

4th IEEE Southern Power Electronics Conference – SPEC 2018

Technical Programme

TIME	10 DECEMBER (Monday)	
9.00am – 6.30pm	Registration outside Lecture Room 1 (9.00am – 4.00pm) / outside Auditorium (4.00pm -6.30pm)	
9.30am – 1.00pm	Tutorial Session 1 & 2 (Parallel)	
9.30am – 11.00am	Tutorial 1 : An Introduction to Power Electronics Reliability	Tutorial 2: High Power Applications of Wide Bandgap Power Devices
	Speakers: Professor Frede Blaabjerg Department of Energy Technology, Aalborg University, Denmark And Associate Professor Huai Wang Center of Reliable Power Electronics (CORPE), Aalborg University, Denmark Venue: Lecture Room 1	Speaker: Professor Jin Wang Department of Electrical and Computer Engineering, The Ohio State University, USA Venue: Lecture Room 2
11.00am – 11.15am	Coffee Break (15mins)	
11.15am – 1.00pm	Tutorial 1 : An Introduction to Power Electronics Reliability	Tutorial 2: High Power Applications of Wide Bandgap Power Devices
1.00pm – 2.00pm	Lunch	
2.00pm – 5.30pm	Tutorial Session 3 & 4 (Parallel)	
2.00pm – 3.30pm	Tutorial 3: Model Predictive Control on electrical drives and power converters (including multi-level converters)	Tutorial 4: Technologies for simulation of multi-level converters
	Speaker: Professor Ralph Kennel Chair of Electrical Drive Systems and Power Electronics, Technische Universität München, Germany Venue: Lecture Room 1	Speaker: Dr Min Luo Application Engineer, Plexim GmbH Venue: Lecture Room 2
3.30pm – 3.45pm	Coffee Break (15mins)	
3.45pm – 5.30pm	Tutorial 3: Model Predictive Control on electrical drives and power converters (including multi-level converters)	Tutorial 4: Technologies for simulation of multi-level converters
5.30pm	End of Tutorial	
6.00pm – 8.00pm	Conference Welcome Reception Venue: Nanyang Executive Centre, Function Hall 1	

TIME	11 DECEMBER (TUESDAY)			
8.30am – 4.00pm	Registration outside Auditorium			
8.45am - 9.00am	SPEC 2018 Opening (Venue: Auditorium)			
9.00am – 10.30am	SPEC Plenary Session (Venue: Auditorium)			
9.00am – 9.30am	Speaker: Professor Frede Blaabjerg, Department of Energy Technology, Aalborg University, Denmark Topic: Power electronics — the key technology for renewable energy system integration			
9.30am – 10.00am	Speaker: Professor Ron Hui, Chair of Power Electronics, Faculty of Engineering, University of Hong Kong Topic: Past, Present and Future of Wireless Charging for Portable Electronics			
10.00am – 10.30am	Speaker: Mr Alexander Gerfer, Chief Technology Officer, Würth Elektronik eiSos Group Topic: Magnetics in the GaN/ SiC world			
10.30am – 11.00am	Coffee break (30mins)			
11.00am – 1.00pm	Session (A1-MLC2): Operational issues and control of multi-level converters Room: Lecture Room 1	Session (A1-MLC1): Multi-level converter topologies Room: Lecture Room 2	Session (A1-PEA1): Wireless power transfer systems 1 Room: Lecture Room 3	Session (A1-UGA2): Control and operational issues in microgrids Room: Lecture Room 4
1.00pm – 2.00pm	Lunch, Exhibition & Poster Sessions (P1)			
2.00pm – 3.30pm	Session (B1-EMD2): Operational issues in electrical machines Room: Lecture Room 1	Session (B1-MLC3): Modulation and control of multi-level converters Room: Lecture Room 2	Session (B1-PEA2): Wireless power transfer systems 2 Room: Lecture Room 3	Session (B1-PEA7): Miscellaneous issues in power electronics and drives Room: Lecture Room 4
3.30pm – 4.00pm	Coffee Break (30mins)			
4.00pm – 5.30pm	Session (C1-PEA5): DC-DC converter applications Room: Lecture Room 1	Session (C1-PEA8): Converter control and modulation Room: Lecture Room 2	Session (C1-UGA1): Energy storage systems Room: Lecture Room 3	
6.00pm – 8.00pm	Social Dinner Venue: ORTO 81 Lorong Chencharu Singapore 769198			
	Transport leaves NEC 5.45pm. Delegates to assemble 5.40pm at lobby			

TIME	12 DECEMBER (WEDNESDAY)			
8.30am – 4.00pm	Registration outside Auditorium			
9.00am – 10.30am	SPEC Plenary Session (Venue: Auditorium)			
9.00am – 9.30am	Speaker: Professor Udaya Madawala, Department of Electrical and Computer Engineering, University of Auckland, New Zealand Topic: Wireless Grid Integration of EVs for V2G applications: Challenges and Technologies			
9.30am – 10.00am	Speaker: Professor Grahame Holmes, Innovation Professor, Smart Energy Systems, School of Engineering, RMIT University, Australia Topic: Power Electronic Converters and the Emerging Smart Grid			
10.00am – 10.30am	Speaker: Professor Patrick Wheeler, Professor of Power Electronic Systems; Head of Department of Electrical and Electronic Engineering; Li Dak Sum Chair Professor in Electrical and Aerospace Engineering University of Nottingham, UK and China Topic: Transportation Electrification: what can we learn about power converter and drive train design from racing an Electric Superbike?			
10.30am – 11.00am	Coffee break (30mins)			
11.00am – 1.00am	Session (A2-EMD1): Control of electrical machines Room: Lecture Room 1	Session (A2-PEA3): Photovoltaic power systems Room: Lecture Room 2	Session (A2-UGA3): Issues in grid interfacing converters Room: Lecture Room 3	Session (A2-UGA4): Control of grid connected converters Room: Lecture Room 4
1.00pm – 2.00pm	Lunch, Exhibition & Poster Sessions (P2)			
2.00pm – 3.30pm	Session (B2-MLC4): Miscellaneous issues in multi-level converters Room: Lecture Room 1	Session (B2-PEA4): Battery storage systems Room: Lecture Room 2	Session (B2-UGA6): Utility and grid applications Room: Lecture Room 3	
3.30pm – 4.00pm	Coffee Break (30mins)			
4.00pm – 5.30pm	Session (C2-PEA6): Grid interactions Room: Lecture Room 1	Session (C2-WBG1): Wide band-gap devices Room: Lecture Room 2	Session (C2-SPC1): Smart power conversion systems Room: Lecture Room 3	
6.00pm – 8.30pm	Conference Banquet and Best Paper Awards Ceremony Venue: The Villa-Halia 1 Cluny Road, Ginger Garden, Singapore Botanic Garden, Singapore 259569 Transport leaves NEC 5.45pm. Delegates to assemble 5.40pm at lobby			

Session (A1-MLC2): Operational issues and control of multi-level converters (6)**Venue: LECTURE ROOM 1, LEVEL 2****Chair: Professor Peter Huang, Kyoto Institute of Technology, Japan****Time: 11th December, 11.00am-1.00pm****Co-chair: Professor Josep Pou, Nanyang Technological University, Singapore**

Paper ID	Paper Title	List of Authors	Paper Track	Remarks	Presenter
10722784	A Decoupled Circulating Current Suppressing Strategy For Modular Multilevel Converter	Shukai Mao, BinbinLi, Shuxin Zhang, Jizhong Chen, Xiaoqing Wang and Dianguo Xu	Multilevel converters	11.00am – 11.20am	Shukai Mao
10727358	Analysis of Load Balancing Limits for Cascaded Rectifier	Ning Jiao, Shunliang Wang and Tianqi Liu	Multilevel converters	11.20am – 11.40am	Ning Jiao
10744826	Investigation on proportional resonant current control for 7-level multilevel inverter with reduced switching devices	Shamsul Aizam Zulkifli and Abdul Khairi Abdul Rahman	Multilevel converters	11.40am – 12.00pm	Shamsul Aizam Zulkifli
10826788	Reducing DC-line Voltage Ripples of MMC by Injecting Circulating Current under Imbalanced Grid Conditions	Fangqing Li and Feng Gao	Multilevel converters	12.00pm – 12.20pm <i>Also for 10813849</i>	Fangqing Li
10827509	Adaptive Filtering Scheme for a Low-Capacitance StatCom	Ezequiel Rodriguez, Neha Beniwal, Glen Farivar, Christopher D. Townsend, Sergio Vazquez and Josep Pou	Multilevel converters	12.20pm – 12.40pm	Ezequiel Rodriguez
10856370	Finite Control Set Model Predictive Control of an Active Nested Neutral-Point-Clamped Converter	Amer Ghias, Pablo Acuna, Jinhang Lu and Adel Merabet	Multilevel converters	12.40pm – 1.00pm	Amer Ghias

Session (A1-MLC1): Multi-level converter topologies (6)**Venue: LECTURE ROOM 2, LEVEL 2****Chair: Professor Amir Ebrahimi, Leibniz University, Germany****Time: 11th December, 11.00am-1.00pm****Co-chair: Dr Xinan Zhang, Nanyang Technological University, Singapore**

Paper ID	Paper Title	List of Authors	Paper Track	Time	Presenter
10541958	Reliable Operation of an Asymmetrical Multilevel Inverter Topology	Santosh Kumar Maddugar, Vijay B Borghate and Sidharth Sabyasachi	Multilevel converters	11.00am -11.20am	Aditya Nurala
10733101	Capacitor Voltage Shaper for Cascaded H-Bridge StatCom	Young-Tae Jeon, Christopher D. Townsend, Glen Farivar, Joung-Hu Park and Josep Pou	Multilevel converters	11.20am -11.40am	Young-Tae Jeon
10756239	A Parallel-Output CLTCL Multi-Resonant Soft- Switching DC-DC Converter	Fuqiang Han and Zhun Meng	Multilevel converters	11.40am - 12.00pm	Fuqiang Han
10809820	A Three-Port Multi-Element Resonant Converter with Decoupled Power Flow Management	Ruixin Liu and Zhanchun Li	Multilevel converters	12.00pm - 12.20pm	Ruixin Liu
10813705	Cascaded Half-Bridge Multilevel Inverter with Reduced Number of Power Switches	Hossein Khoun Jahan, Amin Mohammadpour Shotorbani, Mehdi Abapour, Kazem Zare, Frede Blaabjerg and Yongheng Yang	Multilevel converters	12.20pm - 12.40pm	Zhijian Yin

10801152	A Modular Multilevel Converter with Boosting, Self-Balancing, and Scaling Capabilities for High Voltage Transformerless PV Application	Hossein Khoun Jahan, Mehdi Abapour, Kazem Zare, Seyed Hossein Hosseini, Yongheng Yang, Frede Blaabjerg	Utility & Grid Applications	12.40pm - 1.00pm	Pei Cai
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Session (A1-PEA1): Wireless power transfer systems 1 (5)**Venue: LECTURE ROOM 3, LEVEL 3****Chair: Professor Patrick Hu, University of Auckland, New Zealand****Time: 11th December, 11.00am-1.00pm****Co-chair: Professor Yi Tang, Nanyang Technological University, Singapore**

Paper ID	Paper Title	List of Authors	Paper Track	Time	Presenter
10554099	Design and Optimization of Asymmetrical Spiral Rectangular Pads for EV Wireless Charging	Yun Zhang, Lifang Wang, Yanjie Guo and Chengxuan Tao	Power Electronics Applications	11.00am -11.20am	Lifang Wang
10562204	Synchronous Rectification-Based Phase Shift Keying Communication for Wireless Power Transfer Systems	Hongchang Li, Shuxin Chen, Jingyang Fang and Yi Tang	Power Electronics Applications	11.20am -11.40am	Hongchang Li
10568356	Optimization of T-type compensation network for a certain power fluctuation tolerance of the dynamic wireless power transmission	Shufan Li, Lifang Wang, Yanjie Guo and Chengxuan Tao	Power Electronics Applications	11.40am - 12.00pm	Shufan Li
10733355	The Optimization Method of ICPT System Parameters Based on Mathcad and The Application in Design of Wireless Power Transmission System	Weiping Zhang, Yuanxin Chen, Yuanchao Liu and Shuo Bai	Power Electronics Applications	12.00pm - 12.20pm	Yuanxin Chen
10749444	Comparative Analysis of LCL, LCLC, CLLC Compensation Networks for Capacitive Power Transfer	Sijie Ning, Jian Yang, Qi Zhu, Mei Su, Ruya Tan and Yonglu Liu	Power Electronics Applications	12.20pm - 12.40pm	Sijie Ning
10800088	Power Stabilization Based on Double Energized Transmitting Coils in Dynamic Wireless Charging System for Inspection Robot	Han Liu, Linlin Tan, Xueliang Huang and Dariusz Czarkowski	Power Electronics Applications	12.40pm - 1.00pm	Han Liu

Session (A1-UGA2): Control and operational issues in microgrids (6)**Venue: LECTURE ROOM 4, LEVEL 3****Chair: Professor Christos Mademlis, Aristotle University of Thessaloniki, Greece****Time: 11th December, 11.00am-1.00pm****Co-chair: Professor Amer Ghias, Nanyang Technological University**

Paper ID	Paper Title	List of Authors	Paper Track	Time	Presenter
10562407	Enhanced Consensus-based Distributed Control for Accurate Reactive Power Sharing of Islanded Microgrids Without LBC lines	Aiting Jiang, Yang Han, Ping Yang, Congling Wang and Jingqi Xiong	Utility & Grid Applications	11.00am -11.20am	Aiting Jiang
10583072	Power Sharing Scheme for a Microgrid Including Renewables and Battery Storage	Jiahui Jiang and Colin Coates	Utility & Grid Applications	11.20am -11.40am	Jiahui Jiang

10732963	A unified distributed control scheme on cost optimization for hybrid AC/DC microgrid	Wendong Feng, Jian Yang, Zhangjie Liu, Hui Wang, Mei Su and Xin Zhang	Utility & Grid Applications	11.40am - 12.00pm	Wendong Feng
10818193	Stability Analysis of Control System Based on Linearized Model of Mutually Connected TAB Converters in Autonomous DC Microgrid	Shota Okutani, Yuichi Kado, Pin-Yu Huang and Junichi Arai	Utility & Grid Applications	12.00pm - 12.20pm	Shota Okutani
10819347	Ground Fault Analysis and Grounding Design Considerations in DC Microgrids	D.K.J.S Jayamaha, N.W.A Lidula and A.D Rajapakse	Utility & Grid Applications	12.20pm - 12.40pm	Shan Jayamaha
10817225	An Isolated Bidirectional Forward Converter with Integrated Output Inductor-Transformer Structure	Nurhakimah Mohd Mukhtar and Dylan Dah-Chuan Lu	Utility & Grid Applications	12.40pm - 1.00pm	Nurhakimah Mohd Mukhtar

Session (P1): Poster 1 (12)**Venue: Education Wing Foyer & Main Atrium, Level 2****Chair: Professor Jack Zhang, Nanyang Technological University, Singapore****Time: 11th December, 1.00pm-2.00pm****Co-chair: Dr Liang Mong Koh, Nanyang Technological University, Singapore**

Paper ID	Paper Title	List of Authors	Paper Track	Presenter	Session
10608730	Comparative Study of Performance for Different Winding Connections of Dual-channel Switched Reluctance Machine Using Frozen Permeability	Xiupeng Cui, Jianbo Sun and Chenglin Gu	Electric Machines and Drives	Xiupeng Cui	P1
10779935	An Isolated Three-Port DC-DC Converter with Low-Voltage DC Bus for DC Microgrids	Panbao Wang, Xiaochen Zhang, Sibao Ding, Wei Wang and Dianguo Xu	Electric Machines and Drives	Sibao Ding	P1
10828486	Primary Iron Loss Analysis on Tubular Permanent Magnet Linear Motor	Hui Zhong, Bowei Peng, Ankang Chen and Yingjie Wang	Electric Machines and Drives	Bowei Peng	P1
10828105	Adaptive control of power electronics load considering user intention in islanded microgrid	Shibo Wang, Song Zhang, Guangqian Ding, Chuanpu Li, Yan Cheng, Shumin Sun	Utility & Grid Applications	Guangqian Ding	P1
10918619	High-Performance CLL Resonant Multi-Channel LED Driver for Lighting Application	Wesley Poh Qi Tong, Muhammad Ramadan B.M.S., Thillainathan Logenthiran, R.T. Naayagi, Wai Lok Woo and Van-Tung Phan	Power Electronics Applications	Wesley Poh Qi Tong	P1
10828498	Analysis of High Frequency Electronic Ballast for 2.5kW High Intensity Discharge Lamp	Weiping Zhang, Xuezhi Liu and Yuanchao Liu	Power Electronics Applications	Xuezhi Liu	P1
10765838	Calculation and Experimental Validation on Leakage Inductance of a Medium Frequency Transformer	Haonan Tian, Zhongbao Wei, Sriram Vaisambhayana, Madasamy Palavesha Thevar, Anshuman Tripathi and Philip Carne Kjær	Smart Power Conversions	Haonan Tian	P1
10827800	Power Feedforward Method for Passivity-based Grid-connected PV Inverter in Weak Grids	Guihua Liu, Wenxiu Wang, Wei Wang and Kai Zhu	Smart Power Conversions	Wenxiu Wang	P1
10920337	Modelling of Track Layout for Intelligent Railway Signalling System: A Machine Learning Application	Y. Bavisar, U. Suryawanshi and A. Sheikh	Special Session - Electric Transportation, Motor Drives	Suryawanshi Udaykumar	P1
10918978	A High Step-up Multilevel Inverter with Minimized Components Featuring Self-balancing and Continuous Input Current Capabilities	Hossein Khoun Jahan, Mehdi Abapour, Kazem Zare, Seyed Hossein Hosseini, Yongheng Yang and Frede Blaabjerg	Multilevel converters	Qiao Peng	P1
10823853	A Temperature-dependent Thermal Model of Silicon Carbide MOSFET Module for Long-term Reliability Assessment	Mengxing Chen, Huai Wang, Frede Blaabjerg, Xiongfei Wang and Donghua Pan	WBG semiconductor devices	Zhijian Yin	P1
10732276	A Duty Cycle based Finite-set Model Predictive Torque Control for Permanent Magnet Synchronous Motor Drives	Hejin Yang, Xinan Zhang and Wang Youyi	Electric Machines and Drives	Hejin Yang	P1

Session (B1-EMD2): Operational issues in electrical machines (4)**Venue: LECTURE ROOM 1, LEVEL 2****Chair: Professor Chandan Kumar, Indian Institute of Technology Guwahati, India****Time: 11th December, 2.00pm-3.30pm****Co-chair: Professor Fook Hoong Choo, Nanyang Technological University, Singapore**

Paper ID	Paper Title	List of Authors	Paper Track	Time	Presenter
10711420	Open and Short Circuit Fault detection in Alternators using the rectified DC output voltage	Russell Sabir, Sven Hartmann and Clemens Gühmann	Electric Machines and Drives	2.00pm – 2.20pm	Russell Sabir
10814897	Characterization of a Large Electrical Machine Test Bench for Advanced Investigations on Wind and Hydro Generators	Amir Ebrahimi	Electric Machines and Drives	2.20pm – 2.40pm	Amir Ebrahimi
10829140	Mechanical resonant systems identification and compensation for the self tuning algorithms	Ondrej Bartik and Lukas Pohl	Electric Machines and Drives	2.40pm – 3.00pm	Ondrej Bartik
10918803	Optimal Configuration of Multiphase AC Motors under Squarewave and PWM Operations	Anwar Muqorobin and Pekik Argo Dahono	Electric Machines and Drives	3.00pm – 3.20pm	Anwar Muqorobin

Session (B1-MLC3): Modulation and control of multi-level converters (4)**Venue: LECTURE ROOM 2, LEVEL 2****Chair: Professor Jose Pomilio, University of Campinas, Brazil****Time: 11th December, 2.00pm-3.30pm****Co-chair: Professor Huai Wang, Aalborg University, Denmark**

Paper ID	Paper Title	List of Authors	Paper Track	Time	Presenter
10670594	Current Ripple Reduction for Cascaded H-bridge Converter with Phase-Shifted Carrier PWM	Kevin Sun, Terry Summers and Colin Coates	Multilevel converters	2.00pm – 2.20pm	Kevin Sun
10748184	An Improvement on a Simplified Space Vector Modulation Algorithm to Solve the Inherent Three-Phase Unbalance	Hongda Wu, Jinjun Liu and Shaodi Ouyang	Multilevel converters	2.20pm – 2.40pm	Hongda Wu
10749837	Enhancing the Natural Voltage Balancing Capability of Neutral-Point-Clamped Converters under Carrier-Based Pulsewidth Modulation	Neha Beniwal, Josep Pou, Christopher D. Townsend and Salvador Ceballos	Multilevel converters	2.40pm – 3.00pm	Neha Beniwal
10828721	Research on Smooth Voltage Balance Modulation Strategy in Three Level Neutral Point Clamped Cascade Rectifier	Xiaoqiong He, Zhiqin Zhao, Yang Chen, Pengcheng Han, Xiaoqiong He and Xu Peng	Multilevel converters	3.00pm – 3.20pm	Zhiqin Zhao

Session (B1-PEA2): Wireless power transfer systems 2 (4)**Venue: LECTURE ROOM 3, LEVEL 3****Time: 11th December, 2.00pm-3.30pm****Chair: Professor Patrick Hu, University of Auckland, New Zealand****Co-chair: Professor Chris Lee, Nanyang Technological University, Singapore**

Paper ID	Paper Title	List of Authors	Paper Track	Time	Presenter
10827686	A Class E2 Inverter-Rectifier-Based Bidirectional Wireless Power Transfer System	Kerui Li and Siew-Chong Tan	Power Electronics Applications	2.00pm – 2.20pm	Siew Chong Tan
10829463	Design of a contactless rotary device based on inductively coupled power transfer	Hanlin Zong, Xiangjun Zhang, Xiaorui Zhang, Yijie Wang and Dianguo, Xu Hailin Tian, Xiufang Liu and Dapeng Yan	Power Electronics Applications	2.20pm – 2.40pm	Xiangjun Zhang
10957108	Power Flow Control of Capacitive Power Transfer by Soft Switching of Extra Capacitors in Class-E Converter	Liang Huang and Aiguo Patrick Hu	Power Electronics Applications	2.40pm – 3.00pm	Prof Aiguo Patrick Hu
10989384	A Wireless Power Transfer System for Electric Fence Energizers	James Xian, Craig Baguley and Udaya Madawala	Power Electronics Applications	3.00pm – 3.20pm	James Xian

Session (B1-PEA7): Miscellaneous issues in power electronics and drives (4)**Venue: LECTURE ROOM 4, LEVEL 3****Time: 11th December, 2.00pm-3.30pm****Chair: Professor Zhixun Ma, Tongji University, China****Co-chair: Professor Amer Ghias, Nanyang Technological University, Singapore**

Paper ID	Paper Title	List of Authors	Paper Track	Time	Presenter
10893535	Design of 100 kVA SiC Power Converter for Aircraft Electric Starter Generator	Ziyou Lim, Yong Liu, Lingxi Zhang, Josep Pou, Rejeki Simanjorang and Amit Gupta	Power Electronics Applications	2.00pm – 2.20pm	Lingxi Zhang
10918735	Impact of Mechanical Power Variation on Transient Stability of DFIG-based Wind Turbine	Wangqiang Tang, Jiabing Hu and Rui Zhang	Power Electronics Applications	2.40pm – 3.00pm	Wangqiang Tang
10817502	Overview of CASHIPS High-Power Electrical Equipment Test Facility	Liansheng Huang and Xiaojiao Chen	Power Electronics Applications	3.00pm – 3.20pm	Xiaojiao Chen
10813849	Synchronized Reactive Power Variation Method for Islanding Detection Using High-Frequency Signal Injection	Gongke Wang, Feng Gao and Fangqing Li	Utility & Grid Applications	3.20pm – 3.40pm <i>Also for 10826788</i>	Fangqing Li

Session (C1-PEA5): DC-DC converter applications (4)**Venue: LECTURE ROOM 1, LEVEL 2****Chair: Professor Dylan Lu, University of Technology Sydney, Australia****Time: 11th December, 4.00pm-5.30pm****Co-chair: Dr Xinan Zhang, Nanyang Technological University, Singapore**

Paper ID	Paper Title	List of Authors	Paper Track	Time	Presenter
10925829	A non-ideal SEPIC DCM modeling for LED lighting applications	Bruno Bertoldi, Marcio Moura Bridon Junior, Matheus Schramm Dall'Asta, Mateo Daniel Roig Greidanus, Andfe Luis Kirsten and Marcelo Lobo Heldwein	Power Electronics Applications	4.00pm – 4.20pm <i>Also for #10925450</i>	Marcelo Lobo Heldwein
10497600	DC Bias Study for DC-DC Dual-Active-Bridge Converter	Liangcai Shu, Wu Chen, Zhiguang Lin, Dajun Ma, Xiaokun He and Waqar Azeem Syed	Power Electronics Applications	4.20pm – 4.40pm	Xiaokun He and Wu Chen
10827661	Active Power Decoupling Control of Bridge-less SEPIC using Lyapunov-function based Control Strategy	Soonhwan Hwang, Satoshi Ogasawara, Koji Orikawa and Masatsugu Takemoto	Power Electronics Applications	4.40pm – 5.00pm	Soonhwan Hwang
10817660	Improved quadratic boost converter using cross coupled-inductor	Yiyang Li, John Long Soon and Swamidoss Sathiakumar	Multilevel converters	5.00pm – 5.20pm	John Long Soon

Session (C1-PEA8): Converter control and modulation (4)**Venue: LECTURE ROOM 2, LEVEL 2****Chair: Professor Minh-Khai Nguyen, Chosun University, South Korea****Time: 11th December, 4.00pm-5.30pm****Co-chair: Dr Liang Mong Koh, Nanyang Technological University, Singapore**

Paper ID	Paper Title	List of Authors	Paper Track	Time	Presenter
10604874	A Compound Control Strategy for Inverter Output Voltage in Micro-grid System	Jinghua Zhou, Rong Zhang, Xinlei Zhang, Jiewei Wu and Weichao Huang	Power Electronics Applications	4.00pm – 4.20pm	Leixuan Guo
10828570	Space Vector Modulation Strategy for Three-Level Quasi-Switched Boost T-Type Inverter	Duc-Tri Do, Minh-Khai Nguyen, Thanh-Hai Quach, Vinh-Thanh Tran, Cong-Bang Le, Kyoung-Won Lee and Geum-Bae Cho	Power Electronics Applications	4.20pm – 4.40pm	Dr Minh-Khai Nguyen
10926806	Model Predictive Control of Direct Matrix Converter with Common Mode Voltage Elimination	Muslem Uddin, Galina Mirzaeva and Graham Goodwin	Power Electronics Applications	4.40pm – 5.00pm	Galina Mirzaeva
10941632	Coupled Inductor based Isolated Voltage Multiplier Converter	Shirish Raizada and Vishal Verma	Power Electronics Applications	5.00pm – 5.20pm	Shirish Raizada

Session (C1-UGA1): Energy storage systems (4)**Venue: LECTURE ROOM 3, LEVEL 3****Chair: Professor Mario Pacas, University of Siegen, Germany****Time: 11th December, 4.00pm-5.30pm****Co-chair: Dr Xuan Bac Nguyen, Nanyang Technological University, Singapore**

Paper ID	Paper Title	List of Authors	Paper Track	Time	Presenter
10679148	A Computationally-Efficient Electrochemical-Thermal Model for Small-Format Cylindrical Lithium Ion Batteries	Ngoc Tham Tran, Mahinda Vilathgamuwa, Troy Farrell, San Shing Choi, Yang Li and Joseph Teague	Utility & Grid Applications	4.00pm – 4.20pm	Ngoc Tham Tran
10827697	Inertia Emulation by Flywheel Energy Storage System for Improved Frequency Regulation	Jiale Yu, Jingyang Fang and Yi Tang	Utility & Grid Applications	4.20pm – 4.40pm	Jiale Yu
11026288	Techno-Economic Feasibility Study of Battery-Powered Ferries	Monaaf D.A. Al-Falahi, James Coleiro, S. D. G. Jayasinghe, Hossein Enshaei, Vikram Garaniya, Craig Baguley and Udaya Madawala	Utility & Grid Applications	4.40pm – 5.00pm	Shantha Jayasinghe
10750381	Thermal Management of an Electric Ferry Lithium-Ion Battery System	Erik Alston, Shantha Jayasinghe, Craig Baguley and Udaya Madawala	Smart Power Conversions	5.00pm – 5.20pm	Shantha Jayasinghe

Session (A2-EMD1): Control of electrical machines (6)**Venue: LECTURE ROOM 1, LEVEL 2****Chair: Professor Galina Mirzaeva, University of Newcastle, Australia****Time: 12th December, 11.00am-1.00pm****Co-chair: Professor Chris Lee, Nanyang Technological University, Singapore**

Paper ID	Paper Title	List of Authors	Paper Track	Time	Presenter
10827853	A Novel Modified Digital PWM Control Technique to Reduce Speed Ripples in BLDC Motors	Pratikanta Mishra, Atanu Banerjee, Hari Charan Nannam and Mousam Ghosh	Electric Machines and Drives	11.00am -11.20am	Atanu Banerjee
10828387	Simplification of the Acquisition System for Sensored Vector Control using Resolver Sensor based on FDM and Current Synchronous Sampling	Raymundo Cordero Garcia, Joao Onofre Pereira Pinto, Igor Esdras Silva Ono, Vitoria dos Santos Fahed and Moacyr Brito	Electric Machines and Drives	11.20am -11.40am	Prof Joao Pinto
10911717	Commutation Torque Ripple Reduction for Brushless DC Motors Based on Optimal Control	Jian Liang, Yao Sun, Mei Su, Sijie Ning, Min Zhou, Hanbing Dan, and Guo Xu	Electric Machines and Drives	11.40am - 12.00pm	Jian Liang
10919060	PMSM PI Current Controller Tuning Using Structurally Constrain LQR LMI Criteria for MIMO Plants	Lukas Pohl and Ondrej Bartik	Electric Machines and Drives	12.00pm - 12.20pm	Dr Lukas Pohl
10919840	SiC-VSI with Sinusoidal Voltages for an Enhanced Sensorless Control of the Induction Machine	Harith Al-Badrani, Simon Feuersänger and Mario Pacas	Electric Machines and Drives	12.20pm - 12.40pm	Prof Pacas Mario
10935608	Decoupled Predictive Current Control of Permanent Magnet Synchronous Machines	Ferdinand Grimm and Zhenbin Zhang	Electric Machines and Drives	12.40pm - 1.00pm	Ferdinand Grimm

Session (A2-PEA3): Photovoltaic power systems (5)**Venue: LECTURE ROOM 2, LEVEL 2****Chair: Professor Tomoyuki Mannen, Tokyo University of Science, Japan****Time: 12th December, 11.00am-1.00pm****Co-chair: Professor Josep Pou, Nanyang Technological University, Singapore**

Paper ID	Paper Title	List of Authors	Paper Track	Time	Presenter
10701411	Hybrid MPPT Algorithms for Photovoltaic Systems	Leandro T. Omine, Moacyr A. G. de Brito, João O. P. Pinto and Raymundo C. García	Power Electronics Applications	11.00am – 11.20am	Prof Joao Pinto
10810372	Power Management Scheme for a Wind-Photovoltaic Hybrid Autonomous System with Battery Storage	Jyotismita Mishra, Monalisa Pattnaik and Susovan Samanta	Power Electronics Applications	11.20am – 11.40am	Jyotismita Mishra
10804215	A Min-communication Control for Grid-connected Cascaded PV Inverters	Hongyi Liu, Hua Han, Yao Liu, Mei Su, Xiaochao Hou and Xin Zhang	Utility & Grid Applications	11.40am – 12.00pm	Hongyi Liu

10918899	Microcontroller Implementation of an MPPT Algorithm using Decremental Windows Size Scanning Method for Photovoltaic Systems	Tino Suhaebri, Faizal Arya Samman and Andani Achmad	Power Electronics Applications	12.00pm – 12.20pm	Faizal Arya Samman
10941637	Dual Port Impedance Converter for PV – Battery fed Remote Telecom Towers	Aditya Narula and Vishal Verma	Power Electronics Applications	12.20pm – 12.40pm	Aditya Narula

Session (A2-UGA3): Issues in grid interfacing converters (6)

Venue: LECTURE ROOM 3, LEVEL 3

Chair: Professor Jose Pomilio, University of Campinas, Brazil

Time: 12th December, 11.00am-1.20pm

Co-chair: Professor Yan Xu, Nanyang Technological University, Singapore

Paper ID	Paper Title	List of Authors	Paper Track	Time	Presenter
10562416	Low-Voltage Ride-Through Techniques for Two-Stage Photovoltaic System under Unbalanced Grid Voltage Sag Conditions	Xiangyang Lin, Yang Han, Ping Yang, Congling Wang and Jingqi Xiong	Utility & Grid Applications	11.00am – 11.20am	Xiangyang Lin
10796577	A Universal Model for Grid-Connected Converters Reflecting Power-Internal Voltage Characteristics	Qiao Peng, Jingyang Fang, Yongheng Yang and Frede Blaabjerg	Utility & Grid Applications	11.20am – 11.40am	Qiao Peng
10798622	Control Strategy for Low Voltage Ride Through (LVRT) Operation of Two-Stage Photovoltaic Power Generation System	Lihua Li, Hong Zhou, Fuqiang Luo, Xiangyang Lin and Yang Han	Utility & Grid Applications	11.40am – 12.00pm	Xiangyang Lin
10804075	Research on Influence of Time Delay on Critical Modes for Interconnected Grid	Yonghui Nie, Chiyao Feng, Chunlei Zhang and Qingfeng Zhang	Utility & Grid Applications	12.00pm – 12.20pm	Yonghui Nie
10597353	Design Procedure for a Digital Proportional-Resonant Current Controller in a Grid Connected Inverter	Tiago Davi Curi Busarello, José Antenor Pomilio and Marcelo Godoy Simões	Power Electronics Applications	12.20pm – 12.40pm	Prof Pomilio Jose
10818325	Design of Digital Filter-based Highly Robust Active Damping for LCL-filtered Grid-tied Inverters	Pei Cai, Xiaohua Wu, Yongheng Yang, Wenli Yao, Wenjie Liu and Frede Blaabjerg	Utility & Grid Applications	12.40pm – 1.00pm	Pei Cai

Session (A2-UGA4): Control of grid connected converters (6)**Venue: LECTURE ROOM 4, LEVEL 3****Chair: Professor Amir Ebrahimi, Leibniz University, Germany****Time: 12th December, 11.00am-1.00pm****Co-chair: Dr Gamini Jayasinghe, University of Tasmania, Australia**

Paper ID	Paper Title	List of Authors	Paper Track	Time	Presenter
10548623	Generic Stability Impedance Criterion for the Parallel Inverters System	Xin Zhang and Chung, Shu-hung Henry	Utility & Grid Applications	11.00am – 11.20am	Jinsong He
10806913	Frequency and Temperature-Dependent Power Cable Modelling for Stability Analysis of Grid-Connected Inverter	Weihua Zhou, Yanbo Wang and Zhe Chen	Utility & Grid Applications	11.20am – 11.40am <i>Also for 10823511</i>	Weihua Zhou
10818655	Decentralised Master-Slave Control of Intergrids	Matthew Davison, Terry Summers and Christopher D. Townsend	Utility & Grid Applications	11.40am – 12.00pm	Matthew Davison
10823511	Impedance-Based Modelling Method for Length-Scalable Long Transmission Cable for Stability Analysis of Grid-Connected Inverter	Weihua Zhou, Yanbo Wang and Zhe Chen	Utility & Grid Applications	12.00pm – 12.20pm <i>Also for 10806913</i>	Weihua Zhou
10827676	An improved control strategy of virtual synchronous generator under unbalanced conditions	Fen Li, Guihua Liu, Kai Zhu and Wei Wang	Utility & Grid Applications	12.20pm – 12.40pm	Fen Li
10906572	Passivity Enhancement for Three-Phase Grid-Connected Inverter in dq-frame	Ying Peng, Kai Li, Jiancheng Zhao and Chuan Xie	Utility & Grid Applications	12.40pm – 1.00pm	Kai Li

Session (P2): Poster 2 (10)**Venue: Education Wing Foyer & Main Atrium, Level 2****Chair: Dr Xuan Bac Nguyen, Nanyang Technological University****Time: 12th December, 1.00pm-2.00pm****Co-chair: Professor Fook Hoong Choo, Nanyang Technological University, Singapore**

Paper ID	Paper Title	List of Authors	Paper Track	Presenter	Session
10569365	A soft reclosing model for hybrid DC circuit breaker in VSC-MTDC system	Ji Shu, Shunliang Wang and Tianqi Liu	Utility & Grid Applications	Ji Shu Ning Jiao	P2
10743720	Topology Derivation of Non-isolated Multi-Port DC-DC Converters Based on H-Bridge	Ping Feng, Ping Yang, Zerong Shang, ZeYu Zhu	Utility & Grid Applications	Prof Ping Yang	P2
10767376	DC Voltage Reduction in PV connected LV D-STATCOM with In-Phase Series Voltage Injection and Improved Transformer Ratings	Guddy Satpathy and Dipankar De	Utility & Grid Applications	Dr Dipankar De	P2
10827710	Dimensioning and Comparison of a Novel Power Converter Topology by Empirical Semiconductor Models	Christian Axtmann, Johannes Kolb and Michael Braun	Power Electronics Applications	Christian Axtmann	P2
10925656	Modelling and Simulation of DC microgrid	Song HuiHuan Zacchaeus, Wesley Poh Qi Tong and R.T.Naayagi	Utility & Grid Applications	Wesley Poh Qi Tong	P2
10920512	Revisiting Two-Port Network Analysis for Wireless Power Transfer (WPT) Systems	Prasad Jayathurathnage, Mahinda Vilathgamuwa and Constantin Simovski	Special Session - Wireless Power	Tham Nguyen	P2
10918658	Optimal Operational Scheduling of Smart Microgrids Considering Hourly Reconfiguration	Saeid Esmaili, Shahram Jadid, Amjad Anvari-Moghaddam and Josep M. Guerrero	Special Session - Microgrid	Amjad Anvari-Moghaddam <i>Also for 10909281</i>	P2
10909281	Sensor-based and Sensorless Vector Control of PM Synchronous Motor Drives: A Comparative Study	Shweta Singh and Amjad Anvari-Moghaddam	Special Session - Electric Transportation, Motor Drives	Amjad Anvari-Moghaddam <i>Also for 10918658</i>	P2
10912540	An Improved Active Li-ion Battery Equalization Scheme for Enhancing the Performance of a nearly Zero Energy Building and Electric Vehicle Microgrid	Markos Koseoglou, Evangelos Tsioumas, Nikolaos Jabbour and Christos Mademlis	Power Electronics Applications	Markos Koseoglou	P2
10711824	Design and Control for ZVS Constant Current and Constant Voltage Wireless Charging Systems	Bac Xuan Nguyen, Jaspreet Singh, Xinan Zhang, Wentao Jiang, Leong Hai Koh and Peng Wang	Power Electronics Applications	Dr Nguyen Xuan Bac	P2

Session (B2-MLC4): Miscellaneous issues in multi-level converters (4)**Venue: LECTURE ROOM 1, LEVEL 2****Chair: Professor Marcelo Heldwein, Federal University of Santa Catarina, Brazil****Time: 12th December, 2.00pm-3.30pm****Co-chair: Professor Yi Tang, Nanyang Technological University, Singapore**

Paper ID	Paper Title	List of Authors	Paper Track	Time	Presenter
10728471	A Novel Zero-Voltage-Detector for Buck Converter in Discontinuous Conduction Mode (DCM)	Meng Jia, Zhuochao Sun and Lier Siek	Multilevel converters	2.00pm – 2.20pm	Meng Jia
10733700	Experimental Investigation on Single-Phase Multilevel Inverter for Generating 21-Level Output Voltage Using Four H-Bridge Units	Tapan Kumar Chakraborty, Ashique Anan and Sakhawat Hossen Rakib	Multilevel converters	2.20pm – 2.40pm	Tapan Kumar Chakraborty
10917705	Analysis and Design of a Novel High Step-Down DC-DC Converter for Battery Applications	Zhong-Rong Lin, Nguyen Anh Dung, Huang-Jen Chiu, Yu-Chen Liu, Jih-Sheng Lai and Yu-Chen Chang	Multilevel converters	2.40pm – 3.00pm	Zhong-Rong Lin
10925450	Hybrid Unidirectional MMC-Based Rectifier	Vinicius Bernardi Fuerback, Gean Maia de Sousa and Marcelo Lobo Heldwein	Multilevel converters	3.00pm – 3.20pm <i>Also for 10925829</i>	Marcelo Lobo Heldwein

Session (B2-PEA4): Battery storage systems (4)**Venue: LECTURE ROOM 2, LEVEL 2****Chair: Professor Christos Mademlis, Aristotle University of Thessaloniki, Greece****Time: 12th December, 2.00pm-3.30pm****Co-chair: Professor Yan Xu, Nanyang Technological University, Singapore**

Paper ID	Paper Title	List of Authors	Paper Track	Time	Presenter
10912501	Highly Reliable Monitoring and Equalization in a Hybrid Energy Storage System with Batteries and Supercapacitors for Electrical Motor Drives in Building Applications	Nikolaos Jabbour, Evangelos Tsioumas, Markos Koseoglou and Christos Mademlis	Power Electronics Applications	2.00pm – 2.20pm	Dr Nikolaos Jabbour
10920525	Discussion of Single-Stage Isolated Unidirectional AC-DC On-Board Battery Charger for Electric Vehicle ¹⁰	Mahmoud Nassary, Mohamed Orabi and Maged Ghoneima	Power Electronics Applications	2.20pm – 2.40pm	Mahmoud Nassary
10920492	Development of a WBG-based Transformerless Electric Vehicle Charger with Semiconductor Isolation	Yue Zhang, Chengcheng Yao, Zhongjing Wang, Huanyu Chen, Xiaoteng He, Xuan Zhang, He Li and Jin Wang	Power Electronics Applications	2.40pm – 3.00pm	Prof Wang Jin (Tut. speaker)
10549646	An Optimized Power-Split Method Based on Fuzzy Logic Control for Fuel Cell-Battery FCHEV Powertrain	Yao Zhang and Xin Zhang	Power Electronics Applications	3.00pm – 3.20pm	Yao Zhang

Session (B2-UGA6): Utility and grid applications (4)**Venue: LECTURE ROOM 3, LEVEL 3****Time: 12th December, 2.00pm-3.30pm****Chair: Professor Koji Orikawa, Hokkaido University, Japan****Co-chair: Mr Ke Guo, Nanyang Technological University, Singapore**

Paper ID	Paper Title	List of Authors	Paper Track	Time	Presenter
10828549	Exploration of the Relationship Between Inertia Enhancement and DC-Link Capacitance for Grid-Connected Converters	Ke Guo, Yi Tang and Jingyang Fang	Utility & Grid Applications	2.00pm – 2.20pm	Ke Guo
10906855	Impact of Nonlinearity on Type-3 WT's Fault Current	Yuanzhu Chang, Jiabing Hu, Enbo Zhang and Xiaojie Zhang	Utility & Grid Applications	2.20pm – 2.40pm	Yuanzhu Chang
10912487	Enhanced Effectiveness in the Appliance Scheduling and Energy Storage Control by utilizing the Particle Swarm Technique for a Nearly Zero Energy Building	Evangelos Tsioumas, Nikolaos Jabbour, Markos Koseoglou, Ilias Sfetkos and Christos Mademlis	Utility & Grid Applications	2.40pm – 3.00pm	Evangelos Tsioumas
10920245	Performance Enhancement of three-phase Unbalanced Distribution Network using DER	P. Shettigar, Y. Malviya, A. Surjagade, V. Pal, A. Sheikh and S. Bhil	Utility & Grid Applications	3.00pm – 3.20pm	Mohd Adil Sheikh

Session (C2-PEA6): Grid interactions (4)**Venue: LECTURE ROOM 1, LEVEL 2****Time: 12th December, 4.00pm-5.30pm****Chair: Professor Zhixun Ma, Tongji University, China****Co-chair: Professor Huai Wang, Aalborg University, Denmark**

Paper ID	Paper Title	List of Authors	Paper Track	Time	Presenter
10804358	A Series Voltage Sag Compensator with Reduced Magnitude of Transformer Inrush Current	Syed Sabir Hussain Bukhari, Mahnoor Gul and Faheem A. Chachar	Power Electronics Applications	4.00pm – 4.20pm	Dr Syed Sabir Hussain Bukhari
10839329	Energy Storage System Control for Electromechanical Oscillation Mitigation and Its Impact on Inertia and Damping of Power System	Liansong Xiong, Zhao Xu and Liancheng Xiu	Power Electronics Applications	4.20pm – 4.40pm	Liancheng Xiu
10919328	Three-Phase Unbalance Compensator Using Neutral Point Clamped Multilevel Interleaved Inverter	Yoshiki Yamamoto, Tomoyuki Mannen and Hirotaka Koizumi	Power Electronics Applications	4.40pm – 5.00pm	Yoshiki Yamamoto
10925483	Analysis of Harmonic Cancellation Performance of a Shunt Phase-Shift Transformer Rectifier	Jongwan Kim, Jih-Sheng Lai and Xiong Liu	Power Electronics Applications	5.00pm – 5.20pm	Dr Xiong Liu

Session (C2-WBG1): Wide band-gap devices (3)**Venue: LECTURE ROOM 2, LEVEL 2****Chair: Professor Francesco Iannuzzo, Aalborg University, Denmark****Time: 12th December, 4.00pm-5.30pm****Co-chair: Professor Jack Zhang, Nanyang Technological University, Singapore**

Paper ID	Paper Title	List of Authors	Paper Track	Time	Presenter
10799692	Performance Analysis of a Single-phase GaN-based 3L-ANPC Inverter for Photovoltaic Applications	Mauro Valente, Francesco Iannuzzo, Yongheng Yang and Emre Gurpinar	WBG semiconductor devices	4.00pm – 4.20pm	Prof Francesco Iannuzzo
10828546	A Buck Converter with Cost-Effective GaN/Si Hybrid Switches and CRM Operation for High-Efficiency and High-Power-Density Applications	Dong Liu, Yanbo Wang, Bin Li and Zhe Chen	WBG semiconductor devices	4.20pm – 4.40pm	Dong Liu
10920653	Optimization Method to Eliminate Turn-on Overvoltage Issue of High Voltage SiC Super-Cascode Power Switch	Xintong Lyu, Zhuxuan Ma, Boxue Hu, He Li and Jin Wang	WBG semiconductor devices	4.40pm – 5.00pm	Prof Wang Jin (Tut. speaker)

Session (C2-SPC1): Smart power conversion systems (4)**Venue: LECTURE ROOM 3, LEVEL 3****Chair: Professor Mario Pacas, University of Siegen, Germany****Time: 12th December, 4.00pm-5.30pm****Co-chair: Dr Gamini Jayasinghe, University of Tasmania, Australia**

Paper ID	Paper Title	List of Authors	Paper Track	Time	Presenter
10798923	An Integrated Series-Parallel Microgrid Structure and its Unified Distributed Control	Xiaohai Ge, Hua Han, Wenbin Yuan, Yao Sun, Mei Su, Xin Zhang and Leong Hai Koh	Smart Power Conversions	4.00pm – 4.20pm	Xiaohai Ge
10814139	Research and Implementation of Distribution Network Monitoring System based on IoT Sensors	Ran Hu and Fangchi Qiu	Smart Power Conversions	4.20pm – 4.40pm	Ran Hu
10819326	Small-Signal Stability Analysis of the Standalone Single-Phase Parallel Inverter with BPF-based Droop Control Scheme	Mengling Yang, Yang Han, Ping Yang, Congling Wang and Jingqi Xiong	Smart Power Conversions	4.40pm – 5.00pm	Mengling Yang
10921982	Smart Transformer-based Hybrid LVAC and LVDC Interconnected Microgrid	Dwijasish Das, Hrishikesan VM and Chandan Kumar	Smart Power Conversions	5.00pm – 5.20pm	Chandan Kumar