2019 IEEE Conference on Power Electronics and Renewable Energy (CPERE 2019)

Aswan City, Egypt
23 – 25 October 2019

TS1: Power Electronics Converters and Components – I

Room: Jasmine Room

Chairs: Eduard Alarcon (Technical University of Catalunya, Spain), Essam Eddin Rashad (Tanta University, Egypt)

17:15 A Novel Differential Power Processing Configuration for PV Strings Under Partial Shading Conditions Using Magnetically Coupled Cuk Converter, Mohamed Badawy and Daniel Sardroud (San Jose State University, USA) ; Eltaib Abdeen and Mohamed Orabi (APEARC, Aswan University, Egypt)...1

17:30 Virtual Inertia Impact on the Performance of Photovoltaic System, Abdallah Nazih (Menoufia University); Dina Osheba (Minoufiya University, Egypt); Arafa Mohamed (Menoufia, Egypt)...7

17:45 Enhancing Power Supply Performance Using Parallel Flyback Converters, Tamer Fawzy Megahed (Egypt-Japan University of Science and Technology (E-JUST) & Electrical Power Engineering, Egypt)...12

18:00 Analysis, Design, and Control of a Non-isolated Boost Three-Port Converter for PV Applications, Naser M. B. Abdel-Rahim (Future University in Egypt, Egypt); Sara Abdelrahman, Mohamed Selmy and Khalid Hasaneen (Benha University, Egypt)...18

18:15 Enabling Universal-Input Operation in Electrolytic Capacitor-Less LED Drivers Based on Harmonics Injection Mahmoud Nassary, Mohamed Abdelsabour, Mohamed Saad and Mohamed Orabi (APEARC, Aswan University, Egypt); El-Sayed Hasaneen (Aswan University, Egypt)...26

18:30 A New Single Phase Single Stage Buck-Boost Inverter for Grid Connected PV Applications, Omar Abdel-Rahim, Khalid Awad and Mohamed Orabi (APEARC, Aswan University, Egypt)...32

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Room: Lily Room

Chairs: Shady Gadoue (Aston University, United Kingdom (Great Britain)), Osama Mohammed (Florida International University, USA)

17:15 Remotely Accessible Wind-Tunnel Measurement Platform for Academic Purposes, Mohanad Odema (Ain Shams University, Egypt); Ihab Adly (The British University in Egypt, Egypt); Hani A. Ghali, Ahmed El-Baz and Amr Abdelkader (British University in Egypt (BUE), Egypt)...38

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18:15 Control of Wind Turbine for Variable Speed Based on Auto-Tuning Fuzzy-PI Controller, Abdel-Raheem Youssef and Mustafa Mohamed Ali (South Valley University, Egypt); Ahmed Ali (Assiut University, Egypt); Gamal Tag Abdel-Jaber Tag Abdel-Jaber (South Valley University, Egypt)...63

18:30 AC/AC Converter with Less Number of Power Switches for SWECS for Stand-alone Applications, Fatma Selim Hassan, Mostafa Dardeer and Mohamed Orabi (APEARC, Aswan University, Egypt)...70

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Room: Papyrus Room

Chairs: Prasad Enjeti (Texas A&M, USA), Mostafa I. Marei (Ain Shams University & Faculty of Engineering, Egypt)

17:15 Analysis and Comparison of Indirect Power in DC-AC or AC-DC Topologies by Quasi-static DC-DC Modeling, Cheng Li (Universidad Politécnica de Madrid, Spain); Prasad N. Enjeti (Texas A&M University, USA); Jose A. Cobos (Universidad Politécnica de Madrid (UPM) & CEI, Spain)...76

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TS4: Optimization techniques for Distributed Generation Systems

Room: Lotus Room

Chairs: Ashraf Hemeida (Faculty of Energy Engineering & Aswan University, Aswan, Egypt), Ahmed F Zobaa (Brunel University London & College of Engineering, Design and Physical Sciences, United Kingdom (Great Britain))

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TS5: Power Electronics Converters and Components - II

Room: Jasmine Room

Chairs: Frede Blaabjerg (Aalborg University, Denmark), Masahito Shoyama (Kyushu University, Japan)

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TS6: Wind Energy - II

Room: Lily Room

Chairs: Mostafa S. Hamad (Arab Academy for Science, Technology and Maritime Transport, Egypt), Jian Sun (Rensselaer Polytechnic Institute, USA)

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Room: Lotus Room

Chairs: Ayman Abdelkhalik (Alexandria University, Egypt), Essam Eddin Rashad (Tanta University, Egypt)

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18:15 Mitigating the Impact of Electric Vehicles Integration to DC Microgrids Through Using SMES, Mohamed Sheba (Arab for Smart Systems, Cairo, Egypt); Diaa-Eldin A Mansour (Tanta University, Egypt); Ahmed M. Azmy (Electrical Power and Machine Engineering, Faculty of Engineering - Tanta University, Tanta, Egypt)...238

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Room: Papyrus Room

Chairs: Elwy Eissa El-Kholy (Menoufiya University, Saudi Arabia), Ahmed F Zobaa (Brunel University London & College of Engineering, Design and Physical Sciences, United Kingdom (Great Britain))

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18:30 Adaptive Frequency Regulation in Interconnected Two Area Microgrid System, Hussein Abubakr and Tarek Mohamed (Aswan University, Faculty Of Energy Engineering, Egypt); Mahmoud Mohamed Hessein (Faculty of Energy Engineering, Aswan University, Egypt); Gaber Shabib (Aswan University, Faculty Of Energy Engineering, Egypt)...284

TS9: Power Electronics Converters and Components - III

Room: Jasmine Room

Chairs: Jose A. Cobos (Universidad Politécnica de Madrid (UPM) & CEI, Spain), Fred Lee (Virginia Tech, USA)

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9:00 Carrier-Based PWM Technique for a New Six-to-Three-Phase Multilevel Matrix Converter for Wind-Energy Conversion Systems Sherif Dabour, Ibrahim Masoud and Essam Eddin Rashad (Tanta University, Egypt)...412

9:15 Evaluation and Design of a Three - Phase Inverter for a Maglev Application Mohamed Youssef (UOIT, Canada); Yahya Koraz and Mohammad Abdul Bhuiya (University of Ontario Institute of Technology, Canada); Mohammad Ashraf (University of Ontario Institute of Technology, Egypt); Asif Haniff and Enyi Okorie (University of Ontario Institute of Technology, Canada); Somtochukwu Kofoalada (University of Ontario Institute of Technology, Egypt)...418

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TS10: Motor Drive Systems - I

Room: Papyrus Room

Chairs: Sherif Dabour (Tanta University, Egypt), Ralph Kennel (Technical University of Munich, Germany)

8:30 Computationally Efficient Finite-Set Model Predictive Current Control of Interior Permanent Magnet Synchronous Motors with Model-Based Online Inductance Estimation Issa Hammoud (Technical University of Munich, Germany); Sebastian Hentzelt and Thimo Oehlschlaegel (IAV GmbH, Germany); Ralph Kennel (Technical University of Munich, Germany)...290

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9:15 Enhanced Sensorless Model Predictive Control of Induction Motor Based on Extended Kalman Filter Ahmed Ibrahim Soliman (Technical University of Munich, Germany); Ahmed Farhan (Technical University of Munich & Fayoum University, Egypt); Mohamed Abdelrahem (Technical University of Munich (TUM), Germany); Ralph Kennel (Technical University of Munich, Germany)...309

9:30 Design and Analysis of a Brushless Flux Switching Generator for Rooftop Wind Turbines Ahmed Selema (Faculty of Engineering - Menoufia University, Egypt) - Withdraw

9:45 Development of a Direct Drive Synchronous Reluctance Motor with a Surrogate-Assisted Optimization Technique Shady Gadoue (Aston University, United Kingdom (Great Britain)); Ayman Abdelkhalik (Alexandria University, Egypt); Wenping Cao (Aston University, United Kingdom (Great Britain)...319

TS11: Photovoltaic Systems

Room: Lily Room

Chairs: Abdelali El Aroudi (Research group GAEI, Technical Engineering School of the Rovira i Virgili, Spain), Mostafa S. Hamad (Arab Academy for Science, Technology and Maritime Transport, Egypt)

8:30 Integrated Single Output Sensor Distributed MPPT for Photovoltaic Systems: A Novel Per-Cell Approach Eman Gomaa and Mohamed Saad (APEARC, Aswan University, Egypt); El-Sayed Hassaneen (Aswan University, Egypt); Mohamed Orabi (APEARC, Aswan University, Egypt)...327

8:45 Optimizing 1D Photonic Crystal Structures for Thin Film Solar Cells, Sameh Osama (Lecturer, The British University in Egypt, Egypt); Gehad Ali (The British University in Egypt, Egypt)...333

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9:30 Distributed MPPT for PV-Grid Connected Distribution Networks, Emad Ahmed (Aswan University, Egypt)...349

9:45 Common-Mode Voltage Analysis of Three-phase Quasi-Z Source Inverters for Transformerless Photovoltaic Systems, Noha Elhendawy (Tanta, Egypt); Sherif Dabour and Essam Eddin Rashad (Tanta University, Egypt)...355

TS12: Microgrids

Room: Lotus Room

Chairs: Liuchen Chang (University of New Brunswick, Canada), Mohamed S El Sobki (Cairo University & NREA, Egypt)

8:30 Performance Enhancing of Grid-Connected DC Microgrid, Walid Ali Hatahet and Mohamed Mokhtar (Ain Shams University, Egypt); Mostafa I. Marei (Ain Shams University & Faculty of Engineering, Egypt)...361

8:45 Multi -FPGA Solution for Large Power Systems and Microgrids Real Time Simulation, Amine Yamane and Luc-André Gregoire (OPAL-RT Technologies Inc., Canada); Syed Ali (Opal-RT Technologies, Canada); JeanNicolas Paquin (OPAL-RT Technologies, Canada); Jean Belanger (Opal-RT Technologies, Canada)...367

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9:15 Power Sharing Control in Microgrids - An Approach Guaranteeing Large Signal Stability, Marco Cupelli (Rolls Royce Power Systems - MTU Friedrichshafen & EON Energy Research Center - RWTH Aachen University, Germany); Sriram Gurumurthy (EON Energy Research Center - RWTH Aachen University & Institute for Automation of Complex Power Systems, Germany); Siddharth Bhanderi (RWTH Aachen University & Institute for Automation of Complex Power Systems, Germany); Lisette Cupelli (EON Energy Research Center - RWTH Aachen University & Institute for Automation of Complex Power Systems, Germany); Antonello Monti (RWTH Aachen University & Institute for Automation of Complex Power Systems, Germany)...379

9:30 Robust Control of DC Converter in DC Microgrid Applications Using Linear Matrix Inequality (LMI) Magdi Adel Mosa (Helwan University, Egypt)...385

9:45 Multi-Objective Optimization of a Stand-Alone Hybrid PV/wind/battery/diesel Micro-Grid, Ahmed Shaban Omar (Faculty of Energy Engineering, Aswan University,Egypt); Al-Attar Ali Mohamed (Faculty of Engineering, Aswan University, Egypt); Tomonobu Senjyu (Faculty of Engineering, University of the Ryukyus, Japan); Ashraf Hemeida (Faculty of Energy Engineering & Aswan University, Aswan, Egypt)...391

TS13: Power Electronics Converters and Components - IV

Room: Jasmine Room

Chairs: Marco Chiadò Caponet (University of Wismar, Germany), Mostafa I. Marei (Ain Shams University & Faculty of Engineering, Egypt)

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17:30 Simulation-based Optimized Transformerless Single-Switch Quadratic DC/DC Converter with Continuous Ports Current Hany A. Bastawrous, Amr Kamal and Peter Makeen (The British University in Egypt, Egypt)...444

17:45 A High-Efficiency 1 MHz 65 W GaN-Based LLC Resonant DC-DC Converter, Ahmed M. Ammar, Yasser Nour and Arnold Knott (Technical University of Denmark, Denmark)...448

18:00 Review and Comparison of Resonant Dc-Dc Converters for Wide-Input Voltage Range Applications, Fahad Alaql (University of Central Florida & Al Imam Mohammad Ibn Saud Islamic University, USA); Issa Batarseh (University of Central Florida, USA)...453

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18:30 Review of Partially Isolated Three-Port Converters for PV-Battery Systems Interfacing a PV, Bidirectional Battery, and Load, Abdullah Alhatlani (University of Central Florida, USA & Al Imam Mohammad Ibn Saud Islamic University, Saudi Arabia); Issa Batarseh (University of Central Florida, USA)...465

TS14: Motor Drive Systems - II

Room: Papyrus Room

Chairs: Mohamed K. El-Nemr (Tanta University & EtaSoft Co., Egypt), Mohammed Elgendy (Newcastle University, United Kingdom

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17:15 Quasi-Z-source Inverter with Coupled Inductor, Zhengyu Zhao and Mohammed Elgendy (Newcastle University, United Kingdom (Great Britain)...473

17:30 Wireless Power Transfer for Toys and Portable Devices, Abdulrahman Al-Attar, Sabry Attia, Ali Al-Bialy, Eslam Abdelatif, Abdulrhman S. Al-Gazar and Abdelhamid Salem (Mansoura University, Egypt); Basem Badr (Exro Technologies Inc., Canada)...479

17:45 Investigation of Reliability and Complexity of Torque Control for Switched Reluctance Drives, Najib K Dankadai, Mohammed Elgendy, Stephen McDonald, Dave Atkinson and Glynn Atkinson (Newcastle University, United Kingdom (Great Britain)...485

18:00 Z-Source Inverters for Asymmetrical Six-Phase Drives with Reduced Switching Losses, Rania Hammad (Faculty of Engineering, Tanta Unviversity, Egypt); Sherif Dabour and Essam Eddin Rashad (Tanta University, Egypt)...491

18:15 Induction Motor Drive for PV Water-Pumping System with High-Gain Non-Isolated DC-DC Converter Hussein Mohamed Waly (Menoufia); Dina Osheba, Haitham Azazi and Awad El-sabbe (Minoufiya University, Egypt)...497

18:30 Finite Element Analysis of Multi-Phase Squirrel Cage Induction Motor to Develop the Optimum Torque Mahmoud Yehia Awadalla (Suez Canal Authority, Egypt); Mahmoud Fawzi Mahmoud (Port Said University & Faculty of Engineering, Egypt); Salah Selim and Ahmed Kalas (Port Said University, Egypt)...504

TS15: Power Electronics Applications

Room: Lotus Room

Chairs: Ragi Hamdy (Alexandria University, Egypt), Ashraf Hemeida (Faculty of Energy Engineering & Aswan University, Aswan, Egypt)

17:15 A High-Frequency Induction Heating System Feed from Parallel Connected Cascaded Non-Inverting Buck-Boost Converter Kerollos Wagdy Kamal (College of Engineering & Technology. Arab Academy for Science, Technology & Maritime Transport, Egypt); Ibrahim Abdelsalam (Arab Academy for Science and Technology, Egypt); Bader Alajmi (College of Technological Studies, Kuwait)...511

17:30 A Modular High Voltage Pulse Generator for Water Treatment Applications, Azza A Faiad (Alexandria University, Egypt); I. A. Gowaid (Glasgow Caledonian University, United Kingdom (Great Britain)); Ayman Abdelkhalik (Alexandria University, Egypt)...516

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18:00 A Proposed Transformer-less Dynamic Voltage Restorer to Voltage Sag/swell Mitigation, Haitham Elmasry (Menoufia University, Egypt); Sabry Mahmoud (-Shebin ElKom, Egypt); Elwy El-khly (Menoufia University, Egypt)...530

18:15 Power Losses Estimation of LED Lamps in Li-Fi Communication Systems, Anwaar Damerdash (Aswan University, Egypt); Mokhtar Aly (Aswan University, Egypt & Universidad Técnica Federico Santa María, Chile); Emad Ahmed (Aswan University, Egypt)...535

18:30 Analysis and Comparison of SMES Device Power Losses Considering Various Load Conditions, Sayed M. Said (Aswan Universtiy, Egypt & Budapest University of Technology and Economics, Hungary); Mokhtar Aly (Aswan University, Egypt & Universidad Técnica Federico Santa María, Chile); Balint Hartmann (Budapest University of Technology and Economics, Hungary); Emad Mohamed...541

TS16: Reliability in Renewable Energy Systems

Room: Lily Room

Chairs: Ahmed Kalas (Port Said University, Egypt), Loai Nasrat (Aswan University, Egypt)

17:15 Fault Detection and Diagnosis for Photovoltaic Array Under Grid Connected Using Support Vector Machine Mohamed Mustafa Badr, Badr. (Alexandria University, Egypt); Mostafa S. Hamad (Arab Academy for Science, Technology and Maritime Transport, Egypt); Ayman Abdelkhalik and Ragi Hamdy (Alexandria University, Egypt)...546

17:30 A Reliable Photovoltaic Inverter Using a Fault Tolerant Algorithm and a Traic System, Satya Naidu, Laurice Ann Smith and Mohamed Badawy (San Jose State University, USA)...554

17:45 Advanced Protection Technique for Wind Farm Collector Feeder Divided to Multi Zones Abdullah M ELshazly (Helwan University, Egypt)...560

18:00 Fault Ride-Through Capability Enhancement for Grid- Connected Permanent Magnet Synchronous Generator Driven by Wind Turbine, Mohamed Metwally (Aswan University, Egypt); Ashraf Hemeida (Faculty of Energy Engineering & Aswan University, Aswan, Egypt); Tomonobu Senjyu (Faculty of Engneering, University of the Ryukyus, Japan); Ahmed M Ewais (Cardiff University, United Kingdom (Great Britain)...567

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18:30 Thermal Performance Evaluation of 1500-VDC Photovoltaic Inverters Under Constant Power Generation Operation, Jinkui He, Ariya Sangwongwanich, Yongheng Yang and Francesco Iannuzzo (Aalborg University, Denmark)...579