

JOURNAL OF POWER ELECTRONICS

A PUBLICATION OF THE KOREAN INSTITUTE OF POWER ELECTRONICS

Low Power Converters

• A Novel Method for Compensating Phase Voltage Based on Online Calculating Compensation Time	Mingyu Wang, Dafang Wang, Chuanwei Zhou, Xiu Liang, and Guanglin Dong	333
• Coupled Inductor Design Method for 2-Phase Interleaved Boost Converters	Dong Liang and Hwi-Beom Shin	344
• Zero-Current-Switching in Full-Bridge DC-DC Converters Based on Activity Auxiliary Circuit	Enhui Chu, Ping Lu, Chang Xu, and Jianqun Bao	353
• Analysis and Implementation of LC Series Resonant Converter with Secondary Side Clamp Diodes under DCM Operation for High Step-Up Applications	Pengyu Jia and Yiqin Yuan	363
• Analysis and Design of Function Decoupling High Voltage Gain DC/DC Converter	Yuqi Wei, Quanming Luo, Xingyu Lv, Pengju Sun, and Xiong Du	380
• Reduction of DC-Link Capacitance in Single-Phase Non-Isolated Onboard Battery Chargers	Hoang Vu Nguyen, Sangmin Lee, and Dong-Choon Lee	394
• EMI Noise Source Reduction of Single-Ended Isolated Converters Using Secondary Resonance Technique	Zhangyong Chen, Yong Chen, Qiang Chen, Wei Jiang, and Rongqiang Zhong	403

High Power Converters

• Optimum Hybrid SVPWM Technique for Three-level Inverter on the Basis of Minimum RMS Flux Ripple	Meenu D. Nair, Jayanta Biswas, G. Vivek, and Mukti Barai	413
• DAB Converter Based on Unified High-Frequency Bipolar Buck-Boost Theory for Low Current Stress	Jia-rong Kan, Yao-dong Yang, Yu Tang, Dong-chun Wu, Yun-ya Wu, and Jiang Wu	431
• Fault Diagnosis of Wind Power Converters Based on Compressed Sensing Theory and Weight Constrained AdaBoost-SVM	Xiao-Xia Zheng and Peng Peng	443
• High-Reliability Three-Phase Dual-Buck Grid-Connected Inverter without Shoot-Through Problem	Zhenbin Fu, Zhihua Feng, Xi Chen, and Xinxin Zheng	454
• Effect of Winding Configuration on the kVA Rating of Wye-connected Autotransformer Applied to 12-pulse Rectifier	Fangang Meng, Qingxiao Du, Lei Gao, Quanhui Li, and Zhongcheng Man	463
• Control and Modulation of Three to Asymmetrical Six-Phase Matrix Converters based on Space Vectors	Mohammed A. Al-Hitmi, Khalilur Rahman, Atif Iqbal, and Nasser Al-Emadi	475
• Voltage Balance Control of Cascaded H-Bridge Rectifier-Based Solid-State Transformer with Vector Refactoring Technology in $\alpha\beta$ Frame	Hui Wong, Wendong Huang, and Li Yin	487

Adjustable Speed Drives

• Robust Predictive Speed Control for SPMSM Drives Based on Extended State Observers	Yanping Xu, Yongle Hou, and Zehui Li	497
--	--------------------------------------	-----

(Contents Continued on Next Page)



THE KOREAN INSTITUTE OF POWER ELECTRONICS

Analysis, Modeling and Control

• Comparison of Three Active-Frequency-Drift Islanding Detection Methods for Single-Phase Grid-Connected Inverters	Jia-rong Kan, Hui Jiang, Yu Tang, Dong-chun Wu, Yun-ya Wu, and Jiang Wu	509
• Precise Modeling and Adaptive Feed-Forward Decoupling of Unified Power Quality Conditioners	Yingpin Wang, Rubangakene Thomas Obwoya, Zhibo Li, Gongjie Li, Yi Qu, Zeyu Shi, Feng Zhang, and Yunxiang Xie	519
• A Low-Computation Indirect Model Predictive Control for Modular Multilevel Converters	Wenzhong Ma, Peng Sun, Guanyu Zhou, Gulipali Sailijiang, Ziang Zhang, and Yong Liu	529
• Electromagnetic and Vibration Analysis of E-core Switched Reluctance Motor with Permanent Magnets and Auxiliary Windings	Saranya S. and Balaji M.	540
• Adaptive Sliding Mode Control with Enhanced Optimal Reaching Law for Boost Converter Based Hybrid Power Sources in Electric Vehicles.....	Bin Wang, Chaohui Wang, Qiao Hu, Guangliang Ma, and Jiahui Zhou	549
• Research on Carried-Based PWM with Zero-Sequence Component Injection for Vienna Type Rectifiers	Hui Ma, Mao Feng, Yu Tian, and Xi Chen	560

Renewable Energy

• SSCI Mitigation of Series-compensated DFIG Wind Power Plants with Robust Sliding Mode Controller using Feedback Linearization.....	Penghan Li, Linyun Xiong, Jie Wang, Meiling Ma, and Muhammad Waseem Khan	569
--	--	-----

Power Quality and Utility Applications

• Performance Improvement Strategy for Parallel-operated Virtual Synchronous Generators in Microgrids	Hui Zhang, Ruixue Zhang, Kai Sun, and Wei Feng	580
---	--	-----

Devices and Components

• Analytical and Experimental Validation of Parasitic Components Influence in SiC MOSFET Three-Phase Grid-connected Inverter	Yitao Liu, Zhendong Song, Shan Yin, Jianchun Peng, and Hui Jiang	591
• Double-Loop Coil Design for Wireless Power Transfer to Embedded Sensors on Spindles	Suiyu Chen, Yongmin Yang, and Yanting Luo	602

Journal of Power Electronics (JPE)

Editor-in-Chief

Jung-Ik Ha
Seoul National University, Korea
E-mail: jungikha@snu.ac.kr

Publication Editors

Kyo-Beum Lee
Ajou University, Korea
E-mail: kyl@ajou.ac.kr

Sung-Jin Choi
University of Ulsan, Korea
E-mail: sjchoi@ulsan.ac.kr

Editor Board

Subhashish Bhattacharya
North Carolina State University

Frede Blaabjerg
Aalborg University

Dushan Boroyevich
Virginia Polytechnic Inst. and State Univ.

Liuchen Chang
University of New Brunswick

Po-Tai Cheng
National Tsing Hua University

Bo-Hyung Cho
Seoul National University

Jaeho Choi
Chungbuk National University

Ilhami Colak
Nisantasi University

Brahama Ferreira
Delft University of Technology

Dong-Seok Hyun
Hanyang University

Atsuo Kawamura
Yokohama National University

Marian P. Kazmierkowski
Warsaw University of Tech.

Ralph Kennel
Technical University of Munchen

Johan W. Kolar
Swiss Federal Institute of Tech.

Fujio Kurokawa
Nagasaki Institute of Applied Science

Dong-Choon Lee
Yeungnam University

Tsorng-Juu Liang
National Cheng-Kung University

Jinjun Liu
Xi'an Jiaotong University

Sanjib Kumar Panda
National University of Singapore

Fang Z. Peng
Michigan State University

John Shen
Illinois Institute of Technology

Toshihisa Shimizu
Tokyo Metropolitan University

Seung-Ki Sul
Seoul National University

Jian Sun
Rensselaer Polytechnic Institute

Pat Wheeler
University of Nottingham

Dehong Xu
Zhejiang University

Associate Editors

Dukju Ahn
Incheon National University

Seon-Ju Ahn
Chonnam National University

Dianov Anton
Samsung Electronics

Jong-Bok Baek
Korea Inst. of Energy Research

Honyong Cha
Kyungpook National University

Wu Chen
Southeast University

Chun-An Cheng
I-Shou University

Younghoon Cho
Konkuk University

Pooya Davari
Aalborg University

Xiaoqiang Guo
Yanshan University

Seon-Hwan Hwang
Kyungnam University

Jee-Hoon Jung
UNIST

Byungtaek Kim
Kunsan National University

Jae-hong Kim
Chosun University

Jonghoon Kim
Chungnam National University

Sungmin Kim
Hanyang University

Sangshin Kwak
Chung-Ang University

Byoung-Hee Lee
Hanbat National University

Dong-Hee Lee
Kyungsung University

Jae-Beum Lee
Korea Railroad Research Inst.

June-Seok Lee
Korea Railroad Research Inst.

Kwang-Woon Lee
Mokpo Nat'l Maritime University

Seongjuun Lee
Chosun University

Wook-Jin Lee
Chungnam National University

Fuxin Liu
Nanjing Univ. of Aeron. and Astron.

Hao Ma
Zhejiang University

Saad Mekhlif
University of Malaya

Jinyeong Moon
Florida State University

Minh-Khai Nguyen
Chosun University

Joung-Hu Park
Soongsil University

N. Prabaharan
SASTRA Deemed University

P. Sanjeevikumar
Aalborg University

Jongwon Shin
Chung-Ang University

Kai Sun
Tsinghua University

Mahinda Vilathgamaruwa
Queensland University of Technology

Gaolin Wang
Harbin Institute of Technology

Yijie Wang
Harbin Institute of Technology

Zheng Wang
Southeast University

Huiqing Wen
Xi'an Jiaotong-Liverpool Univ.

Hongfei Wu
Nanjing Univ. of Aeron. and Astron.

Han Yang
Univ. Electron. Sci. Tech. China

Xuerong Ye
Harbin Institute of Technology

Zhonggang Yin
Xi'an University of Technology

Sang-Won Yoon
Hanyang University

Young-Doo Yoon
Myongji University

Liqiang Yuan
Tsinghua University

Guoqiang Zhang
Harbin Institute of Technology

Li Zhang
Hohai University

Yongchang Zhang
North China Univ. of Technology

Yun Zhang
Tianjin University

Managing Editor – Sejin Jung / Secretary

The Korean Institute of Power Electronics (KIPE) Executive Board Officers (2019)

Dong-Choo Lee, President
Yeungnam University

Jung-Goo Cho, Vice President
Green Power Co., Ltd.

Hanju Cha, Secretary
Chungnam National University

Seung-Ho Song, Editor
Kwangwoon University

Jong-Soo Kim, Technical Activities
Daejin University

Chan-Ki Kim, Industrial Activities
KEPCO R&D Institute

Honyong Cha, International Activities
Kyungpook National University

Jin-Woo Lee, Vice President
Doowon Technical College

Jung-Ik Ha, Vice President
Seoul National University

Woo-Jin Choi, Treasurer
Soongsil University

Kyo-Beum Lee, Editor
Ajou University

Byoung Kuk Lee, Researching Activities
Sungkyunkwan University

Jin Hur, Planning Activities
Incheon National University

Rae-Young Kim, International Activities
Hanyang University

Taeck-Kie Lee, Vice President
Hankyong National University

Se-Wan Choi, Auditor
Seoul Nat'l Univ. of Science & Tech.

Dong-Hee Lee, Treasurer
Kyungsung University

Sung-Jin Choi, Editor
University of Ulsan

In-Soung Jung, Researching Activities
Korea Electronics Technology Inst.

Seong-Mi Park, Planning Activities
Korea Lift College

Jun-Keun Ji, Vice President
Soonchunhyang University

Cheol-Won Lee, Auditor
CORE Electric Co., Ltd.

Se-Kyo Chung, Editor
Gyeongsang National University

Hag-Wone Kim, Technical Activities
Korea Nat'l Univ. of Transportation

Shin-Hyeong Choi, Industrial Activities
Kangwon National University

Jee-Hoon Jung, Planning Activities
UNIST

Jun-Koo Kang, Vice President
LG Electronics

Eun-Soo Kim, Secretary
Jeonju University

Dong-Myung Lee, Editor
Hongik University

Hong-Je Ryoo, Technical Activities
Chung-Ang University

Ju-Won Baek, Industrial Activities
Korea Electrotechnology Research Inst.

Yong-Sug Suh, International Activities
Chonbuk National University

About the journal: The official title of the journal is *Journal of Power Electronics* (pISSN 1598-2092; eISSN 2093-4718), and the ISO abbreviation of the journal title is 'J. Power Electron.' The first issue of *JPE* was in April 2001. *JPE* is published bimonthly, appearing on the 20th day of January, March, May, July, September, November each year. Hard copies of *JPE* are distributed to 51 associations related with the field of power electronics.

Aims and Scope: Its scope includes all topics in the field of Power Electronics. Included are techniques for high power converters, power quality and utility applications, renewable energy, low power converters, control in power electronics, motor drives, electric machines, analysis, simulation and control, power devices and components, sensors, integration and packaging, education, and other applications.

Full Text Availability: Full text is freely available at the following URL – <http://www.jpels.org>. Search articles by year, category, title, author, abstract, and keyword.

Index/Abstracted in: Science Citation Index Expanded (SCI E), Journal Citation Reports/Science Edition, Korea Citation Index, Scopus

Fund Support: This work was supported by the Korean Federation of Science and Technology Societies Grant funded by the Korean Government(Ministry of Education).

Hard Copy Subscription: The subscription period and rate are renewed on a yearly basis. If you are in the middle of a year, you can choose the starting point either from this year or from next year. Annual Hard Copy Subscription Rates (USD) – Individual: \$ 100.00; Business/Library: \$ 300.00. For more information on subscriptions, please visit the *JPE* website: <http://www.jpels.org>

Publisher: The Korean Institute of Power Electronics (KIPE)

Contact Information

The Korean Institute of Power Electronics

Rm. #1103, The Korean Science & Technology Bldg. (New Bldg.), 22, Teheran-ro 7gil, Gangnam-gu, Seoul 06130, Republic of Korea

Tel: +82-2-554-0184, 0185; Fax: +82-2-554-0186; E-mail: editor@kipe.or.kr; Website: <http://www.jpels.org>

© 2019. The Korean Institute of Power Electronics. All rights reserved. Responsibility for the contents rests upon the authors and not upon the KIPE.

INSTRUCTIONS TO AUTHORS

Manuscripts submitted for the consideration should report the results of an original work. Also, survey papers from the field experts will be considered for the review.

Details on the “original works”

Papers that have been previously published or submitted to other journals, conferences, or books in any language will not be considered for the **JPE** publication. However, the extended version of the paper presented at the conference, workshop, or symposium can be submitted to **JPE** for the consideration no later than 18 months from the presentation. After the due date, the submission will be invalid. In order to qualify for the review, the extended version of the paper should include significant improvements. The title and abstract of the paper should be different and at least 30% of the contents (introduction, main body, conclusion and references) should be modified with new ideas and improvements. If a significant overlap (e.g. higher than 30% in terms of text) between the original conference paper and the submitted manuscript is found through the plagiarism detection software, the manuscript will be returned or rejected immediately. Authors should clearly indicate at which conference, workshop or symposium the manuscript has been presented for the initial submission. Also, the original conference paper should be uploaded at the initial submission. The conference paper should be cited in the manuscript and be added in the reference list. Also in cover letter, mention as to which contents in the manuscript have been improved from the original conference paper. Any violation of the rules mentioned above may cause an infringement of the copyright as well as a self-plagiarism. Every co-authors bear the full responsibility for any legal issues.

Plagiarism Policy

All the original conference papers and dissertations should be referred in manuscript. All the manuscripts for review should meet following requirements. Otherwise, the editorial committee refuses to review the manuscript or rejects to publish it.

1. Identify the original text body and form a reference mark. Even if a reference is made, the contents of the comparison/evaluation should be added.
2. The drawing, table or formula should be drawn or expanded as freshly as possible. If the original ones are imported, the author should resolve the license problem and reveal the courtesy copy
 - A. Imported ones from the graduation thesis must be licensed by university publisher and/or the copyright holder.
 - B. In case of articles, they must be licensed by the publisher.
3. Do not copy the original text body as it is.
4. Add new content as much as possible.

Submission Guidelines for the **JPE**

These guidelines are specified by the **JPE** Editor-in-Chief. All authors are responsible for understanding these guidelines before submitting manuscripts to the **JPE**.

Guidelines for Submitting a Manuscript for Review

Authors must submit manuscripts electronically to the **JPE** on-line review system at <http://manuscript.jpels.org>. All manuscripts must be in an electronic format (only ‘.pdf’ files) and less than 10Mb. Please note that first-time users of the **JPE** system have to create an account and follow the submission instructions. Names of the authors and their affiliations must remain anonymous in the submitted manuscripts to make the evaluation process as fair as possible. However, when submitting a manuscript, the corresponding author’s information must be entered into the submission form on the **JPE** author’s page at the **JPE** website. It is the author’s responsibility to ensure that the submitted files are fully viewable and in the intended format. Before making a submission, please confirm the style and format of your manuscript accordingly.

Style of a Manuscript for Review

- Size of manuscript: 21cm x 27.8cm
- Formatted double columns with a single spaced 9.5pt fonts.
- Include all figures, tables and captions in the text and confirm their size and legibility.
- If a table or figure is too large for a single column, make it span the width of the entire page.
- Include the manuscript title, keywords and an abstract of not more

than 200 words on the first page.

- Do not include articles (a, an, the) and some adjectives such as new, novel, enhanced, improved in the title. They are allowed to be used only in exceptional cases.
- Capitalize the first letter of each word in the title except prepositions, articles and conjunctions.
- Indicate reference numbers in square brackets (e.g. [1], [2], and [3]) and give the reference details at the end of the paper.
- Please do not include authors’ names, footnotes, photos, acknowledgements, biographies or any other information which could identify authors in the manuscript.

For a more detailed formatting guideline, you can download a template file for review at http://jpels.org/submission/info_authors.asp.

Forms of Publication

JPE accepts original papers of research articles, invited papers.

- Original Paper: Original research articles on the wide areas of power electronics and its applications.
- Invited Paper: Articles which are invited to submit from the Editorial Committee of **JPE**.

SI Unit

Please refer to the ‘SI Unit’ list in **JPE** website: <http://www.jpels.org>

Peer Review

The KIPE employs a web-based manuscript submission portal for the peer-review. All manuscripts are treated as confidential. Each manuscript is peer-reviewed by at least two anonymous reviewers who are specialized in the field of power electronics. **JPE** reviewers are selected by the **JPE** Editorial Board depending on their career and contributions in the field of power electronics.

Code of Ethics for Research

Prior to submitting your manuscript, please ensure that you carefully read the Code of Ethics for Research of the Korean Institute of Power Electronics. The Code of Ethics for Research is available from http://jpels.org/submission/info_authors.asp

Guidelines for Submitting a Final Manuscript for Publication

Once a manuscript has been accepted for the publication, the authors will be notified by the **JPE** Editorial board. At that point, a special format will be required for the publication. Your final manuscript for the publication must contain author biographies and photos and be saved in MS-Word (‘.doc’ file) which is less than 10Mb. Before submitting your final manuscript, please check the template file at http://jpels.org/submission/info_authors.asp and format your manuscript accordingly. Submit your final manuscript to the **JPE** on-line review system with your author’s ID and also send it to the **JPE** Editor by e-mail at editor@kipe.or.kr. A signed copyright agreement form is also required before publication.

Copyright Policy

It is KIPE policy to obtain the copyright for all KIPE published technical contributions. To comply with this policy, authors are required to sign a KIPE copyright agreement form before publication. This form is provided upon approval of a manuscript. Authors should submit a signed copy of the copyright form along with their final manuscript. The KIPE copyright agreement form can be downloaded at http://jpels.org/submission/copyright%20agreement/Copyright_Agreement.doc and submitted to the **JPE** on-line review system at <http://manuscript.jpels.org>.

Page Charges

After the final manuscript has been submitted, the **JPE** editor will estimate the length of the paper. The authors will be notified in advance of page charges. Page charges will be billed at \$30 per page. Authors must commit to paying page charges before the publication.

Contact Information

Journal of Power Electronics

The Korean Institute of Power Electronics

Rm. #1103, The Korean Science & Technology Bldg. (New Bldg.)

22, Teheran-ro 7gil, Gangnam-gu, Seoul 06130, Republic of Korea

Tel: +82-2-554-0184, 0185; Fax: +82-2-554-0186

E-mail: editor@kipe.or.kr; Website: <http://www.jpels.org>

INDEXED/ABSTRACTED IN

Science Citation Index Expanded (SCIE)
Journal Citation Reports/Science Edition
Korea Citation Index
Scopus



THE KOREAN INSTITUTE OF POWER ELECTRONICS
<http://www.jpeis.org>

Journal of Power Electronics

A Publication of the Korean Institute of Power Electronics
Rm. #1103, The Korean Science & Technology Bldg. (New Bldg.)
22, Teheran-ro 7gil, Gangnam-gu, Seoul 06130, Republic of Korea
Phone : +82-2-554-0184, 0185; Fax: +82-2-554-0186
E-mail : editor@kipe.or.kr

Table of Contents

Journal of Power Electronics Vol. 19, No. 2 March 2019

Low Power Converters

A Novel Method for Compensating Phase Voltage Based on Online Calculating Compensation Time	
..... Mingyu Wang, Dafang Wang, Chuanwei Zhou, Xiu Liang, and Guanglin Dong	333
Coupled Inductor Design Method for 2-Phase Interleaved Boost Converters	
..... Dong Liang and Hwi-Beom Shin	344
Zero-Current-Switching in Full-Bridge DC-DC Converters Based on Activity Auxiliary Circuit	
..... Enhui Chu, Ping Lu, Chang Xu, and Jianqun Bao	353
Analysis and Implementation of LC Series Resonant Converter with Secondary Side Clamp Diodes under DCM Operation for High Step-Up Applications	
..... Pengyu Jia and Yiqin Yuan	363
Analysis and Design of Function Decoupling High Voltage Gain DC/DC Converter	
..... Yuqi Wei, Quanming Luo, Xingyu Lv, Pengju Sun, and Xiong Du	380
Reduction of DC-Link Capacitance in Single-Phase Non-Isolated Onboard Battery Chargers	
..... Hoang Vu Nguyen, Sangmin Lee, and Dong-Choon Lee	394
EMI Noise Source Reduction of Single-Ended Isolated Converters Using Secondary Resonance Technique	
..... Zhangyong Chen, Yong Chen, Qiang Chen, Wei Jiang, and Rongqiang Zhong	403

High Power Converters

Optimum Hybrid SVPWM Technique for Three-level Inverter on the Basis of Minimum RMS Flux Ripple	
..... Meenu D. Nair, Jayanta Biswas, G. Vivek, and Mukti Barai	413
DAB Converter Based on Unified High-Frequency Bipolar Buck-Boost Theory for Low Current Stress	
..... Jia-rong Kan, Yao-dong Yang, Yu Tang, Dong-chun Wu, Yun-ya Wu, and Jiang Wu	431
Fault Diagnosis of Wind Power Converters Based on Compressed Sensing Theory and Weight Constrained AdaBoost-SVM	
..... Xiao-Xia Zheng and Peng Peng	443
High-Reliability Three-Phase Dual-Buck Grid-Connected Inverter without Shoot-Through Problem	
..... Zhenbin Fu, Zhihua Feng, Xi Chen, and Xinxin Zheng	454
Effect of Winding Configuration on the kVA Rating of Wye-connected Autotransformer Applied to 12-pulse Rectifier	
..... Fangang Meng, Qingxiao Du, Lei Gao, Quanhui Li, and Zhongcheng Man	463
Control and Modulation of Three to Asymmetrical Six-Phase Matrix Converters based on Space Vectors	
..... Mohammed A. Al-Hitmi, Khaliqu Rahman, Atif Iqbal, and Nasser Al-Emadi	475
Voltage Balance Control of Cascaded H-Bridge Rectifier-Based Solid-State Transformer with Vector Refactoring Technology in $\alpha\beta$ Frame	
..... Hui Wong, Wendong Huang, and Li Yin	487

Adjustable Speed Drives

Robust Predictive Speed Control for SPMSM Drives Based on Extended State Observers	
..... Yanping Xu, Yongle Hou, and Zehui Li	497

Analysis, Modeling and Control

Comparison of Three Active-Frequency-Drift Islanding Detection Methods for Single-Phase Grid-Connected Inverters	Jia-rong Kan, Hui Jiang, Yu Tang, Dong-chun Wu, Yun-ya Wu, and Jiang Wu	509
Precise Modeling and Adaptive Feed-Forward Decoupling of Unified Power Quality Conditioners ...	Yingpin Wang, Rubangakene Thomas Obwoya, Zhibo Li, Gongjie Li, Yi Qu, Zeyu Shi, Feng Zhang, and Yunxiang Xie	519
A Low-Computation Indirect Model Predictive Control for Modular Multilevel Converters	Wenzhong Ma, Peng Sun, Guanyu Zhou, Gulipali Sailijiang, Ziang Zhang, and Yong Liu	529
Electromagnetic and Vibration Analysis of E-core Switched Reluctance Motor with Permanent Magnets and Auxiliary Windings	Saranya S. and Balaji M.	540
Adaptive Sliding Mode Control with Enhanced Optimal Reaching Law for Boost Converter Based Hybrid Power Sources in Electric Vehicles	Bin Wang, Chaohui Wang, Qiao Hu, Guangliang Ma, and Jiahui Zhou	549
Research on Carried-Based PWM with Zero-Sequence Component Injection for Vienna Type Rectifiers	Hui Ma, Mao Feng, Yu Tian, and Xi Chen	560

Renewable Energy

SSCI Mitigation of Series-compensated DFIG Wind Power Plants with Robust Sliding Mode Controller using Feedback Linearization	Penghan Li, Linyun Xiong, Jie Wang, Meiling Ma, and Muhammad Waseem Khan	569
---	--	-----

Power Quality and Utility Applications

Performance Improvement Strategy for Parallel-operated Virtual Synchronous Generators in Microgrids	Hui Zhang, Ruixue Zhang, Kai Sun, and Wei Feng	580
---	--	-----

Devices and Components

Analytical and Experimental Validation of Parasitic Components Influence in SiC MOSFET Three-Phase Grid-connected Inverter	Yitao Liu, Zhendong Song, Shan Yin, Jianchun Peng, and Hui Jiang	591
Double-Loop Coil Design for Wireless Power Transfer to Embedded Sensors on Spindles	Suiyu Chen, Yongmin Yang, and Yanting Luo	602