

10th IET International Conference on Power Electronics, Machines and Drives (PEMD 2020)

IET Conference Publications 766

Online
15 - 17 December 2020

Volume 1 of 2

ISBN: 978-1-7138-3218-8

Printed from e-media with permission by:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571



Some format issues inherent in the e-media version may also appear in this print version.

Copyright© (2020) by the Institution of Engineering and Technology
All rights reserved.

Printed with permission by Curran Associates, Inc. (2021)

For permission requests, please contact the Institution of Engineering and Technology
at the address below.

Institution of Engineering and Technology
P. O. Box 96
Stevenage, Hertfordshire
U.K. SG1 2SD

Phone: 01-441-438-767-328-328
Fax: 01-441-438-767-328-375

www.theiet.org

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
Email: curran@proceedings.com
Web: www.proceedings.com

TABLE OF CONTENTS

VOLUME 1

A SIMPLE CURRENT HARMONIC ANALYSIS BASED DEAD TIME COMPENSATION METHOD FOR PERMANENT MAGNET SYNCHRONOUS MACHINE DRIVES	1
<i>Lu Wang, Z.Q. Zhu, Bin Hong, Liming Gong</i>	
ANALYSIS AND EXPERIMENTAL VERIFICATION OF THE HIGH VOLTAGE DC BUS CURRENT AND VOLTAGE RIPPLE IN ELECTRIC VEHICLES	7
<i>Marius Gentejohann, Michael Schluter, Sibylle Dieckerhoff</i>	
SEARCH-BASED PMSM LOW AND ZERO SPEED ESTIMATION WITH SALIENCY SHIFT COMPENSATION.....	13
<i>Kris Scicluna, Cyril Spiteri Staines, Reiko Raute</i>	
RELIABILITY AND COST FIGURES COMPARISON OF MODULAR MULTILEVEL CONVERTER BASED ON PREVENTIVE AND CORRECTIVE MAINTENANCE	19
<i>Prajakta Kapale, Ilknur Colak</i>	
ACTIVE THERMAL CONTROL FOR LIFETIME EXTENSION OF TRACTION CONVERTER	24
<i>Fernando Gonzalez-Hernando , Jon San-Sebastian, Manuel Arias, Alejandro Rujas, Luis Mir</i>	
INFLUENCE OF INTERLEAVED CONVERTERS ON IRON LOSSES IN DUAL THREE-PHASE PERMANENT MAGNET MACHINES	30
<i>Narciso G. Marmolejo, Martin Doppelbauer</i>	
ANALYSIS OF HARMONIC AMPLIFICATION IN AC TRACTION SYSTEMS USING LCL FILTER WITH ACTIVE DAMPING	36
<i>Li Zhang, Yi Shi, Xuejiao Pan, Kang Li</i>	
MEASUREMENT OF SUBSTATION LOAD CURRENT USING AN ANDROID PHONE.....	42
<i>Neil Strickland, Dani Strickland, Brian Goss, Andrew Cross, David Thompson, Murray Thomson, Robert Ferris, Matthew Watson</i>	
SCOPE FOR DOMESTIC APPLIANCE DYNAMIC DEMAND SIDE MANAGEMENT.....	49
<i>Tinashe Chinyemba, Farhad Anvari-Azar, Dani Strickland</i>	
FAULT DIAGNOSIS METHOD OF DC-LINK VOLTAGE SENSORS IN INVERTER-FED MOTOR DRIVE SYSTEM FOR STEEL ROLLING MILL	55
<i>Hideaki Tanaka, Tomomichi Ito, Yoshitoshi Akita</i>	
GATE THRESHOLD VOLTAGE MEASUREMENT METHOD FOR SIC MOSFET WITH CURRENTSOURCE GATE DRIVER	61
<i>Xiang Wang, Haimeng Wu, Volker Pickert</i>	
SOLAR PHOTOVOLTAIC-BASED DC MICROGRID TESTING UNDER REAL-WORLD OPERATING CONDITIONS	66
<i>Pedro Torres, Thiago Costa, Leonam Araújo, José de A. Vieira Filho, Samuel Williamson, Wilson Macêdo</i>	
A NOVEL DIRECT TORQUE CONTROL SCHEME FOR HIGH-SPEED CONTROL OF SWITCHED RELUCTANCE MOTOR USING 4-LEVEL TORQUE CONTROLLER	72
<i>Vaibhav Shah, Mahetab Alam, Saifullah Payami</i>	

COMPARATIVE STUDY OF ROTOR INITIAL POSITION ESTIMATION TECHNIQUES.....	78
<i>Ximeng Wu, Z.Q. Zhu</i>	
RIPPLE IMPROVEMENT AND STEADY STATE ANALYSIS OF A BOOST CONVERTER WITH HIGHER STEP-UP RATIO.....	84
<i>Mriganka Biswas, Somanath Majhi, Harshal Nemade</i>	
ADAPTIVE DEAD TIME IN HIGH FREQUENCY GAN-INVERTERS WITH LC OUTPUT FILTER.....	90
<i>Benedikt Kohlhepp, Daniel Kübrich, Marvin Tannhäuser, Thomas Dürbaum</i>	
A COST-EFFECTIVE BUS-CURRENT DETECTION TECHNIQUE FOR CURRENT CONTROL AND FAULT DIAGNOSIS OF POWER DIODES IN SRM DRIVES.....	96
<i>Nasir Ali, Qiang Gao, Ke Ma</i>	
SMART SOP ARCHITECTURES AND POWER CONTROL MANagements BETWEEN LIGHT DC RAILWAY AND LV DISTRIBUTION NETWORK.....	102
<i>Tamer Kamel, Zhongbei Tian, Pietro Tricoli</i>	
LOW AND ZERO SPEED SENSORLESS CONTROL OF DUAL THREE-PHASE PERMANENT MAGNET SYNCHRONOUS MACHINES USING THE FUNDAMENTAL PWM EXCITATION.....	108
<i>Hao Chen, Qiang Gao, Haoyue Zhu</i>	
ELECTRICAL ROTATING EQUIPMENT HEALTH MONITORING BASED ON PARTIAL DISCHARGES SPECTRUM ANALYSIS: AN INVESTIGATION USING A WIDE VARIETY OF SENSORS.....	114
<i>Benjamin Cella, Bardia Mocharee, Karim Abdelnour</i>	
COMPARATIVE STUDY ON MULTIPLE THREE-PHASE PERMANENT MAGNET MOTORS IN FAULT TOLERANT ELECTRIC POWER STEERING APPLICATION.....	119
<i>Han Yang, Sul Ademi, Richard A. McMahon</i>	
A SIMPLE VOLTAGE PULSE SELECTION STRATEGY FOR ROTOR INITIAL POSITION ESTIMATION.....	125
<i>Ximeng Wu, Z.Q. Zhu</i>	
ANALYSIS AND SUPPRESSION OF ON-LOAD EXCITATION WINDING VOLTAGE PULSATING IN PARTITIONED-STATOR HYBRID-EXCITED SWITCHED-FLUX MACHINE.....	131
<i>Xiao-Yong Sun, Zi-Qiang Zhu</i>	
A PEER TO PEER ENERGY MANAGEMENT SYSTEM FOR COMMUNITY MICROGRIDS IN THE PRESENCE OF RENEWABLE ENERGY AND STORAGE SYSTEMS.....	137
<i>Mahmoud H Elkazaz, Mark Sumner, Seksak Pholboon, David Thomas</i>	
A DRIVES AND MACHINES TEACHING LABORATORY USING INDUSTRIAL DRIVES.....	143
<i>Andrew Cross, Paul Titmus</i>	
USE OF SERIES CONNECTED SIC DEVICES IN A 2 X 330KW, 1500VDC POWER CONVERTER DESIGN.....	149
<i>Peter J R Allan, Paulo J Torri</i>	
ARCHITECTURE FOR PARALLEL PV STRINGS USING THE SWITCHED-CAPACITOR- BASED DIFFERENTIAL POWER PROCESSING TECHNIQUE.....	155
<i>Kamran A K Niazi, Yongheng Yang, Dezso Sera</i>	

ACTIVE TILT COMPENSATION METHODS FOR BEARINGLESS DISC MOTORS	160
<i>Bianca Klammer, Hubert Mitterhofer, Wolfgang Gruber</i>	
SENSORLESS CONTROL FOR PERMANENT MAGNET SYNCHRONOUS MACHINE DRIVES CONSIDERING RESISTANCE ASYMMETRY	166
<i>Tianyi Liu, Ziqiang Zhu, Zhanyuan Wu, David Stone, Martin Foster, Milijana Odavic, Antonio Griffio, Guangjin Li</i>	
MULTIVARIABLE GENERALIZED PREDICTIVE SPEED CONTROL FOR PERMANENT MAGNET SYNCHRONOUS MACHINE WITH ENHANCED LUENBERGER SPEED OBSERVER	172
<i>Tao Wang, Nuno M A Freire, Ziqiang Zhu, Martin Foster, David Stone, Antonio Griffio, Milijana Odavic, Guangjin Li</i>	
AUTO-APPRAISAL OF VOLTAGE RATING FOR SWITCHED-CAPACITOR DC-DC CONVERTERS	178
<i>Hassan Taghizadeh, Andrew Cross, Nakul Narayanan-Kuruveetil</i>	
FFT PWM RIPPLE CURRENT BASED TURN-FAULT DETECTION APPLIED TO A 9-PHASE PMASRM MACHINE	184
<i>David A Hewitt, Rongguang Hu, Jiabin Wang and Adegoke Gbadeyan</i>	
INTER-TURN FAULT DETECTION APPLIED TO AN AEROSPACE PERMANENT MAGNET ALTERNATOR	190
<i>Rongguang Hu, David A Hewitt, Jiabin Wang and Zhigang Sun</i>	
EARLY DETECTION OF TURN-TO-TURN WINDING FAULTS USING A PWM RIPPLE CURRENT BASED METHOD	196
<i>David A Hewitt, Rongguang Hu, Jiabin Wang</i>	
SERIES-PARALLEL DIFFERENTIAL POWER PROCESSING SCHEME FOR MAXIMISED POWER EXTRACTION FROM MISMATCHED PHOTOVOLTAIC PANELS	202
<i>Mohamed Etarhouni, Benjamin Chong, Li Zhang</i>	
RESEARCH ON TECHNOLOGY OF 126KV MOTOR DRIVE VACUUM CIRCUIT BREAKER	208
<i>Yuan Deng, Naiyuan Fan, Haonan Yang, Yulong Huang</i>	
A GENERALIZED APPROACH TO GENERATE THE COMPONENT MODELS FOR MULTI- OBJECTIVE OPTIMIZATION IN POWER ELECTRONIC APPLICATIONS	214
<i>Marcel Gladen, Leon Brakemeier, Volker Staudt</i>	
MULTI-LAYER MODULAR WINDINGS FOR SINGLE-SIDED LINEAR MACHINES.....	220
<i>Stephen P Colyer, John F Eastham, Muhsien M Yazid, Richard Haig</i>	
A COMPENSATED IMPEDANCE BASED GROUND FAULT LOCATOR FOR AN UNEARTHED POWER SYSTEM.....	225
<i>Hayder K. Jahanger, Abdurrahman Raqib, David W.P. Thomas, Mark Sumner</i>	
THERMAL DC TEST AND ANALYSIS OF A STATOR MADE WITH RESIN TRICKLE IMPREGNATION.....	231
<i>Yufeng Guo, Juliette Soulard, David Greenwood</i>	
MANUFACTURE AND TESTING OF AN IN-WHEEL HALBACH ARRAY MOTOR FOR AUTOMOTIVE TRACTION	237
<i>Iago Martinez-Ocaña, Nick J. Baker, Barrie C. Mecrow, Chengwei Gan, Simon Brockway, Chris Hilton</i>	

ADVANCED DISTURBANCE OBSERVER-BASED ACTIVE FLUX ESTIMATION FOR SENSORLESS CONTROL OF IPMSM.....	243
<i>Abebe T Woldegiorgis, Xinglai Ge, Mannan Hassan</i>	
DESIGN SOLUTIONS OF TRACTION SUPPLY DYNAMIC AC/DC CHANGEOVER.....	249
<i>Rafat Kadhim, Hussain Al-Ezee, Rasheed Hameed</i>	
IMPACT OF MAGNETIC COUPLING IN TRANSVERSE FLUX PERMANENT MAGNET MACHINE FOR WIND POWER APPLICATION.....	255
<i>R. Kumar, L. R. Huang, D. K. K. Padinharu, Z. Q. Zhu, A. Duke, R. Clark, A. Thomas, G. J. Li, M. Odavic, A. Griffio, M. Foster, D. Stone</i>	
REAL-TIME SIMULATION PLATFORM OF AN EMA LANDING GEAR BASED ON MULTIPHASE BLDC.....	261
<i>Andres Sierra-Gonzalez , Edorta Ibarra, Iñigo Kortabarria, Elena Trancho, Erlantz Otaola</i>	
PULSE DENSITY MODULATION CONTROL TO ACHIEVE CONSTANT OUTPUT VOLTAGE FOR MULTI-LOAD MAGNETICALLY COUPLED RESONANT WIRELESS POWER TRANSFER SYSTEM.....	267
<i>Weiwei Ye, Xuling Chen, Fuxin Liu</i>	
HIGH-GAIN ADAPTIVE CONTROLLER FOR SPEED REGULATION OF INDUCTION MOTOR DRIVE SYSTEM.....	275
<i>Sarah AlBarri, Habibur Rehman, Shayok Mukhopadhyay</i>	
SPEEDING UP CONVERTER DESIGN BY ANALYTICAL MODELING AND GENETIC OPTIMIZATION – A MORE ELECTRIC AIRCRAFT EXAMPLE.....	279
<i>Niklas Fritz, Xuanlin Pan, Rik W. De Doncker</i>	
DEVELOPMENT OF MECHANICAL MODEL FOR VIBRATORY SIMULATION OF WATER COOLED INTERIOR PERMANENT MAGNET SYNCHRONOUS MACHINE.....	285
<i>Iain M Urquhart, Zi.Qiang Zhu</i>	
INVESTIGATION OF INDUCTION MACHINE PARAMETER ESTIMATION USING LEAST SQUARES OPTIMIZATION.....	291
<i>Toni Varga, Tin Benšić, Vedrana Jerkovic Stil, Marinko Barukcic</i>	
OPTIMUM TIME COORDINATION OF DIRECTIONAL OVERCURRENT RELAYS USING CVX, GAMS AND GENETIC ALGORITHM.....	297
<i>Radhwan Dawood, Maher Al-Greer, Ahmed Gailani, Gobind Pillai</i>	
ANALYSIS AND MITIGATION OF DEMAGNETIZATION ISSUE IN STATOR SLOT PM MACHINES.....	303
<i>Huan Qu, Zi-Qiang Zhu, Shun Cai, Liren Huang</i>	
COMPARISON OF STATOR SLOT PERMANENT MAGNET HYBRID EXCITED MACHINE WITH ROTOR INTERIOR PERMANENT MAGNET MACHINE FOR EV/HEV APPLICATION.....	309
<i>Shun Cai, Z. Q. Zhu, Liren Huang, Huan Qu</i>	
PERMANENT MAGNET SYNCHRONOUS MACHINE TEMPERATURE ESTIMATION USING LOW-ORDER LUMPED-PARAMETER THERMAL NETWORK WITH EXTENDED IRON LOSS MODEL.....	315
<i>Emebet G Gedlu, Oliver Wallscheid, Joachim Böcker</i>	
AC COPPER LOSSES IN EDGE-WOUND COILS IN A YASA MOTOR.....	321
<i>Richard Phillips, Tim Woolmer</i>	

TORQUE SEPARATION FOR DUAL THREE-PHASE PM MACHINES USING FROZEN PERMEABILITY METHOD.....	327
<i>Shensheng Wang, Zi-Qiang Zhu, Adam Pride, Rajesh Deodhar, Chiaki Umemura</i>	
HIGH SHEAR-STRESS DENSITY TRANSVERSE-FLUX MACHINE FOR LARGE DIRECT-DRIVEN WIND TURBINES, AND ELECTRIC SHIP PROPULSION SYSTEMS	333
<i>Oleksandr Dobzhanskyi, Rupert Gouws, Nima Zabihi</i>	
EFFECT OF A NEW NON-ORIENTED ELECTRICAL STEEL SHEET WITH HIGH MAGNETIC FLUX DENSITY AND LOW IRON LOSS ON INDUCTION MOTOR PERFORMANCE	339
<i>Masahito Kamikawabata, Takeru Ichie, Fuminobu Murakami, Shinichi Matsui, Yasuo Ohsugi</i>	
OPTIMIZATION METHOD OF TOPOLOGY FOR HYBRID MODULAR MULTILEVEL CONVERTER IN OFFSHORE WIND TURBINES	344
<i>Xiangjie Xie, Hui Li, Alasdair McDonald</i>	
HYBRID METHOD FOR TOPOLOGY OPTIMIZATION BASED ON A META-HEURISTIC METHOD AND PIXEL CONNECTIVITY	351
<i>Shabnam Ruzbehi, Ingo Hahn</i>	
RELIABILITY ASSESSMENT OF LCC BASED HVDC SYSTEMS USING PUBLIC FAILURE DATA.....	356
<i>Damian S. Vilchis-Rodriguez, Victor Levi, Robin Gupta, Mike Barnes</i>	
FEASIBILITY ANALYSIS OF THE PROBABILISTIC MODELLING OF LCC BASED HVDC EQUIPMENT AGEING USING PUBLIC DATA	362
<i>Damian S. Vilchis-Rodriguez, Victor Levi, Robin Gupta, Mike Barnes</i>	
EXTENDED LAYER APPROACH FOR THERMAL MODELING OF A TOOTH-COIL WINDING IN ELECTRICAL MACHINES.....	368
<i>Felix Hoffmann, Martin Doppelbauer</i>	
FAULT TOLERANT CONTROL OF 3PH PMSM WITH INTER-TURN FAULTS.....	374
<i>Simon Foitzik, Martin Doppelbauer</i>	
A ROBUST CURRENT CONTROLLER DESIGN METHOD FOR HIGHLY NONLINEAR SYNCHRONOUS RELUCTANCE MOTORS	380
<i>Ivan Z Petric, Alessandro Galassini, Shuo Wang, Dmytro Prystupa, Michele Degano, Giampaolo Buticchi, Chris Gerada</i>	
A NEW FOUR-QUADRANT INVERTER BASED ON DUAL-WINDING ISOLATED CUK CONVERTERS FOR RAILWAY AND RENEWABLE ENERGY APPLICATIONS	386
<i>Saud Alotaibi, Ahmed Darwish, Xiandong Ma, Barry W. Williams</i>	
A FAULT TOLERANT CONTROL STRATEGY FOR DUAL THREE-PHASE PMSM UNDER SINGLE-PHASE OPEN CIRCUIT FAULT CONSIDERING INDUCTANCE ASYMMETRY	392
<i>Zhuohang Li, Lijian Wu, Jaming Liu</i>	
TWO DIFFERENT CARRIER PHASE SHIFTED SPACE VECTOR PWM TECHNIQUES FOR POLE PHASE MODULATION BASED 9-PHASE INDUCTION MOTOR DRIVE	398
<i>Atif Iqbal, B. Prathap Reddy, Mohammad Meraj, Pandav Kiran Maroti, M.A Hitimi</i>	
MECHANICAL MODELLING OF STATOR AND ROTOR ASSEMBLIES OF AN EXTERNAL-ROTOR INTEGER-SLOT SPM MACHINE	404
<i>Jaime Maravi-Nieto, Kartik Chandrasekhar, Zi-Qiang Zhu, Arwyn Thomas, Edom Lemma Demissie, Ziad Azar, Richard Clark</i>	

OPEN-CIRCUIT FAULT TOLERANCE OF MULTIPHASE GENERATOR RECTIFIER SYSTEMS.....	410
<i>Xiaotao Zhang , Judith Apsley</i>	
TORQUE RIPPLE SUPPRESSION CONTROL FOR DUAL THREE-PHASE PERMANENT-MAGNET SYNCHRONOUS MOTOR.....	417
<i>Zekai Chen, Lijian Wu, Jaming Liu</i>	
OPTIMISATION OF THE GATE VOLTAGE IN SIC MOSFETS: EFFICIENCY VS RELIABILITY	423
<i>Jose Ortiz Gonzalez, Ruizhu Wu, Haimeng Wu, Xiang Wang, Volker Pickert, Philip Mawby, Olayiwola Alatise</i>	
HYBRID COOLING DESIGN OF PERMANENT MAGNET SYNCHRONOUS MACHINES	429
<i>Qing Li, Xiang Shen, Barrie Mecrow, Xu Deng</i>	
DESIGN AND TESTING OF A 250 KW FERRITE-BASED AXIAL FLUX PERMANENT MAGNET FOR APPLICATION IN WIND POWER GENERATION.....	435
<i>Sul Ademi, Alex N. Ridge, Richard A. McMahon, Hugh-Peter Kelly, Peter Clifton</i>	
ANALYSING THE CONVERTER REQUIREMENTS FOR A DUAL-FED INDUCTION MACHINE BASED FLYWHEEL ENERGY STORAGE SYSTEM.....	441
<i>Christian Klumpner</i>	
A COMPARATIVE STUDY OF ADDITIVELY MANUFACTURED LOW-POWER-LOSS WINDINGS FOR PM MACHINES.....	447
<i>Rafal Wrobel, Nicola Chiodetto</i>	
A COMPARATIVE STUDY OF ADDITIVELY MANUFACTURED LOW-POWER-LOSS WINDINGS FOR PM MACHINES.....	453
<i>Rafal Wrobel, Nicola Chiodetto</i>	
UNBALANCED MAGNETIC PULL IN A MAGNETIC SCREW	459
<i>Zhengmeng Liu, Jiabin Wang</i>	
IMPACT OF DC-DC CONVERTER DISTRIBUTION AND REDUNDANCY ON RELIABILITY OF BATTERY-INTEGRATED-CONVERTER SYSTEMS	465
<i>Razieh Khanaki, Geoffrey R. Walker, Mark A. H. Broadmeadow, Gerard F. Ledwich</i>	
EXPERIMENTAL VERIFICATION OF MAIN FLUX SATURATION SALIENCY FOR INDUCTION MACHINES AT ZERO STATOR FREQUENCY	471
<i>Ryosuke Kubota, Kazuhiro Ohyama</i>	
OPEN-CIRCUIT FAULT DIAGNOSIS OF DUAL ACTIVE BRIDGE CONVERTER WITH CURRENT AND VOLTAGE ANALYSIS	477
<i>Dong Xie, Xinglai Ge</i>	
IMPACT OF MODULE VOLTAGE ON EFFICIENCY OF BATTERY-INTEGRATED-CONVERTER SYSTEMS	483
<i>Razieh Khanaki, Geoffrey R. Walker, Mark A. H. Broadmeadow, Gerard F. Ledwich</i>	
ONLINE FAULT DIAGNOSIS OF STATIC AND DYNAMIC ECCENTRICITY IN SWITCHED RELUCTANCE MOTORS USING PARK'S VECTOR ALGORITHM	489
<i>Mahetab Alam, Vaibhav Shah, Saifullah Payami</i>	

COMPARISON OF ACTIVE TRANSFORMER RECTIFIER UNIT TOPOLOGIES FOR MORE ELECTRIC AIRCRAFT	494
<i>Unai Atutxa, Asier García, Alejandro Rujas, Daniel Izquierdo, Josefina Meneses</i>	
EXPERIMENTAL INVESTIGATION OF THE THERMAL PARAMETERS FOR MODELLING NON-INFILTRATED CONCENTRATED WINDINGS.....	500
<i>Robert Camilleri</i>	
HOMOGENIZATION AND EDDY CURRENT LOSS APPROXIMATION OF SOFT MAGNETIC COMPOSITE MATERIAL FOR ELECTRICAL MACHINES	506
<i>Shruti Singh, Joonas Vesa , Johan Gyselinck, Paavo Rasilo, Yves Mollet</i>	
A PSCAD PROCESSOR-IN-THE-LOOP SYSTEM FOR HARDWARE EVALUATION OF POWER CONVERTER CONTROL ALGORITHMS	512
<i>Jack Andrews, Peter R Green, Mike Barnes</i>	
A HIGH SPEED FAULT TOLERANT TRANSVERSE FLUX ALTERNATOR FOR AEROSPACE.....	518
<i>Mehmet C. Kulan, Nick J. Baker, Simon Turvey</i>	
IMPACT OF INTER-TURN FAULT ONTO THE TRANSIENT THERMAL MACHINE BEHAVIOUR AND FAULT DEVELOPMENT	524
<i>Benedict Jux, Martin Doppelbauer</i>	
INVESTIGATION OF PM DEMAGNETIZATION CHARACTERISTICS FOR AXIAL SPLIT PHASE PM MACHINE WITH SHORT-CIRCUIT FAULT.....	530
<i>Feng Chai, Lina Geng, Yulong Pei, Lixiao Gao</i>	

VOLUME 2

ENHANCED FLUX WEAKENING CONTROL OF PMM-BASED STARTER-GENERATOR SYSTEM IN MORE ELECTRIC AIRCRAFT	536
<i>Mohamed A. A. Mohamed, Mohamed Rashed, Serhiy Bozhko</i>	
IMPACT OF TEMPERATURE AND SWITCHING RATE ON FORWARD AND REVERSE CONDUCTION OF GAN AND SIC CASCODE DEVICES: A TECHNOLOGY EVALUATION	542
<i>Yasin Gunaydin, Saeed Jahdi, Olayiwola Alatise, Jose O Gonzalez, Mohammad Hedayati, Bernard Stark, Juefei Yang, Xibo Yuan, Phil Mellor</i>	
A METHODICAL APPROACH TO DETERMINE IMPORTANT THERMAL PARAMETERS OF A PERMANENT MAGNET ALTERNATOR	548
<i>Mehmet C. Kulan, Nick J. Baker, Simon Turvey</i>	
ONLINE MONITORING OF GROUND-WALL INSULATION IMPEDANCE UNDER CYCLIC LOAD OPERATION	554
<i>Shubham Sundeep, Igor Tsyokhla, Jiabin Wang, Antonio Griffo</i>	
RELIABILITY STUDY OF COMMUNICATIONS TOPOLOGIES TO SUPPORT HIGH SUBMODULE COUNT CONVERTERS	560
<i>Kenneth D. Sands, Mark A.H. Broadmeadow, Geoffrey R. Walker</i>	
ROTOR CONDITION MONITORING USING FIBRE OPTIC SENSING TECHNOLOGY	566
<i>A. Mohammed, S. Djurovic</i>	

QUASI Z-SOURCE HYBRID MODULAR MULTILEVEL CONVERTER CONTROLLED BY REDUCED INSERTED CELLS MODULATION TECHNIQUE FOR MEDIUM VOLTAGE APPLICATIONS.....	572
<i>Fatma A. Khera , Christian Klumpner, Pat W Wheeler</i>	
CUK-SEPIC DC-DC CONVERTER INTEGRATED THREE-PHASE GRID-CONNECTED TRANSFORMERLESS INVERTER FOR PHOTOVOLTAIC APPLICATIONS	578
<i>Jianguo Wang, Danilo X Llano, Ku E Ku Ahamad, Richard A McMahon</i>	
A HARDWARE IMPLEMENTATION OF 6DOF QUADCOPTER MATLAB/SIMULINK CONTROLLER ALGORITHM TO AN AUTOPILOT	584
<i>Abdelkader Fareha, Amar Bousbaine, Ajay K Josaph</i>	
SENSORLESS CONTROL FOR A SYNCHRONOUS RELUCTANCE MOTOR BASED ON CURRENT OVERSAMPLING USING STANDARD PWM EXCITATION	590
<i>M. Giuliano, L. Peretti, F. Tinazzi, M. Zigliotto</i>	
DQ0-MODELLING AND PARAMETRIZATION APPROACHES FOR SMALL DELTA CONNECTED PERMANENT MAGNET SYNCHRONOUS MACHINES	596
<i>Simon Decker, Christoph Rollbühler, Felix Rehm, Matthias Brodatzki, Alexander Oerder, Andreas Liske, Johannes Kolb, Michael Braun</i>	
ANALYSIS OF DCM INTERLEAVED BOOST CONVERTER FOR PV AC-MODULE APPLICATION.....	603
<i>Fatima A Fayrouz, Mohammed A Elgendy, Mohamed Dahidah, Musbahu Muhammad</i>	
DEVELOPMENT AND TESTING OF A SMALL SCALE WAVE ENERGY CONVERTER AND FULLY CONTROLLED LINEAR ELECTRIC GENERATOR	609
<i>N.J. Baker, L. McNabb, S McDonald, A. Almoraya</i>	
COMPARATIVE ANALYSIS OF BIDIRECTIONAL DC-DC CONVERTERS FOR FUEL CELL HYBRID VEHICLES	615
<i>Noass Hasimi, Hartmut Hinz, Nigel Schofield</i>	
PROVISION OF SYNTHETIC INERTIA VIA ENERGY STORAGE VSC FOR A SHIP AC/DC MICROGRID	622
<i>F. Hardan, R. Norman</i>	
STATISTICAL ESTIMATION FRAMEWORK FOR STATE AWARENESS IN MICROGRIDS BASED ON IOT DATA STREAMS	629
<i>Seyed A. Alavi, Ardavan Rahimian, Kamyar Mehran</i>	
A NOVEL HIGH GAIN BOOST CONVERTER WITH SWITCHED REACTIVE NETWORK FOR ELECTRIC VEHICLE APPLICATION: A NEW MEMBER OF MODIFIED BOOST CONVERTER FAMILY	635
<i>Mohammad. A. Al-Hitmi, Atif Iqbal, Pandav K. Maroti, Prathap Reddy, Syed Rahman, Mohammad Meraj</i>	
ONLINE MAGNETIC FIELD MONITORING IN LITHIUM-ION BATTERIES FOR ELECTRIC VEHICLES.....	641
<i>Mehrnaz Javadipour, Kamyar Mehran</i>	
MODELLING AND DYNAMIC ANALYSIS OF A SWITCHED RELUCTANCE DRIVE	647
<i>Giulia Urgera, Xu Deng, Barrie C. Mecrow, Melanie Michon, James E. Goss</i>	

MODELING AND FUZZY CONTROL OF PERMANENT MAGNET SYNCHRONOUS MOTORS	653
<i>Domagoj-Krešimir Jukic, Toni Varga, Tin Benšic, Vedrana Jerkovic Stil, Marinko Barukcic</i>	
AN EXPERIMENTAL COMPARISON OF THERMAL MODELLING TECHNIQUES FOR IGBT MODULES IN ELECTRICAL DRIVETRAINS.....	659
<i>Leonie Hallemans, Jeroen Zwysen, Simon Ravyts, Giel Van den Broeck, Stephan Schlimpert, Guillaume Beckers, Johan Driesen</i>	
OUTPUT VOLTAGE REGULATION FOR PIEZOELECTRIC TRANSFORMERBASED RESONANT POWER SUPPLIES USING PHASE-LOCKED LOOP	665
<i>Zijiang Yang, Jonathan N. Davidson, Martin P. Foster</i>	
MODEL-BASED SENSORLESS TORQUE CONTROL OF SRM DRIVE USING SINGLE CURRENT SENSOR.....	671
<i>N. K. Dankadai, M. A. Elgandy, S. P. McDonald, D. J. Atkinson, H. M. Hasanien</i>	
PERFORMANCE ANALYSES OF A PROPOSED MINIMUM PHASE BIPOLAR CONVERTER FOR SOLAR PHOTOVOLTAIC APPLICATIONS	677
<i>Pawan Kumar, R. K. Singh, R. Mahanty</i>	
COMPARATIVE ANALYSIS OF PI AND HYSTERESIS CONTROLLERS FOR FAULT RIDE THROUGH OF VSC TRANSMISSION SYSTEM.....	683
<i>Olusegun Olowookere, Yehdego Habtay, Steve Woodhead, Spyros Skarvelis-Kazakos</i>	
A CAPACITANCE CONTROL METHOD FOR TWO-TERMINAL ACTIVE CAPACITOR.....	689
<i>Guorong Zhu, Shuangcheng Yang, Ming Yang, Xueming He, Haoran Wang, Huai Wang</i>	
CONDITION MONITORING OF PRESS-PACK IGBT DEVICES USING DEFORMATION DETECTION APPROACH	694
<i>Bowen Gu, Haimeng Wu, Volker Pickert, Siyang Dai, Zhiqiang Wang, Guofeng Li, Shuai Ding, Bing Ji</i>	
NEW ADAPTIVE CONTROL STRATEGIES FOR OPEN-END WINDING PERMANENT MAGNET SYNCHRONOUS GENERATOR(OEW-PMSG) FOR WIND POWER GENERATION	700
<i>Ning Xing, Shubo Hu, Zhengyu Lin, Zheng Tan, Wenping Cao, Shady Gadoue</i>	
A CASE STUDY OF POWER ELECTRONICS IN WIND ENERGY CONVERSION	706
<i>Ruizhu Wu, Jose A Ortiz-Gonzalez, Olayiwola Alatise</i>	
SUSPENSION FORCE PERFORMANCE OF BEARINGLESS BLDC MOTOR IN GENERATOR MODE FOR FLYWHEEL BATTERIES.....	712
<i>Yichen Liu, Huangqiu Zhu, Bo Xu</i>	
DIRECT SPEED MODEL PREDICTIVE CONTROL WITH TWO-TIME SCALE FOR PMSM DRIVES	717
<i>Feng Chai, Lixiao Gao, Yanjun Yu, Lina Geng</i>	
REDUCED VOLTAGE STRESS EXTENDABLE SEVENTEEN-LEVEL MULTILEVEL INVERTER USING SINGLE VOLTAGE SOURCE.....	722
<i>Abhinandan Routray, Akash Singh, Kharan Shiluveru, Pawan Kumar, Rajeev Kumar Singh, Ranjit Mahanty</i>	
LIFETIME ESTIMATION OF IGBT POWER MODULES FOR RELIABILITY STUDY OF WIND TURBINE SYSTEMS	726
<i>Arsim Ahmedi, Mike Barnes, Victor Levi, Jesus Carmona-Sanchez, Ander Madariaga, Chong Ng, Chunjiang Jia</i>	

EFFICIENCY AND OPERATIONAL ENVELOPE OF A HYBRID PM MACHINE SYSTEM FOR HEVS	732
<i>Ahmad S. Al-Adsani, Omid Beik</i>	
DESIGN AND PERFORMANCE EVALUATION OF AN OPTIMAL CASCADE CONTROLLER BASED ON REAL-TIME CLOSED-LOOP PID AUTOTUNER FOR BUCK-BOOST CONVERTERS IN EVS	738
<i>Najmeh Rezaei, Kamyar Mehran</i>	
CHARACTERISATION OF UNCLAMPED INDUCTIVE SWITCHING IN SIC CASCODE JFETS	744
<i>Nereus S. Agbo, Jose Ortiz-Gonzalez, Robert Wu, Olayiwola Alatise</i>	
DESIGN OF BEARINGLESS PERMANENT MAGNET MOTORS USING NO VOLTAGE COMBINED WINDINGS.....	750
<i>Jiahao Chen, Ashad Farhan, Martin Johnson, Eric L Severson</i>	
A LARGE-SCALE BATTERY ENERGY STORAGE SYSTEM SIMULATION TOOL FOR STUDYING CELL VARIATION.....	756
<i>Zeyuan Wang, Jonathan N. Davidson, Martin P. Foster</i>	
ADAPTIVE CONTROLLER FOR POWER SHARING IN MODULAR BATTERY ENERGY STORAGE SYSTEMS.....	761
<i>Bortecene Yildirim, Mohammed A. Elgandy, Andrew Smith, Volker Pickert</i>	
CASCADED MODULAR MULTILEVEL CONVERTER FOR DRIVE APPLICATIONS WITH ZERO COMMON-MODE VOLTAGE	767
<i>Felipe Donoso, Claudio Burgos, Alan Watson, Jon Clare, Mark Sumner, Roberto Cardenas</i>	
A NOVEL SENSORLESS CONTROL STRATEGY BASED ON SLIDING MODE OBSERVER FOR NON-SINUSOIDAL SEVEN-PHASE PMSM	773
<i>Youssef Mini, Ngac Ky Nguyen, Eric Semail</i>	
MULTI-PHYSICS OPTIMISATION OF A HIGH SPEED COPPER ROTOR INDUCTION MOTOR FOR A TRACTION APPLICATION USING A METAMODEL BASED APPROACH	779
<i>Nicolas Rivière, Mircea Popescu</i>	
COMPARISON OF ARTIFICIAL NEURAL NETWORK AND LEAST SQUARES PREDICTION MODELS FOR FINITE-CONTROL-SET MODEL PREDICTIVE CONTROL OF A PERMANENT MAGNET SYNCHRONOUS MOTOR.....	785
<i>Sören Hanke, Oliver Wallscheid, Joachim Böcker</i>	
MECHANICAL VIBRATION SUPPRESSION ON MULTI-SECTOR PMSM WITH OPTIMAL ACTIVE VIBRATION CONTROL.....	791
<i>Zhuang Wen, Giorgio Valente, Andrea Formentini, Luca Papini, Pericle Zanchetta, Christopher Gerada</i>	
EXPERIMENTAL CHARACTERISATION OF RADIAL OIL SPRAY COOLING ON A STATOR WITH HAIRPIN WINDINGS	797
<i>Yew Chuan Chong, James Goss, Mircea Popescu, Dave Staton, Chuan Liu, David Gerada, Zeyuan Xu, Chris Gerada</i>	
ROBUSTNESS TESTING OF TWO IMPEDANCE ESTIMATION TECHNIQUES IN WEAK GRIDS.....	803
<i>Mathieu Kervyn, Khaled Ahmed, Agusti Egea-Alvarez</i>	

DESIGN METHODOLOGY AND PARAMETRIC DESIGN STUDY OF THE ON-BOARD ELECTRICAL POWER SYSTEM FOR HYBRID ELECTRIC AIRCRAFT PROPULSION	809
<i>Giorgio Valente, Sharmila Sumsurooah, Christopher Ian Hill, Mohamed Rashed, Gaurang Vakil, Serhiy Bozhko, Chris Gerada</i>	
ON SPECIMENS CHOICE FOR THERMAL LIFETIME ASSESSMENT OF LOW VOLTAGE ELECTRICAL MACHINES INSULATION	815
<i>Vincenzo Madonna, Paolo Giangrande, Michael Galea</i>	
PHASE TO GROUND INSULATION IN LOW VOLTAGE MACHINES: LIFETIME EVALUATION UNDER ENHANCED THERMAL STRESS	821
<i>Vincenzo Madonna, Paolo Giangrande, Michael Galea</i>	
INDUCTION VOLTAGE REGULATOR IN DISTRIBUTION NETWORK SYSTEM.....	827
<i>Silvio I Nabeta, Ivan E Chabu, Thomas R Matsumoto, Shigueru Nagao Jr, Nerivaldo R Santos, Alexandre Dominice</i>	
CONTROL OF ENVELOPE TRACKING PWM MULTI-LEVEL BUCK CONVERTERS UP TO 150MHZ	832
<i>Alejandro Villarruel-Parra, Andrew J. Forsyth</i>	
SVM BASED MULTILEVEL Z SOURCE MATRIX CONVERTER WITH REDUCED POWER DEVICES	838
<i>M Raghuram, A. Kumar, P. N. Kumar, M. M. Reza, S.K. Singh, C. Wang, Khaled Al Jaafari</i>	
EVALUATION OF INVERTER TOPOLOGIES FOR HIGH POWER/MEDIUM VOLTAGE AIRCRAFT APPLICATIONS	844
<i>Christian Klumpner, Fatma Khera</i>	
COMPARATIVE STUDY OF SENSORLESS METHODS BASED ON SLIDING MODE OBSERVER FOR DUAL THREE-PHASE PERMANENT MAGNET SYNCHRONOUS MACHINE	850
<i>Linhui Fan, Tao Yang, Yuzheng Chen, Serhiy Bozhko</i>	
MODEL PREDICTIVE CONTROL FOR A DUAL THREE-PHASE TWO-SECTOR PERMANENT MAGNET SYNCHRONOUS MACHINE	855
<i>Yuzheng Chen, Tao Yang, Serhiy Bozhko, Usman Nasir, Jose R. Rodriguez, Cristian F. Garcia</i>	
AN ENERGY CONTROL METHOD FOR MODULAR MULTILEVEL DC-DC CONVERTERS OPERATING WITH TRAPEZOIDAL WAVEFORMS	860
<i>Beeond S M Saleh, Alessandro Costabeber, Alan Watson, Francesco Tardelli, Jon Clare</i>	
COMPARATIVE ANALYSIS BETWEEN AXIAL AND COAXIAL MAGNETIC COUPLINGS	866
<i>Yusuf Akcay, Paolo Giangrande, Chris Gerada, Michael Galea</i>	
CHARACTERISATION OF THE JUNCTION TEMPERATURE OF GALLIUM-NITRIDE POWER DEVICES VIA QUASI-THRESHOLD VOLTAGE AS TEMPERATURE SENSITIVE ELECTRICAL PARAMETER.....	872
<i>Kanuj Sharma, Kevin Muñoz Barón, Johannes Ruthardt, Ingmar Kallfass</i>	
THRUST RIPPLE OPTIMISATION METHOD FOR LINEAR SWITCHED-FLUX MACHINES.....	877
<i>Imanol Eguren, Gaizka Almandoz, Aritz Egea, Patxi Madina, Ana J Escalada</i>	
A VARIABLE SWITCHING FREQUENCY PWM METHOD FOR INDIRECT MATRIX CONVERTERS.....	883
<i>Tingna Shi, Zewen Wang, Chaolei Ma, Yan Yan, Peng Song</i>	

INVESTIGATION OF WORST-CASE SCENARIOS OF COGGING TORQUE DUE TO MANUFACTURING TOLERANCES IN STATOR TEETH PROFILE OF 12-SLOT/10-POLE SURFACE PERMANENT MAGNET MOTORS	889
<i>Karl Buhagiar, Zi-Qiang Zhu, David Moule</i>	
OPEN-END WINDING SYNCHRONOUS RELUCTANCE SENSORLESS DRIVE BASED ON INDIRECT MATRIX CONVERTER WITH DUAL VSI OUTPUT	895
<i>Alexandre Bento, Ricardo Luís, Sónia Pinto, Fernando Silva</i>	
DESIGN PROCEDURE OF 48V IN-WHEEL OUTER ROTOR SPMS FOR FULLY ELECTRIC VEHICLES.....	901
<i>Xi-yun Ma, Xiao-yan Wang, Juliette Soulard</i>	
VECTOR CONTROL OF A SINGLE-PHASE VOLTAGE SOURCE CONVERTER FOR THE SUPPLY OF INERTIA TO WEAK GRIDS	907
<i>Callum Henderson, Neville McNeill, Guanglu Wu, Derrick Holliday, Agustí EgeaÀlvarez</i>	
DESIGN OF MAGNETIC GEARS FOR SPACE APPLICATIONS	913
<i>Jon Santiso-Zelaia, Gaizka Ugalde, Iker Sainz, Javier Poza, Patxi Madina</i>	
A CRITICAL TOPOLOGICAL REVIEW FOR MICROWAVE POWER MODULES.....	919
<i>Joel M. Holland, Volker Pickert, Mohammed A. Elgandy, Gary Henderson</i>	
ASYMMETRICAL STATOR GEOMETRY DESIGN FOR THREE-PHASE MACHINES WITH DISTRIBUTED WINDING	925
<i>Daniele De Gaetano, Giacomo Sala, Michele Degano, David Gerada, Chris Gerada</i>	
COMPARISON OF FREQUENCY TRANSFORM METHODS FOR CONDITION MONITORING OF A DC-LINK CAPACITOR.....	931
<i>Abdurrahman Raqib, Hayder Jahanger, Mark Sumner, Tom Cox, Christian Klumpner, Imran Agha, Richard Kenney, Fernando Aguilar, Peter Lonsdale</i>	
A SIMPLIFIED ANALYTICAL APPROACH FOR THE ANALYSIS OF MULTI-THREE-PHASE SURFACE PERMANENT MAGNET ELECTRICAL MACHINES	937
<i>Alessandro Galassini, Alessandro Marfoli, Andrew Trentin, Savvas Papadopoulos, Giacomo Sala , Giampaolo Buticchi, Michele Degano, Chris Gerada</i>	
GENERALISED GRID-FORMING VSC CONTROL FOR GRID CONNECTION AND ISLAND NETWORK.....	943
<i>Yuan Lu, Lie Xu</i>	
ROTOR SLOT OPTIMIZATION OF SQUIRREL CAGE INDUCTION MOTOR	949
<i>Alessandro Marfoli, Mauro Di Nardo, Michele Degano, Chris Gerada</i>	
MANIFESTATION OF PARTIAL DEMAGNETISATION FAULT INDUCED UNBALANCED MAGNETIC PULL EFFECTS IN THE STATOR CURRENT AND TORQUE OF SURFACE-MOUNTED PM MACHINES	955
<i>Juan I. Melecio, A. Mohammed, N. Schofield, S. Djuroviae</i>	
SIMULINK MODEL FOR A HYDROGEN PEM FUEL CELL FOR AUTOMOTIVE APPLICATIONS.....	961
<i>David Wilson, Amar Bousbaine, Jose Andrade</i>	

INFLUENCE OF COMPENSATION CURRENTS ON ASYMMETRICAL VOLTAGE CONDITION USING STAR CONNECTED MODULAR MULTILEVEL CASCADED CONVERTER.....	967
<i>Oghenewvogaga J.K. Oghorada, Han Huang, Li Zhang, Ayodele B. Esan, Dickson O. Egbune, Babatunde S. Adejumobi</i>	
VIBRATION SUPPRESSION AND HIGH PRECISION POSITION CONTROL FOR A TWO- MASS PERMANENT MAGNET SYNCHRONOUS MOTOR SYSTEM WITH MULTIPLE POSITION SENSOR FEEDBACK.....	973
<i>Qinan Ni, Ming Yang, Yunsong Li, Mi Tang, Xiaosheng Liu, Dianguo Xu</i>	
THE USE OF HYBRID MODULAR MULTILEVEL CASCADED CONVERTER FOR UNBALANCED VOLTAGE CONDITION.....	978
<i>Oghenewvogaga J.K. Oghorada, Han Huang, Li Zhang, Julius O. Uwagboe, Matthew Olawejaju, Isaac Omeiza, Reuben S. Diarah</i>	
STATE OF ENERGY ESTIMATION IN ELECTRIC PROPULSION SYSTEMS WITH LITHIUM-SULFUR BATTERIES	984
<i>Srinivasan Munisamy, Daniel J. Auger, Abbas Fotouhi, Bob Hawkes, Euthymios Kappos</i>	
COMPARATIVE STUDY OF VOLTAGE SOURCE INVERTER NONLINEARITY COMPENSATION USING DIFFERENT SIGNAL INFORMATION FOR TABLE LOOK UP IN PMSM DRIVES	992
<i>Jiang Long, Ming Yang, Yangyang Chen, Qinan Ni, Dianguo Xu</i>	
ITERATIVE LEARNING CONTROL OF TRAJECTORY TRACKING OF ROBOT MANIPULATOR BASED THE SOC PLATFORM INTEGRATED MOTOR DRIVE AND MOTION CONTROL	997
<i>Yongping Sun, Ming Yang, Yangyang Chen, Qinan Ni, Dianguo Xu</i>	
ALTERNATIVE IMPLEMENTATIONS OF SQUARE-ROOT CUBATURE KALMAN FILTER FOR SENSORLESS PMSM DRIVES WITH IMPROVED DYNAMIC PERFORMANCE	1002
<i>G.R. Gopinath, Shyama P Das</i>	
DESIGN OF RARE-EARTH-FREE PM-ASSISTED SYNCHRONOUS RELUCTANCE MACHINE FOR HEAVY-DUTY AUTOMOTIVE APPLICATION.....	1008
<i>M. Al-ani, S. La Rocca, A. La Rocca, A. Walker, R. Ramanathan, T. Zou, G. Vakil, D. Gerada, C. Gerada, K. Paciura, A. McQueen</i>	
DIRECT SPEED MODEL PREDICTIVE CONTROL WITH TWO-TIME SCALE FOR PMSM DRIVES	1015
<i>Feng Chai, Lixiao Gao, Yanjun Yu, Lina Geng</i>	
COMPARATIVE EVALUATION OF SI MOSFET-BASED SOFT-SWITCHED DC-DC CONVERTERS AND GAN HEMT-BASED HARD-SWITCHED DC-DC CONVERTERS.....	1020
<i>Sajad A. Ansari, Jonathan N. Davidson, Martin P. Foster</i>	
SEQUENTIAL PREDICTIVE CURRENT CONTROL OF A VSI WITH COMMON-MODE VOLTAGE REDUCTION	1026
<i>Duberney Murillo-Yarce, Marco Rivera, Carlos Restrepo Raul Rodriguez, Patrick W. Wheeler, Pericle Zanchetta, Galina Mirzaeva</i>	
DESIGN OF A CALORIMETER FOR MODERN POWER ELECTRONICS AND ELECTRICAL MACHINES	1032
<i>Danilo X. Llano, Xiaoyan Wang, Jianguo Wang, Richard McMahan</i>	

NOVEL ITERATIVE DISTURBANCE OBSERVER DESIGN FOR A TWO-LEVEL VOLTAGE SOURCE INVERTER WITH A NONLINEAR LOAD	1038
<i>Asaad M. Makhalfih, Shafiq A. Odhano, Pericle Zanchetta</i>	
A NOVEL VDM CONTROL OF ENERGY STORAGE CONVERTER BASED ON ADAPTIVE PARAMETERS.....	1045
<i>Pengyu Wang, Jianfeng Zhao, Kangli Liu</i>	
INITIAL VALIDATION & PERFORMANCE ANALYSIS OF THE BEARINGLESS DOUBLE U-CORE SWITCHED RELUCTANCE MACHINE TOPOLOGY	1051
<i>Fariba Shakibapour, Peter O Rasmussen, Fariba Shakibapour</i>	
A NOVEL OBSERVER BASED POSITION ANGLE DELAY CORRECTION METHOD FOR DEADBEAT CURRENT CONTROL IN SPMSM DRIVES	1058
<i>Kaiyuan Liu, Ming Yang, Jiang Long, Yangyang Chen, Dianguo Xu</i>	
INVESTIGATION INTO THE SWITCHING TRANSIENT OF SIC MOSFET USING VOLTAGE/CURRENT SOURCE GATE DRIVER	1064
<i>Haimeng Wu, Xiang Wang, Jose Ortiz-Gonzalez, Olayiwola Alatise, Volker Pickert</i>	

Author Index