COMMERCIAL SESSION

13:30-15:35 CS01 - Commercial Session 1

Session Chair: Tatsuo Sasaki, Origin ELECTRIC CO., LTD. Hakucho, 8th Floor

13:30 CS01-1 NTT-F's Technologies for Optimizing LCC
Keizo Hoshijima
NTT FACILITIES, INC., Japan

14:00 CS01-2 Eltek Company Presentation and its Role in Energy Efficiency for Telecom Power Systems
Morten Schoyen
Chief Marketing Officer, ELTEK POWER PTE. LTD., Singapore

14:30 CS01-3 HVDC and OCP Power Solution in Data Center
Chihming Wu
Delta Electronics (Japan), Inc., Japan

16:00-18:05 CS02 - Commercial Session 2

Session Chair: Satoshi Ohtsu Hakucho, 8th Floor
NTT FACILITIES RESEARCH INSTITUTE Inc., Japan

16:00 CS02-1 Experimental Verification of Fault-diagnosis Architecture in a Large-scale Photovoltaic Power Plant
Tohru Kohno, Kenichi Gokita, Tomoharu Nakamura
Hitachi Group, Japan

16:30 CS02-2 ICT Convergence Oriented Power Solutions
Tao Hongming
VP of Network Energy Product Line, Huawei Technologies Co., Ltd., China

17:00 CS02-3 Integration and Flexibility: Tendencies for Telecom Energy Development
Changling Zhang
Solution Director of Energy Product Department, ZTE Corporation, China

TECHNICAL PROGRAM

Monday October 19th

8:30-11:30 Opening and Keynote Session

Naniwa, 8th Floor

Opening Mr. Kiyoshi Tsutsui, General Chair, Intelec 2015
President, NTT FACILITIES, INC.
Dr. John Hawkins, President, Intelec
Prof. Dr.-Ing. Mario Pacas, VP Conferences IEEE PELS
Prof. Dr. Fujio Kurokawa, Chair, Organizing Committee, Intelec 2015
Nagasaki University,
Intelec Executive Committee Member,
IEEE Fellow

MC: Dr. Keiichi Hirose, NTT FACILITIES, INC.,
Intelec Executive Committee Member

Session Chairs: Dr. John Hawkins, President, Intelec
Dr. Tadahito Aoki, NTT FACILITIES, INC.

KL1-1 NTT Group's Actions towards Resilient and Green Society
Dr. Hiromichi Shinohara
NIPPON TELEGRAPH AND TELEPHONE CORPORATION

Session Chairs: Prof. Praveen Jain, IEEE Fellow, Queen's University
Mr. Hiroaki Ikebe, NTT FACILITIES, INC.

KL2-1 Energy for Telecommunications: the Next 25 Years
Mr. Alex McEachern
IEEE Fellow, President of Power Standards Lab

Session Chairs: Prof. Yen-Shin Lai, IEEE Fellow, National Taipei University of Technology
Prof. Tadashi Suetsugu, Fukuoka University

KL2-2 Approaches to Overcome the GOOGLE Little Box Challenges
Prof. Dr. Johann W. Kolar
IEEE Fellow, Director, Power Electronic Systems Laboratory, Department of Information Technology and Electrical Engineering (D-ITET)), Swiss Federal Institute of Technology (ETH) Zurich

11:30-13:30 Break for Lunch

13:30-15:35 CS01 - Commercial Session 1

Session Chair: Tatsuo Sasaki, Origin ELECTRIC CO., LTD. Hakucho, 8th Floor

13:30 CS01-1 NTT-F's Technologies for Optimizing LCC
Keizo Hoshijima
NTT FACILITIES, INC., Japan

14:00 CS01-2 Eltek Company Presentation and its Role in Energy Efficiency for Telecom Power Systems
Morten Schoyen
Chief Marketing Officer, ELTEK POWER PTE. LTD., Singapore

14:30 CS01-3 HVDC and OCP Power Solution in Data Center
Chihming Wu
Delta Electronics (Japan), Inc., Japan

13:30-15:35 TS01 - HVDC Power Systems 1

Session Chairs: Dusty Becker, General Chair, INTELEC 2016 Austin, USA — Toki, 8th Floor
Tetsuya Oshikata, Shindengen Electric Mfg. Co. Ltd., Japan

13:30 TS01-1 Development of Fuses for High Voltage Direct Current Power Systems
Yuji Yoshida and Yosuke Furuya
Daito Communication Apparatus Co., Ltd., Japan

13:55 TS01-2 Three Case Studies of Commercial Deployment of 400V DC Data and Telecom Centers in the EMEA Region
Sara Maly Lisy[1], and Mirna Smrekar[2]
[1]Emerson Network Power, USA, [2]Emerson Network Power, Croatia

14:20 TS01-3 Development of High-Efficiency Downsized Power Conversion (380 V to −48 V) Equipment for HVDC Power Supply System
Naoki Hanaoka[1], Akiko Takahashi[1], Toru Tanaka[1], Nobuhiko Yamashita[2], and Masahisa Sugahara[2]
[1]NTT FACILITIES, INC., Japan, [2]Nippon Telegraph and Telephone Corporation, Japan

14:45 TS01-4 Digital Peak Current Mode DC-DC Converter for Data Center in HVDC System
Kazuhiro Kajiwara[1], Fujio Kurokawa[1], Hidenori Maruta[1], Yuichiro Shibata[1], and Keiichi Hirose[2]
[1]Nagasaki University, Japan, [2]NTT FACILITIES, INC., Japan

15:10 TS01-5 Development of Appliance Coupler for 400V Direct Current System
Koichi Kiryu, Koki Sato, and Kyohei Seki
FUJITSU COMPONENT LIMITED, Japan

13:30-15:35 TS02 - Battery Technology 1

Session Chairs: Steven Vechy, Enersys, United States — Kujaku, 8th Floor
Toshihiko Ishiyama, Hachinohe Institute of Technology, Japan

13:30 TS02-1 Energy Storage System with Cylindrical Large Formatted Lithium Ion Batteries for Industrial Applications
Shoichi Hirota[1], Manabu Ochida[1], Kenji Hara[1], and Yuichiro Mishiro[2]
[1]Hitachi Chemical Co., Ltd., Japan, [2]Shin-Kobe Electric Machinery Co., Ltd., Japan

13:55 TS02-2 Green and Compact Backup Battery Solution for a Green Data Center
Stuart Lansburg, and Clémence Siret
Saft, France

14:20 TS02-3 Development of Long Cycle Life Valve-Regulated Lead-Acid Battery for Large-Scale Battery Energy Storage System to Utilize Renewable Energy
Shinichi Sano[1], Yoshiaki Ito[1], Yoshikazu Hirose[2], Hisaki Takeuchi[2], and Shigeo Aone[2]
[1]Hitachi Chemical Co., Ltd., Japan, [2]Shin-Kobe Electric Machinery Co., Ltd., Japan

14:45 TS02-4 Performance Study of a Vanadium Redox Flow Battery (VRB) for Use in Green Data Centers
Rajagopalan Badrinarayanan, Zhang Yu, and King Jet Tseng
Nanyang Technological University, Singapore

15:10 TS02-5 Failure Mechanism Due to Aging Effects in Lithium-Ion Batteries
Alvin Wu, Dean Wu, and Carl Wang
Underwriters Laboratories Taiwan Co., Ltd., Taiwan

13:30-15:35 TS03 - Topologies and Techniques for Power Converters 1

Session Chairs: Mourad Chergui, Alpha Technologies, Canada — Aoi, 9th Floor
Takaharu Takeshita , Nagoya Institute of Technology, Japan

13:30 TS03-1 Modular Multi-Stage Marx Topology for High Boost Ratio DC/DC Converter in HVDC
Asmarashid Ponniran, Koji Orikawa, and Jun-ichi Itoh
Nagaoka University of Technology, Japan

13:55 TS03-2 Single Input Triple Output DC-DC Converter for Automation Applications
Mahmoud Eid, Mohamed Youssef, and Ying Wang
University of Ontario Institute of Technology (UOIT), Canada

14:20 TS03-3 High Efficiency of 3-Level Inverter Embedding Neutral Point Voltage Shifting Control
Hiroki Munechika[1], Akihiro Ohori[1], Nobuyuki Hattori[1], and Mutsuo Nakaoka[2]
[1]DAIHEN Corporation, Japan, [2]Yamaguchi University, Japan

14:45 TS03-4 A Nine-Switch Interleaved Three-Phase AC-DC Single Stage Isolated Converter Implemented with SiC MOSFETs
Kawsar Ali, Pritam Das, and Sanjib Kumar Panda
National University of Singapore, Singapore

15:10 TS03-5 Dynamic Analysis of the Three-Level LLC Resonant Converter for a Rectifier in HVDC Distribution System
Hiroyuki Haga[1] and Fujio Kurokawa[2]
[1]Shindengen Electric Manufacturing Co., Ltd., Japan, [2]Nagasaki University, Japan

13:30-15:35 TS04 - Disaster Recovery and Mitigation

Session Chairs: Brain T. Patterson, EMerge Alliance, USA — Akane, 9th Floor
Wu Guohong, Tohoku Gakuin University, Japan

13:30 TS04-1 Numerical Evaluation of Communication Networks Resilience with a Focus on Power Supply Performance during Natural Disasters
Alexis Kwasinski
University of Pittsburgh, USA

13:55 TS04-2 Interoperability of Electricity Distribution and Communication Networks in Large-Scale Outage Situations
Seppo Horsmanheimo, Niwas Maskey, Lotta Tuomimäki, and Kari Mäki
VTT Technical Research Centre of Finland Ltd., Finland

14:20 TS04-3 Wavelet Based Fault Tolerance in Grid Interface System for DC Power Distribution Network
H.G.Yap, and K.J.Tseng
Nanyang Technological University, Singapore

14:45 TS04-4 Energizing Microgrids with Electric Vehicles during Emergencies – Natural Disasters, Sabotage and Warfare
Taha Selim Ustun[1], Umit Cali[2], and Mithat C. Kisacikoglu[3]
[1]Carnegie-Mellon University, USA, [2]Gediz University, Turkey, [3]Hacettepe University, Turkey

15:10 TS04-5 Cost-Benefit Analysis of a Microgrid System
Junpei Inamori, Midori Nonogaki, and Keiichi Hirose
NTT FACILITIES, INC., Japan

15:35-16:00 Coffee Break

16:00-18:05 CS02 - Commercial Session 2

Session Chair: Satoshi Ohtsu — Hakucho, 8th Floor
NTT FACILITIES RESEARCH INSTITUTE Inc., Japan

16:00 CS02-1 Experimental Verification of Fault-diagnosis Architecture in a Large-scale Photovoltaic Power Plant
Tohru Kohno, Kenichi Gokita, Tomoharu Nakamura
Hitachi Group, Japan

16:30 CS02-2 ICT Convergence Oriented Power Solutions
Tao Hongming
VP of Network Energy Product Line, Huawei Technologies Co., Ltd., China

17:00 CS02-3 Integration and Flexibility: Tendencies for Telecom Energy Development
Changling Zhang
Solution Director of Energy Product Department, ZTE Corporation, China

16:00-18:05 TS05 - HVDC Power Systems 2

Session Chairs: BJ Sonnenberg, Emerson, USA — Toki, 8th Floor
Yasuyuki Nishida, Chiba Institute of Technology, Japan

16:00 TS05-1 Concept of New Power Supply System Topology Using 380 V and 48 V DC Bus for Future Datacenters and Telecommunication Buildings
Toru Tanaka[1], Naoki Hanaoka[1], Akiko Takahashi[1], Koki Asakimori[1], Takeshi Iwato[2], Atsushi Sakurai[2], and Nobuhiko Yamashita[2]
[1]NTT FACILITIES, INC., Japan, [2]Nippon Telegraph and Telephone Corporation, Japan

16:25 TS05-2 High Efficiency Remote Power Distribution for Telecom Infrastructure
Bjørn Håvard Stokke[1], Ole Jakob Sørdalen[1], Erling Skallerud[1], Morten Schøyen[1], and Gunter Schmitt[2]
[1]Eltek AS, Norway, [2]Eltek Deutschland GmbH, Germany

16:50 TS05-3 A Novel Control Strategy for Multi Energy Source Power Supply for DC Link Connection
Fumiya Nagano and Youichi Ito
Sanken Electric Co.,Ltd., Japan

17:15 TS05-4 380Vdc/48Vdc/ 3kw DC/DC Converter with 98.2% Efficiency
Odd Roar Schmidt and Erik Myhre
Eltek A/S, Norway

17:40 TS05-5 Suppression of Output Capacitance of DC-DC Converter in HVDC System
Fujio Kurokawa[1], Yudai Furukawa[1], Ippei Sugimoto[1], Yuichiro Shibata[1], and Keiichi Hirose[2]
[1]Nagasaki University, Japan, [2]NTT FACILITIES, INC., Japan

16:00-18:05 TS06 - Battery Technology 2

Session Chairs: Mike Giulianini, Redflow Limited, Australia — Kujaku, 8th Floor
Takefumi Inoue, GS Yuasa Corporation, Japan

16:00 TS06-1 On-Line Electrochemical Impedance Spectroscopy Implementation for Telecommunication Power Supplies
Reinhold Koch[1], Christoph Riebel[1], and Andreas Jossen[2]
[1]TUM CREATE, Singapore, [2]Technische Universität München, Germany

16:25 TS06-2 Development of Nickel Zinc Technology for Reserve Power Industrial Applications – Part 1
Rhodri W. Evans[1], Stephen L. Vechy[2], Andrew C. Loyns[1], Christian Oettel[3], Alfonso S. Pensado[3], and Borislav S. Leshtanski[3]
[1]EnerSys Limited, United Kingdom, [2]EnerSys Limited, USA, [3]EnerSys - GAZ Geräte- und Akkumulatorenwerk Zwickau, GmbH, Germany

16:50 TS06-3 Study of Degradation Prediction Technology for Valve-Regulated Lead-Acid Batteries
Hiroshi Wakaki[1], Yusuke Uno[1], Nobuhiko Susuki[1], Takashi Matsushita[1], and Shoji Matsumura[2]
[1]NTT FACILITIES, INC., Japan, [2]NTT FACILITIES RESEARCH INSTITUTE, Inc., Japan

17:15 TS06-4 Techno Economic Assessment of Different Electrochemical Energy Storage Systems for Use in Khorasan, Iran
Mohammad Monfared[1], Hamed Heydary D.[1], Ali Saeedi[1], and Guohong Wu[2]
[1]Mashhad Electric Energy Distribution Company, Iran, [2]Tohoku Gakuin University, Japan

17:40 TS06-5 Battery Quite Discharge for Rapid Capacity Evaluation Based on Multi-Frequency Measurement
Wang Rugang[1], Yang Zhongliang[2], Huang Shihui[1], and Kang Qibin[1]
[1] PITE TECH. INC., China, [2] Shenzhen Power Supply Co., LTD., China

16:00-18:05 TS07 - Topologies and Techniques for Power Converters 2

Session Chairs: Praveen Jain, Queens University, Canada — Aoi, 9th Floor
Kazuto Yukita, Aichi Institute of Technology, Japan

16:00 TS07-1 Single Stage True Bridgeless AC/DC Power Factor Corrected Converter
Donovan Davidson
Gleneagles Technologies Ltd., Canada

16:25 TS07-2 Robustness Analysis for Observer Based Active Damping of LCL Filter at Different Resonant Frequencies
Mahmoud A. Gaafar[1], Gamal M. Dousoky[1,2], and Masahito Shoyama[1]
[1]Kyushu University, Japan, [2]Minia University, Egypt

16:50 TS07-3 Simple Cost Function and Low Calculations MPC Algorithm for qZSI
Abualkasim Bakeer, Mohamed A. Ismeil, and Mohamed Orabi
Aswan University, Egypt

17:15 TS07-4 High-Efficiency Buck AC/DC Converter Using SiC MOSFET
Junpei Isozaki, Kazuma Suzuki, Wataru Kitagawa, and Takaharu Takeshita
Nagoya Institute of Technology, Japan

17:40 TS07-5 Design a High-Frequency Isolated AC-DC Converter for High Current Applications
Ming-Tsung Tsai, Ching-Lung Chu, Yu-Jhang Chen, and Bao-Xiang Chen
Southern Taiwan University, Taiwan

16:00-18:05 TS08 - Power Distribution Architectures

Session Chairs: Alex McEachern, Power Standard Laboratory, USA — Akane, 9th Floor
Yasuyuki Sugiyama, NTT FACILITIES, INC., Japan

16:00 TS08-1 The Evolution of Remote Line Powering Safety Standards for Facilitating the Transmission of Elevated DC Voltages over Twisted Pair
Andrew J. Dickson[1], Victor Goncalves[1], Steve Robinson[2], and Dan Cassidy[2]
[1]Alpha Technologies, Canada, [2]ADTRAN, USA

16:25 TS08-2 The Cost Benefits of Deploying Line Powering Systems from a Centralized Location over an Existing a Copper Twisted-Pair Outside Plant to Energize Remote Equipment in the Distributed Telecom Network
Mourad Chergui
Alpha Technologies, Canada

16:50 TS08-3 Distributed Dynamic Consensus for Reliable and Economic Operation of Standalone DC Microgrids
Mohamed Zaery, Emad M. Ahmed, and Mohamed Orabi
Aswan University, Egypt

17:15 TS08-4 Energy Sharing and Energy Co-Construction of the Communication Network
Mingming Liu, Lingqiao Teng, Guangji Ma, Xianhong Hu, and Shi Men
ZTE Corporation, China

17:40 TS08-5 XMPP-Based Energy Management System Architecture for Communications Systems
Yoshimichi Okuno[1], Yutaka Arai[1], Yasuyuki Hoshi[1], Hiroyuki Henmi[1], Tetsuo Otani[2], and Eiji Ohba[2]
[1]Meidensha Corporation, Japan, [2]Central Research Institute of Electric Power Industry, Japan

Tuesday October 20th

8:30-10:10 TS09 - High Efficiency and High Density Power Supplies 1

Session Chairs: Odd Roar Schmidt, Eltek A/S, Norway — Hakucho, 8th Floor
Masayoshi Yamamoto, Shimane University, Japan

8:30 TS09-1 Fundamental Efficiency Limits in Power Electronic Systems
Thomas Heckel[1], Cornelius Rettner[2], and Martin März[2]
[1]Friedrich-Alexander-University Erlangen-Nuremberg, Germany, [2]Fraunhofer IISB, Germany

8:55 TS09-2 Characteristics of High Frequency Gate Driver by the Use of LC Self-Excitation Oscillator
Hironori Murakami[1], Naoyuki Ishibashi[1], Xiuqin Wei[1], Akihiko Katsuki[1], and Masahiko Hirokawa[2]
[1]Nagasaki University, Japan, [2]TDK Corporation, Japan

9:20 TS09-3 High Efficiency High Density Telecom Rectifier With GaN Device
Liping Sun, Zhihui Ding, Desheng Guo, Lihao Yan, and Chao Yan
Delta Electronics (Shanghai) Co., Ltd., China

9:45 TS09-4 Single Stage AD-DC Full-Bridge Converter for Battery Charger
Shinichiro Hattori and Fujio Kurokawa
Nagasaki University, Japan

8:30-10:10 TS10 - Islanded/Gird-connected Power Systems 1

Session Chairs: Kari Mäki, VTT Technical Research Center of Finland, Finland — Toki, 8th Floor
Hiroshi Yamaguchi, AIST, Japan

8:30 TS10-1 Development of a Resilient Hybrid Microgrid with Integrated Renewable Power Generations Supplying DC and AC Loads
Guohong Wu[1], Yoshiyuki Ono[1], and Mohammad Alishahi[2]
[1]Tohoku Gakuin University, Japan, [2]Mashhad Electric Energy Distribution Company, Iran

8:55 TS10-2 Result Assessment of the First Local Micro-Grid in Mashhad, Iran
Naser Nakhodchi[1], Saeed Alishahi[1], Morteza H. Pourarab[1], and Guohong Wu[2]
[1]Mashhad Electric Energy Distribution Company, Iran, [2]Tohoku Gakuin University, Japan

9:20 TS10-3 Experimental Study of the Storage Battery Capacity Reduction by Using Direct Current Mutual Power Interchanges for Micro Grid
Kazufumi Yuasa, Tomohito Ushirokawa, Hidenori Matsuo, Takashi Takeda, Masatoshi Noritake, Midori Nonogaki, Ken Ozeki, and Keiichi Hirose
NTT FACILITIES, INC., Japan

9:45 TS10-4 An Advanced Voltage Droop Control Concept for Grid-Tied and Autonomous DC Microgrids
Leopold Ott, Yunchao Han, Bernd Wunder, Julian Kaiser, Fabian Fersterra, Matthias Schulz, and Martin März
Fraunhofer Institute for Integrated Systems and Device Technology, Germany

8:30-10:10 TS11 - Energy Management Techniques 1

Session Chairs: Greg Tremelling, NEC Energy Solutions, USA — Kujaku, 8th Floor
Masahide Hojo, Tokushima University, Japan

8:30 TS11-1 Loss Analysis of Energy-Storage System with Multiple Storage Devices for Grid Connection
Hitoshi Haga[1], Toshihiro Shimao[2], Seiji Kondo[1], Koji Kato[2], Youichi Itoh[2], Kenji Arimatsu[3], and Katsuhiro Matsuda[3]
[1]Nagaoka University of Technology, Japan, [2]Sanken Electric Co., Ltd,, Japan, [3]Tohoku Electric Power Co., Inc., Japan

8:55 TS11-2 An Intelligent Sensor-Less Supervisory Power Management Control Algorithm with a Fuzzy Logic Voltage Controller for Off-Grid Wind Systems
Joanne Hui, Alireza Bakhshai, and Praveen K. Jain
Queen's University, Canada

9:20 TS11-3 Optimized Battery Charge Control in PV-Hybrid Applications
Daniel Wolf, Kai Siemer, José Daza-Correa, and Harald Münter
Heliocentris Industry GmbH, Germany

9:45 TS11-4 WSN-Based Energy-Efficient Data Communication Protocol for Smart Green Building Environment
Hnin Yu Shwe and Peter Han Joo Chong
Nanyang Technological University, Singapore

8:30-10:10 TS12 - Topologies and Techniques for Power Converters 3

Session Chairs: Ghasem Hosseini Aghdam, Ericsson AB, Sweden — Aoi, 9th Floor
Teruhiko Kohama, Fukuoka University, Japan

8:30 TS12-1 Zero-Crossing Point Detection Using Differentiation Circuit for Boundary Current Mode Converters
Jizhe Wang, Kazuki Yoshimura, and Fujio Kurokawa
Nagasaki University, Japan

8:55 TS12-2 A Highly-Efficient Two-Stage DC-DC Converter with Wide Input Voltage
Chun Shang[1], Liangliang Liu[2], Mingming Liu[2], and Shi Men[2]
[1]SUPLET Corporation, China, [2]ZTE Corporation, China

9:20 TS12-3 Basic Characteristics of Current Sensorless Hysteretic Control DC-DC Converter
Kazuki Yoshimura and Fujio Kurokawa
Nagasaki University, Japan

9:45 TS12-4 Model Based Control of Modified Four-Phase Interleaved Boost Converter for Fuel Cell Power Source for Mobile Based Station
Pongsiri Mungporn[1], Nitchamon Poonnoi[1], Suwat Sikkabut[1], Chainarin Ekkaravarodome[1], Phatiphat Thounthong[1], Nicu Bizon[2], Melika Hinaje[3], Serge Pierfederici[3], and Bernard Davat[3]
[1]King Mongkut's University of Technology North Bangkok, Thailand, [2]Univ. Pitesti, Romania, [3]GREEN, Université de Lorraine, France

8:30-10:10 TS13 - Grounding, EMC and Site Support Systems

Session Chairs: Achmad Munir, Institut Teknologi Bandung, Indonesia — Akane, 9th Floor
Tetsuro Tanaka, Kagoshima University, Japan

8:30 TS13-1 Conduction Noise Reduction Method for the Three-Level V-Connection Inverter Using Space Vector PWM
Jun-ichi Itoh[1], Minh Dang Huynh[2], Daisuke Sato[1], and Koji Kato[2]
[1]Nagaoka University of Technology, Japan, [2]Sanken Electric Co., Ltd., Japan

8:55 TS13-2 Conducted Noise Reduction of Totem-Pole Bridgeless PFC Converter Using GaN HEMTs
Baihua Zhang[1], Kewei Shi[1], Qiang Lin[1], Gamal M. Dousoky[1,2], Masahito Shoyama[1], and Satoshi Tomioka[3]
[1]Kyushu University, Japan, [2]Minia University, Egypt, [3]TDK-lambda, Japan

9:20 TS13-3 A Study on Conducted Disturbance Below 150 kHz from Commercial Power-conditioning System
Farhan Mahmood, Ken Okamoto, and Kazuhiro Takaya
NTT Network Technology Laboratories Tokyo, Japan

10:10-10:30 Coffee Break

10:30-12:10 TS14 - High Efficiency and High Density Power Supplies 2

Session Chairs: Mohsen Soltani, Aalborg University, Denmark — Hakucho, 8th Floor
Junichi Itoh, Nagaoka University of Technology, Japan

10:30 TS14-1 Efficiency Comparison between Phase Shift and LLC Converters as Power Supply for Information and Communication Equipments
Toshiyuki Watanabe[1] and Fujio Kurokawa[2]
[1]SHINDENGEN ELECTRIC MFG. CO., LTD., Japan, [2]Nagasaki University, Japan

10:55 TS14-2 A Battery Charger with 3-Phase 3-Level T-Type PFC
Ryuji Yamada, Yuji Nemoto, Satoru Fujita, and Qichen Wang
Fuji Electric Co., Ltd., Japan

11:20 TS14-3 A New Phase Shedding and Phase Adding Control Scheme for Interleaved DAB Converter Operating in IPOP Configuration
Shiva S. Muthuraj, Naga B. Y. Gorla, Pritam Das, and Sanjib K. Panda
National University of Singapore, Singapore

11:45 TS14-4 A Novel High Step-Down Interleaved Converter with Coupled Inductor
Wilmar Martinez[1], Jun Imaoka[1], Yuki Itoh[1], Masayoshi Yamamoto[1], and Kazuhiro Umetani[2]
[1]Shimane University, Japan, [2]Okayama University, Japan

10:30-12:10 TS15 - Islanded/Gird-connected Power Systems 2

Session Chairs: Emad Ahmed, Aswan University, Egypt — Toki, 8th Floor
Masaki YAGAMI, Hokkaido Institute of Technology, Japan

10:30 TS15-1 Islanding Detection for a Single Phase Bidirectional Converter in Telecommunication Power Systems
Bahador Mohammadpour, Majid Pahlevaninezhad, Sajjad Makhdoomi Kaviri, and Praveen Jain
Queen's University, Canada

10:55 TS15-2 The Demonstration of the CO_2 Reduction Effect of 400V Class DC Micro Grid for Offices
Masatoshi Noritake[1], Kazufumi Yuasa[1], Takashi Takeda[1], Kentaro Shimomachi[2], Ryoichi Hara[2], Hiroyuki Kita[2], and Toshiro Matsumura[3]
[1] NTT FACILITIES, INC., Japan, [2] Hokkaido University, Japan, [3] Nagoya University, Japan

11:20 TS15-3 Influence of Availability on the Cost Analysis of Solar Powered Data Centers with AC and DC Architecture and Mirroring Functionality
Domagoj Talapko[1] and Sejid Tesnjak[2]
[1]Emerson Network Power, Croatia, [2]Faculty of Electrical Engineering and Computing, Croatia

11:45 TS15-4 Verification of Cost Saving for Office Building Using Renewable Energy and Battery System
Tomohito Ushirokawa[1], Kazufumi Yuasa[1], Takashi Takeda[1], Hiroaki Miyoshi[2], and Kazuto Yukita[2]
[1]NTT FACILITIES, INC., Japan, [2]Aichi Institute of Technology, Japan

10:30-12:10 TS16 - Energy Management Techniques 2

Session Chairs: Michele Pastorell, Politecnico di Torino, Itally — Kujaku, 8th Floor
Toshiaki Yachi, Tokyo University of Science, Japan

10:30 TS16-1 Economic Evaluation of Peak Shift System Using Power Demand Forecasting
Masaki Shimoda[1], Toshiaki Yachi[1], and Yasuyuki Kanai[2]
[1]Tokyo University of Science, Japan, [2]Kyowa Exio, Japan

10:55 TS16-2 Setup and State Based Energy Control of a Grid-Connected Multipurpose Hybrid Hydrogen System
Michael Steinberger, Johannes Geiling, and Richard Öchsner
Fraunhofer Institute for Integrated Systems and Device Technology IISB, Germany

11:20 TS16-3 The Effect of Free Cooling on Reducing Total Energy Consumption for Telecommunication Base Stations
Ehsan Bitaraf Haghighi
Dantherm Cooling AB, Sweden

11:45 TS16-4 First Approach of Diversity Design for FPGA Based on Energy Management
Kenichi Morimoto[1], Yuichiro Shibata[1], Yudai Shirakura[1], Hidenori Maruta[1], Fujio Kurokawa[1], Masanori Nobe[2], and Masaharu Tanaka[3]
[1]Nagasaki University, Japan, [2]Mitsubishi Hitachi Power Systems, LTD., Japan, [3]Mitsubishi Heavy Industries, LTD., Japan

10:30-12:10 TS17 - Topologies and Techniques for Power Converters 4

Session Chairs: Manfred Schlenk, Infineon, Germany — Aoi, 9th Floor
Yoichi Itoh, Sanken Electric Co. Ltd., Japan

10:30 TS17-1 A High Frequency Solution for Hybrid Renewable Energy Systems
Hossein Mousavian, Alireza Bakhshai, and Praveen Jain
Queen's University, Canada

10:55 TS17-2 An Isolated DC-DC Converter Using Air-Core Inductor for Power Supply on Chip Applications
Takafumi Akagi, Seiya Abe, Masanobu Hatanaka, and Satoshi Matsumoto
Kyushu Institute of Technology, Japan

11:20 TS17-3 Model Characterization and Performance Evaluation of GaN FET in DC-DC POL Regulators
Ghasem Hosseini Aghdam
Ericsson AB, Sweden

11:45 TS17-4 Electrolytic Capacitor-Less Single-Phase AC/DC Converter Using T-Type NPC Circuit
Mitsuyasu Abe, Hitoshi Haga, and Seiji Kondo
Nagaoka University of Technology, Japan

10:30-12:10 TS18 - Wireless Power Transfer 1

Session Chairs: Huang J. Chiu, National Taiwan University of Science and Technology, Taiwan — Akane, 9th Floor
Hamdoun Hassan, University of Aberdeen, United Kingdom

10:30 TS18-1 Basic Experiment Study on Misalignment Characteristic of Electrical Resonance Coupling Wireless Power Transfer
Hirokatsu Umegami, Masataka Ishihara, Fumiya Hattori, Mitsuru Masuda, and Masayoshi Yamamoto
Shimane University, Japan

10:55 TS18-2 Practical Bifurcation Criteria Considering Coil Losses and Compensation Topologies in Inductive Power Transfer Systems
Jae-Woo Lee[1], Dong-Gyun Woo[1], Seung-Hee Ryu[1], Byoung-Kuk Lee[1], and Hee-Jun Kim[2]
[1]Sungkyunkwan University, Republic of Korea, [2]Hanyang University, Republic of Korea

11:20 TS18-3 Reduce of Electric Ner-Field Intensity by a Shield Box in Wireless Power Transfer via Field Resinance Coupling
Mitsuru Masuda[1], Masahiro Kusunoki[1], Hirokatsu Umegami[2], Fumiya Hattori[2], and Masayoshi Yamamoto[2]
[1]Furukawa Electric Corporation, Japan, [2]Shimane University, Japan

11:45 TS18-4 Radiator of Wireless Power Charging for Mobile Device and Its Efficiency Characterization
Achmad Munir, Ni Wayan Dessy Eka Rahayu, and Biru Tutur Ranum
Institut Teknologi Bandung, Indonesia

12:10-13:30 Break for Lunch

13:30-15:35 OS01 - Organized Session 1 - DC Power Conversion and Application

Session Organizer: Yen-Shin Lai, National Taipei University of Technology, Taiwan — Hakucho, 8th Floor
Session Chair: Satoshi Ohtsu, NTT FACILITIES RESEARCH INSTITUTE Inc., Japan

13:30 OS01-1 Analysis and Design of High Step-Up DC-DC Converter with Coupled-Inductor Technique
Guo-Wei Shiung, Tsorng-Juu Liang, Jia-You Lee, and Po-Yen Lin
National Cheng-Kung University, Taiwan

13:55 OS01-2 Design and Implementation of Step-Down Converter with D-Σ Digital Control
Tsai-Fu Wu, Tin-Hao Chang, Chih-Hao Chang, and Li-Chiun Lin
National Tsing Hua University, Taiwan

14:20 OS01-3 Low Harmonic Design of a Buck Converter with Triangular Wave Control for Frequency Hopping
Pang-Jung Liu[1], Chuan-Feng Wu[2], and Kai-Lin Peng[1]
[1]National Taipei University of Technology, Taiwan, [2]National Taiwan University of Science and Technology, Taiwan

14:45 OS01-4 Design and Implementation of a Four-Phase Converter with Digital Current Sharing Control for Battery Charger
Sheng Yuan Ou and Liang Yen Liu
National Taipei University of Technology, Taiwan

15:10 OS01-5 New Switching Control Technique to Improve the Efficiency under Light Load Condition for LLC Converter with Large Magnetizing Inductance
Yen-Shin Lai and Shau-Wei Chen
National Taipei University of Technology, Taiwan

13:30-15:35 TS19 - High Efficiency and High Density Power Supplies 3

Session Chairs: King J. Tseng, Nanyang Technological University, Singapore — Toki, 8th Floor
Hirohito Funato, Utsunomiya University, Japan

13:30 TS19-1 A Method for Dividing Voltage Stress of High Voltage Class E Inverter
Tadashi Suetsugu[1], Shotaro Kuga[1], and Xiuqin Wei[2]
[1]Fukuoka University, Japan, [2]Nagasaki University, Japan

13:55 TS19-2 Switching Characterization of SiC Half Bridge Module for High Power Density Converter
Shan Yin[1], K. J. Tseng[1], C. F. Tong[1], Rejeki Simanjorang[2], C. J. Gajanayake[2], and Amit K. Gupta[2]
[1]Nanyang Technological University, Singapore, [2]Rolls-Royce Singapore Pte. Ltd., Singapore

14:20 TS19-3 Minimization of EMC Filter for Interconnection Inverter by High Switching Frequency
Takuya Kataoka, Masakazu Kato, and Jun-ichi Itoh
Nagaoka University of Technology, Japan

14:45 TS19-4 Re-Architecting 48V Power Systems with a Novel Non-Isolated Bus Converter
Maurizio Salato
VICOR, USA

15:10 TS19-5 Improved Digital Control Scheme of Synchronous Rectification for Resonant Converter at Light Load Conditions
Mitsuru Sato[1], Gamal M. Dousoky[1,2], and Masahito Shoyama[1]
[1]Kyushu University, Japan, [2]Minia University, Egypt

13:30-15:35 TS20 - Energy Management Techniques 3

Session Chairs: Jon Anderson, C&D Technologies Inc., USA — Kujaku, 8th Floor
Ryo Takahashi, Kyoto University Graduate School of Engineering, Japan

13:30 TS20-1 Energy Management Using a Quick Charger with Storage Battery for Electric Vehicles
Taku Ishibashi, Toyonari Shimakage, Norikazu Takeuchi, Takaaki Kikuchi, and Midori Nonogaki
NTT FACILITIES, INC., Japan

13:55 TS20-2 Microgrids for Base Stations: Renewable Energy Prediction and Battery Bank Management for Effective State of Charge Control
Youngsung Kwon[1], Alexis Kwasinski[2], and Andres Kwasinski [3]
[1]University of Texas at Austin, USA, [2]University of Pittsburgh, USA, [3]Rochester Institute of Technology, USA

14:20 TS20-3 Control Charge-Discharge Using EV and PHEV Batteries for Power Demand Reducion
Yoshito Nishita and Masafumi Iwata
Mitsubishi Electric Corporation, Japan

14:45 TS20-4 State of Charge Estimation Considering OCV Hysteresis in Lithium Iron Phosphate Battery for UPS Applications
Rudy Tjandra[1], King Jet Tseng[1], Suguna Thanagasundram[2], and Andreas Jossen[3]
[1]Nanyang Technological University, Singapore, [2]Temasek Polytechnic, Singapore, [3]Technische Universität München, Germany

15:10 TS20-5 Advanced Battery Management System Using MATLAB/Simulink
Bijender Kumar[1], Neeta Khare[2], and P. K. Chaturvedi[3]
[1]Banasthali University, India, [2]Energy Storage & System Integrator, USA, [3] SRM University, India

13:30-15:35 TS21 - Power Systems for Central Offices/Data Centers 1

Session Chairs: George Bradilovic, Telstra, Australia — Aoi, 9th Floor
Hiroaki Kakigano, Ritsumeikan University, Japan

13:30 TS21-1 Peak-cut Control of Smart Energy BTS - Power Control Technology for Reducing the Power Consumed by Base Stations
Masaki Nakamura, Kazuaki Kimura, and Kazuhiko Takeno
NTT DOCOMO, INC., Japan

13:55 TS21-2 Edison vs Tesla: A Rematch in the Telecom Data Center
Paul Smith
GE – Critical Power, USA

14:20 TS21-3 How to Ensure the Modular UPS with High Reliability
Zhang Xiaofei[1], Wang Zhen[2], and Shu Zhou[1]
[1]Huawei Technologies Co., Ltd., China, [2]China Mobile Communications Group Co., Ltd., China

14:45 TS21-4 Research and Application of Green Power System for New Data Centers
Zhen Wang, Xu Wang, and Mingjiang Li
China Mobile, China

15:10 TS21-5 Strategy for Introduction of High-Voltage DC Power Supply System at NTT Group
Takashi Okuno, Shintaro Okamura, Yasuyuki Ooi, Keiichi Hirose, and Reiko Nishii
NTT FACILITIES, INC., Japan

13:30-15:35 TS22 - Renewable Energy Generations 1

Session Chairs: Leopold Ott, Fraunhofer Institute for Integrated Systems and Device Technology, Germany — Akane, 9th Floor
Noriyuki Kimura, Osaka Institute of Technology, Japan

13:30 TS22-1 Power Output Estimation of Cylindrical Flexible PV Modules That Can Be Mounted to a Telecommunications Pole in Green Base Stations
Mamoru Shibasaki and Toshiaki Yachi
Tokyo University of Science, Japan

13:55 TS22-2 A New Integrated Hybrid Power Supply System for Telecom Site Sharing Solution
Yun Wang, Lu Xu, Jiankai Gao, and Liwei Liu
ZTE Corporation, China

14:20 TS22-3 Experimental Characteristics of a Novel Synchronous Generator for Wind Power Generation
Tsuyoshi Higuchi, Yuichi Yokoi, and Takashi Abe
Nagasaki University, Japan

14:45 TS22-4 Microgrid Control Strategies and Synchronization Techniques during Transition between Grid-Connected and Stand-Alone Mode of Operation
Sadaf S. Sorkhabi and Alireza Bakhshai
Queen's University, Canada

15:10 TS22-5 Solar Powered Base Station with a Muliple-Input Modified Inverse Watkins-Johnson Converter
Jeongtae Kim and Sungwoo Bae
Yeungnam University, Republic of Korea

15:35-16:00 Coffee Break

16:00-18:05 OS02 - Organized Session 2 - Site Support Systems: Energy and Safety

Session Organizer: Rosario Miceli, University of Palermo, Italy — Hakucho, 8th Floor
Session Chair: Masahito Ohnishi, Panasonic Corporation, Japan

16:00 OS02-1 A Low-cost, Real-time Monitoring System for PV Plants based on ATmega 328P-PU Microcontroller
M. Caruso, R. Miceli, P. Romano, G. Schettino, C. Spataro, and F. Viola
University of Palermo, Italy

16:25 OS02-2 Smart Energy Users: ICT Instruments for the Consumer Awareness
Mariapia Martino[1], Guglielmina Mutani[1], Michele Pastorelli[1], and Rosario Miceli[2]
[1]Politecnico di Torino, Italy, [2]Università di Palermo, Italy

16:50 OS02-3 VIMSEN – Smart Tool for Energy Aggregators
Genesh Sauba[1], Jos van der Burgt[1], Emmanouel Varvargos[2], Prodromos Makris[2], and Anthony Schoofs[3]
[1]DNV GL, The Netherlands, [2]Computer Technology Institute and Press <<Diphantus>>, Greece, [3]WATTICS, Ireland

17:15 OS02-4 Finite-Difference Time-Domain Simulation of Tower and Grounding Subjected to Lightning
F. Viola, P. Romano, R. Miceli, A. Imburgia, M. Caruso, and G. Schettino
Università degli Studi di Palermo, Italy

17:40 OS02-5 **Embedding Final Users in Energy Saving Programs**
Mariapia Martino, Guglielmina Mutani, and Michele Pastorelli
Dipartimento Energia Politecnico di Torino, Italy

18:05 OS02-6 **Clustering-based Performance Assessment of Thermal Energy Management in Buildings**
G. Chicco[1], F. de Bosio[1], M. Pastorelli[1], and M. Fantino[2]
[1]Dipartimento Energia Politecnico di Torino, Italy, [2]Istituto Superiore Mario Boella Torino, Italy

16:00-18:05 TS23 - Topologies and Techniques for Power Converters 5

Session Chairs: Maurizio Salato, VICOR, USA — Toki, 8th Floor
Akihiko Katsuki, Nagasaki University, Japan

16:00 TS23-1 **A 380V AC-DC Single Stage Three Level Resonant Converter without Auxiliary Circuit**
Cong Wang, Shangzhi Pan, and Praveen Jain
Queen's University, Canada

16:25 TS23-2 **Stand-Alone Three-Phase Symmetrical Multi-Level Inverter**
Ahmed Salem[1], Emad M. Ahmed[1], Mahrous Ahmed[1,2], and Mohamed Orabi[1]
[1]Aswan University, Egypt, [2]Taif University, Saudi Arabia

16:50 TS23-3 **A Study on Trajectory Control of Manipulator Using Power Packet Dispatching**
Shiu Mochiyama, Naoaki Fujii, Ryo Takahashi, and Takashi Hikihara
Kyoto University, Japan

17:15 TS23-4 **An Extra Low Voltage DC (ELVDC) Power Distribution for LED Lighting System**
Si H. Chew[1,2], Nurul H. Ardiyanto[1], and King J. Tseng[1,2]
[1]Nanyang Technological University, Singapore, [2]Berkeley Education Alliance for Research in Singapore, Singapore

17:40 TS23-5 **Phase-Shift Frequency-Variant Control for Single Stage Dual Active Bridge DC/DC Converter over a Wide Input Voltage Range**
Iman Askarian, Majid Pahlevani, and Alireza Bakhshai
Queen's University, Canada

16:00-17:40 TS24 - Energy Management Techniques 4

Session Chairs: Rajit Gadh, Smart Grid Energy Research Center, UCLA, USA — Kujaku, 8th Floor
Masatoshi Nakahara, Sojo University, Japan

16:00 TS24-1 **Single-Phase Virtual Synchronous Generator without a Dedicated Synchronization Unit**
Tarek Younis[1], Mohamed Ismeil[1], Mohamed Orabi[1], Mahmoud A. Sayed[2], and Takaharu Takeshita[2]
[1]Aswan University, Egypt, [2]Nagoya Institute of Technology, Japan

16:25 TS24-2 **Power Control of a Bi-Directional AC/DC Rectifier Used for Telecom Backup Systems**
Sajjad M. Kaviri, Majid Pahlevani, Bahador Mohammadpour, Praveen Jain, and Alireza Bakhshai
Queen's University, Canada

16:50 TS24-3 **High Accuracy and Resolution Illuminance Sensing for Intelligent Energy Management**
Yee Loon Sum, Szu-Cheng Chien, Yiu Wing Edwin Chan, Boon Hee Soong, and King Jet Tseng
Nanyang Technological University, Singapore

17:15 TS24-4 **An Energy Optimization Model (EOM) to Reduce Mobile Service Providers Network Costs: a Multi-Objective Optimization Approach**
Marwan Awad[1], Osama Khair[2], and Hassan Hamdoun[3]
[1]Dot Energy, United Kingdom, [2]ZAIN SD, Sudan, [3]University of Aberdeen, United Kingdom

16:00-18:05 TS25 - Power Systems for Central Offices/Data Centers 2

Session Chairs: Paul Smith, GE Critical Power, USA — Aoi, 9th Floor
Nobuhiko Yamashita, NTT, Japan

16:00 TS25-1 **Resonant Voltage Doubler Circuit for Solar PV Converter**
Kiyoshi Moro[1], Takuya Sudo[1], Tadashi Masuda[1], Tomohito Ushirokawa[2], and Takashi Takeda[2]
[1]Origin Electric Co., Ltd., Japan, [2]NTT FACILITIES, INC., Japan

16:25 TS25-2 **Droop Control for Bi-Directional DC-DC Converters Used in Multi-Level Virtual Conductors**
Tomohiro Takahashi[1], Masakazu Miyamoto[1], Gamal M. Dousoky[1,2], and Masahito Shoyama[1]
[1]Kyushu University, Japan, [2]Minia University, Egypt

16:50 TS25-3 **A Novel Concept of DC Voltage Taps for Multi-Ended DC Power Supply System**
Naoya Okada, Masahide Hojo, and Kenji Yamanaka
Tokushima University, Japan

17:15 TS25-4 **Application of Powering from Mains Supply Directly in Data Centers**
Zheng-Hai Liu, Qing-Feng Zhu, Bao-Qing Liu, and Hao-Ming Li
China United Network Communications Corporation Limited, China

17:40 TS25-5 **Multi–Cell Rectifier Using GaN-FET for Highly Efficient Next Generation 380-V dc Distribution System**
Yusuke Hayashi[1], Daiki Takai[1], and Akira Matsumoto[2]
[1]Osaka University, Japan, [2]NTT FACILITIES, INC., Japan

16:00-17:40 TS26 - Power Systems for Networks

Session Chairs: Victor Goncalves, Alpha Technologies LTD Canada, Canada — Akane, 9th Floor
Nobumasa Matsui, Nagasaki Institute of Applied Science, Japan

16:00 TS26-1 **Voltage and Frequency Stability Analysis of AC Microgrid**
Ilhami Colak[1], Ramazan Bayindir[2], Mohammed Al-Nussari[3], and Eklas Hossain[4]
[1]Istanbul Gelisim University, Turkey, [2]Gazi University, Turkey, [3]Misan University, Iraq, [4]University of Wisconsin Milwaukee, USA

16:25 TS26-2 **Development of a Fuse-Type SPD Disconnector for Power Supply System and the Application Guide**
Atsushi Sato, Nobuyuki Morii, and Hidetaka Sato
NTT FACILITIES, INC., Japan

16:50 TS26-3 **A TCP-Based Transport Protocol for Smart Metering Application**
Mitra Farshchian[1], Mohammad Alishahi[2], Mohammad H. Y. Moghaddam[3], and Amir H. Mohajerzadeh[3]
[1]Ferdowsi University of Mashhad, Iran, [2]Islamic Azad University, Iran, [3]Mashhad Electric Energy Distribution Company, Iran

17:15 TS26-4 **Determine the Optimal Level of Automation in Distribution Networks with Local Remote Control Switches and VIT Switches Automation**
Hamid Sharifian, Vahid Baghishani, and Mohsen Zabihi
Mashhad Electric Energy Distribution Company (MEEDC), Iran

Wednesday October 21st

8:30-12:10 **POSTER SESSION**
Please refer to the Poster Section of this Final Program for Details

8:30-10:00 **WS01 - Opinion from Telecom Operators**
"What Telecom Operators Need for Next Generation Energy Infrastructure?"

Hakucho, 8th Floor

Facilitator: Hamdoun Hassan Abdalla, University of Aberdeen, United Kingdom

Panelists: George Bradilovic, Telstra, Australia
Paul Mesguich, France telecom/Orange, France
Reiko Nishii, NTT, Japan
Tang Yih-long, Chunghwa Telecom, Taiwan
Wang Zhen, China Mobile, China

10:20-12:10 **WS02 - Is DC Power Reality?**
Expansion of DC Power from ICT to Smart Solution

Hakucho, 8th Floor

Facilitator: Sara Lisy, Emerson Network Power, USA

Panelists: James A. Stark, EEC, USA
Brian T. Patterson, Emerge Alliance, USA
Mario Tokoro, Sony CSL, Japan
Wunder Bernd, Fraunhofer IISB, Germany
Hisashi Tamaki, Kobe University, Japan
Worajit Setthapun, Chiang Mai Rajabhat University, Thailand
Hitoshi Hayashiya, JR East, Japan

Thursday October 22nd

8:30-10:10 **OS03 - Organized Session 3 - Radio Frequency Inverter and Its Applications for Wireless Power Transfer**

Session Organizer: Tadashi Suetsugu, Fukuoka University, Japan — Hakucho, 8th Floor
Session Chair: Sanjib Kumar Panda, National University of Singapore, Singapore

8:30 OS03-1 **Design and Analysis of Class-E Inverter with MOSFET Nonlinear Gate-to-Drain and Nonlinear Drain-to-Source Capacitances**
Xiuqin Wei
Nagasaki University, Japan

8:55 OS03-2 **A Design of Inductively Coupled Wireless Power Transfer System with Coupling Coil Optimization**
Takumi Noda, Tomoharu Nagashima, and Hiroo Sekiya
Chiba University, Japan

9:20 OS03-3 **Selectable Wireless Power Transfer System Using Heterodyne Detection**
Tadashi Suetsugu and Shotaro Kuga
Fukuoka University, Japan

9:45 OS03-4 **Discrete Control of Class E Amplifier with Load Fluctuation**
Tadashi Suetsugu
Fukuoka University, Japan

8:30-10:10 **TS27 - Renewable Energy Generations 2**

Session Chairs: Mohamed Youssef, University of Ontario Institute of Technology, Canada — Toki, 8th Floor
Noriko Kawakami, TMEIC, Japan

8:30 TS27-1 **Verification Test Results of the Wide-Area Control and Operation System for Distributed Generation of Renewable Energy**
Yoshinobu Ueda and Saburo Maehira
Meidensha Corporation, Japan

8:55 TS27-2 **Simple and Low Cost PV Simulator Using Diode Characteristics for Development of PV System**
Michiharu Kawano[1], Terukazu Sato[1], Takayuki Taguchi[2], Yasuhiro Genzima[2], and Susumu Teramoto[2]
[1]Oita University, Japan, [2]Origin Electric Co., Ltd, Japan

9:20 TS27-3 **TCO-Optimized Solar System Dimensioning in BTS Applications**
Kai Siemer and Daniel Wolf
Heliocentris Industry GmbH, Germany

9:45 TS27-4 **Evaluation of Various Photovoltaic Power Generation Systems**
Keiichiro Hakuta, Hideaki Masaki, Masashi Nagura, Noriko Umeyama, and Koki Nagai
NTT FACILITIES, INC., Japan

8:30-10:10 **TS28 - Architectures for Energy Storage 1**

Session Chairs: Jaeho Choi, Chungbuk National University, Republic of Korea — Kujaku, 8th Floor
Hitoshi Hayashiya, JR East Group, Japan

8:30 TS28-1 **An Approach to Increase the Battery Time of a Mobile Phone Using Free Energy Harvesting**
Jesper Kirkegaard Jensen, Kasper Jessen, Kasper Laugesen, Signe Møller Mortensen, and Juliane Bech Sørensen
Aalborg University, Denmark

8:55 TS28-2 **Development of Magnetic Coupling with Variable Thrust Structure for Flywheel Energy Storage System in Long Lifetime UPS**
Daisuke Sato[1], Jun-ichi Itoh[1], Tomoki Watanabe[1], Kazuma Kawagoe[1], Noboru Yamada[1], and Koji Kato[2]
[1]Nagaoka University of Technology, Japan, [2]Sanken Electric Co., Ltd., Japan

9:20 TS28-3 **Designing a Competitive Electric Vehicle Charging Station with Solar PV and Storage**
Ilhami Colak[1], Eklas Hossain[2], Ramazan Bayindir[3], Ahmet Aksoz[3], and Sabri Sayilgan[4]
[1]Istanbul Gelisim University, Turkey, [2]University of Wisconsin Milwaukee, USA, [3]Gazi University, Turkey, [4]Turkish Aerospace Industry, Turkey

9:45 TS28-4 **Research on the Operation and Control of Multivariate Mixed Energy Storage Power Station**
Yang Zhongliang
Shenzhen Power Supply Co., LTD., PITE TECH. INC., China

8:30-10:10 **TS29 - Utility Interface Inverters for Energy Generation and Storage**

Session Chairs: Emand H. El-Zohri, Sohag University, Egypt — Aoi, 9th Floor
Satoshi Matsumoto, Kyushu Institute of Technology,, Japan

8:30 TS29-1 **A Study of Fault Ride Through Control using Symmetrical Coordinate Calculation**
Takaaki Shimizu, Xiaoxiao Yu, Noriyuki Kimura, Toshimitsu Morizane, and Hideki Omori
Osaka Institute of Technology, Japan

8:55 TS29-2 A Harmonic Current Injection Control Scheme for Active Islanding Detection of Grid-Connected Inverters
Zhongwei Guo
Shindengen Electric Mfg. Co., Ltd., Japan

9:20 TS29-3 Z-Source with Voltage Multiplication Inverter for Grid-Tie Photovoltaic Applications
Omar Abdel-Rahim[1,2], Hirohito Funato[2], and Junnosuke Haruna[2]
[1]Aswan University, Egypt, [2]Utsunomiya University, Japan

9:45 TS29-4 Loss Evaluation of Matrix Converters Using SiC-MOSFETs for Flywheel Energy Storage Systems
Koji Kato[1], Satoru Ishiguma[1], Youichi Ito[1], Yoshiya Ohnuma[2], and Satoshi Miyawaki[2]
[1]Sanken Electric Co., Ltd., Japan, [2]Nagaoka Power Electronics Co., Ltd., Japan

8:30-10:10 TS30 - Physical and Thermal Design

Session Chairs: Ganesh Sauba, DNV-GL, The Netherlands — Akane, 9th Floor
Sumikazu Matsuno, Daikin Industries, Ltd., Japan

8:30 TS30-1 Design of a Computer Controlled Speed Control System for Wound-Rotor Inducion Machines
Erdal Irmak[1], İlhami Çolak[2], Naki Güler[1], Emre Hazer[1], and Hande Kilisli[1]
[1]Gazi University, Turkey, [2]Gelişim University, Turkey

8:55 TS30-2 Energy-Efficient Cooling for Telecom Networks - Thermosiphon as Energy Savings Generator
Pia Grandelag
Dantherm Cooling Holding A/S, Denmark

9:20 TS30-3 Factor Analysis of Power-Saving Effects in Air-Side Economizers for Data Centers
Ryuhei Tate, Shinichiro Kaneko, Yosuke Mino, and Masahide Yanagi
NTT FACILITIES, INC., Japan

9:45 TS30-4 Economic Assessment of Solar Photovoltaic System for AC/DC Lighting Circuits
Navid Aghli[1], Morteza H. Pourarab[1], Saeed Alishahi[1], M. Zabihi[1], and G. Wu[2]
[1]Mashhad Electric Energy Distribution Company, Iran, [2]Tohoku Gakuin University, Japan

10:10-10:30 Coffee Break

10:30-12:10 OS04 - Organized Session 4 -Advanced Battery Management System (BMS) Technologies for Industry Application

Session Organizer: Jaeho Choi, Chungbuk National University, Republic of Korea — Hakucho, 8th Floor
Session Co-Organizer: Jonghoon Kim, Chosun University, Republic of Korea
Session Chair: Takashi Yamashita, NTT FACILITIES RESEARCH INSTITUTE, Inc., Japan

10:30 OS04-1 State-of-Charge and Remaining Charge Estimation of Series-Connected Lithium-Ion Batteries for Cell Balancing Scheme
Chang Yoon Chun, Bo H. Cho[1], and Joonhoon Kim[2]
[1]Seoul National University, Republic of Korea, [2]Chosun University, Republic of Korea

10:55 OS04-2 Modularized Charge Equalizer Using Fuzzy Logic Controller for Lithium-Ion Battery System
Naxin Cui, Xiang Ji, Guang Yu, and Chenghui Zhang
Shandong University, China

11:20 OS04-3 Evaluation of Noise Reduction in Experimental Battery Pack Voltage Using Discrete Wavelet Transform and Wavelet Packet Transform
Jonghoon Kim[1], Chang Yoon Chun[2], and Bo H. Cho[2]
[1]Chosun University, Republic of Republic of Korea, [2]Seoul National University, Republic of Korea

11:45 OS04-4 Evaluation on State-of-Health Estimation Methods of Lithium-Ion Battery for Electric Vehicles
Rui Xiong, Fengchun Sun, and Hongwen He
Beijing Institute of Technology, China

10:30-12:10 TS31 - Renewable Energy Generations 3

Session Chairs: Bernd Wunder, Fraunhofer Institute for Integrated Systems and Device Technology, Germany — Toki, 8th Floor
Ryoichi Hara, Hokkaido University, Japan

10:30 TS31-1 MPPT Based on Incremental Conductance–Fuzzy Logic Algorithm for Photovoltaic System under Variable Climate Conditions
Donny Radianto[1,2], Gamal M. Dousouky[1,3], and Masahito Shoyama[1]
[1]Kyushu University, Japan, [2]State Polytechnic of Malang, Indonesia, [3]Minia University, Egypt

10:55 TS31-2 A Novel Efficient EPP-Based Algorithm for MPPT PV Applications
Mahmoud Eid, Mohamed Youssef, and Ying Wang
University of Ontario Institute of Technology (UOIT), Canada

11:20 TS31-3 Suppression of Heat Leakage by Cooling Thermoelectric Device for Low-Temperature Waste-Heat Thermoelectric Generation
Toshihiko Ishiyama[1]and Hiroaki Yamada[2]
[1]Hachinohe Institute of Technology, Japan, [2]Yamaguchi University, Japan

11:45 TS31-4 Virtual Synchronous Generator Control of Single Phase Voltage-Controlled Inverter for Micro Grid
Yang Chen[1], Jinbin Zhao[1], Keqing Qu[1], Fen Li[1], Shuuichi Ushiki[2], and Masaaki Ohshima[2]
[1]Shanghai University of Electric Power, China, [2]Origin Electric Co., Ltd., Japan

10:30-12:10 TS32 - Architectures for Energy Storage 2

Session Chairs: Alexis Kwasinski, University of Pittsburgh, USA — Kujaku, 8th Floor
Tsuyoshi Higuchi, Nagasaki University, Japan

10:30 TS32-1 Reduction of Magnetic Fields to Human Exposure from a Wireless EV Charger by a New Cancelling Method
Jia Jin[1], Yoshiki Yashima[1], Hideki Omori[1], Noriyuki Kimura[1], Toshimitsu Morizane[1], and Mutsuo Nakaoka[2]
[1]Osaka Institute of Technology, Japan, [2]Kyungnam University, Republic of Korea

10:55 TS32-2 Redflow Advanced Battery for Remote Telecommunication Sites Resilience and Backup
Michele Giulianini
Redflow Limited, Australia

11:20 TS32-3 A Kind of Power Conditioning System (PCS) with Universal Architecture and Control Technologies
Hongyang Wu, Cheng Lu, Wei Guan, and Herman Chang
Delta Power Electronics Center, China

11:45 TS32-4 Development of the Battery Fluid Leak Detection System for UPS
Naoaki Yamato[1], Masaki Niwa[1], Keita Takahashi[1], Kojiro Nishioka[1], Keiichi Hirose[1], and Takao Omori[2]
[1]NTT FACILITIES, INC., Japan, [2]HASEGAWA ELECTRIC CO., LTD., Japan

10:30-12:10 TS33 - UPS Technologies

Session Chairs: Tsorng-Juu Liang, National Cheng-Kung University, Taiwan — Aoi, 9th Floor
Zhongwei Guo, Shindengen Electric Mfg. Co., Ltd., Japan

10:30 TS33-1 The New Concept for 3-Phase 4-Wire UPS System
Hiroyuki Hanaoka, Hideaki Matsuo, and Narumi Yanagisawa
SANYO DENKI Co., Ltd., Japan

10:55 TS33-2 Low Phase-to-Phase-Impedance Busbar for Modular Power Converter System
Hiroshi Kamizuma, Yukio Hattori, Daisuke Matsumoto, Akira Mima, Tetsufumi Kawashima, Yuichi Mabuchi, and Tomonori Ichikawa
Hitachi, Ltd., Japan

11:20 TS33-3 A Bypass Transfer Method for UPS System
Keisuke Nakano and Osamu Iyama
[1]Sanken Electric Co.,Ltd., Japan

11:45 TS33-4 Development of Modular Concept Uninterruptible Power System
Daisuke Matsumoto, Yuichi Mabuchi, Yuichiro Konishi, Hiroshi Kamizuma, Yukio Hattori, Akira Mima, Tetsuya Kawashima, Ryohei Miyagawa, and Tomonori Ichikawa
Hitachi, Ltd., Japan

10:30-12:10 TS34 - Wireless Power Transfer 2

Session Chairs: Yoshiharu Akiyama, NTT Network Technology Laboratories, Japan — Akane, 9th Floor
Hiroo Sekiya, Chiba University, Japan

10:30 TS34-1 High-Efficiency Wireless Power Transfer System
Hsin-Che Hsieh, Jing-Yuan Lin, Yao-Ching Hsieh, and Huang-Jen Chiu
National Taiwan University of Science and Technology, Taiwan

10:55 TS34-2 Capacitive Wireless Power Transfer System with Double Matching Transformers for Reduced Stress and Extended ZVS Range
Sung-Jin Choi and Hee-Su Choi
University of Ulsan, Republic of Korea

11:20 TS34-3 Control Method of Wireless Power Transfer System for Allowing Coil Position Deviation
Toshihiro Akiyama, Mamoru Ozaki, Toyohiko Tsujimoto, Mitsuru Tanabe, Hitoshi Kudo, Hideaki Abe, and Akira Yabuta
Panasonic Corporation, Japan

12:10-13:00 Closing Session

Hakucho, 8th Floor

INTELEC 2015 POSTERS

INTELEC 2015 Posters will be displayed in Naniwa D during open hours. Presentation time for each poster author is scheduled as below.

Date & Time:	Wednesday 21 October 8:30 – 12:10
Core Time	09:15 – 10:15: Even Presentation Number (ex. PS0x- x2, x4, x6, x8, x0)
	10:45 – 11:45: Odd Presentation Number (ex. PS0x-x1, x3, x5, x7, x9)
	At least one author should stand at his/her poster during above mentioned time.
Set up	Wednesday 21 October 07:30 - 08:30
Removal	Wednesday 21 October 12:10 - 12:40

Coffee will be served in the Poster Session Room from 10:10 to 10:30.

PS01 - Renewable Energy Generations

PS01-01 New Energy Services Based on Distributed Energy System
Yoshimichi Nakamura[1], Yutaka Kamitsukasa[1], and Yoshimichi Nakamura[2]
[1]Smart Energy Laboratory Co. Ltd., Japan, [2]Nagasaki University, Japan

PS01-02 A Study on Load Characteristics of Vibration Energy Harvester Using Parametrically Excited Pendulum
Yuichi Yokoi and Tsuyoshi Higuchi
Nagasaki University, Japan

PS01-03 Hybrid Energy Deployment - What to Consider When Enabling Alternative Energy Sources at the Cell Site
Chen H. Wong
Emerson Network Power Asia, Malaysia

PS01-04 Pursuit of Simple PCS for Photovoltaic Power Generation - Optimum Waveforms
Keiju Matsui[1], Eiji Oishi[1], Yasutaka Kawata[1], Mikio Yasubayashi[2], Masayoshi Umeno[2], Hideo Uchida[2], and Masaru Hasegawa[2]
[1]Minna-Denryoku, Inc., Japan, [2]Chubu University, Japan

PS01-05 Validations of Lightning Protections for Accidents at a Wind Farm
Shunichi Yanagawa[1], and Kazuo Yamamoto[2]
[1]Shoden Corporation, Japan, [2]Chubu University, Japan

PS02 - Islanded/Gird-Connected Power Systems

PS02-06 A Feasibility Study on a Regional Energy Business
Midori Nonogaki[1], Ken Ozeki[1], Tadatoshi Babasaki[1], Keiichi Hirose[1], and Nobuyuki Yoshizawa[2]
[1]NTT FACILITIES, INC, Energy Business Headquarters, Japan, [2]NTT FACILITIES, INC, Smart Business Headquarters, Japan

PS02-07 Introduction and Its Operational Status of Multiple Type of Renewable Energy System in Regional Disaster Prevention Base
Toshiaki Murakami, Takaaki Kikuchi, and Keiichi Hirose
NTT FACILITIES, INC., Japan

PS03 - Power Systems for Central Offices/Data Centers

PS03-09 **A Consideration of Transient Response for Sensorless Model Control DC-DC Converter**
Yudai Furukawa[1], Shota Hirotaki[1], Shingo Watanabe[1], Fujio Kurokawa[1], Nobumasa Matsui[2], and Ilhami Colak[3]
[1]Nagasaki University, Japan, [2]Nagasaki Institute of Applied Science, Japan, [3]Gelisim University, Turkey

PS03-10 **Verification of Selective Breaking Performance by Distribution Board for Data Centers**
Hiroshi Ishidate, Kenji Otomo, and Toshihiro Sato
Chuo Electric Works Co., Ltd., Japan

PS03-11 **Energy-saving and Efficient Use of Renewable Energy by Introducing an 380 VDC Power-supply System in Data Centers**
Hiroya Yajima, Tadatoshi Babasaki, Kenichi Usui, Yasuyuki Ooi, and Keiichi Hirose
NTT FACILITIES, INC., Japan

PS04 - Power Distribution Architectures

PS04-13 **A Soft-Switching Modular Three-Phase AC Voltage Regulator**
Maoh-Chin Jiang, Pin-En Pan, Tai-Chun Liu, Yan-Ru Li, and You-Ying Lin
National Ilan University, Taiwan

PS04-14 **Stabilization Techniques of Power Hardware-in-the-Loop Simulation with Time Delay Compensation**
Naoki Iwado[1], Akihiro Ohori[1], Nobuyuki Hattori[1], and Tsuyoshi Funaki[2]
[1]DAIHEN Corporation, Japan, [2]Osaka University, Japan

PS05 - Power Systems for Networks

PS05-15 **Tech Tree Study on Foreign Object Detection Technology in Wireless Charging System for Electric Vehicles**
Ji-Won Jeong[1], Seung-Hee Ryu[1], Byoung-Kuk Lee[1], and Hee-Jun Kim[2]
[1]Sungkyunkwan University, Republic of Korea, [2]Hanyang University, Republic of Korea

PS05-16 **Industrial Trend on EMI Technology for Contactless Power Transfer of Electric Vehicle**
Ji-Won Jeong[1], Seung-Hee Ryu[1], and Byoung-Kuk Lee[1], and Hee-Jun Kim[2]
[1]Sungkyunkwan University, Republic of Korea, [2]Hanyang University, Republic of Korea

PS06 - Battery Technology

PS06-17 **Advanced Lead Carbon Batteries for Partial State of Charge Operation in Stationary Applications**
Jon L. Anderson and Jay Frankhouser
C&D Technologies Inc., USA

PS06-18 **Study on Suppressing Variation of Storage Battery Power in Micro Grid Using Flywheel**
Hiroaki Miyoshi[1], Takashi Takeda[1], Kazuto Yukita[1], Yasuyuki Goto[1], Katsuhiro Ichiyanagi[1], Tomohito Ushirokawa[2], and Kazuhumi Yuasa[2]
[1]Aichi Institute of Technology, Japan, [2]NTT FACILITIES, INC., Japan

PS06-19 **Energy Storage System Design and Integration - The Keys to Safety Design and Test**
Greg Tremelling
NEC Energy Solutions, USA

18-22 October 2015
Swissôtel Nankai Osaka
Namba, Osaka, Japan

PS06-21 **The EV Charging System Using Module Balancing Method in V2G System**
An-Yeol Ko, Do-Yun Kim, Il-Kuen Won, Chang-Hyun Shin, and Chung-Yuen Won
Sungkyunkwan University, Republic of Korea

PS07 - Energy Management Techniques

PS07-22 **Design Considerations for ELVDC Power Distribution System Integrated Directly with DC Energy Sources for LED Lighting in High-Rise Built Environment**
Si H.Chew[1], Yiu W.E.Chan[1,2], Nurul H.Ardiyanto[1], Yee L.Sum[1,2], Szu C.Chien[1,2], Boon H.Soong[1], and King J.Tseng[1,2]
[1]Nanyang Technological University, Singapore, [2]Berkeley Education Alliance for Research in Singapore, Singapore

PS07-23 **An Air Conditioning Control Method for Peak Power Reduction Using Heat Capacity Based Room Temperature Constraints**
Fuyuki Sato, Hiroki Kawano, Naoki Kobayashi, Yosuke Kaneko, and Kenjiro Miura
Mitsubishi Electric Corporation, Japan

PS07-24 **Operation Method of Microgrid Using the Forecast Method by Neural Network**
Masayoshi Koyama, Takashi Takeda, Kazuto Yukita, Yasuyuki Goto, Katsuhiro Ichiyanagi, and Tadahiro Goda
Aichi Institute of Technology, Japan

PS07-25 **Control of EV Charging Station Based on Three-Phase Three-Level AC/DC Rectifier**
Emad H. El-Zohri and Khairy Sayed
[1]Sohag University, Egypt

PS07-26 **Development and Implementation of CEMS, Community Energy Management System**
Naoto Hirakata, Keiichi Hiroe, Takashi Takeda, Toyonari Shimakage, and Taku Ishibashi
NTT FACILITIES, INC., Japan

PS08 - Topologies and Techniques for Power Converters

PS08-27 **A Thin Transformer Realized by Optimizing the Resonance Voltage of an Active Clamp Soft-Switching Converter**
Teruhito Takeda, Takafumi Fujino, Kiyoshi Ogasawara, Satohiko Hosomi, Hiromichi Goto, and Hideaki Abe
Panasonic Corporation, Japan

PS08-28 **Prediction Based Parallel Operation of Soft-Start Control for DC-DC Converter**
Fujio Kurokawa[1], Tsutomu Sakai[1], Hidenori Maruta[1], Yuichiro Shibata[1], and Keiichi Hirose[2]
[1]Nagasaki University, Japan, [2]NTT FACILITIES, INC., Japan

PS08-29 **Analysis and Design Consideration of the Hysteretic PWM Controller**
Kenta Nakamoto[1], Terukazu Sato[1], Takayuki Taguchi[2], Yasuhiro Genjima[2], and Susumu Teramoto[2]
[1]Oita University, Japan, [2]Origin Electric Co.,Ltd., Japan

PS08-30 **A Family of Four Quadrant DC/DC Converters with Reduced Number of Components**
Ali Mostaan[1] and Mohsen Soltani[2]
[1]University of Guilan, Iran, [2]Aalborg University, Denmark

PS08-31 **Hybrid Controlled Soft-Switching Half-Bridge Converter in DCM Operation with Voltage Doubler Rectifier for Battery Charge Application**
Seiya Abe[1], Junichi Yamamoto[2], and Tamotsu Ninomiya[3]
[1]Kyushu Institute of Technology, Japan, [2]Texas Instruments Japan Ltd., Japan, [3]City of Kitakyushu, New Industry Promotion Division, Japan

PS08-32 **Performance Characteristic of Interleaved LLC Resonant Converter with Phase Shift Modulation**
Koji Murata and Fujio Kurokawa
Nagasaki University, Japan

PS08-33 **FPGA-Based Hardware-in-the-Loop Simulator of High Switching Frequency Power Converters**
Hitoshi Kidokoro[1]and Masatoshi Nakahara[2]
[1]dSPACE Japan K. K., Japan, [2]Sojo University, Japan

PS08-34 **Design of a Burst Dimming Controller with Primary-Side Control for EFL Electronic Ballast**
Chang-Hua Lin[1], Ke-Keng Su[1], Liang-Ho Kuo[1], and Chien-Ming Wang[2]
[1]Tatung University, Taiwan (R.O.C.), [2]National Ilan University, Taiwan

PS08-35 **Single-phase 7-Level Inverter for Reducing Number of Switches**
Kosuke Sato, Hitoshi Haga, and Seiji Kondo
Nagaoka University of Technology, Japan

PS08-36 **Deadbeat Control of Power Leveling System with EDLC**
Shin-ichi Hamasaki, Hirotaka Fukuda, Yoshihiro Yano, and Mineo Tsuji
Nagasaki University, Japan

PS08-37 **Novel Circuit of Power Conditioning System with Energy Storage Applying Modular Multilevel Converter Structure**
Shin-ichi Hamasaki, Takahiro Honda, and Mineo Tsuji
Nagasaki University, Japan

PS08-38 **High-Power-Factor ZCS-PWM DC Power Supply System**
Chien-Ming Wang[1], Yu-Hao Lai[1], Kuan-Yu Chen[1], and Chang-Hua Lin[2]
[1]National Ilan University, Taiwan, [2]Tatung University, Taiwan

PS08-39 **Design and Validation of SVPWM Algorithm for Thermal Protection of T-Type Three-Level Inverters**
Mokhtar Aly[1,2], Gamal M. Dousoky[1,3], and Masahito Shoyama[1]
[1]Kyushu University, Japan, [2]Aswan University, Egypt, [3]Minia University, Egypt

PS08-40 **Thermal Improvement by Switching-Loss Reduction Technique in PWM-Controlled Output-Inductor-Less Full-Bridge Converter**
Kazuhide Domoto[1], Yoichi Ishizuka[1], Seiya Abe[2], and Tamotsu Ninomiya[3]
[1]Nagasaki University, Japan, [2]Kyushu Institute of Technology, Japan, [3]Industry Promotion Department, Japan

PS08-41 **A Fully Digitally Controlled Multiple Input and Output Voltage Buck-Boost POL for Power Supply on Chip**
Takuto Hashiguchi, Seiya Abe, and Satoshi Matsumoto
Kyushu Institute of Technology, Japan

PS08-42 **A ZCS-PWM Interleaved Boost Rectifier**
Chien-Ming Wang[1], Chien-Iu Lin[1], Kuan-Yu Chen[1], and Chang-Hua Lin[2]
[1]National Ilan University, Taiwan, [2]Tatung University, Taiwan

PS08-43 **Loss Analysis of Current-Fed Two Inductor Bi-Direciontal DC-DC Converter Using Resonance**
Eun-Jung Ha[1], Yong-Su Noh[1], Chung-Yuen Won[1], and Min-Seuk Oh[2]
[1]Sungkyunkwan University, Republic of Korea, [2]INTECH-FA, Republic of Korea

PS08-44 **DC Outlet Using a Multi-Output Current Resonant Converter**
Wataru Iihoshi[1], Kimihiro Nishijima[1], Tadanori Matsushita[1], and Susumu Teramoto[2]
[1]Oita University, Japan, [2]Origin Electric Co., Ltd., Japan

PS08-45 **Optimum Dead-Time Control Method of Phase-Shifted Converter to Extend the ZVS Range**
Zhao Lei, Li Haoyu, Yanxue Yu, and Yutian Wang
Harbin Institute of Technology, China

PS08-46 **Transient Response of Integral Gain Switchover Digital Control DC-DC Converter in Discontinuous Conduction Mode**
Kazuhiro Kajiwara, Hidenobu Tajima, Tsuyoshi Kume, and Fujio Kurokawa
Nagasaki University, Japan

PS08-47 **Three-Coil Wireless Power Transfer System Using Class E² Resonant DC-DC Converter**
Agasthya Ayachit[1], Dalvir K. Saini[1], Marian K. Kazimierczuk[1], and Tadashi Suetsugu[2]
[1]Wright State University, USA, [2]Fukuoka University, Japan

PS08-48 **DC Capacitor Voltage Regulation of Modular Multilevel Cascade Converter (MMCC-SSBC) for DC-Powered Data Center**
Shota Oki and Hiroaki Kakigano
Ritsumeikan University, Japan

PS08-49 **Optimization of a Transformer Used for LLC Resonant DC-DC Converters for Photovoltaic Cells**
Hisatsugu Kato[1], Shotaro Karasuyama[2], Yoichi Ishizuka[2], Kohei Ogasawara[1], and Kohei Ueda[1]
[1]Tabuchi Electric Co., Ltd., Japan, [2]Nagasaki University, Japan

PS08-50 **Nanosecond Response Digital Controller for Switching Mode Power Supply**
Shogo Hirota[1], Hirotaka Nonaka[1], Akinori Hariya[1], Yoichi Ishizuka[1], and Yasuo Masuda[2]
[1]Nagasaki University, Japan, [2]Origin Electric Corporation, Japan

PS08-51 **An Architecture of Nanosecond Level Response Digital PFM Controller for Isolated Type DC-DC Converter**
Hirotaka Nonaka[1], Akinori Hariya[1], Shogo Hirota[1], Yoichi Ishizuka[1], and Kazuo Sakai[2]
[1]Nagasaki University, Japan, [2]Origin Electric Co., Ltd., Japan

PS08-52 **Gain Selection Effect of Reference Modification in PID Control for Digitally Controlled DC-DC Converter**
Fujio Kurokawa, Daiki Mitsutake, and Hidenori Maruta
Nagasaki University, Japan

PS08-53 **Performance Characteristics of Digital Current Detector in DC-DC Converter**
Yudai Furukawa[1], Shusuke Maeda[1], Fujio Kurokawa[1], and Ilhami Colak[2]
[1]Nagasaki University, Japan, [2]Gelisim University, Turkey

PS08-54 **Transient Response Improvement of Digitally Controlled Buck-Type DC-DC Converter with Feedforward Compensator**
Kosuke Sato[1], Toshiro Sato[2], and Makoto Sonehara[2]
[1]Nagano Prefecture General Industrial Technology Center, Japan, [2]Shinshu University, Japan

PS08-55 **Digital Overcurrent Detector for Peak Current Mode DC-DC Converter**
Kazuhiro Kajiwara, Tatsuya Ueki, Yuichiro Shibata, and Fujio Kurokawa
Nagasaki University, Japan

PS08-56 **Improvement of Compensation Effect of Neural Network Prediction for Digitally Controlled DC-DC Converter**
Hidenori Maruta, Hironobu Taniguchi, and Fujio Kurokawa
Nagasaki University, Japan

PS08-57 **Small Boost Circuit Topology for Expanding Input Voltage Range for a Bi-Directional Isolated DC-DC Converter**
Takae Shimada[1], Kimiaki Taniguchi[2], and Kosuke Abe[2]
[1]Hitachi, Ltd., Japan, [2]Hitachi Information & Telecommunication Engineering, Ltd., Japan

PS08-58 **Analytical Calculation of the Voltage Ripple on the Input Capacitor of the Voltage-PWM Inverter for High Frequency Operation**
Shun Endo, Yasuki Kanazawa, and Masayoshi Yamamoto
Shimane University, Japan

PS08-59 **Digitally Proportional Gain Varying Method for DC-DC Converter**
Yudai Furukawa[1], Takuya Shirakawa[1], Fujio Kurokawa[1], and Ilhami Colak[2]
[1]Nagasaki University, Japan, [2]Gelisim University, Turkey

PS08-60 **A High-Precision Constant Current Primary Side Controller with Inductance Compensation**
Yang Xu, Changyuan Chang, Bin Bian, Yao Chen, and Junjie Hu
Southeast University, China

PS08-61 **Predictive Thermal Modeling for Loss Distribution Method of 3-Level Active NPC Inverter**
Soon-Jong Lee, Seung-Wook Hyun, Seok-Jin Hong, Hee-Jun Lee, and Chung-Yuen Won
Sungkyunkwan University, Republic of Korea

PS08-62 **The Communication Power System with V^2C Adaptive Control Method**
Haoyu Li, Yuan Liu, Lei Zhao, and Zhenwei Li
Harbin Institute of Technology, China

PS08-63 **Digital PID Based Two-Compensator for DC-DC Converter**
Yudai Furukawa[1], Fujio Kurokawa[1], and Ilhami Colak[2]
[1]Nagasaki University, Japan, [2]Gelisim University, Turkey

PS08-64 **Performance Characteristics of Digital Boundary Current Control Sensor-Less PFC Converter**
Kazuki Yoshimura, Motoshi Matsunaga, and Fujio Kurokawa
Nagasaki University, Japan

PS08-65 **Passive Regenerative Turn-Off Snubber Composed of Two Diodes and a Capacitor for Two-Phase Interleaved Boost Chopper**
Kazuhiro Umetani[1], Eiji Hiraki[1], and Masayoshi Yamamoto[2]
[1]Okayama University, Japan, [2]Shimane University, Japan

18-22 October 2015
Swissôtel Nankai Osaka
Namba, Osaka, Japan

PS08-66 **Simple Estimating Method for Voltage Fluctuation in Paralleled Converter System with Optimized On-Off Control**
Teruhiko Kohama, Keisuke Takeshita, and Satoshi Tsuji
Fukuoka University, Japan

PS09 - UPS Technologies

PS09-67 **Stability Analysis of a DC-DC Converter for Battery Energy Storage System Feeding CPL**
Seyed Ahmad Hamidi and Adel Nasiri
University of Wisconsin-Milwaukee, USA

PS09-68 **The Predictive Control of Single-Phase UPS System for Fast Dynamic Characteristic**
Jung-Min Park, Bong-Yeon Choi, Soon-Ryung Lee, Jun-Hyeok Jegal, and Chung-Yuen Won
[1]Sungkyunkwan University, Republic of Korea

PS09-69 **Serial Multi-Module UPS System Control Method Considering Battery Module Balancing**
Soon-Ryung Lee, Seung-Ho Baek, and Chung-Yuen Won
Sungkyunkwan University, Republic of Korea

PS09-70 **Current Sharing Algorithm for Parallel Operation of Single Phase UPS Inverters Using Predictive Current Control**
Bong-Yeon Choi, Jung-Min Park, Soon-Ryung Lee, Jun-Hyeok Jegal, and Chung-Yuen Won
Sungkyunkwan University, Republic of Korea

PS10 - High Efficiency and High Density Power Supplies

PS10-71 **Performance Analysis of Single Film Electrode of the L-C Resonance Capacitors for Using High-Frequency Induction Heating Processing Equipment**
Seo Yeon Won[1], Jae Hong Joo[1], Hie Sik Kim[1], Dae Seung Hwang[2], and Kyeong Jin Lee[2]
[1]University of Seoul, Republic of Korea, [2]DAEDONG CAPACITOR CO., LTD, Republic of Korea

PS10-72 **Development of a Real-Time Power and Impedance Sensor for Wireless Power Transfer Systems**
Toshio Minami, Isao Tabuchi, Ryohei Tanaka, and Yoshinori Tsuruda
Daihen Corporation, Japan

PS10-73 **Analysis and Implementation of a Hybrid ZVS Converter**
Bor-Ren Lin, Yan-Kang Du, and Jia-Sheng Chen
National Yunlin University of Science and Technology, Taiwan

PS10-74 **Analysis on the Loss of Hybrid Transformer Winding for Multi-Output High Frequency (300W) LLC Resonance Converters**
Heung Gyoon (Harry) Choi, Kyu-Sun Chung[1], and Ge Li[2]
[1]Hanyang University, Republic of Korea, [2]Samsung Electro-Mechanics Co. Ltd, Republic of Korea

PS10-75 **A 160-kW High-Efficiency Photovoltaic Inverter with Paralleled SiC-MOSFET Modules for Large-Scale Solar Power**
Ayumu Hatanaka, Hiroshi Kageyama, and Toru Masuda
Hitachi, Ltd., Japan

PS10-76 **Analysis of GaN HEMT-Based Phase Shifted Full Bridge DC-DC Converter**
Dong-Myoung Joo[1], Byoung-Kuk Lee[1], Dong-Sik Kim[2], Jong-Soo Kim[2], and Hee-Jun Kim[3]
[1]Sungkyunkwan University, Republic of Korea, [2]Daejin University, Republic of Korea, [3]Hanyang University, Republic of Korea

PS11 - Disaster Recovery and Mitigation/Safety Technology

PS11-77 **Evaluating and Deploying Integrated Modular Solutions for Telecom**
Cal Lahteenmaa
Emerson Network Power Asia Pacific, Australia

PS11-78 **A Novel Simple Technology for Power Switching in HVDC System**
Shinya Watanabe, Yuta Sagara, Shota Yamane, Seiji Aso, Kentaro Kokura, Seiji Ikeda, and Mitsugi Mori
Mitsubishi Electric Corporation, Japan

PS11-82 **Android Tool to Evaluate Grounding Resistance**
F. Viola, P. Romano, R. Miceli, G. Vaccarella, G. Schettino, and M. Pastorelli
University of Palermo, Italy

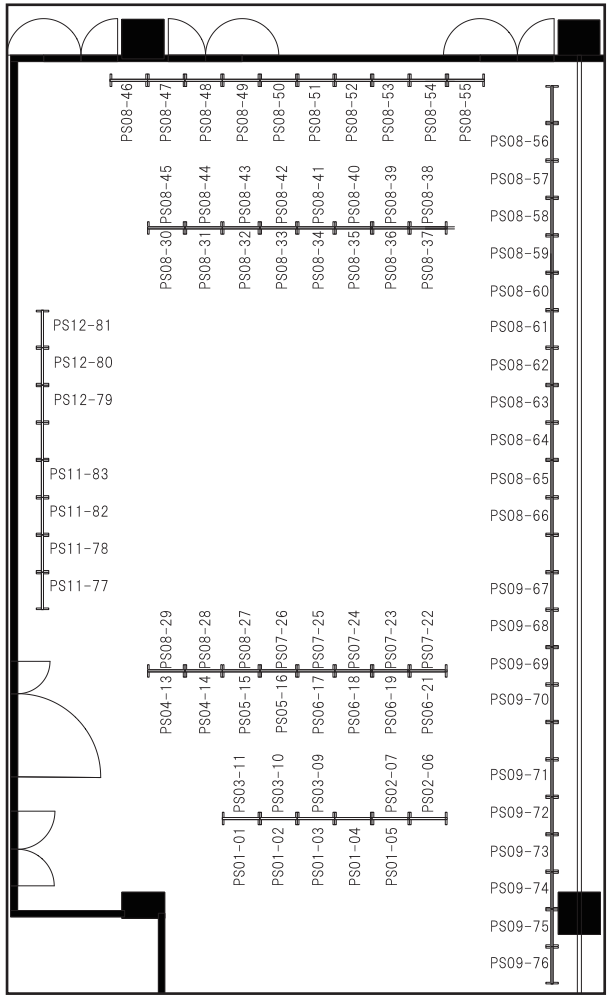
PS11-83 **Development of Intelligent Type Power Conditioner System with Power Storage Device for Photovoltaic Generation (Part2)**
Youhei Takigawa[1], Kazuto Yukita[1], Yasuyuki Goto[1], Katsuhiro Ichiyanagi[1], and Atsushi Miyamoto[2]
[1]Aichi Institute of Technology, Japan, [2]Nitto Kogyo Co., Ltd., Japan

PS12 - Physical and Thermal Design

PS12-79 **Comparative Analysis of Power Losses for 3-Level NPC and T-Type Inverter Modules**
Kwanghee Lee[1], Hyunjin Shin[2], and Jaeho Choi[2]
[1]Woojin Industrial Systems Co. Ltd., Republic of Korea, [2]Chungbuk National University, Republic of Korea

PS12-80 **Bridging the Gap: Towards an Intelligent Telecom Facility**
Chen H. Wong
Emerson Network Power Asia, Malaysia

PS12-81 **Magnetizing Approach for Permanent Magnets with Resonant Power Conversion**
Fu-Sheng Pai[1], Yi-Ping Wang[1], Chia-Chin Chou[1], and Min-Fu Hsieh[2]
[1]National University of Tainan, Taiwan, [2]National Cheng Kung University, Taiwan

18-22 October 2015
Swissôtel Nankai Osaka
Namba, Osaka, Japan

POSTER LAYOUT