

Monday, 27th June

Monday 08:00 - 19:00	Registration Venue Registration desk
Monday 08:30 - 10:00	TUT-1 Tutorial Venue Plaza A
08:30	<u>Reliability of Power Electronics Converters for Renewable Energy Systems</u> » <i>Frede Blaabjerg and Huai Wang Aalborg University</i>
Monday 08:30 - 10:00	TUT-2 Tutorial Venue Plaza B
08:30	<u>Extreme Control Performance for Power Electronics</u> » <i>Martin Ordonez and Ignacio Galiano University of British Columbia</i>
Monday 10:00 - 10:15	Sponsor Booths and Coffee Break Venue Georgia A
Monday 10:15 - 11:45	TUT-3 Tutorial Venue Plaza A
10:15	<u>Control of Power Electronics Systems using Predictive Switching Sequences and Switching Transitions</u> » <i>Sudip K. Mazumder University of Illinois</i>
Monday 10:15 - 11:45	TUT-4 Tutorial Venue Plaza B
10:15	<u>Design Challenges for High Frequency Magnetic Circuit Design for Power Conversion</u> » <i>William Gerard Hurley National University of Ireland</i>
Monday 12:00 - 13:00	TUT-5 Tutorial and Lunch Venue Plaza B
12:00	<u>Speeding up Grid-Link Inverter Development with Offline, Processor-In-Loop (PIL), and Hardware-In-Loop (HIL) Simulation</u> » <i>Albert Dunford Powersim</i>

Monday
13:00 - 14:30

TUT-6 Tutorial

Venue Plaza A

13:00

Electric Springs - A Smart Grid Technology for Taming the Intermittent Nature of Wind and Solar Power

» Ron S.Y. Hui and Chi Kwan Lee *The University of Hong Kong*

Monday
13:00 - 14:30

TUT-7 Tutorial

Venue Plaza B

13:00

HIL and RCP capabilities of real-time digital simulators for MMC and other power converter applications

» Maxim Beaudoin and Wei Li *OPAL-RT TECHNOLOGIES*

Monday
14:30 - 14:45

Sponsor Booths and Coffee Break

Venue Georgia A

Monday
14:45 - 15:45

TUT-8 Tutorial

Venue Plaza B

14:45

Real-Time Power Electronic Plant Model Generation for PLECS RT Box

» Kristofer Eberle *Plexim*

Monday
17:00 - 19:00

Welcome Reception

Venue Georgia A and B

Tuesday, 28th June

Tuesday
08:00 - 17:00

Registration

Venue Registration desk

Tuesday
08:30 - 08:50

S-01 Welcome Session

Venue Plaza Ballroom

08:30

Welcome Session

» Martin Ordonez and Gerard Hurley *UBC Vancouver/NUI Galway*

Tuesday
08:50 - 09:00

S-02 TC5 Update

Venue Plaza Ballroom

08:50

TC5 Sustainable Energy Systems Update

» Sudip Mazumder *University of Illinois, Chicago*

Tuesday
09:00 - 09:30

KN-1 Keynote

Venue Plaza Ballroom

09:00

Future Trend of Power Semiconductor Devices

» Seiki Igarashi *Fuji Electric*

Tuesday
09:30 - 09:45

Sponsor Booths and Coffee Break

Venue Georgia A

Tuesday
09:45 - 11:05

TUE- 1A Power-Electronics-Based Power Systems

Chair Seyed Ali Arefifar - University Of British Columbia

Venue Plaza A

09:45

Optimal Real-time Dispatch for Integrated Energy Systems: An Ontology-Based Multi-Agent Approach

» *Amjad Anvari-Moghaddam (Aalborg University), Ashkan Rahimi-kian (University of Tehran), Maryam S. Mirian (University of Tehran), Josep Guerrero (Aalborg University)*

10:05

Reliable Power Supply Capability Analysis for Electric Distribution Network Including Distributed Generations Based on Probabilistic Reliability

» *Xianjun Qi (Hefei University of Technology), Liming Zhang (Hefei University of Technology), Jingjing Zhang (Hefei University of Technology), Liuchen Chang (University of New Brunswick)*

10:25

Integration and Control of Heterogeneous Power Sources in Meshed Distribution Grids

» *Tommaso Caldognetto (University of Padova), Paolo Tenti (University of Padova)*

10:45

Substitution of Synchronous Generator Based Instantaneous Frequency Control Utilizing Inverter-coupled DER

» *Stefan Laudahn (Technische Universität Braunschweig - elenia), Thorsten Bülo (SMA Solar Technology AG), Daniel Premm (SMA Solar Technology AG), Bernd Engel (Technische Universität Braunschweig - elenia), Julia Seidel (Technische Universität Braunschweig - elenia)*

Tuesday
09:45 - 11:05

TUE- 1B Power Electronics for Wind Energy Systems

Chair Juan Balda - University of Arkansas

Venue Plaza B

09:45

LVRT Control Strategy of CSC-PMSG-WGS Based on PIR Controller

» *Liuchen Chang (Hefei University of Technology), wenhan wu (Hefei University of Technology), Meiqin Mao (Hefei University of Technology)*

10:05

A Low-Voltage Generator-Converter Topology for Direct Drive Wind Turbines

» *Akanksha Singh (Kansas State University), Behrooz Mirafzal (Kansas State University)*

10:25

Stator-Flux-Linkage-Referenced Control and Online Optimization of a Doubly-Fed Induction Generator

» *David Kastelan (Saarland University), Joachim Rudolph (Saarland University), Albrecht Gensior (Technische Universität Dresden)*

10:45

Self-synchronising Stator Terminal Control Of Permanent Magnet Synchronous Generators For Wind Energy Conversion Systems

» *reza davoodnezhad (Royal Melbourne Institute of Technology), Grahame Holmes (Royal Melbourne Institute of Technology), Brendan Peter McGrath (Royal Melbourne Institute of Technology), Arash Vahidnia (Royal Melbourne Institute of Technology)*

Tuesday
09:45 - 11:05

TUE- Power electronics for Grid Stabilization 1C

Chair Qing-Chang Zhong - Illinois Institute of Technology

Venue Plaza C

09:45

Stability Prediction and Stability Enhancement for Large-Scale PV Power Plants

» *Florian Ackermann (Fraunhofer Institute for Solar Energy System ISE), Nicolas Bihler (Fraunhofer Institute for Solar Energy System ISE), Sönke Rogalla (Fraunhofer Institute for Solar Energy System ISE)*

10:05

Capability Analysis and Design Considerations of Electric Springs

» *Heng Liu (The University of Hong Kong), Chi Kwan Lee (The University of Hong Kong), Ron Hui (The University of Hong Kong), Eberhard Waffenschmidt (Cologne University of Applied Science)*

10:25

Modern Controller Approaches for Stabilizing Constant Power Loads within a DC Microgrid while Considering System Delays

» *Brandon M Grainger (University of Pittsburgh), Qin hao Zhang (University of Pittsburgh), Gregory Reed (University of Pittsburgh), Zhi-Hong Mao (University of Pittsburgh)*

10:45

A Unified Converter Topology for Electric Spring

» *Chi Kwan Lee (The University of Hong Kong), Heng Liu (The University of Hong Kong), Guidong Zhang (The University of Hong Kong), Shuo Yan (The University of Hong Kong), Eberhard Waffenschmidt (Cologne University of Applied Science), Ron Hui (The University of Hong Kong)*

Tuesday
11:05 - 12:00

S-03 Lunch and Best Paper Awards

Venue Georgia B

11:05

Lunch and Best Paper Awards

» *Sudip Mazumder University Illinois Chicago*

Tuesday
12:00 - 13:20

TUE- Electric Vehicle Applications 2A

Chair Ignacio Galiano Zurbriggen - University of British Columbia

Venue Plaza A

12:00

Plug-In Hybrid Electric Vehicle Battery Charger with Soft-Switched Dual-Bridge Resonant Converter for Smart Grid Applications

» *Rasoul Akbari (Sharif University of Technology), Seyyedmilad Ebrahimi (The University of British Columbia), Farzad Tahami (Sharif University of Technology), Hashem Oraee (Sharif University of Technology)*

12:20

A Bi-directional AC-DC Converter for Electric Vehicle with No Electrolytic Capacitor

» *Behnam Koushki (Queen's University), Praveen Jain (Queen's University), Alireza Bakhshai (Queen's University)*

12:40

Multi-time Scale Forecast for Schedulable Capacity of Electric Vehicle Fleets Using Big Data Analysis

» *Meiqin Mao (Hefei University of Technology), You Yue (Hefei University of Technology), Liuchen Chang (Hefei University of Technology)*

TUE Parallel Converters and Droop Control

Tuesday
12:00 - 13:20

TUE- Parallel Converters and Droop Control 2B

Chair Takaharu Takeshita - Nagoya Institute of Technology
Venue Plaza B

12:00

Reduced-Order Harmonic Modeling and Analysis of Droop-Controlled Distributed Generation Systems

» *Philip Hart (University of Wisconsin - Madison), Robert H. Lasseter (University of Wisconsin - Madison), Thomas Jahns (University of Wisconsin - Madison)*

12:20

A Robust Control Strategy for Parallel-Connected Distributed Generation Using Real-Time Simulation

» *Allal El Moubarek BOUZID (Université du Québec à Trois-Rivières), Pierre Sicard (Université du Québec à Trois-Rivières), Jean-Nicolas PAQUIN (OPAL-RT TECHNOLOGIES), Amine Yamane (OPAL-RT TECHNOLOGIES)*

12:40

Dynamic Droop Scheme Considering Effect of Intermittent Renewable Energy Source

» *Yanbo Wang (Aalborg University), Zhe Chen (Aalborg), Fujin Deng (Aalborg University)*

13:00

Circulating Current Control for Parallel Interleaved VSCs Connected in Whiffletree Configuration

» *Lorand Bede (Aalborg University), Ghanshyamsinh Gohil (Aalborg University), Mihai Ciobotaru (UNSW Australia), Tamas Kerekes (Aalborg University), Remus Teodorescu (Aalborg University), Vassilios G Agelidis (UNSW Australia)*

Tuesday
12:00 - 13:20

TUE- Power Electronics for Sustainable Sources I 2C

Chair Humberto Pinheiro - Federal University of Santa Maria
Venue Plaza C

12:00

Sensorless Reserved Power Control Strategy for Two-Stage Grid-Connected Photovoltaic Systems

» *Ariya Sangwongwanich (Aalborg University), Yongheng Yang (Aalborg University), Frede Blaabjerg (Aalborg University)*

12:20

Robust Control Design for a Boost Converter in a Photovoltaic System

» *Majid Fard (The University of Melbourne), Mohammad Aldeen (The University of Melbourne)*

12:40

Model Predictive Current Controller using Kalman Filter for Fault-Tolerant Five-Phase Wind Energy Conversion Systems

» *Jorge Rodas (Universidad Nacional de Asuncion), Hugo Guzman (Universidad de Sevilla), Raul Gregor (Universidad Nacional de Asuncion), Federico Barrero (Universidad de Sevilla)*

Tuesday
13:20 - 13:35

Short Break

Venue Georgia A

Tuesday
13:35 - 14:55

TUE- Reliability Solutions and Improvements 3A

Chair Seiki Igarashi - Fuji Electric
Venue Plaza A

13:35

Mission Profile Based Sizing of IGBT Chip Area for PV Inverter Applications

» Yanfeng Shen (Aalborg University), Huai Wang (Aalborg University), Yongheng Yang (Aalborg University), Paula Diaz Reigosa (Aalborg University), Frede Blaabjerg (Aalborg University)

13:55

Active Gate Driving Method for Reliability Improvement of IGBTs via Junction Temperature Swing Reduction

» Haoze Luo (Aalborg University), Francesco Iannuzzo (Aalborg University), Ke Ma (Aalborg University), Frede Blaabjerg (Aalborg University), Wuhua Li (Zhejiang University), Xiangning He (Zhejiang University)

14:15

Advanced Derating Strategy for Extended Lifetime of Power Electronics in Wind Power Applications

» Ionut Vernica (Aalborg University), Ke Ma (Aalborg University), Frede Blaabjerg (Aalborg University)

14:35

Fault Diagnosis of Modular Multilevel Converters Based on Extended State Observer

» Xing Hu (Southeast University), Jianzhong Zhang (Southeast University), Shuai Xu (Southeast University), Yongjiang Jiang (Southeast University)

Tuesday
13:35 - 14:55

**TUE- Microgrids/Nanogrids I
3B**

Chair Behrooz Mirafzal - Kansas State University
Venue Plaza B

13:35

Dynamic Performance Improvement of DC Microgrids During Constant-Power Load Transients

» Marco Andres Bianchi (The University of British Columbia), Ignacio Galiano Zurbriggen (The University of British Columbia), Martin Ordonez (The University of British Columbia), Matias Anun (Schneider Electric)

13:55

Interlink Converters in DC nanogrids and its effect in power sharing using distributed control

» Aniel Morais (Federal University of Uberlandia), Luiz Lopes (Concordia University)

14:15

Coexistence of Fast-Scale and Slow-Scale Instabilities in DC Cascaded Converters System With Multi-Load Converters

» Fan Xie (South China University of Technology), Bo Zhang (South China University of Technology), Dongyuan Qiu (South China University of Technology), Yanwei Jiang (South China University of Technology)

14:35

Adaptive Series-Virtual-Impedance Control Strategy for Load Converters to Improve the Stability of the Cascaded System

» Xin Zhang (The University of Sheffield), Qing-Chang Zhong (Illinois Institute of Technology), Wen-long Ming (The University of Sheffield)

Tuesday
13:35 - 14:55

**TUE- Energy Storage Systems
3C**

Chair Gerard Hurley - National University of Ireland
Venue Plaza C

13:35

Experimental Identification and Validation of a Battery Model for a Battery-Buffered Frequency-Controlled Smart Load

» Ahmed Zurfı (University of Arkansas at Little Rock), Jing Zhang (University of Arkansas at Little Rock)

13:55

Community Energy Storage Impacts on Smart Grid Adaptive Volt-VAR Optimization of

Distribution Networks

» *Moein Manbachi (Simon Fraser University), Hassan Farhangi (British Columbia Institute of Technology), Ali Palizban (British Columbia Institute of Technology), Siamak Arzanpour (Simon Fraser University)*

14:15

Energy Management Strategy of Multiple Supercapacitors in an Autonomous DC Microgrid Using Adaptive Virtual Impedance

» *Xin Zhao (Beijing Jiaotong University), Yunwei Li (University of Alberta), Hao Tian (University of Alberta), Xuezhi Wu (Beijing Jiaotong University)*

14:35

A New Energy Harvesting and Wireless Power Transfer System for Smart Grid

» *Cheng Zhang (The University of Hong Kong), TANG NIANG (Electric Power Research Institute of Guangdong Power Grid Corporation), Wenxing Zhong (The University of Hong Kong), Chi Kwan Lee (The University of Hong Kong), Ron Hui (The University of Hong Kong)*

Tuesday
14:55 - 15:10

Sponsor Booths and Coffee Break

Venue Georgia A

Tuesday
15:10 - 16:30

TUE- Control Methods and Modulations 4A

Chair Bo Zhang - South China University of Technology

Venue Plaza A

15:10

Comparative Evaluation of Modulation Schemes for Grid-connected Parallel Interleaved Inverters

» *Ghanshyamsinh Gohil (Aalborg University), Lorand Bede (Aalborg University), Remus Teodorescu (Aalborg University), Tamas Kerekes (Aalborg University), Frede Blaabjerg (Aalborg University)*

15:30

CARRIER-BASED DISCONTINUOUS MODULATION FOR INTERLEAVED INVERTERS

» *André Nicolini (Federal University of Santa Maria), Antonio Carlos Ricciotti (Federal University of Rondônia), Fernanda Carnielutti (Federal University of Santa Maria), Humberto Pinheiro (Federal University of Santa Maria)*

15:50

Optimal Switching Sequence Based Control of a Differential-Mode Inverter

» *Mazumder Sudip (UIC), deabanjan chatterjee (University of Illinois, Chicago)*

Tuesday
15:10 - 16:30

TUE- Power Devices and Passive Elements 4B

Chair Braham Ferreira - Delft University

Venue Plaza B

15:10

Comprehensive Power MOSFET Model for LLC Resonant Converter in Renewable Energy Applications


» *Zhi Qu (University Of British Columbia), Vikram Dayal (University Of British Columbia), Jiawei Dong (University Of British Columbia), Reet Sangha (University Of British Columbia), Navid Shafiei (University Of British Columbia), Seyed Ali Arefifar (University Of British Columbia), Martin Ordonez (University Of British Columbia), Marian Craciun (Delta-Q Technologies Corp.), Chris Botting (Delta-Q Technologies Corp.)*

15:30

Effects of Uneven Temperature of IGBT and Diode on Switching Characteristics of Bridge Legs in MW-Level Power Converters

» *Haoze Luo (Aalborg University), Francesco Iannuzzo (Aalborg University), Frede Blaabjerg (Aalborg University)*

University), Wuhua Li (Zhejiang University), Xiangning He (Zhejiang University)

15:50  **Snubber Circuit Design Considerations for Medium-Voltage Solid-State Switches for High-Power Inverter-based Testing Applications: A Case Study**

» [Ramtin Hadidi](#) (Clemson University), [Jesse Leonard](#) (Clemson University), [Thomas Salem](#) (Clemson University), [Curtiss Fox](#) (Clemson University), [Randy Collins](#) (Clemson University)

16:10  **Selecting Magnetic Cores for Higher Power Inductors**

» [Samira Janghorban](#) (RMIT University), [Grahame Holmes](#) (RMIT University), [Brendan Peter McGrath](#) (RMIT University), [Gerard Hurley](#) (National University of Ireland Galway (NUI Galway)), [Xinghuo Yu](#) (RMIT University)

Tuesday
15:10 - 16:30

TUE- Power Quality Analysis, Testing and Solutions
4C

Chair Praveen Jain - Queen's University
Venue Plaza C

15:10  **Active and Reactive Power Operational Region for Grid-Tied Inverters**

» [Jacob Lamb](#) (Kansas State University), [Behrooz Mirafzal](#) (Kansas State University)

15:30  **Active and Reactive Power Compensation of Data Center using Multi-Level STATCOM Inverter**

» [Subrata Mondal](#) (Inertech)

15:50  **Synchronised Microcontroller Architecture to Eliminate Harmonics from Quasi square Waveform**

» [vivek gopinath](#) (National Institute of Technology, Calicut), [Meenu Nair](#) (National Institute of Technology, Calicut), [Mukti Barai](#) (National Institute of Technology, Calicut)

16:10  **Dynamic Mitigation of Grid Current Harmonics Using the Power Sphere Concept in Voltage Source Inverters**

» [David Campos-Gaona](#) (University Of British Columbia), [Rafael Peña-Alzola](#) (The University of British Columbia), [José Luis Monroy Morales](#) (University Of British Columbia), [Martin Ordonez](#) (University Of British Columbia)

Tuesday
17:30 - 22:30

UBC Tour and Networking Night

Venue Buses leaving at 17:00, 17:15, and 17:30 from Hyatt to UBC

Wednesday, 29th June

Wednesday
08:00 - 17:00

Registration

Venue Registration desk

Wednesday
08:30 - 09:00

KN-2 Keynote

Venue Plaza Ballroom

08:30

The Rise of Solar and how it is Changing the Power Sector

» [Francis O'Sullivan](#) MIT Energy Initiative

Wednesday
09:00 - 09:30

KN-3 Keynote
Venue Plaza Ballroom

09:00

Campus as a Living Lab: Sustainability and Innovation
» *James Tansey Sauder School of Business, University of British Columbia*

Wednesday
09:30 - 09:45

Sponsor Booths and Coffee Break
Venue Georgia A


Wednesday
09:45 - 11:05

WED- 1A Detection, Estimation and Monitoring
Chair Huai Wang - Aalborg University
Venue Plaza A

09:45

 **A Line to Ground Fault Detection Technique for ELVDC Distribution System in Built Environment**
» *Benjamin Chew (Nanyang Technological University), King-Jet Tseng (Nanyang Technological University)*

10:05

 **Efficient Approach for Harmonic Resonance Identification of Large Wind Power Plants**
» *Esmaeil Ebrahimzadeh (Aalborg University), Frede Blaabjerg (Aalborg University), Xiongfei Wang (Aalborg University), Claus Leth Bak (Aalborg University)*


10:25

 **An Embedded Impedance Measurement for DC Microgrids Based on a Lock-In Amplifier**
» *Francisco Paz (University Of British Columbia), Martin Ordonez (University Of British Columbia)*

Wednesday
09:45 - 11:05

WED- 1B Single-Phase Converters
Chair Hung-Chi Chen - National Chiao Tung University
Venue Plaza B


09:45

 **Robust Power Decoupling Control Scheme for DC Side Split Decoupling Capacitor Circuit with Mismatched Capacitance in Single Phase System**
» *Wenli Yao (Northwestern Polytechnical University), Poh Chiang Loh (Aalborg University), Yi Tang (Nanyang Technological University), Xiongfei Wang (Aalborg University), Xiaobin Zhang (Northwestern Polytechnical University), Frede Blaabjerg (Aalborg University)*


10:05

 **A Mixed Decoupling Power Method for Single-Phase grid-connected Inverters**
» *Jintao Liao (Hefei University of Technology), Liuchen Chang (University of New Brunswick), Jianhui Su (Hefei University of Technology), Jidong Lai (Hefei University of Technology)*

10:25

 **Modified Window, Recursive Least Square Estimator for Single-Phase Active and Reactive Power Estimation**
» *Sajjad Makhdoomi Kaviri (Queen's University), Tooraj Abbasian Najafabadi (University of Tehran), Bahador Mohammadpour (Queen's University), Praveen Jain (Queen's University), Alireza Bakhshai (Queen's University)*

10:45

 **The Time Delay Effect in the Predictive Current Controller of Single-phase Grid-connected Power Converter**
» *Haider Mohomad (University of New Brunswick), Liuchen Chang (University of New Brunswick), Riming Shao (University of New Brunswick)*

Wednesday
09:45 - 11:05

WED- Multilevel Converters

1C

Chair Vassilios G. Agelidis - UNSW Australia

Venue Plaza C

09:45

Stair-Case Selective Harmonic Elimination for a nine-levels Cascaded H-Bridge Converter

» *Ines Sanz (Universidad de Alcala), Emilio Bueno (Universidad de Alcala), Miguel Moranchel (Universidad de Alcala), Francisco Javier Rodriguez (Universidad de Alcala)*

10:05

Nine-levels Cascaded H-Bridge converter prototype for FACTS applications

» *Ines Sanz (Universidad de Alcala), Miguel Moranchel (Universidad de Alcala), Emilio Bueno (Universidad de Alcala), Francisco Javier Rodriguez (Universidad de Alcala)*

10:25

A new 25 level asymmetric multilevel inverter topology

» *Aldo Flores (Instituto Tecnológico y de Estudios Superiores de Monterrey)*

10:45

A Novel Flying Capacitor Transformerless Inverter for Single-Phase Grid Connected Solar Photovoltaic System

» *Yam Prasad (Aalborg University), Frede Blaabjerg (Aalborg University)*

Wednesday
11:05 - 12:00

Lunch

Venue Georgia B

Wednesday
12:00 - 13:20

WED- Grid-Connected Converters I

2B

Chair Rafael Pena-Alzola - University Of British Columbia

Venue Plaza B

12:00

Impulsive Noise Modeling in Single Phase Grid-connected Power Converter

» *Haider Mohomad (University of New Brunswick), Liuchen Chang (University of New Brunswick), Riming Shao (University of New Brunswick)*

12:20

Fast-Transient, Low-THD Geometric Control of Boost-Derived Active Rectifiers

» *Ignacio Galiano Zurbriggen (The University of British Columbia), Marco Andres Bianchi (The University of British Columbia), Martin Ordonez (The University of British Columbia)*

12:40

Circulating Current Suppressing in Modular Parallel PV Grid Connected Inverter

» *peng zhang (Hefei University of Technology), Guorong Zhang (Hefei University of Technology)*

Wednesday
12:00 - 13:20

WED- DC-DC Converters

2C

Chair Martin Ordonez - University of British Columbia

Venue Plaza C

12:00

A Novel Zero-Current-Transition PWM DC-DC Converter with Coupled Inductor

» *Zhe Li (Shanghai jiaotong University), Xi Zhang (Shanghai jiaotong University), Hua Bai (Kettering University), Wei Qian (Shanghai jiaotong University)*

12:20

 **Study on the Construction Method of Z-Source DC-DC Converters**

» *Dongyuan Qiu (South China University of Technology), Bo Zhang (South China University of Technology), Liqiang Yang (Delta Electronics (Shanghai) Co., Ltd.), Guidong Zhang (The University of Hong Kong), Fan Xie (South China University of Technology)*

12:40

 **A Multiport Modular Multilevel DC-DC Converter**

» *Fei Zhang (McGill University), Geza Joos (McGill University), Wei Li (OPAL-RT TECHNOLOGIES)*

13:00

 **Implementation and Performance of Three-way Isolated DC/DC Converter using SiC-MOSFETs for Power Flow Control**

» *Yuichi Kado (Kyoto Institute of Technology), Keiji Wada (Tokyo Metropolitan University), Ryosuke Kasashima (Kyoto Institute of Technology), Naoki Iwama (Kyoto Institute of Technology)*

Wednesday
12:00 - 12:20

X1-01 Industrial Session

Venue Plaza A

12:00

Ultra-high Fidelity Hardware-in-the-loop (HIL) Simulation for Power Electronics and Microgrids

» *Ivan Celanovic Typhoon HIL, Inc.*

Wednesday
12:20 - 12:40

X1-02 Industrial Session

Venue Plaza A

12:20

Development of an Energy Management System for Distributed Energy Resources; a case study

» *Victor Goncalves Alpha Technologies Ltd.*

Wednesday
12:40 - 13:00

X1-03 Industrial Session

Venue Plaza A

12:40

Solar and Storage for Rural Electrification

» *Doug Wicks Schneider Electric*

Wednesday
13:20 - 13:35

Short Break

Venue Georgia A

Wednesday
13:35 - 14:55

**WED- MPPT Solutions
3A**

Chair Francisco Paz - University of British Columbia

Venue Plaza A

13:35


 **A Novel System Architecture to Extract Maximum Energy from Photo Voltaic Modules**

» *Nakul Shah (UNC Charlotte), Vikram Roy Chowdhury (UNC Charlotte), Madhav Manjrekar (UNC Charlotte)*

13:55

 **MPPT and Control Design of a Vienna Rectifier-based Low Power Wind Turbine with Reduced Number of Sensors**

» *Rafael Peña-Alzola (The University of British Columbia), David Campos-Gaona (University Of British Columbia), Francisco Paz (University Of British Columbia), José Luis Monroy Morales (The University of*

14:15  **Improved Maximum Power Point Tracking Algorithm using a Fuzzy Logic Controller for a Photovoltaic System**

» Woonki Na (Cal St Univ-Fresno), Pengyuan Chen (Cal St Univ-Fresno), Jonghoon Kim (Chosum University), Hong-Ju Jung (Hyosung Corporation)

14:35  **A Low-Profile, High Power Density Inverter with Minimal Energy Storage Requirement for Ripple Cancellation**

» Edgaras Mickus (ICERGi / University College Dublin), Trong Tue Vu (ICERGi), Terence O'Donnell (University College Dublin)


Wednesday
13:35 - 14:55

WED- Neutral Point Clamped (NPC) Converters

3B

Chair Jiacheng Wang - Simon Fraser University

Venue Plaza B

13:35  **Re-Evaluation of Modulation Techniques for Neutral-Point-Clamped Inverters with High-Order Output Filters**

» Jiazhi Liang (Beijing Jiaotong University), Jiuchun Jiang (Beijing Jiaotong University), Fen Tang (Beijing Jiaotong University), Poh Chiang Loh (Beijing Jiaotong University)

13:55  **A Smooth Switching Method of the Hybrid Control Strategy for Five-Level Active NPC Converter**

» Cungang Hu (Anhui University), Qunjing Wang (Anhui University), Guoli Li (Anhui University), Jun Hu (Anhui University), Fanglin Luo (Nanyang Technological University)

14:15  **An Optimization Approach for Designing Multilevel Converters**

» Luccas Di Tullio (University Of British Columbia), Seyed Ali Arefifar (University Of British Columbia), Martin Ordonez (University Of British Columbia)

14:35  **Optimal Control and Filter Sizing of a Multi-Megawatt Medium-Voltage Voltage-Source Converter for Future Grids**

» Hafiz Abu Bakar Siddique (PGS, E.ON ERC, RWTH Aachen University), Muhammad Jamal Riaz Ahmad (PGS, E.ON ERC, RWTH Aachen University), De Doncker Rik W. (PGS, E.ON ERC, RWTH Aachen)

Wednesday
13:35 - 14:55

WED- Grid-Connected Converters II

3C

Chair Yuichi Kado - Kyoto Institute of Technology

Venue Plaza C

13:35  **Control of A Grid Connected Converter During Weak Grid Conditions**

» Søren Iorenzen (Aalborg University), Alex Buus Nielsen (Aalborg University), Lorand Bede (Aalborg University)

13:55  **Adaptive notch filter based active damping for power converters using LCL filters**

» Mihai Ciobotaru (UNSW Australia), Antoine Rossé (Électricité de France (EDF)), Lorand Bede (Aalborg University), Baburaj Karanayil (UNSW Australia), Vassilios G Agelidis (UNSW Australia)

14:15  **Adaptive Optimal Control for Parallel Grid-connected Inverters with LCL Filters**

» Shangzhi Pan (Queen's University), Majid Pahlevani (Queen's University), Praveen Jain (Queen's University)

14:35

 **Modeling and Control Design of a Vienna Rectifier Based Electrolyzer**

» *José Luis Monroy Morales (The University of British Columbia), Rafael Peña-Alzola (The University of British Columbia), David Campos-Gaona (The University of British Columbia), Martin Ordonez (The University of British Columbia), Máximo Hernández Ángeles (Instituto Tecnológico de Morelia), Walter Merida (University Of British Columbia)*

Wednesday
14:55 - 15:10

Sponsor Booths and Coffee Break

Venue Georgia A

Wednesday
15:10 - 16:30

**WED- Microgrids/Nanogrids II
4A**

Chair Liuchen Chang - University of New Brunswick

Venue Plaza A

15:10

 **AC Voltage Sensors-Less Control Strategies for Dual-Mode Micro-grid Interfacing Converters**

» *ruiqi wang (State Grid Shandong Electric Power Research Institute)*

15:30

 **Microgrid Control System Based on an Adaptive Notch Filter Power Processor**

» *Sadaf Sadeghian Sorkhabi (Queen's University), Alireza Bakhshai (Queen's University)*

15:50

 **Energy Management of a Microgrid: Compensating for the Difference between the Real and Predicted Output Power of Photovoltaics**

» *Baljit Riar (University of Oxford), Jaehwa Lee (University of Oxford), Alessandra Tosi (University of Oxford), David Howey (University of Oxford), Stephen Duncan (University of Oxford), Michael Osborne (University of Oxford)*

16:10

 **SHORT-CIRCUIT PROTECTION FOR LOW-VOLTAGE DC MICROGRIDS BASED ON SOLID-STATE CIRCUIT BREAKERS**

» *Sharthak Munasib (University of Arkansas), Juan Balda (University of Arkansas)*

Wednesday
15:10 - 16:30

**WED- Modular Multilevel Converters (MMC)
4B**

Chair Wei Li - OPAL-RT TECHNOLOGIES

Venue Plaza B

15:10

 **Circulating Current elimination in Modular Multilevel Converter with Resonant controllers**

» *Miguel Moranchel (Universidad de Alcala), Emilio Bueno (Universidad de Alcala), Francisco Javier Rodriguez (Universidad de Alcala), Ines Sanz (Universidad de Alcala)*

15:30

 **Selective Harmonic Elimination modulation for Medium Voltage Modular Multilevel Converter**

» *Miguel Moranchel (Universidad de Alcala), Emilio Bueno (Universidad de Alcala), Francisco Javier Rodriguez (Universidad de Alcala), Ines Sanz (Universidad de Alcala)*

15:50

 **Device Loading and Efficiency of Modular Multilevel Converter under Various Modulation Strategies**

» *Hui Liu (Aalborg University), Ke Ma (Aalborg University), Frede Blaabjerg (Aalborg University)*

16:10

Characteristics Analyses and Rebalancing Method of Modular Multilevel Converter Under

Submodule Fault Conditions

» *Zhao Cong (Institute of Electrical Engineering, Chinese Academy of Sciences), Yaohua Li (Institute of Electrical Engineering, Chinese Academy of Sciences), Zixin Li (Institute of Electrical Engineering, Chinese Academy of Sciences), Fei Xu (Institute of Electrical Engineering, Chinese Academy of Sciences), Ping Wang (Institute of Electrical Engineering, Chinese Academy of Sciences)*

Wednesday
15:10 - 16:30

WED- Wide Bandgap Devices

4C

Chair Mazumder Sudip - University of Illinois

Venue Plaza C

15:10

Accurate Transient Calorimetric Measurement of Soft-Switching Losses of 10kV SiC MOSFETs

» *Daniel Rothmund (ETH Zurich), Dominik Bortis (ETH Zurich), Johann Kolar (ETH Zurich)*

15:30

A Performance Comparison of SiC and Si devices in a Bi-Directional Converter for Distributed Energy Storage Systems

» *Thilini Daranagama (The University of Cambridge), Tom Logan (Paramita Electronics), Richard McMahon (The University of Warwick), Florin Udrea (The University of Cambridge)*

15:50

Experimental Evaluation of Switching Characteristics, Switching Losses and Snubber Design for a Full SiC Half-Bridge Power Module

» *Bendik Nybakk Torsæter (Norwegian University of Science and Technology), Subhadra Tiwari (Norwegian University of Science and Technology), Richard Lund (Rolls-Royce Marine AS Trondheim), Ole-Morten Midtgård (Norwegian University of Science and Technology)*

16:10

Efficiency Improvement of a SiC-MOSFET 500 kHz ZVS Inverter

» *Yawen Li (Zhejiang University), Zhengyu Ye (Zhejiang University), Ning He (Zhejiang University), Junxiong Wu (Zhejiang University), Changsheng Hu (Zhejiang University), Dehong Xu (Zhejiang University)*

Wednesday
17:30 - 22:00

Wind Turbine Visit and PEDG Banquet

Venue Buses leaving at 17:00, 17:15, and 17:30 from Hyatt to Grouse Mountain

Thursday, 30th June

Thursday
08:00 - 14:00

Registration

Venue Registration desk

Thursday
08:30 - 08:45

Closing Session

Venue Plaza Ballroom

Thursday
08:45 - 09:00

Announcement of PEDG 2017

Venue Plaza Ballroom

Thursday
09:00 - 09:30

KN-4 Keynote

Venue Plaza Ballroom

09:00

Entrepreneurship and its Role in Creating a New Energy Infrastructure

» [Deepak Divan](#) Center for Distributed Energy, Georgia Tech

Thursday
09:30 - 10:00

KN-5 Keynote
Venue Plaza Ballroom

09:30

Emerging Technologies for Renewable Energy Conversion

» [Braham Ferreira](#) President of IEEE PELS

Thursday
10:00 - 10:15

Sponsor Booths and Coffee Break

Venue Georgia A

Thursday
10:15 - 11:35

THU- Off-Grid Operation and Islanding Detection 1A

Chair Denizar Cruz Martins - Federal University of Santa Catarina

Venue Plaza A

10:15

A New Slip Mode Frequency Shift Islanding Detection Method for Single Phase Grid Connected Inverters

» [Bahador Mohammadpour](#) (Queen's University), [Majid Pahlevani](#) (Queen's University), [Sajjad Makhdoomi Kaviri](#) (Queen's University), [Praveen Jain](#) (Queen's University)

10:35

Control Of An Islanded Microgrid Based On A Distributed Finite Control Set-Model Predictive Control: A Double Synchronous Reference Frame Approach

» [Riyadh Toman](#) (Western Michigan University), [Johnson Asumadu](#) (Western Michigan University)

10:55

Power Management Control Strategy in Photovoltaic and Energy Storage for Off-Grid Distributed Generation

» [Emanuel Serban](#) (University Of British Columbia), [Martin Ordonez](#) (University Of British Columbia), [Cosmin Pondiche](#) (Schneider Electric), [Keith Feng](#) (Schneider Electric), [Matias Anun](#) (Schneider Electric), [Peyman Servati](#) (University Of British Columbia)

11:15

Stability Analysis of Droop-Control in Diesel-Hybrid Systems

» [Stefan Reichert](#) (Fraunhofer Institute for Solar Energy System ISE), [Roland Singer](#) (Fraunhofer Institute for Solar Energy System ISE)

Thursday
10:15 - 11:35

THU- HVDC Systems 1B

Chair Rik De Doncker W. - RWTH Aachen University

Venue Plaza B

10:15

Hybrid Offshore HVDC Converter with Diode Rectifier and Modular Multilevel Converter

» [Malte von Hofen](#) (University Hannover), [Dennis Karwatzki](#) (Leibniz University Hannover), [Lennart Baruschka](#) (Protolar GmbH), [Axel Mertens](#) (Leibniz University Hannover)


10:35

Dynamic Performance of Computational-Efficient Models for Multi-Terminal MMC-HVDC Systems

» [Haihao Jiang](#) (McGill University), [Wei Li](#) (OPAL-RT TECHNOLOGIES), [Geza Joos](#) (McGill University), [Boon-](#)

10:55  **FixReF: a control strategy for offshore wind farms with different wind turbine types and diode rectifier HVDC transmission**

» *Cord Prignitz (University of Rostock), Hans-Guenter Eckel (University of Rostock), Sven Achenbach (Siemens AG), Friedemann Augsburger (Siemens AG), Andre Schoen (Siemens AG)*

11:15  **Minimum Loss Control of a Variable speed Off-Shore Interior Permanent Magnet Wind Generator Integrated to a Weak Grid by a Voltage Source – High Voltage Direct Current Link**

» *Kanokwan klinieam (Tennessee Technological University), Olorunfemi Ojo (Tennessee Technological University)*

Thursday
10:15 - 11:35

THU- Power Electronics in Distribution Systems
1C

Chair Ron Hui - The University of Hong Kong
Venue Plaza C

10:15  **Medium-Voltage DC Distribution Grids in Urban Areas**

» *Marco Stieneker (PGS, E.ON ERC, RWTH Aachen University), De Doncker Rik W. (PGS, E.ON ERC, RWTH Aachen)*

10:35  **Ancillary Voltage Control for a Distribution Feeder by Using Energy Storage System in Microgrid**

» *Yih-Der Lee (Institute of Nuclear Energy Research)*

10:55  **Managing Distribution Feeder Voltage Issues Caused by High PV Penetration**

» *Deepakraj Divan (Georgia Institute of Technology), Rohit Moghe (Varentec), Hong Chun (Varentec)*

11:15  **Required VSC Efficiency for Zero Net-Loss Distribution Network Active Compensation**

» *Jeff Bloemink (British Columbia Institute of Technology), Timothy Green (Imperial College London)*

Thursday
11:35 - 11:50

Short Break


Thursday
11:50 - 13:10

THU- Isolated Converters
2A

Chair Deepakraj Divan - Georgia Institute of Technology
Venue Plaza A

11:50  **A Push-pull Class E converter with improved PDM Control**

» *Hossein Mousavian (Queen's University), Somayeh Abnavi (Queen's University), Alireza Bakhshai (Queen's University), Praveen Jain (Queen's University)*

12:10  **A Switched-Inductor-Augmented Resonant DAB Converter for Achieving Wide-Range Zero Voltage Switching**

» *Muhammad Yaqoob (The Hong Kong Polytechnic University), Ka-Hong Loo (The Hong Kong Polytechnic University), Yuk Ming Lai (The Hong Kong Polytechnic University)*

12:30  **Modeling and Control of Bidirectional Isolated Battery Charging and Discharging Converter**

Based High-Frequency Link Transformer

» *Mahmoud Abdallah (Nagoya Institute of Technology), Suzuki Kazuma (Nagoya Institute of Technology), Takaharu Takeshita (Nagoya Institute of Technology), Kitagawa Wataru (Nagoya Institute of Technology)*

12:50

AC-AC Hybrid Dual Active Bridge Converter for Solid State Transformer

» *Lucas Brighenti (Federal University of Santa Catarina), Gabriel Facchinello (Federal University of Santa Catarina), Sergio Brockveld (Federal University of Santa Catarina), Henrique Mamede (Federal University of Santa Catarina), Walbermark Marques dos Santos (Federal University of Santa Catarina), Denizar Cruz Martins (Federal University of Santa Catarina)*

Thursday
11:50 - 12:50

THU- Power Electronics for Sustainable Sources II 2B

Chair Yunwei Li - University of Alberta

Venue Plaza B

11:50

Three Phase Reactive Power Control Using One Cycle Controller for Wind Energy Conversion Systems

» *Snehal Bagawade (Queen's University), Majid Pahlevani (Queen's University), Shangzhi Pan (Queen's University), Praveen Jain (Queen's University)*

12:10

High-Efficiency RB-IGBT Based Low-Voltage PWM Current-Source Converter for PMSG Wind Energy Conversion Systems

» *jianwen zhang (Shanghai jiaotong University), Peiyuan Li (Shanghai jiaotong University), Jiacheng Wang (Simon Fraser University), Cai Xu (Shanghai jiaotong University)*

12:30

Decoupling Control of Series-Connected DC Wind Turbines with Energy Storage System for Offshore DC Wind Farm

» *Gang Shi (Shanghai jiaotong University), jianwen zhang (Shanghai jiaotong University), Cai Xu (Shanghai jiaotong University), Miao Zhu (Shanghai jiaotong University)*

Thursday
11:50 - 12:50

THU- Inverters Control 2C

Chair Frede Blaabjerg - Aalborg University

Venue Plaza C

11:50

Cascaded control to shape output virtual impedance and improve output voltage quality for power inverter

» *Shlomo Gadelovits (The University of Sheffield), Qing-Chang Zhong (The University of Sheffield), Visakan Kadirkamanathan (The University of Sheffield)*

12:10

Design and Implementation of Two Single-Phase AC Voltage Sources with Six-Switch Inverter

» *Hung-Chi Chen (National Chiao Tung University), Jung Wang (National Chiao Tung University)*

12:30

Dual-Loop Geometric-Based Control of Full-Bridge Inverters for Stand-Alone Distributed Generation Systems

» *Marco Andres Bianchi (The University of British Columbia), Ignacio Galiano Zurbriggen (The University of British Columbia), Martin Ordonez (The University of British Columbia)*

Thursday
13:00 - 14:00

Lunch

Venue Georgia B

