
Chuck Mullett, Onsemi

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Hal Massie, ON Semiconductor, Belgium
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Samir Mouhoubi, ON Semiconductor, Belgium
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Session D06: System Integration II
Location: Grand Ballroom
March 21, 2013 11:30 - 14:00
Session Chairs: Bilal Akin, University of Texas at Dallas
Robert Balog, Texas A&M

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Stanislav Skibin, ABB Corporate Research, Switzerland
Andreas Ecklebe, ABB Corporate Research, Switzerland

On the Ongoing Evolution of Very High Frequency Power Supplies
Arnold Knott, Technical University of Denmark, Denmark
Toke M. Andersen, Technical University of Denmark, Denmark
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Session D07: Modeling, Simulation, and Control
Location: Grand Ballroom
March 21, 2013 11:30 - 14:00
Session Chairs: Ali Davoudi, University of Texas, Arlington
Tianjun Fu, John Deere

FPGA Implementation of a Gain-Scheduled Controller for Transient Optimization of Resonant Converters Applied to Induction Heating
Oscar Lucia, University of Zaragoza, Spain
Oscar Jimenez, University of Zaragoza, Spain
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Comparison of Direct and PWM Model Predictive Control for Power Electronic and Drive Systems
Matthias Preindl, University of Padova, Italy
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Optimal Trajectory Control for Series Resonant Converters Applied to Domestic Induction Heating
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A Multi-Resonant Sliding-Mode Controller for Single-Phase Grid-Connected Inverter with LCL-Filter
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Location: Grand Ballroom
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Session Chairs: Morgan Kiani, Texas Christian University
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A.J. Marques Cardoso, University of Beira Interior/Instituto de Telecomunicações, Portugal

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Location: Grand Ballroom
March 21, 2013 11:30 - 14:00
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Wei Qiao, University of Nebraska at Lincoln

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Larry E. Seiber, Oak Ridge National Laboratory, United States
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Location: Grand Ballroom
March 21, 2013 11:30 - 14:00
Session Chairs: Sheldon Williamson, Concordia University
Jim Spangler, Spangler Prototype

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Hongbo Ma, Southwest Jiaotong University, China
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Jih-Sheng Lai, Virginia Polytechnic Institute and State University, United States

Two-Switch BCM Flyback Single-Stage PFC for HB LED Lighting Applications

Hangseok Choi, Fairchild Semiconductor, United States

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Liangzong He, Xiamen University, China

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