

2018 IEEE 4th Southern Power Electronics Conference (SPEC 2018)

**Singapore
10-13 December 2018**



**IEEE Catalog Number: CFP18F32-POD
ISBN: 978-1-5386-8258-6**

**Copyright © 2018 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:	CFP18F32-POD
ISBN (Print-On-Demand):	978-1-5386-8258-6
ISBN (Online):	978-1-5386-8257-9

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
Web: www.proceedings.com

CURRAN ASSOCIATES INC.
proceedings
.com

TABLE OF CONTENTS

A DECOUPLED CIRCULATING CURRENT SUPPRESSING STRATEGY FOR MODULAR MULTILEVEL CONVERTER.....	1
<i>Shukai Mao ; Binbin Li ; Shuxin Zhang ; Dianguo Xu ; Jizhong Chen ; Xiaoqing Wang</i>	
ANALYSIS OF LOAD BALANCING LIMITS FOR CASCADED RECTIFIERS	8
<i>Ning Jiao ; Shunliang Wang ; Tianqi Liu</i>	
INVESTIGATION ON PROPORTIONAL RESONANT CURRENT CONTROL FOR 7-LEVEL MULTILEVEL INVERTER WITH REDUCED SWITCHING DEVICE.....	15
<i>Shamsul Aizam Zulkifli ; Suriana Salimin ; Abdul Khairi ; Abdul Rahman</i>	
REDUCING DC VOLTAGE RIPPLES OF MMC BY INJECTING CIRCULATING CURRENT UNDER IMBALANCED GRID CONDITIONS.....	21
<i>Fangqing Li ; Feng Gao</i>	
ADAPTIVE FILTERING SCHEME FOR A LOW-CAPACITANCE STATCOM.....	27
<i>Ezequiel Rodriguez ; Neha Beniwal ; Glen Farivar ; Christopher D. Townsend ; Sergio Vazquez ; Josep Pou</i>	
FINITE CONTROL SET MODEL PREDICTIVE CONTROL OF AN ACTIVE NESTED NEUTRAL-POINT-CLAMPED CONVERTER	34
<i>Amer Ghias ; Pablo Acuna ; Jinghang Lu ; Adel Merabet</i>	
RELIABLE OPERATION OF AN ASYMMETRICAL MULTILEVEL INVERTER TOPOLOGY.....	40
<i>Santosh Kumar Maddugari ; Vijay B Borghate ; Sidharth Sabyasachi</i>	
CAPACITOR VOLTAGE SHAPER FOR CASCADED H-BRIDGE STATCOM	45
<i>Young-Tae Jeon ; Glen Farivar ; Christopher D. Townsend ; Joung-Hu Park ; Josep Pou</i>	
A PARALLEL-OUTPUT CLTCL MULTI-RESONANT SOFT-SWITCHING DC-DC CONVERTER	51
<i>Fuqiang Han ; Zhun Meng</i>	
A THREE-PORT MULTI-ELEMENT RESONANT CONVERTER WITH DECOUPLED POWER FLOW MANAGEMENT	57
<i>Ruixin Liu ; Zhanchun Li</i>	
CASCADED HALF-BRIDGE MULTILEVEL INVERTER WITH REDUCED NUMBER OF POWER SWITCHES.....	62
<i>Hossein Khoun Jahan ; Amin Mohammadpour Shotorbani ; Mehdi Abapour ; Kazem Zare ; Frede Blaabjerg ; Yongheng Yang</i>	
A MODULAR MULTILEVEL CONVERTER WITH BOOSTING, SELF-BALANCING, AND SCALING CAPABILITIES FOR HIGH- VOLTAGE TRANSFORMERLESS PV APPLICATIONS.....	69
<i>Hossein Khoun Jahan ; Mehdi Abapour ; Kazem Zare ; Seyed Hossein Hosseini ; Yongheng Yang ; Frede Blaabjerg</i>	
DESIGN AND OPTIMIZATION OF ASYMMETRICAL SPIRAL RECTANGULAR PADS FOR EV WIRELESS CHARGING	76
<i>Yun Zhang ; Lifang Wang ; Yanjie Guo ; Chengxuan Tao</i>	
SYNCHRONOUS RECTIFICATION-BASED PHASE SHIFT KEYING COMMUNICATION FOR WIRELESS POWER TRANSFER SYSTEMS.....	81
<i>Hongchang Li ; Shuxin Chen ; Jingyang Fang ; Yi Tang</i>	
OPTIMIZATION OF T-TYPE COMPENSATION NETWORK FOR A CERTAIN POWER FLUCTUATION TOLERANCE OF THE DYNAMIC WIRELESS POWER TRANSMISSION	85
<i>Shufan Li ; Lifang Wang ; Yanjie Guo ; Chengxuan Tao</i>	
COMPARATIVE ANALYSIS OF LCL, LCLC, CLLC COMPENSATION NETWORKS FOR CAPACITIVE POWER TRANSFER.....	90
<i>Sijie Ning ; Jian Yang ; Qi Zhu ; Mei Su ; Ruya Tan ; Yonglu Liu</i>	
POWER STABILIZATION BASED ON DOUBLE ENERGIZED TRANSMITTING COILS IN DYNAMIC WIRELESS CHARGING SYSTEM FOR INSPECTION ROBOT	96
<i>Han Liu ; Linlin Tan ; Xueliang Huang ; Dariusz Czarkowski</i>	
ENHANCED CONSENSUS-BASED DISTRIBUTED CONTROL FOR ACCURATE REACTIVE POWER SHARING OF ISLANDED MICROGRIDS WITHOUT LBC LINES	102
<i>Aiting Jiang ; Yang Han ; Ping Yang ; Congling Wang ; Jingqi Xiong</i>	
POWER SHARING SCHEME FOR AN ISLANDED MICROGRID INCLUDING RENEWABLES AND BATTERY STORAGE.....	110
<i>Jiahui Jiang ; Colin Coates</i>	
A UNIFIED DISTRIBUTED CONTROL SCHEME ON COST OPTIMIZATION FOR HYBRID AC/DC MICROGRID	117
<i>Wendong Feng ; Jian Yang ; Zhangjie Liu ; Hui Wang ; Mei Su ; Xin Zhang</i>	

STABILITY ANALYSIS OF CONTROL SYSTEM BASED ON LINEARIZED MODEL OF MUTUALLY CONNECTED TAB CONVERTERS	123
<i>Shota Okutani ; Yuichi Kado ; Pin-Yu Huang ; Junichi Arai</i>	
GROUND FAULT ANALYSIS AND GROUNDING DESIGN CONSIDERATIONS IN DC MICROGRIDS	129
<i>D. K. J. S Jayamaha ; N. W. A Lidula ; A. D Rajapakse</i>	
AN ISOLATED BIDIRECTIONAL FORWARD CONVERTER WITH INTEGRATED OUTPUT INDUCTOR-TRANSFORMER STRUCTURE.....	137
<i>Nurhakimah M. Mukhtar ; Dylan Dah-Chuan Lu</i>	
COMPARATIVE STUDY OF PERFORMANCE FOR DIFFERENT WINDING CONNECTIONS OF DUAL-CHANNEL SWITCHED RELUCTANCE MACHINE USING FROZEN PERMEABILITY	144
<i>Xiupeng Cui ; Jianbo Sun ; Chenglin Gu</i>	
AN ISOLATED THREE-PORT DC-DC CONVERTER WITH LOW-VOLTAGE DC BUS FOR DC MICROGRIDS	150
<i>Panbao Wang ; Xiaochen Zhang ; Sibao Ding ; Wei Wang ; Dianguo Xu</i>	
PRIMARY IRON LOSS ANALYSIS ON TUBULAR PERMANENT MAGNET LINEAR MOTOR	156
<i>Hui Zhong ; Bowei Peng ; Ankang Chen ; Yingjie Wang</i>	
ADAPTIVE CONTROL OF POWER ELECTRONICS LOAD CONSIDERING USER INTENTION IN ISLANDED MICROGRID.....	161
<i>Shibo Wang ; Song Zhang ; Guangqian Ding ; Chuanpu Li ; Yan Cheng ; Shumin Sun</i>	
HIGH-PERFORMANCE CLL RESONANT MULTI-CHANNEL LED DRIVER FOR LIGHTING APPLICATION	167
<i>Wesley Poh Qi Tong ; B.M.S. Muhammad Ramadan ; Thillainathan Logenthiran ; R.T. Naayagi ; Wai Lok Woo ; Van-Tung Phan</i>	
CALCULATION AND EXPERIMENTAL VALIDATION ON LEAKAGE INDUCTANCE OF A MEDIUM FREQUENCY TRANSFORMER.....	173
<i>Haonan Tian ; Zhongbao Wei ; Sriram Vaisambhayana ; Madasamy Palavesha Thevar ; Anshuman Tripathi ; Philip C. Kjer</i>	
POWER FEEDFORWARD METHOD FOR PASSIVITY-BASED GRIDCONNECTED PV INVERTER IN WEAK GRIDS.....	179
<i>Guihua Liu ; Wenxiu Wang ; Wei Wang ; Kai Zhu</i>	
MODELLING OF TRACK LAYOUT FOR INTELLIGENT RAILWAY SIGNALLING SYSTEM: A MACHINE LEARNING APPLICATION	185
<i>Y. Baviskar ; U. Suryawanshi ; A. Sheikh</i>	
A HIGH STEP-UP MULTILEVEL INVERTER WITH MINIMIZED COMPONENTS FEATURING SELF-BALANCING AND CONTINUOUS INPUT CURRENT CAPABILITIES	191
<i>Hossein Khoun Jahan ; Mehdi Abapour ; Kazem Zare ; Seyed Hossein Hosseini ; Yongheng Yang ; Frede Blaabjerg</i>	
A TEMPERATURE-DEPENDENT THERMAL MODEL OF SILICON CARBIDE MOSFET MODULE FOR LONG-TERM RELIABILITY ASSESSMENT.....	197
<i>Mengxing Chen ; Huai Wang ; Frede Blaabjerg ; Xiongfei Wang ; Donghua Pan</i>	
A DUTY CYCLE BASED FINITE-SET MODEL PREDICTIVE TORQUE CONTROL FOR PERMANENT MAGNET SYNCHRONOUS MOTOR DRIVES.....	204
<i>Hejin Yang ; Xinan Zhang ; Wang Youyi</i>	
OPEN AND SHORT CIRCUIT FAULT DETECTION IN ALTERNATORS USING THE RECTIFIED DC OUTPUT VOLTAGE	210
<i>Russell Sabir ; Sven Hartmann ; Clemens Gühmann</i>	
CHARACTERIZATION OF A LARGE ELECTRICAL MACHINE TEST BENCH FOR ADVANCED INVESTIGATIONS ON WIND AND HYDRO GENERATORS	217
<i>Amir Ebrahimi</i>	
MECHANICAL RESONANT SYSTEMS IDENTIFICATION AND COMPENSATION FOR THE SELF TUNING ALGORITHMS.....	223
<i>Ondrej Bartik ; Lukas Pohl</i>	
OPTIMAL CONFIGURATION OF MULTIPHASE AC MOTORS UNDER SQUAREWAVE AND PWM OPERATIONS.....	229
<i>Anwar Muqorobin ; Pekik Argo Dahono</i>	
CURRENT RIPPLE REDUCTION FOR CASCADED H-BRIDGE CONVERTER WITH PHASE-SHIFTED CARRIER PWM	237
<i>Kevin Sun ; Terry Summers ; Colin Coates</i>	

AN IMPROVEMENT ON A SIMPLIFIED SPACE VECTOR MODULATION ALGORITHM TO SOLVE THE INHERENT THREE-PHASE UNBALANCE.....	243
<i>Hongda Wu ; Jinjun Liu ; Shaodi Ouyang</i>	
ENHANCING THE NATURAL VOLTAGE BALANCING CAPABILITY OF NEUTRAL-POINT-CLAMPED CONVERTERS UNDER CARRIER-BASED PULSEWIDTH MODULATION.....	251
<i>Neha Beniwal ; Josep Pou ; Christopher D. Townsend ; Salvador Ceballos</i>	
RESEARCH ON SMOOTH VOLTAGE BALANCE MODULATION STRATEGY IN THREE LEVEL NEUTRAL POINT CLAMPED CASCADE RECTIFIER.....	257
<i>Zhiqin Zhao ; Yang Chen ; Pengcheng Han ; Xiaoqiong He ; Xu Peng</i>	
A CLASS E² INVERTER-RECTIFIER-BASED BIDIRECTIONAL WIRELESS POWER TRANSFER SYSTEM	265
<i>Kerui Li ; Siew-Chong Tan</i>	
DESIGN OF A CONTACTLESS ROTARY DEVICE BASED ON INDUCTIVELY COUPLED POWER TRANSFER.....	271
<i>Hanlin Zong ; Xiangjun Zhang ; Xiaorui Zhang ; Yijie Wang ; Dianguo Xu ; Hailin Tian ; Xiufang Liu ; Dapeng Yan</i>	
POWER FLOW CONTROL OF CAPACITIVE POWER TRANSFER BY SOFT SWITCHING OF EXTRA CAPACITORS IN CLASS E CONVERTER.....	275
<i>Liang Huang ; Aiguo Patrick Hu</i>	
A WIRELESS POWER TRANSFER SYSTEM FOR ELECTRIC FENCE ENERGIZERS.....	280
<i>James Xian ; Craig Baguley ; Udaya Madawala</i>	
DESIGN OF 100 KVA SIC POWER CONVERTER FOR AIRCRAFT ELECTRIC STARTER GENERATOR	284
<i>Ziyou Lim ; Yong Liu ; Lingxi Zhang ; Josep Pou ; Rejeki Simanjorang ; Amit Gupta</i>	
SYNCHRONIZED REACTIVE POWER VARIATION METHOD FOR ISLANDING DETECTION USING HIGH-FREQUENCY SIGNAL INJECTION	293
<i>Gongke Wang ; Feng Gao ; Fangqing Li</i>	
IMPACT OF MECHANICAL POWER VARIATION ON TRANSIENT STABILITY OF DFIG-BASED WIND TURBINE.....	299
<i>Wangqianyun Tang ; Jiabing Hu ; Rui Zhang</i>	
OVERVIEW OF CASHIPS HIGH-POWER ELECTRICAL EQUIPMENT TEST FACILITY	306
<i>Xiaojiao Chen ; Liansheng Huang ; Peng Fu ; Ge Gao ; Zhiquan Song ; Liuwei Xu ; Shiyang He ; Xiuqing Zhang</i>	
A NON-IDEAL SEPIC DCM MODELING FOR LED LIGHTING APPLICATIONS	310
<i>Bruno Bertoldi ; Marcio Moura Bridon Junior ; Matheus Schramm Dall'asta ; Marcos Paulo Mocellini ; Greidanus Mateo Daniel Roig ; André Luis Kirsten ; Marcelo Lobo Heldwein</i>	
DC BIAS STUDY FOR DC-DC DUAL-ACTIVE-BRIDGE CONVERTER.....	317
<i>Liangcai Shu ; Wu Chen ; Zhiguang Lin ; Dajun Ma ; Xiaokun He ; Waqar Azeem Syed</i>	
ACTIVE POWER DECOUPLING CONTROL OF BRIDGE-LESS SEPIC USING LYAPUNOV-FUNCTION BASED CONTROL STRATEGY	322
<i>Soonhwan Hwang ; Satoshi Ogasawara ; Koji Orikawa ; Masatsugu Takemoto</i>	
IMPROVED QUADRATIC BOOST CONVERTER USING CROSS COUPLED-INDUCTOR.....	328
<i>Yiyang Li ; John Long Soon ; Swamidoss Sathiakumar</i>	
A COMPOUND CONTROL STRATEGY FOR INVERTER OUTPUT VOLTAGE IN MICRO-GRID SYSTEM	334
<i>Jinghua Zhou ; Rong Zhang ; Xinlei Zhang ; Jiewei Wu ; Weichao Huang</i>	
SPACE VECTOR MODULATION STRATEGY FOR THREE-LEVEL QUASI-SWITCHED BOOST T-TYPE INVERTER.....	339
<i>Duc-Tri Do ; Minh-Khai Nguyen ; Thanh-Hai Quach ; Vinh-Thanh Tran ; Cong-Bang Le ; Kyoung-Won Lee ; Geum-Bae Cho</i>	
MODEL PREDICTIVE CONTROL OF DIRECT MATRIX CONVERTER WITH COMMON MODE VOLTAGE ELIMINATION	344
<i>Muslem Uddin ; Galina Mirzaeva ; Graham Goodwin</i>	
COUPLED INDUCTOR BASED ISOLATED VOLTAGE MULTIPLIER CONVERTER	351
<i>Shirish Raizada ; Vishal Verma</i>	
A COMPUTATIONALLY-EFFICIENT ELECTROCHEMICAL-THERMAL MODEL FOR SMALL-FORMAT CYLINDRICAL LITHIUM ION BATTERIES.....	358
<i>Ngoc Tham Tran ; Mahinda Vilathgamuwa ; Troy Farrell ; San Shing Choi ; Yang Li ; Joseph Teague</i>	
INERTIA EMULATION BY FLYWHEEL ENERGY STORAGE SYSTEM FOR IMPROVED FREQUENCY REGULATION.....	365
<i>Jiale Yu ; Jingyang Fang ; Yi Tang</i>	
TECHNO-ECONOMIC FEASIBILITY STUDY OF BATTERY- POWERED FERRIES.....	373
<i>Monaaf D. A. Al-Falahi ; James Coleiro ; S. D. G. Jayasinghe ; Hossein Enshaee ; Vikram Garaniya ; Craig Baguley ; Udaya. Madawala</i>	

THERMAL MANAGEMENT OF AN ELECTRIC FERRY LITHIUM-ION BATTERY SYSTEM	380
<i>Erik Alston ; Shantha Jayasinghe ; Craig Baguley ; Udaya Madawala</i>	
A NOVEL MODIFIED DIGITAL PWM CONTROL TECHNIQUE TO REDUCE SPEED RIPPLES IN BLDC MOTORS	385
<i>Pratikanta Mishra ; Atanu Banerjee ; Hari Charan Nannam ; Mousam Ghosh</i>	
SIMPLIFICATION OF THE ACQUISITION SYSTEM FOR SENSORED VECTOR CONTROL USING RESOLVER SENSOR BASED ON FDM AND CURRENT SYNCHRONOUS SAMPLING	393
<i>Raymundo Cordero García ; João Onofre Pereira Pinto ; Igor Esdras Silva Ono ; Vitoria Dos Santos Fahed ; Moacyr Brito</i>	
COMMUTATION TORQUE RIPPLE REDUCTION FOR BRUSHLESS DC MOTORS BASED ON OPTIMAL CONTROL	400
<i>Jian Liang ; Yao Sun ; Mei Su ; Sijie Ning ; Min Zhou ; Hanbing Dan ; Guo Xu</i>	
PMSM PI CURRENT CONTROLLER TUNING USING STRUCTURALLY CONSTRAIN LQR LMI CRITERIA FOR MIMO PLANTS	406
<i>Lukas Pohl ; Ondrej Bartik</i>	
SIC-VSI WITH SINUSOIDAL VOLTAGES FOR AN ENHANCED SENSORLESS CONTROL OF THE INDUCTION MACHINE	412
<i>Harith Al-Badrani ; Simon Feuersänger ; Mario Pacas</i>	
DECOUPLED MULTISTEP MODEL PREDICTIVE CONTROL OF PERMANENT MAGNET SYNCHRONOUS MACHINES	419
<i>Ferdinand Grimm ; Zhenbin Zhang</i>	
HYBRID MPPT ALGORITHMS FOR PHOTOVOLTAIC SYSTEMS	425
<i>Leandro T. Omine ; Moacyr A. G. De Brito ; João O. P. Pinto ; Raymundo C. García</i>	
POWER MANAGEMENT SCHEME FOR A WIND-PHOTOVOLTAIC HYBRID AUTONOMOUS SYSTEM WITH BATTERY STORAGE	433
<i>Jyotismita Mishra ; Monalisa Pattnaik ; Susovan Samanta</i>	
A MIN-COMMUNICATION CONTROL FOR GRID-CONNECTED CASCADED PV INVERTERS	438
<i>Hongyi Liu ; Hua Han ; Yao Liu ; Mei Su ; Xiaochao Hou ; Xin Zhang</i>	
MICROCONTROLLER IMPLEMENTATION OF AN MPPT ALGORITHM USING DECREMENTED WINDOWS SIZE SCANNING METHOD FOR PHOTOVOLTAIC SYSTEMS	444
<i>Tino Suhaebri ; Faizal Arya Samman ; Andani Achmad</i>	
DUAL PORT IMPEDANCE CONVERTER FOR PV – BATTERY FED REMOTE TELECOM TOWERS	449
<i>Aditya Narula ; Vishal Verma</i>	
LOW-VOLTAGE RIDE-THROUGH TECHNIQUES FOR TWO-STAGE PHOTOVOLTAIC SYSTEM UNDER UNBALANCED GRID VOLTAGE SAG CONDITIONS	456
<i>Xiangyang Lin ; Yang Han ; Ping Yang ; Congling Wang ; Jingqi Xiong</i>	
A UNIVERSAL MODEL FOR GRID-CONNECTED CONVERTERS REFLECTING POWER- INTERNAL VOLTAGE CHARACTERISTICS	464
<i>Qiao Peng ; Jingyang Fang ; Yongheng Yang ; Frede Blaabjerg</i>	
CONTROL STRATEGY FOR LOW VOLTAGE RIDE THROUGH (LVRT) OPERATION OF TWO-STAGE PHOTOVOLTAIC POWER GENERATION SYSTEM	471
<i>Lihua Li ; Hong Zhou ; Fuqiang Luo ; Xiangyang Lin ; Yang Han</i>	
RESEARCH ON INFLUENCE OF TIME DELAY ON CRITICAL MODES FOR INTERCONNECTED GRID	477
<i>Yonghui Nie ; Chiyao Feng ; Chunlei Zhang ; Qingfeng Zhang</i>	
DESIGN PROCEDURE FOR A DIGITAL PROPORTIONAL-RESONANT CURRENT CONTROLLER IN A GRID CONNECTED INVERTER	483
<i>Tiago Davi Curi Busarello ; Jose Antenor Pomilio ; Marcelo Godoy Simoes</i>	
DESIGN OF DIGITAL FILTER-BASED HIGHLY ROBUST ACTIVE DAMPING FOR LCL- FILTERED GRID-TIED INVERTERS	491
<i>Pei Cai ; Xiaohua Wu ; Yongheng Yang ; Wenli Yao ; Wenjie Liu ; Frede Blaabjerg</i>	
GENERIC STABILITY IMPEDANCE CRITERION FOR THE PARALLEL INVERTERS SYSTEM	499
<i>Xin Zhang ; Jinsong He ; Shu-Hung Henry Chung</i>	
FREQUENCY AND TEMPERATURE-DEPENDENT POWER CABLE MODELLING FOR STABILITY ANALYSIS OF GRID-CONNECTED INVERTER	503
<i>Weihua Zhou ; Yanbo Wang ; Zhe Chen</i>	
DECENTRALISED MASTER-SLAVE CONTROL OF INTERGRIDS	511
<i>Matthew Davison ; Terry Summers ; Christopher D. Townsend</i>	

IMPEDANCE-BASED MODELLING METHOD FOR LENGTH-SCALABLE LONG TRANSMISSION CABLE FOR STABILITY ANALYSIS OF GRID-CONNECTED INVERTER.....	518
<i>Weihua Zhou ; Yanbo Wang ; Zhe Chen</i>	
AN IMPROVED CONTROL STRATEGY OF VIRTUAL SYNCHRONOUS GENERATOR UNDER UNBALANCED CONDITIONS.....	526
<i>Fen Li ; Guihua Liu ; Kai Zhu ; Wei Wang</i>	
PASSIVITY ENHANCEMENT FOR THREE-PHASE GRID-CONNECTED INVERTER IN DQ-FRAME	532
<i>Ying Peng ; Kai Li ; Jiancheng Zhao ; Chuan Xie</i>	
A SOFT RECLOSING MODEL FOR HYBRID DC CIRCUIT BREAKER IN VSC-MTDC SYSTEM.....	539
<i>Ji Shu ; Shunliang Wang ; Tianqi Liu</i>	
TOPOLOGY DERIVATION OF NON-ISOLATED MULTI-PORT DC-DC CONVERTERS BASED ON H-BRIDGE	544
<i>Ping Feng ; Ping Yang ; Zerong Shang ; Zeyu Zhu</i>	
DC VOLTAGE REDUCTION IN PV CONNECTED LV D-STATCOM WITH IN-PHASE SERIES VOLTAGE INJECTION AND IMPROVED TRANSFORMER RATINGS.....	551
<i>Guddy Satpathy ; Dipankar De</i>	
DIMENSIONING AND COMPARISON OF A NOVEL POWER CONVERTER TOPOLOGY BY EMPIRICAL SEMICONDUCTOR MODELS.....	559
<i>Christian Axtmann ; Johannes Kolb ; Michael Braun</i>	
MODELLING AND SIMULATION OF DC MICROGRID.....	567
<i>Song Huihuan Zacchaeus ; Wesley Poh Qi Tong ; R.T. Naayagi</i>	
REVISITING TWO-PORT NETWORK ANALYSIS FOR WIRELESS POWER TRANSFER (WPT) SYSTEMS	572
<i>Prasad Jayathurathnage ; Mahinda Vilathgamuwa ; Constantin Simovski</i>	
OPTIMAL OPERATIONAL SCHEDULING OF SMART MICROGRIDS CONSIDERING HOURLY RECONFIGURATION.....	577
<i>Saeid Esmaeili ; Shahram Jadid ; Amjad Anvari-Moghaddam ; Josep M. Guerrero</i>	
SENSOR-BASED AND SENSORLESS VECTOR CONTROL OF PM SYNCHRONOUS MOTOR DRIVES: A COMPARATIVE STUDY	583
<i>Shweta Singh ; Amjad Anvari-Moghaddam</i>	
AN IMPROVED ACTIVE LI-ION BATTERY EQUALIZATION SCHEME FOR ENHANCING THE PERFORMANCE OF A NEARLY ZERO ENERGY BUILDING AND ELECTRIC VEHICLE MICROGRID	589
<i>Markos Koseoglou ; Evangelos Tsioumas ; Nikolaos Jabbour ; Christos Mademlis</i>	
DESIGN AND CONTROL FOR ZVS CONSTANT CURRENT AND CONSTANT VOLTAGE WIRELESS CHARGING SYSTEMS.....	596
<i>Bac Xuan Nguyen ; Jaspreet Singh ; Xinan Zhang ; Wentao Jiang ; Leong Hai Koh ; Peng Wang</i>	
A NOVEL ZERO-VOLTAGE-DETECTOR FOR BUCK CONVERTER IN DISCONTINUOUS CONDUCTION MODE(DCM)	603
<i>Meng Jia ; Zhuochao Sun ; Lier Siek</i>	
EXPERIMENTAL INVESTIGATION ON SINGLE-PHASE MULTILEVEL INVERTER FOR GENERATING 21-LEVEL OUTPUT VOLTAGE USING FOUR H-BRIDGE UNITS	607
<i>Tapan Kumar Chakraborty ; Ashique Anan ; Sakhawat Hossen Rakib</i>	
ANALYSIS AND DESIGN OF A NOVEL HIGH STEP-DOWN DC-DC CONVERTER FOR BATTERY APPLICATIONS.....	611
<i>Zhong-Rong Lin ; Nguyen Anh Dung ; Huang-Jen Chiu ; Yu-Chen Liu ; Jih-Sheng Lai ; Yu-Chen Chang</i>	
HYBRID UNIDIRECTIONAL MMC-BASED RECTIFIER.....	616
<i>Vinícius Bernardi Fuerback ; Gean Jacques Maia De Sousa ; Marcelo Lobo Heldwein</i>	
HIGHLY RELIABLE MONITORING AND EQUALIZATION IN A HYBRID ENERGY STORAGE SYSTEM WITH BATTERIES AND SUPERCAPACITORS FOR ELECTRIC MOTOR DRIVES IN BUILDING APPLICATIONS	624
<i>Nikolaos Jabbour ; Evangelos Tsioumas ; Markos Koseoglou ; Christos Mademlis</i>	
DISCUSSION OF SINGLE-STAGE ISOLATED UNIDIRECTIONAL AC-DC ON-BOARD BATTERY CHARGER FOR ELECTRIC VEHICLE	631
<i>Mahmoud Nassary ; Mohamed Orabi ; Maged Ghoneima</i>	
DEVELOPMENT OF A WBG-BASED TRANSFORMERLESS ELECTRIC VEHICLE CHARGER WITH SEMICONDUCTOR ISOLATION	638
<i>Yue Zhang ; Chengcheng Yao ; Zhongjing Wang ; Huanyu Chen ; Xiaoteng He ; Xuan Zhang ; He Li ; Jin Wang</i>	
AN OPTIMIZED POWER-SPLIT METHOD BASED ON FUZZY LOGIC CONTROL FOR FUEL CELL-BATTERY FCHEV POWERTRAIN	644
<i>Yao Zhang ; Xin Zhang</i>	

EXPLORATION OF THE RELATIONSHIP BETWEEN INERTIA ENHANCEMENT AND DC-LINK CAPACITANCE FOR GRID-CONNECTED CONVERTERS	649
<i>Ke Guo ; Yi Tang ; Jingyang Fang</i>	
IMPACT OF NONLINEARITY ON TYPE-3 WT'S FAULT CURRENT	656
<i>Yuanzhu Chang ; Jiabing Hu ; Enbo Zhang ; Xiaojie Zhang</i>	
ENHANCED EFFECTIVENESS IN THE APPLIANCE SCHEDULING AND ENERGY STORAGE CONTROL BY UTILIZING THE PARTICLE SWARM TECHNIQUE FOR A NEARLY ZERO ENERGY BUILDING	663
<i>Evangelos Tsioumas ; Nikolaos Jabbour ; Markos Koseoglou ; Ilias Sfetros ; Christos Mademlis</i>	
PERFORMANCE ENHANCEMENT OF THREE-PHASE UNBALANCED DISTRIBUTION NETWORK USING DER	670
<i>P. Shettigar ; Y. Malviya ; A. Surjagade ; V. Pal ; A. Sheikh ; S. Bhil</i>	
A SERIES VOLTAGE SAG COMPENSATOR WITH REDUCED MAGNITUDE OF TRANSFORMER INRUSH CURRENT	676
<i>Syed Sabir Hussain Bukhari ; Mahnoor Gul ; Faheem A. Chachar</i>	
ENERGY STORAGE SYSTEM CONTROL FOR ELECTROMECHANICAL OSCILLATION MITIGATION AND ITS IMPACT ON INERTIA AND DAMPING OF POWER SYSTEM	680
<i>Liansong Xiong ; Zhao Xu ; Liancheng Xiu</i>	
THREE-PHASE UNBALANCE COMPENSATOR USING NEUTRAL POINT CLAMPED MULTILEVEL INTERLEAVED INVERTER	685
<i>Yoshiki Yamamoto ; Tomoyuki Mannen</i>	
ANALYSIS OF HARMONIC CANCELLATION PERFORMANCE OF A SHUNT PHASE-SHIFT TRANSFORMER RECTIFIER	692
<i>Jongwan Kim ; Jih-Sheng Lai ; Xiong Liu</i>	
PERFORMANCE ANALYSIS OF A SINGLE-PHASE GAN-BASED 3L-ANPC INVERTER FOR PHOTOVOLTAIC APPLICATIONS	698
<i>Mauro Valente ; Francesco Iannuzzo ; Yongheng Yang ; Emre Gurpinar</i>	
A BUCK CONVERTER WITH COST-EFFECTIVE GAN/SI HYBRID SWITCHES AND CRM OPERATION FOR HIGH-EFFICIENCY AND HIGH-POWER-DENSITY APPLICATIONS.....	706
<i>Dong Liu ; Yanbo Wang ; Zhe Chen ; Bin Li</i>	
OPTIMIZATION METHOD TO ELIMINATE TURN-ON OVERVOLTAGE ISSUE OF THE HIGH VOLTAGE SIC SUPER-CASCADE POWER SWITCH.....	712
<i>Xintong Lyu ; He Li ; Zhuxuan Ma ; Boxue Hu ; Jin Wang</i>	
AN INTEGRATED SERIES-PARALLEL MICROGRID STRUCTURE AND ITS UNIFIED DISTRIBUTED CONTROL	718
<i>Xiaohai Ge ; Hua Han ; Wenbin Yuan ; Yao Sun ; Mei Su ; Xin Zhang ; Koh Leong Hai</i>	
SMALL-SIGNAL STABILITY ANALYSIS OF THE STANDALONE SINGLE-PHASE PARALLEL INVERTER WITH BPF-BASED DROOP CONTROL SCHEME.....	724
<i>Mengling Yang ; Congling Wang ; Yang Han ; Jingqi Xiong ; Ping Yang</i>	
SMART TRANSFORMER-BASED HYBRID LVAC AND LVDC INTERCONNECTED MICROGRID	732
<i>Dwijasish Das ; Vm Hrishikesan ; Chandan Kumar</i>	
Author Index	