

# **2023 IEEE International Future Energy Electronics Conference (IFEEC 2023)**

**Sydney, Australia  
20-23 November 2023**



**IEEE Catalog Number: CFP23IFE-POD  
ISBN: 979-8-3503-3989-5**

**Copyright © 2023 by the Institute of Electrical and Electronics Engineers, Inc.  
All Rights Reserved**

*Copyright and Reprint Permissions:* Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limit of U.S. copyright law for private use of patrons those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

For other copying, reprint or republication permission, write to IEEE Copyrights Manager, IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. All rights reserved.

***\*\*\* This is a print representation of what appears in the IEEE Digital Library. Some format issues inherent in the e-media version may also appear in this print version.***

IEEE Catalog Number:	CFP23IFE-POD
ISBN (Print-On-Demand):	979-8-3503-3989-5
ISBN (Online):	979-8-3503-3988-8

**Additional Copies of This Publication Are Available From:**

Curran Associates, Inc  
57 Morehouse Lane  
Red Hook, NY 12571 USA  
Phone: (845) 758-0400  
Fax: (845) 758-2633  
E-mail: [curran@proceedings.com](mailto:curran@proceedings.com)  
Web: [www.proceedings.com](http://www.proceedings.com)

CURRAN ASSOCIATES INC.  
**proceedings**  
.com

## TABLE OF CONTENTS

Circulating Current Mitigation of Paralleled AC/DC Rectifiers with Zero-Sequence Compensation and Carrier Synchronization.....	1
<i>Yi-Hung Liao, Jiong-Ye Chen</i>	
Dual Influence of Power-Synchronization Loop on the Stability of Virtual Synchronous Generators .....	6
<i>Shan Jiang, Georgios Konstantinou</i>	
The Three-Phase Four-Wire Grid-Type Inverter Neutral Line Current Ripple Derivation with SPWM.....	12
<i>Wen-Yen Li, Chien-Heng Shih, Yaow-Ming Chen</i>	
Flexible Active Power Decoupling Control Strategy for a Single-Stage Switched-Boost Grid-Connected Multilevel Inverter.....	18
<i>Majid Farhangi, Reza Barzegarkhoo, Ricardo P. Aguilera, Dylan Dah-Chuan Lu, Yam P. Siwakoti</i>	
A Switching Scheme for Optimal Trajectory Control in a Fully Soft Switching Single-Stage Isolated Three Phase AC/DC Converter .....	24
<i>Yusuf Kosesoy, Jan M. Schellekens, Henk Huisman</i>	
Novel Continuous Transition of CCM and DCM Switching Control Method for Efficiency Improvement of PFC .....	29
<i>Yen-Shin Lai, Xiang-Yu Wu, Yong-Yi Huang</i>	
Design and Implementation of Input-Series/Output-Parallel 3.6 kW Half-Bridge Resonant Converter with GaN E-HEMT for High Input Voltage Applications.....	34
<i>Wei-Cheng Tai, Tsorng-Juu Liang, Kai-Hui Chen, Yu-Chuan Chen, Guan-Ting Peng</i>	
Optimal Planar Transformer Design Considerations for GaN-Based High Frequency Isolated Converters .....	39
<i>Cheng-Yu Tang, Yu-Ching Tan</i>	
Design and Implementation of Improved SEPIC Bidirectional DC-DC Converter with Switched Inductors.....	44
<i>Po-Hsun Chiu, Yi-Hung Chen, Hsuan Liao, Jiann-Fuh Chen</i>	
Efficiency and Leakage Current Evaluation of GaN Inverter Fed PMSM Drive with Sine Wave Filter .....	48
<i>Seongmi Park, Taehoon Chin, Byungju Bae, Yoonghoon Cho</i>	
Design Method of Leakage Inductance of MHz Toroidal Transformer for LLC Converters .....	52
<i>Jinxing Zhou, Koji Orikawa, Satoshi Ogasawara</i>	
A Three-Level LLC Resonant Converter with PFM and PWM Control for Battery Charging Application .....	57
<i>Ming-Shi Huang, Jih-Cheng Hu, Wei-Hsiang Hsu, Chun-Wei Huang</i>	
Design and Implementation of 3.5 kW Digital Controlled Battery Charge System .....	62
<i>Shi-Quan Chen, Tsorng-Juu Liang, Ming-Yang Chang, Kuo-Fu Liao, Kai-Hui Chen, Tzu-Yi Chan, Guan-Ting Peng</i>	
Design of a Bidirectional CLLC Resonant DC-DC Converter for Energy Storage System.....	67
<i>Chen-Yi Wu, Kuo-Yuan Lo</i>	

Design and Implementation of a Soft Switching Interleaved Inductor-Coupled Boost Converter with High Voltage Conversion Ratio .....	72
<i>Kuei-Hsiang Chao, Chang-De Wu, Jung-Han Chang</i>	
Light-Load Conversion Efficiency Enhancement for Three-Phase Dual Active Bridge DC-DC Converters .....	78
<i>Zhi-Xuan Chou, Han-Cheng Wu, Bo-Hsien Liu, Jen-Hao Teng, Yao-Ching Hsieh</i>	
Compensation Function Observer Based Model Predictive Control for Interleaved Boost Converter .....	83
<i>Xinhong Yu, Tiantian Jiang, Libin Xu, Yao Wei, Fengxiang Wang, José Rodríguez</i>	
Research on Electromagnetic Scattering of Buried Cables Based on FDTD Algorithm .....	89
<i>Shulei Xiong, Nana Duan, Weijie Xu</i>	
Review of Data-Driven Artificial Intelligence Applications in Electric Machines and Drive Systems.....	93
<i>Lin Liu, Youguang Guo, Gang Lei, Jianguo Zhu</i>	
A Data-Driven Method for Iron Loss Estimation in Bearingless Permanent Magnet Synchronous Motors .....	98
<i>Kai Xu, Youguang Guo, Gang Lei, Jianguo Zhu</i>	
Reinforcement Learning for Intelligent Control of AC Machine Drives: A Review .....	103
<i>Nabil Farah, Gang Lei, Jianguo Zhu, Youguang Guo</i>	
Demonstration of Ultra-High-Speed Magnetic Gear .....	109
<i>Emiri Asahina, Kazuhide Mitsuya, Kenji Nakamura, Yuichi Tachiya, Yuma Suzuki, Kingo Kuritani</i>	
Proposal of a Novel Air-Gap Structure for Magnet-Less 3-Axis Active Control-Type Magnetic Bearing with Cylindrical Rotor: Reducing Axial Length of Turbomachinery System .....	114
<i>Yuto Sho, Masatsugu Takemoto, Ren Tsunata, Jun Imai</i>	
Hybrid Topologies of Non-Permanent Magnet-Excited Switched-Reluctance Motors with High Torque Capability for Electric Vehicle Applications .....	120
<i>Vijina Abhijith, M. J. Hossain, Gang Lei, Premal Ajikumar Sreelekha, Sandeep B Kadam</i>	
Electric Motor Emulator Aided Motor Drive Design: A Case Study Under Resistance Unbalance Scenario .....	125
<i>Jia-Ming Zhong, Ming-Yuan Hsieh, Hsueh-Ju Wu, Yaow-Ming Chen</i>	
Magnetic Interaction Effect on Stall Torque of IPM-Type Magnetic-Geared Generator.....	131
<i>Boqun Dai, Koki Ito, Kenji Nakamura</i>	
Study of 6-Phase Pole Change Induction Motor with Double Inverter Drive .....	136
<i>Naoya Kato, Kan Akatsu</i>	
Design and Implementation of Four Switches Bidirectional DC-DC Converter with Switched Inductors.....	142
<i>Kuan-Ting Lien, Yu-Sheng Lo, Jiann-Fuh Chen, Hsuan Liao</i>	
Primary-Side Controlled Flyback Converter with Propagation-Delay Compensation .....	146
<i>Jui-Hung Lai, Tsorng-Juu Liang, Kai-Hui Chen, Hsu Hsin-Chen, Guan-Ting Peng</i>	
Ultrahigh Voltage Gain DC-DC Converter Based on Reformed Quadratic Boost Converter with Switched Capacitor and Coupled Inductor .....	151
<i>Milad Rezaie, Vahid Abbasi, Dylan Lu</i>	

Controllable Usage Rates for Switching-Mode Power Supply in Parallel .....	157
<i>Tasi-Fu Wu, Chien-Chih Hung, Jui-Yang Chiu, Yun-Hsiang Chang</i>	
Automatic Voltage Equalizer Based on Load-Independent Class E <sup>2</sup> Parallel Resonant DC-DC Converter.....	162
<i>Shizuna Oshima, Hirotaka Koizumi</i>	
Current Sensorless Online Load Estimation for Induction Heating Cooker.....	168
<i>Ming-Shi Huang, Jhih-Cheng Hu, Yi-Min Chen, Chun-Wei Lin</i>	
Surge Current Reduction in LLC Resonant Converter with PSM Under Light Load Condition.....	173
<i>Ryo Moriyasu, M. S. Hassan, Hideaki Funaki, Masahito Shoyama, Yuichi Noge</i>	
Analysis of Plateau Tandem Solar Cells.....	179
<i>Bernice Mae, Yu Jeco-Espaldon, Yoshitaka Okada</i>	
SHC-PWM Closed-Loop Control Based on PI Controllers for Active Power Filters .....	184
<i>Irati Ibanez-Hidalgo, Ricardo P. Aguilera, Alain Sanchez-Ruiz, Angel Perez-Basante, Asier Zubizarreta, Salvador Ceballos</i>	
A Single-Switch-Buck (SSB) PFC Converter with Continuous Input Current.....	189
<i>Maryam Pourmahdi, Hamed Heydari-Doostabad, Terence O'Donnell</i>	
The DC-Link Voltage Double Line Frequency Ripple Reduction for AC-DC Converters.....	194
<i>Ying-Ting Huang, Zhi-Jun Jiang, Guan-Yu Chen, Cheng-Yu Tang, Yaow-Ming Chen</i>	
Magnetic Field Distribution Prediction of Wireless Power Transfer Based on Machine Learning .....	199
<i>Heng Zhang, Manwen Liao, Liangxi He, Chi-Kwan Lee</i>	
Boosting Efficiency of Wireless Power Transfer in a Near-To-Receiver Manner: Metamaterials Versus Relay Coils.....	203
<i>Jiali Zhou, Heng Zhang, Chi-Kwan Lee</i>	
Wireless Power Transfer System with the Auxiliary Resonant Commutated Pole Converter for Reducing Radiated Emission.....	208
<i>Rintaro Kusui, Keisuke Kusaka, Hiroki Watanabe, Jun-Ichi Itoh</i>	
Design and Implementation of a 6.78-MHz Wireless Charger for E-Bike Applications .....	214
<i>Yun-Yen Chen, Yi-Hung Fang, Chen Chen, Kai-De Chen, Yu-Chen Liu, Huang-Jen Chiu</i>	
Modular Multiport Converter with Flexible Output Forms and Simple Control.....	219
<i>Xiaolu Lucia Li, Chi K. Tse, Dylan Dah-Chuan Lu</i>	
Position Sensorless Estimation for Surface Permanent Magnet Synchronous Motors Using Eddy Currents with Loads at a Low Speed.....	224
<i>Yuki Miki, Mutuwo Tomita, Masaru Hasegawa, Shinji Doki</i>	
Design and Control Strategy of Galvanic Isolated Two-Stage Power Supply for Motor Drive .....	230
<i>Chi-Yuan Huang, Yaow-Ming Chen</i>	
Investigation of Multipole Transverse-Flux-Type Switched Reluctance Motor.....	236
<i>Ayumi Nagai, Kenji Nakamura</i>	
Power Quality and Speed Performance Improvements for Small Film Capacitor-Based IPMSM Drives .....	240
<i>Tian-Hua Liu, Sheng-Hsien Cheng</i>	

Cogging Torque Cancellation by Magnet Shape Design for Axial Gap Motors.....	246
<i>Daisuke Sato, Wataru Kitagawa, Takeshita Takaharu</i>	
Model Predictive Control for Suppression of Zero-Sequence Current in Open-End Winding Induction Motors .....	251
<i>Jaime Guzmán, César A. Silva, Gonzalo Carvajal, Juan C. Agüero</i>	
Derivation of Non-Uniformly Distributed Look-Up Table for PMSM Model Simulation.....	257
<i>Fang-Yi Lin, Yaow-Ming Chen</i>	
Fuzzy Virtual Inertia Control Based Frequency Regulation of Power Systems with Offshore Wind Farms and Energy Storage Systems .....	262
<i>Miaosong Gu, Lifeng Qiu, Zhongjiang Chen, Rong Bian, Guoqiang Li, Wenke Jiang, Zekai Ma, Xiao Qi</i>	
Optimized Training Options of a Deep Learning Model for Lithium-Ion Battery State of Charge Estimation.....	267
<i>Yuyue Li, Ping Ding, Linfeng Zheng</i>	
State of Charge Estimation of Lithium-Ion Batteries Based on Back Propagation-Particle Swarm Optimization.....	271
<i>Ping Ding, Weixiong Wu, Linfeng Zheng</i>	
A Comprehensive Review About Machine Learning for Battery Packs Remaining Useful Life Prediction .....	276
<i>Yunlong Han, Gang Lei, Li Li, Linfeng Zheng</i>	
Comparative Study on Incremental Capacity Analysis with Machine Learning Algorithms for State of Health Estimation of Lithium-Ion Batteries.....	280
<i>Linfeng Zheng, Xianli Guo</i>	
Fuzzy-Based Model Predictive Control for Bidirectional Charging of EV: An Adaptive Weighting Factor Algorithm .....	284
<i>Tingting He, Mingli Wu, Dylan Dah-Chuan Lu, Shuo Wang, Jianguo Zhu</i>	
An Empirical Understanding of Usage for Battery Swapping Electric Taxis in Beijing.....	288
<i>Dingsong Cui, Zhenpo Wang, Shuo Wang, Peng Liu, Zhaosheng Zhang, Changhong Shao, David G. Dorrell</i>	
Wide Range Output with Switch-Controlled Capacitor in Wireless Power Transfer System for Electric Vehicle Charging.....	292
<i>Runzhuo Zhang, Junjun Deng, Na Fu, Shuo Wang, Zhenyuan Zhang</i>	
Optimisation Design of On-Grid Hybrid Power Supply System for Electric Vehicle Battery Swapping Station.....	296
<i>Lumbumba T-E. Nyamayoka, Lesedi M. Masisi, David G. Dorrell, Shuo Wang</i>	
Fast Global Maximum Power Point Tracking for Photovoltaic Generation Systems Under Partial Shading Conditions .....	300
<i>Han-Cheng Wu, Jen-Hao Teng, Wei-Hao Huang</i>	
Power Balance of a Delta-Connected CHB Converter with MPC for Photovoltaic Systems.....	305
<i>Rodrigo H. Cuzmar, Pablo Poblete, Ricardo P. Aguilera, Javier Pereda, Dylan Dah-Chuan Lu</i>	
A Multi-Port Converter with Multi-Directional Power Flow Control Strategies for PV Power and Energy Storage Systems .....	311
<i>Cheng-Yu Tang, Ta-Nien Sun, Da-De Shih</i>	

Balancing Simulation Speed and Accuracy for Grid-Connected Photovoltaic Power Systems .....	317
<i>Shuang Jiao, Po-Hsu Huang, Weidong Xiao, Sinan Li, Jinghang Li</i>	
Investigation of Photovoltaic Panel Degradation Affected by Dust in Jordan.....	322
<i>Mohammad Al-Soeidat, Habes Khawaldeh, Dylan D-C Lu</i>	
Photovoltaic Hot Spot Detection System Using Deep Convolution Neural Networks.....	327
<i>Tariq Alqahtani, Abdullah Almutared, Ahmad Alzahrani</i>	
A SiC-MOSFET Based Bidirectional EV Charger for V2X Application .....	331
<i>Zhang Yuming, Dedong Shao, Zhi Yang, Mao Yuyang, Muhammad Humayun</i>	
A Brief Study on the Utilization of Regenerative Power in Cases of Bus Voltage Droppage .....	337
<i>Kentaro Nishi, Takashi Yoshinaga, Rika Saito, Yosuke Kohata</i>	
Battery Pack Design Based on an Origami Sandwich Structure for the Enhanced Cooling and Mechanical Performances in Electric Vehicles.....	342
<i>Ruifeng Li, Guoxing Lu, Weixiang Shen</i>	
A Novel Adaptive Digital Filter-Based Energy Management Strategy Applied to Hybrid Energy Storage System for Electric Vehicles.....	347
<i>Yu-Lin Lee, Chang-Hua Lin, Chun-Cheng Chen, Jenn-Jong Shieh</i>	
Graph-Based Optimization of Electric Motorcycle Battery Swapping Station Locations: A Case Study in Busan, South Korea.....	352
<i>Taehoon Kim, Joon Kim, Mingyu Kwon, Kyoung-Yong Park</i>	
Reliability Assessment of Selected Boost-Converter-Based Three-Port DC/DC Converters.....	357
<i>Dylan Dah-Chuan Lu, Hamzeh Aljarajreh, Mohammad Al-Soeidat</i>	
Reliability of Submodules in Modular Multilevel Converters Considering Periodic Preventive Maintenance for MVDC Applications.....	363
<i>Yumeng Tian, Georgios Konstantinou</i>	
High-Efficiency Microinverter with Interleaved Switching and Asymmetrical Unipolar Modulation.....	369
<i>Che-Yu Lu, Ming-Yueh Hsieh</i>	
Enhanced Voltage-Following Strategy to Reduce Switching Loss for Programmable Electronic Loads with Shared DC Bus .....	374
<i>Tzu-Hsuan Ho, Chia-Chou Chang, Yaow-Ming Chen</i>	
Three-Phase Inverter with Front-End SEPIC Converter (PLECS-Based).....	380
<i>Amit Hasan Pranto, Md Anamul Hoque, Rhea Johnson, Md Riazul Islam, Sruthi Supriya, Hamzeh Aljarajreh</i>	
Impact of Virtual Arm Impedance on Small-Signal Stability of Modular Multilevel Converters .....	386
<i>Ye Zhu, Shan Jiang, Georgios Konstantinou</i>	
Real-Time Implementation of Online Adaptive Space Vector Modulation for a Three-Level NPC Inverter .....	392
<i>Victor Truong Thinh Lam, Nart Gashi, Georgios Papafotiou</i>	
Capacitor Voltage Compensation of Flying Capacitor Multi-Level Converter for High-Speed Current Control.....	398
<i>Ryuga Koyama, Kenji Natori, Yukihiko Sato</i>	

A Level-Increment Circuit for Multilevel Inverter Based on Cross-Connected Sources .....	404
<i>Niraj Kumar Dewangan, Krishna Kumar Gupta, Mandeep Singh</i>	
Nearest Level Modulation Technique Based Multilevel Inverter with Less Switches .....	410
<i>Vijay Sirohi, Tejinder Singh Saggi, Jagdish Kumar</i>	
Enhanced Control of Photovoltaic Voltage Regarding Mixed Conduction Modes of Power Interfaces .....	415
<i>Yuezhu Lu, Weidong Xiao, Dylan Lu, Xiaochao Li</i>	
Recent Advances in Data Preprocessing and Machine Learning Approaches for Battery's State of Charge and State of Health Estimation: A Review .....	421
<i>Xinyu Gu, Khay See, Xiuze Zhou, Yunpeng Wang, Caiyun Zang</i>	
Simulation of Synchronous Condenser Retrofitted Diesel Generator with Synchro-Self-Shifting Clutch .....	427
<i>Ashley Mauro, Yang Du, Alan Louis</i>	
Simulating and Deploying Model Predictive Control for Regional Microgrids.....	431
<i>Jai Wilson, Yang Du, Alan Louis</i>	
Battery Energy Storage Control Using Reinforcement Learning .....	435
<i>Elliott Basso, Yang Du</i>	
A ZVS-PWM Full-Bridge Series-Resonant DC/AC Converter.....	440
<i>Chien-Ming Wang, Yu-Ting Lai, I-Hsiang Wang, Yu-Zhe Lee</i>	
Adaptive Droop Controlled-VSCs in MVDC Distribution Systems with ESS Engagement.....	445
<i>Pingyang Sun, Watcharakorn Pinthurat, Gen Li, Muhammad Khalid, Graham Town, Georgios Konstantinou</i>	
An Edge-Capturing Pulse Signal Measurement Method for Low-Latency and High-Efficiency Applications.....	450
<i>Ming-Yuan Hsieh, Hsueh-Ju Wu, Yaow-Ming Chen</i>	
Signal Wireless Carrier Synchronization Using Power Line for Interleaving in Power Converters.....	455
<i>Keita Ohata, Hiroki Watanabe, Jun-Ichi Itoh</i>	
Machine Learning-Based Hosting Capacity Analysis and Forecasting in Low-Voltage Networks .....	461
<i>Md Tariqul Islam, M. J. Hossain, Md Ahasan Habib</i>	
An Efficiency Study of SiC-MOSFET Based Three-Level NPC Inverters .....	465
<i>Tung-Sheng Wu, Po-Jui Huang, Yong-Hong Sie, Pei-Wen Lee, Mohammadreza Lak, Tzung-Lin Lee</i>	
A Dv/Dt Filter Design Based on the Voltage Reflection Theory at SiC Converter .....	469
<i>Bernard Arhin, Dongmin Kim, Hanju Cha</i>	
Design and Implementation of Three-Phase Three-Level TType Inverter with Grid-Following Control.....	473
<i>Yeow-Heng Yeoh, Tsorng-Juu Liang, Kai-Hui Chen, Wen-Chung Chen, Yi-Fu Chen, Guan-Ting Peng</i>	
Design and Implementation of Two-Stage Boost and FullBridge Resonant Converter for Wide-Range APMs.....	478
<i>Chia-Yu Chen, Tsorng-Juu Liang, Kuo-Fu Liao, Guan-Ting Peng, Kai-Hui Chen, Chi-Hung Cheng</i>	



Adaptive Dead Time Control Strategy for ClosedLoop TCM GaN-Based Buck Converters.....	482
<i>Dinh Phuc Nguyen, Yu-Chen Liu, Huang-Jen Chiu</i>	
Model Predictive Controller for Simplified Split Source Boost Inverters.....	488
<i>Mokhtar Aly, Ahmed Shawky, Fernanda Carnielutti, Margarita Norambuena, Eltaib Abdeen D. Ibrahim, Cristian Garcia, Samir Kouro, José Rodriguez</i>	
Low Modulation Index Operation of a Nine-Level T-Type Converter.....	493
<i>Ibrahim Harbi, Mostafa Ahmed, Mohamed Abdelrahem, Jose Rodriguez, Ralph Kennel</i>	
A Modular Four-Port DC-DC Converter for Battery Management Systems.....	498
<i>Muhammad Mubashir Alam, Dylan D.-C. Lu, Priyabrata Shaw, Yam P. Siwakoti</i>	
Enhanced Electricity Demand Forecasting in Australia Using a CNN-LSTM Model with Heating and Cooling Degree Days Data .....	504
<i>Laial Alsmadi, Gang Lei, Li Li</i>	
Control Method of Command Deviation Considering Electric Vehicles Participating in Power Grid Dispatching.....	509
<i>Qianxin Ma, Wenjing Xue, Ye Yang</i>	
D $\Sigma$ -Based Grid-Connected Converter with Reactive Power Compensation .....	514
<i>Yun-Hsiang Chang, Tsai-Fu Wu, Anumeha Kumari, Jui-Yang Chiu</i>	
Single-Phase Soft-Switching Unified Power Quality Conditioner Based on Three-Arm Converter.....	518
<i>Maoh-Chin Jiang, Kao-Yi Lu, Guan-Yi Wu, Chung-His Lin</i>	
A Modulation Method with Low Distortion for Isolated Three-Phase AC-DC Matrix Converters.....	522
<i>Tzu-Yen Hsu, Jun-Tong Kuo, Bo-Yi Li, Mohammadreza Lak, Tzung-Lin Lee</i>	
Limitations in Impedance Reshaping of Grid Forming Converters for Instability Prevention.....	526
<i>Chirag Ramgopal Shah, Marta Molinas, Roy Nilsen, Mohammad Amin</i>	
Analysis of Neutral Line Current Ripple Effective Value for Three-Phase Four-Wire Grid- Connected Inverters.....	532
<i>Chien-Heng Shih, Wen-Yen Li, Yaow-Ming Chen</i>	
Design Considerations for Virtual Impedance and Virtual Synchronous Generators in Inverter- Based Generators.....	538
<i>Naief Almatrafi, Dylan Dah-Chuan Lu, Li Li, Hamzeh Aljarajreh</i>	
A Review: Controlling Techniques of DC Microgrids .....	544
<i>Bawantha Indrajith, Hasith Jayasinghe, Kosala Gunawardane</i>	
Lessons Learned from Previous Cyberattacks on Energy Systems – Global and Australian Context.....	550
<i>Kapila Susantha, Dylan Lu, Xu Wang</i>	
Phase-Lagging Operation in a Buck-Type Current Unfolding Converter with Discontinuous Conduction Mode .....	555
<i>Tomoyuki Mannen, Boseung Seo, Takanori Isobe, Ha Pham N.</i>	
Extended-Duty-Ratio Class DE Voltage-Source Parallel Resonant Inverter .....	560
<i>Ryunosuke Yamada, Yuma Mitsusada, Hirotaka Koizumi</i>	
Modelling and Design of Power Flow Controller of Three-Phase Hybrid Transformer.....	566
<i>Taehoon Chin, Younghoon Cho</i>	

Development of the Power Storage System with Emergency Generation Function..... 571  
*Yosuke Kohata, Kentaro Nishi, Tomoko Hosaka*

Non-Contact Energy Harvester Using Rotation of Roller Conveyor and Its Application to ZigBee  
Based Wireless Communication Module..... 576  
*Atsushi Nakajima, Kazushi Ohmura, Yuichiro Honda, Takanori Okazaki, Daiki Satou, Shigeo  
Masukawa*

A Novel Extended Power Supply Time System for Unmanned Aerial Vehicle..... 580  
*Jenn-Jong Shieh, Yu-Lin Lee, Chang-Hua Lin, Kai-Jun Pai*

**Author Index**