Monday, 19 April 2010

Mo1.1 Welcome Address and Keynotes
Chair: tbc
Co-Chair: tbc

Welcome Address 09:20 – 09:30

Mo1.1.1 09:30 – 10:05
Keynote Address – **Power Device Technology**
Dr Gourab Majumdar, Senior Chief Engineer, Power Device Works, *Mitsubishi Electric Corporation*

Mo1.1.2 10:05 – 10:40
Keynote Address – **An International Perspective on the Impact of Power Electronics on Renewable Energy**
Professor Frede Blaabjerg, *Aalborg University*, Denmark

Sponsored Refreshment Break 10:40 – 11:10

Mo2.1 Energy Efficient Drives and Integrated Drives
Chair: tbc
Co-Chair: tbc

Mo2.1.1 11:10 – 11:30
Comparison of Losses in IGBT based Voltage and Current Source Converters using a Single Switching Pole Approach
C Avery, S Burrow, P H Mellor*, University of Bristol, UK*

Mo2.1.2 11:30 – 11:50
Saving Energy using Energy Efficient Motors: A Case Study
K Singh Salana, T Singh, N Singh, *Guru Nanak Dev Engineering College, India*

Mo2.1.3 11:50 – 12:10
Optimal Flux Loss Model based of Speed Sensorless Vector Control Induction Motor
E Hussein, P Mutschler, *Technische Universität Darmstadt, Germany*

Mo2.1.4 12:10 – 12:30
A New Compact High Power, Low Voltage Variable Speed Drive for the Renewable and Offshore Markets
J V Perrier, J P Starkey, N J Elliott, *Converteam UK Ltd, UK*

Mo2.2 Switch-Mode Power Supplies
Chair: tbc
Co-Chair: tbc

Mo2.2.1 11:10 – 11:30
Design and Implementation of a High Current Low Voltage DC/DC Converter using Nanocrystalline Core Transformer
Z M Shafik, K H Ahmed, S J Finney, B W Williams, *University of Strathclyde, UK*

Mo2.2.2 11:30 – 11:50
High Step-Up Boost Converter with Coupled Inductor and Switched Capacitor
Y Zhao, W Li, B Yang, X He, *Zhejiang University, China*

Mo2.2.3 11:50 – 12:10
Performance Analysis of a ZVT Interleaved High Step-Up Converters with Built-In Transformer
W Li, W Li, Y Deng, X He, *Zhejiang University, China*

Mo2.2.4 12:10 – 12:30
Design and Implementation of a VRM based on Secondary-Side Controller LM5035A
Y Liao, J Wu, X He, *Zhejiang University, China,* S Tian, *Virginia Polytechnic Institute & State University, USA*

Mo2.2.5 12:30 – 12:50
Adaptive Control of a Switch Mode DC-DC Power Converter using a Recursive FIR Predictor
M Algreer, M Armstrong, D Giaouris, *Newcastle University, UK*

Mo2.3 Converters for Grid Connection
Chair: tbc
Co-Chair: tbc

Mo2.3.1 11:10 – 11:30
A Simple Predictive Control Technique of Power Electronic Transformers with High Dynamic Features
A Del Pizzo, G Brando, A Dannier, *University Federico II of Naples, Italy*

Mo2.3.2 11:30 – 11:50
Sliding Mode Observation of Capacitor Voltage in Multilevel Power Converters
M Almaleki, P W Wheeler, J C Clare, *University of Nottingham, UK*

Mo2.3.3 11:50 – 12:10
A New Synchronous Frame Single-Phase PLL Algorithm with a Decoupling Network
S Min, L Yongdong, T Xinghua, *Tsinghua University, China,* W Jian, *Beijing Jiaotong Univeristy, China*

Mo2.3.4 12:10 – 12:30
Single Stage Grid Converters for Battery Energy Storage
I Trintis, S Munk-Nielsen, R Teodorescu, *Aalborg University, Denmark*

Mo2.3.5 12:30 – 12:50
Robust Repetitive Feedback Control of a Three-Phase Grid Connected Inverter
M Jamil, S M Sharkh, B Hussain, M Abu-Sara, R J Boltryk, *University of Southampton, UK*

Mo2.4 Tide and Wave Power Systems
Chair: tbc
Co-Chair: tbc

Mo2.4.1 11:10 -11:30
Novel Permanent Magnet Linear Generator Topology for Wave Energy Conversion
R Vermaak, M J Kamper, *University of Stellenbosch, South Africa*

Mo2.4.2 11:30 - 11:50
Power Conversion for Wave Energy Applications
J K H Shek, D E Macpherson, M A Mueller, *University of Edinburgh, UK*

Mo2.4.3 11:50 - 12:10

Thermal Model of an Induction Generator in Oscillating Water Column Wave Energy Converter
N .Hodgins, M A Mueller, *University of Edinburgh, UK*

Mo2.4.4 12:10 - 12:30
C-Gen, a Lightweight Direct Drive Generator for Marine Energy Converters
O Keysan, A McDonald, M A Mueller, *University of Edinburgh, UK*

Mo2.4.5 12:30 – 12:50
Design and Commissioning of a 30 KW Direct Drive Wave Generator
P C J Clifton, R A McMahon, *University of Cambridge, UK,* H-P Kelly, *Trident Energy Ltd, UK*

Mo2.5 - Marine
Chair: tbc
Co-Chair: tbc

Mo2.5.1 11:10 – 11:30
Induction RIM Drive for a Marine Propulsor
P Tuohy, A C Smith, *University of Manchester, UK*, S M Husband, *Rolls-Royce Plc, UK*

Mo2.5.2 11:30 – 11:50
Investigation of Superconducting Fault Current Limiter Application in a Power-Dense Marine Electrical Network
S M Blair, N K Singh, I M Elders, C D Booth, G M Burt, *University of Strathclyde, UK,* J McCarthy, *Rolls-Royce, UK*

Mo2.5.3 11:50 – 12:10
Design and Analysis of a Pseudo Direct-Drive Propulsion Motor
D J Powell, S D Calverley, *Magnomatics Ltd, UK,* K Daffey, *Ministry of Defence, UK*

Mo2.5.4 12:10 – 12:30
Integration of a Mean-Torque Diesel Engine Model into a Hardware-in-the-Loop Shipboard Network Simulation
A J Roscoe, G M Burt, I M Elders, *University of Strathclyde, UK,* J E Hill, *Rolls-Royce Plc,* UK

Mo2.5.5 12:30 – 12:50
Modelling of Active Heave Compensation with Induction Motor Drive
V R Jevremovic, D T Blood, *Parker SSD Drives, UK*

Lunch 12:50 – 13:50

Mo3.1 Condition Monitoring of Machines and Drives
Chair: tbc
Co-Chair: tbc

Mo3.1.1 13:50 – 14:10
Condition Monitoring of a Wind Turbine DFIG by Current or Power Analysis
C J Crabtree, P J Tavner, *Durham University, UK,* S Djurovic, A C Smith, *University of Manchester, UK*

Mo3.1.2 14:10 – 14:30
Faulty Operation Analysis of Permanent Magnet Synchronous Generator Drives for Wind Turbine Applications
J O Estima, J L J Fernandes, A J Marques Cardoso, *University of Coimbra, Portugal*

Mo3.1.3 14:30 – 14:50
Sensor and Open-Phase Fault Detection and Isolation for Three-Phase AC Drives
F Meinguet, J Gyselinck, *Université Libre de Bruxelles, Belgium*

Mo3.1.4 14:50 – 15:10

A Park Transform-Based Method for Condition Monitoring of Three-Phase Electromechanical Systems
C Laughman, *Mitsubishi Electric Research Laboratories, USA,* S Leeb, L Norford, *Massachusetts Institute of Technology, USA,* S Shaw, *Montana State University, USA,* P Armstrong, *Masdar Institute of Science and Technology, United Arab Emirates*

Mo3.1.5 15:10 – 15:30
Enhanced Algorithm for Motor Rotor Broken Bar Detection
J Vico, I Voloh, D Stankovic, Z Zhang, *GE Digital Energy, Multilin*, *Canada,* D Swigost, *Basin Electric Power Cooperative, USA*

Mo3.2 Resonant Converters
Chair: tbc
Co-Chair: tbc

Mo3.2.1 13:50 – 14:10
Steady-State Analysis of Full-Bridge Series Resonant Converter with Symmetrical PWM and Frequency Control
A A Aboushady, K H Ahmed, S J Finney, B W Wiiliams, *Strathclyde University, UK*

Mo3.2.2 14:10 – 14:30
Reduced Synchronous-Rectifier Losses in Off-line Resonant Converters using the LCC Topology
A J Skinner, C Bennett, *TDK-Lambda UK Ltd*, *UK*

Mo3.2.3 14:30 – 14:50
Resonance Behaviour of a Pulsed Electronic Control Gear for DBD
M Meisser, M Paravia, W Heering, R Kling, *University of Karlsruhe, Germany*

Mo3.2.4 14:50 – 15:10
Comparative Analysis of Three Starting Methods for Parallel Resonant Current Source Inverter
R Fuentes, J Juliet, C Silva, F Ahumada, F Campaña, *Universidad Técnica Federico Santa María, Chile*

Mo3.2.5 15:10 – 15:30
Practical Evaluations of a ZCS-PWM Boost DC-DC Converter with Si-IBGT and SiC-SBD Hybrid Power Device
T Mishima, *Kure National College of Technology, Japan,* M Nakaoka, *DAIHEN Corporation, Japan,* S Miyake, *Yamaguchi University, Japan*

Mo3.3 FACTS, Grids and Micro-Grids
Chair: tbc
Co-Chair: tbc

Mo3.3.1 13:50 – 14:10
TCSC for Increased Power Transmission Capacity over Long AC Inter-Connectors
R Grünbaum, P Halvarsson, *ABB AB, Sweden,* P Jones, *ABB UK, UK*

Mo3.3.2 14:10 – 14:30
Reducing the Cost of Domestic MicroGrids
T Feehally, M Barnes, *University of Manchester, UK*

Mo3.3.3 14:30 – 14:50
Zero-Current Zero-Voltage Switching for On-Load Tap Changers
D J Rogers, T C Green, *Imperial College London, UK*

Mo3.3.4 14:50 – 15:10
An Overview of the Omani Power Network and the Need for Facts
H A Hassan, *Dhofar University, Oman*

Mo3.3.5 15:10 – 15:30
STATCOM and UPQC: Options to Enhance Fault-Ride-Through Capability of a Fixed Speed Wind Generator
M Basu, N G Jayanti, K Gaughan, M F Conlon, *Dublin Institute of Technology, Ireland*

Mo3.4 Wind Power
Chair: tbc
Co-Chair: tbc

Mo3.4.1 13:50 – 14:10
A Decoupled Control of Grid Connected Voltage Source Inverter for Wind Power Generating Systems
B Chitti Babu, B Vasantha Reddy, *National Institute of Technology Rourkela, India*

Mo3.4.2 14:10 – 14:30
DC-Link Voltage Ripple Elimination for a Transformerless Modular Wind Generator System
X B Yuan, Y D Li, J Y Chai, *Tsinghua University, China*

Mo3.4.3 14:30 – 14:50
Wind Energy Systems with Power-Electronic Converters and Fractional-Order Controllers
R Melício, J P S Catalão, *University of Beira Interior, Portugal,* V M F Mendes, *Instituto Superior de Engenharia de Lisboa, Portugal*

Mo3.4.4 14:50 – 15:10
Recongfiguration of Control Strategies for High Power DFIG Wind Turbine System
L Peng, Y Li, *Tsinghua University, China,* B Francois, *Ecole Centrale de Lille, France*

Mo3.4.5 15:10 – 15:30
Stalling Region Instability Compensation for Constant Power Soft Stalling Control
A Ahmed, L Ran, J R Bumby, *Durham University, UK*

Mo3.5 More Electric Aircraft
Chair: tbc
Co-Chair: tbc

Mo3.5.1 13:50 – 14:10
Optimum Component Technology Selection for an Expulsive Wing De-Icing System
T Wijekoon, A Castellazzi, M Johnson, P Wheeler, *University of Nottingham, UK,* F Abdesselam, N Picco, *Zodiac Aerospace, France*

Mo3.5.2 14:10 – 14:30
Improving Aircraft Engine Operability through Electrical System Design and Operation
P J Norman, S J Galloway, G M Burt, *University of Strathclyde, UK,* J Hill, *Rolls-Royce, UK*

Mo3.5.3 14:30 – 14:50
DC-Bus Power Quality for UAV Systems during Generator Fault Conditions
R Todd, A J Forsyth, *University of Manchester, UK*

Mo3.5.4 14:50 – 15:10
Fast Functional Modelling of the Aircraft Power System including Line Fault Scenarios
T Wu, S V Bozhko, G M Asher, P W Wheeler, *University of Nottingham, UK*

Refreshments **15:30 – 16:00**

Mo4.1 Fault Tolerant Drives
Chair: tbc
Co-Chair: tbc

Mo4.1.1 16:00 – 16:20
Fault Tolerant Design of a High Speed Permanent Magnet Machine
C Gerada, T Raminosoa, *University of Nottingham, UK,* D Gerada, *Cummins Generator Technologies, UK*

Mo4.1.2 16:20 – 16:40
Novel Fault Tolerant Design of Flux Switching Machines
T Raminosoa, C Gerada, *University of Nottingham, UK*

Mo4.1.3 16:40 – 17:00
Comparison of Current Vector Control Performance for Fault Tolerant Inverter Topologies Applied to Three-Phase PM Brushless AC machine with One Phase Open-Circuit Fault
K D Hoang, Z Q Zhu, M P Foster, *University of Sheffield, UK*

Mo4.1.4 17:00 – 17:20
Application of Hybrid Frame Current Regulator in Multiphase Vector Controller with Missing Phases
A D Graham, *Stoyerman Controls Ltd, UK*

Mo4.1.5 17:20 – 17:40
Fault Ride through Control for Delta Connected Induction Motor with an Open Winding Fault by Controlling the Zero Sequence Voltage
O Jasim, C Gerada, M Sumner, J Arellano-Padilla, *University of Nottingham UK*

Mo4.2 Power Factor Correction/Active Filters
Chair: tbc
Co-Chair: tbc

Mo4.2.1 16:00 – 16:20
A New Bridgeless SEPIC PFC Circuit
M R Sahid, A H Yatim, *Universiti Teknologi Malaysia, Malaysia*

Mo4.2.2 16:20 – 16:40
A Novel Soft-Switching Boost Power Factor Correction Converter with an Active Snubber
M Mahesh, A K Panda, *National Institute of Technology, India,* H N Pratihari, *Mahavir Institute of Engineering & Technology, India*

Mo4.2.3 16:40 – 17:00
Digital-Controlled Power Factor Corrector with Interleave Transition Current Mode Control
Y Chia-An, H Kung-Min, L Yen-Shin, *National Taipei University of Technology, Taiwan,* T Fumikazu, H Masahiro, *Hitachi Computer Peripheral Co. Ltd, Japan*

Mo4.2.4 17:00 – 17:20
Design of Hybrid Active Filter to Suppress Harmonic Resonances of Distribution Power Systems
T-L Lee, Y-C Wang, *National Sun Yat-sen University, Taiwan*

Mo4.2.5 17:20 – 17:40
Simple Digital Control of a Two-Stage PFC Converter using DSPIC30F Microprocessor

L Török, S Munk-Nielsen, *Aalborg University, Denmark*

Mo4.3 Synchronous Machines and Special Generators
Chair: tbc
Co-Chair: tbc

Mo4.3.1 16:00 – 16:20
Open Circuit Voltage Distortion in Salient Pole Synchronous Generators with Damper Windings
P A Hargreaves, *Newcastle University & Converteam UK Ltd, UK,* B Mecrow, *Newcastle University*, *UK,* R Hall, *Converteam UK Ltd, UK*

Mo4.3.2 16:20 – 16:40
Comparison of Flux Switching and Surface Mounted Permanent Magnet Generators for Aerospace Applications
A S Thomas, Z Q Zhu, G W Jewell*, University of Sheffield, UK*

Mo4.3.3 16:40 – 17:00
Parameter Estimation of Synchronous Machines using Particle Swarm Optimisation
G I Hutchison, B Zahawi, D Giaouris, *Newcastle University, UK,* K Harmer, B Stedall, *Parsons Brinckerhoff, UK*

Mo4.3.4 17:00 – 17:20
Experimental Performance Assessment of Multi-Phase Alternators Supplying Multiple AC/DC Power Converters
A Tessarolo, *University of Trieste, Italy*

Mo4.3.5 17:20 – 17:40
CyberGen: Modelling the Design Challenges for Small Embedded Synchronous Generators Connected to Increasingly Unstable Networks
N L Brown, *Cummins Generator Technologies, UK*

Mo4.4 Wind Power
Chair: tbc
Co-Chair: tbc

Mo4.4.1 16:00 – 16:20
"C" Core Topology for PM Wind Generators with Non-Overlap Iron-Cored Stator Windings
J H van Wijk, M J Kamper, *Stellenbosch University, South Africa*

Mo4.4.2 16:20 – 16:40
Synchronous Machine Wind Turbine Modelling Fidelity
J E Mohammed, M Barnes, *University of Manchester, UK*

Mo4.4.3 16:40 – 17:00
Electromagnetic and Mechanical Optimisation of Direct-Drive Generators for Large Wind Turbines
A S McDonald, A Zavvos, M A Mueller, *University of Edinburgh, UK*

Mo4.4.4 17:00 – 17:20
Losses in Hybrid and Active Magnetic Bearings Applied to Long Term FLYWHEEL Energy Storage
L Bakay, M Dubois, P Viarouge, J Ruel, *Laval University, Canada*

Mo4.4.5 17:20 – 17:40
Life Cycle Costs of DC-Excited and Permanent Magnet Synchronous Wind Turbine Generators
A S McDonald, K Mentesidi, W Zhang, M A Mueller, G Harrison, *University of Edinburgh, UK*

Mo4.5 Automotive and Systems - Control
Chair: tbc
Co-Chair: tbc

Mo4.5.1 16:00 – 16:20
Conception of Robust Neural Networks for Hybrid Control of Asynchronuous Motor Drives
M M Krishan, *Al-Balqa Applied University, Jordan,* A Khwaldeh, *University of Science & Technology Honari Bouemedine, Algeria,* L Barazane, *Philadelphia University, Jordan*

Mo4.5.2 16:20 – 16:40
Discretization Effects in Permanent Magnet Motor Drives Adopting Carrier-Signal Injection for Sensorless Control
S Zhao, M Leksell, O Wallmark, KTH *Royal Institute of Technology, Sweden*

Mo4.5.3 16:40 – 17:00
Preliminary Design of Electrified Power Trains by Dint of Scalable Simulation Models
D Buecherl, H-G Herzog, *Technische Universitaet Muenchen, Germany*

Mo4.5.4 17:00 – 17:20
Kalman Filter based Sensorless Control of a Tubular Permament Magnet Machine for Active Vehicle Suspension
J Wang, W Wang, K Atallah, *University of Sheffield UK*

Mo4.5.5 17:20 – 17:40
Introduction of an Adaptive Neuro-Fuzzy Sliding Mode Controller to the Field-Oriented Control of Asynchronuous Motor
M M Krishan, *Al-Balqa' Applied University, Jordan*

Sponsored Welcome Drinks Reception 17:40 – 19:00

Rolls-Royce

Poster Session

The posters will be hung for the duration of the conference.

P01
The Artificial NN and the Fuzzy Logic Control of the Electrical Drives and thus Improving the Energy Consumption and the Overall Efficiency at Hot Mill in Corus Strip Products UK
A Bhattacharya, Dev Jagadeesan, *Corus Strip Products, UK*

P02
Ancillary Services of VSC Interfaced Energy Sources - Voltage Harmonics Compensation
F Hassan, R Critchley, *Areva T&D*, *UK*

P03
Analytical Method for the Design of the Skewed Permanent Magnets Motor of High Performance
T MacSouza, J L Almedida, *Universidade Estadual Paulista, Brazil*

P04
Effect of Mica Content on Insulation System Life-Time in 202MVA Turbine-Generator

R Mirabzadeh, M Shadmand, *MAPNA, Iran*

P05
Active Power Reversal in the Main Winding of a Single Phase Induction Motor
J Peuteman, *Katholieke Hogeschool Brugge Oostende, Belgium,* G Van Heerswynghels, *Vrij Technisch Instituut, Belgium*

PO6
Battery-Supercapacitors Mixed as Electrical Power Buffers
J Leuchter, *University of Defence, Czech Republic,* P Bauer, *Delft University of Technology*, *Netherlands*

PO7
Five-Phase Machines, Advantages and Applications
M T Mohammad, J E Fletcher, *University of Strathclyde, UK*

PO8
The Complex Gain Controller Applied to the IM Direct Torque Control
A J Sguarezi Filho, E Ruppert Filho, *University of Campinas, Brazil*

PO9
Opacity Meter for Transparency Measurements
A K Singh, S Gupta, *MAIT, India*

PO10
Design Considerations of a Brushless DC Motor for Blower Applications
M F Momen, *Northland Motor Technologies, USA*

PO11
Simplified Design and Optimization of PM Machine for Spacecraft ElectroMechanical Batteries
B Abdi, J Milimonfared, J Shokrollahi Moghani*, Amirkabir University of Technology, Iran*

PO12
A Novel Multiple Input-Single Output DC/DC Converter for Fuel Cell Applications
S H Hosseini, S Nazemi, *University of Tabriz, Iran*

PO13
Effect of Inter-Layer Interface Quality on Electrical and Thermal Characteristics of IMS
J Holmes, D Stone, M Foster, *University of Sheffield, UK*

PO14
Investigation of the Impact of Speed Ripple and Inertia on the Steady-State Current Spectrum of a DFIG with Unbalanced Rotor
S Djurovic, *University of Manchester, UK,* S Williamson, *University of Surrey, UK*

PO15
PSPICE and Simulink Co-Simulation of a High Efficiency DC-DC Converter using SLPS Interface Software
O A Ahmed, J A M Bleijs, *University of Leicester*, *UK*

PO16
Development of a Laboratory Simulating System to Investigate the Effect of Mechanical Malfunctions in a Twin AC Drive for Cement Kilns
I Bogiatzidis, A Safacas, E Mitronikas, *University of Patras, Greece*

PO17
Fuel Cell-Supercapacitor System for Telecommunications
E Ribeiro, A J Marques Cardoso, *University of Coimbra, Portugal,* C Boccaletti, *Sapienza University of Rome, Italy*

PO18
Induction Motor Fault Detection Using Fast Orthogonal Search
G King, M Tarbouchi, D McGaughey, *Royal Military College of Canada, Canada*

PO19
Four-Quadrant Operation of AC Machines Powered by Inverters that Mimic Synchronous Generators
Q-C Zhong, *University of Liverpool*, *UK*

PO20
A D-STATCOM based on Goertzel Algorithm for Sag Detection and a Novel Current Mode Controller
E Najafi, H Yatim*, University Teknologi Malaysia, Malaysia*

PO21
Voltage Control of Three-Stage Hybrid Multilevel Inverter using Vector Transformation
M N Abdul Kadadir, S Mekhilef, *Malaya of University, Malaysia*

PO22
Artificial Intelligence and Fuzzy Logic Based Comprehensive Motor Testing Technique
S Sista, V Manoharan, *Mahindra Satyam, India*

PO23
Design Aspects on Magnet Placement in Permanent Magnet Assisted Synchronous Reluctance Machines
K Khan, M Leksell, O Wallmark, KTH *Royal Institute of Technology, Sweden*

PO24
Comparative Analysis of On-Line and Off-Line Explicit Solutions, Applied in a Predictive Direct Current Control
J C Ramirez, N AL_Sheakh Ameen, *Wuppertal University, Germany,* R M Kennel, *Technische Universitaet Muenchen, Germany*

PO25
Modelling and Control of Variable Frequency Multiphase Multi-machine AC-DC Power Conversion Systems
W UN Fernando, M Barnes, O Marjanovic, *University of Manchester, UK*

PO26
Condition Monitoring for Mechanical Faults for Motor Drive Systems by Detecting Recifier Input Currents
J Li, M Sumner, J Arellano-Padilla, *University of Nottingham, UK*

PO27
The Effects of the Voltage Source Inverter Harmonics on Dynamic Performance of Short Rotor Linear Induction Motors
H Hamzehbahmani, *Islamic Azad University of Sanandaj, Iran*

PO28
Battery and Supercapacitor Combination for Electric Vehicles
A M Jarushi, N Schofield, *University of Manchester, UK*

PO29
Modelling of a Line-Start Permanent Magnet Motor using Finite Element Method
F Kalluf, C Pompermaier, *Whirlpool S.A., Brazil,* M V Ferreira de Luz, N Sadowski, *Federal University of Santa Catarina, Brazil*

PO30
Complex Control of Small Hydro Power Plants by using a Fuzzy Controller

I Salhi, S Doubabi, *Cadi Ayyad University, Morocco*

PO31
Fuzzy Logic Control of Brushless Doubly Fed Induction Generator
M A Badr, H F Soliman, H M Hasanien, S Madbouly, *German University Cairo, Egypt*

PO32
Design, Simulation and Implementation of a Fuzzy Controlled Power Management Unit for a Rack Power System
M Jafari, Z Malekjamshidi, *Islamic Azad University, Iran*

PO33
A Finite-Element Model for Induction Machines Incorporating Winding Faults
P J Holik, *University of Strathclyde, UK*

PO34
HDD Servo System using GA based Fixed Structure Robust Loop Shaping Control
N Amar, K Somyot, DSTAR, King Mongkut's Institute of Technology Ladkrabang, Thailand

PO35
Frequency Control Method in Autonomous Microgrids with Renewable Energy Sources
I Serban, C Marinescu, *Transilvania University of Brasov, Romania*

PO36
Voltage Versus Power Factor Regulation for Enhancement of Renewable Generation Capacity
A R Ahmadi, T C Green, *Imperial College London, UK*

PO37
Analysis of Various Control Strategy Performances of BDCM for Industrial Applications
H Zeroug, B Boukais, N Tadrist, *Université des Sciences et de la Technologie Houari Boumediene, Algeria*

P O38
Conceptual Design of an Electric Helicopter Powertrain
S R Durkee, A Muetze, *University of Warwick, UK*

PO39
Performance Comparison of Static and Dynamic Battery Models for Vehicle to Grid Appraisal
P J Holik, D G Infield, A J Cruden, *University of Strathclyde, UK*

PO40
Neuro-Fuzzy Based Power Control Architecture For Pem Fuel Cell / Battery Driven Unmanned Electric Aerial Vehicle
L Karunarathne, J T Economou, K Knowles, *Cranfield University, UK*

PO41
Intelligent based Power, Energy Management for Battery, Ultra Capacitor based Electric Vehicle
P Suntharalingam, J T Economou, K Knowles, *Cranfield University, UK*

Tuesday, 20 April 2010

Tu1.1 Special Machines
Chair: tbc
Co-Chair: tbc

Tu1.1.1 09:00 – 09:20
Levitation Performance of Permanent Magnet Pole-Pair Separated Conical Bearingless

Motor
P E Kascak, T P Dever, R H Jansen, K A Loparo, *NASA Glenn Research Center, USA*

Tu1.1.2 09:20 – 09:40
Topologies for Wound-Field Three-Phase Flux-Switching Machines using Segmented Rotors
A Zulu, B C Mecrow, M Armstrong, *Newcastle University, UK*

Tu1.1.3 09:40 – 10:00
Analysis of a Combined Radial-Axial Magnetic Bearing for a High-Speed Drive System
P Imoberdorf, J W Kolar, *Power Electronic Systems Laboratory, Switzerland,* T Nussbaumer, *Levitronix GmbH, Switzerland*

Tu1.1.4 10:00 - !0:20
Development of the World's Most Powerful Deep Submersible Motor
K J Sears, *Hayward Tyler Ltd, UK*

Tu1.2 Power Quality & EMC
Chair: tbc
Co-Chair: tbc

Tu1.2.1 09 :00 – 09 :20
Synthesizing Power Electronic Switching Waveforms for Reduced EMI Generation
N F Oswald, B H Stark, D Holliday, *University of Bristol, UK,* C Hargis, W Drury, *Control Techniques Ltd, UK*

Tu1.2.2 09:20 – 09:40
Analysis of Output Voltage Spectrum in Power Converters with Modulated Switching Frequency
D Stepins, *Riga Technical University, Latvia*

Tu1.2.3 09:40 – 10:00
Methodologies for EMC Applied in Transients Analysis of Impulsive Grounding Systems - A Study Review
D S Gazzana, A S Bretas, G A D Dias, *Universidade Federal do Rio Grande do Sul, Brazil,* M Telló, *Universidade Católica do Rio Grande do Sul*, *Brazil*

Tu1.2.4 10:00 – 10:20
Suppression of Harmonic Current Produced by an Electrified Railway System with using an Adaptive Hybrid Active Filter
M Ranjbar, A Jalilian, *Iran University of Science and Technology, Iran*

Tu1.3 HVDC
Chair: tbc
Co-Chair: tbc

Tu1.3.1 09:00 – 09:20
A Hybrid Voltage Source Converter Arrangement for HVDC Power Transmission and Reactive Power Compensation
R Feldman, M Tomasini, J C Clare, P Wheeler, *University of Nottingham, UK,* D R Trainer, R S Whitehouse, *Areva T&D UK Ltd, UK*

Tu1.3.2 09:20 – 09:40
Grid Intgeration of Offshore Wind Farm using Multi-Terminal DC Transmission System (MTDC)
O A Giddani, G P Adam, O Anaya-Lara, *University of Strathcylde, UK*

Tu1.3.3 09:40 – 10:00
Comparative Analysis between Current and Voltage Source Topologies for a New Modular Nano-Crystalline Core Transformer based Converter for Medium Voltage DC

Transmission Applications
A A Aboushady, K A Ahmed, S J Finney, B W Williams, *University of Strathcylde, UK*

Tu1.3.4 10:00 – 10:20
Efficiency Evaluation of DC Transmission System based on Voltage Source Converter
O A Giddani, G P Adam, O Anaya-Lara, *University of Strathcylde, UK*

Tu1.4 Wind Power
Chair: tbc
Co-Chair: tbc

Tu1.4.1 09:00 – 09:20
Inverstigation and Losses Comparison of a Reduced Matrix Converter for Off-Shore Turbines
A Garces, M Molinas, *Norwegian University of Science and Technology, Norway*

Tu1.4.2 09:20 – 09:40
Converter Performance of Grid Connected Wind Power Generating Systems
B Chitti Babu, K B Mohanty, *National Institute of Technology, India*

Tu1.4.3 09:40 – 10:00
Power Converters used in Grid Connected Small Wind Turbines: Analysis of Alternatives
I Kortabarria, J Andreu, E Ibarra, I Martinez de Alegria, *University of the Basque Country, Spain,* A Ascarza, *Tecnalia, Spain*

Tu1.4.4 10:00 – 10:20
Design of Permanent-Magnet Generators for Wind Energy Applications
M Nagrial, J Rizk, A Hellany, *University of Western Sydney, Australia*

Tu1.5 Transport - Converters
Chair: tbc
Co-Chair: tbc

Tu1.5.1 09:00 – 09:20
Design of On-Board Charger for Plug-In Hybridelectric Vehicle
M Grenier, G M Hosseini Aghdam, T Thiringer, *Chalmers University of Technology, Sweden*

Tu1.5.2 09:20 – 09:40
Hardware-in-the-Loop Evaluation of Electric Vehicle Drives
J M Apsley, E Varrone, N Schofield, *University of Manchester*, *UK*

Tu1.5.3 09:40 – 10:00
Power Boost Unit for Automotive Electric Power Steering Systems
E Christopher, M Sumner, *University of Nottingham, UK,* A Szabo, E Introwicz, *TRW Automotive, UK*

Refreshment break **10:20 – 10:50**

Tu2.1 Induction Machines
Chair: tbc
Co-Chair: tbc

Tu2.1.1 10:50 – 11:10
Steady-State Modeling of Single-Phase Induction Motors
E Sorrentino, *Universidad Simón Bolívar, Venezuela,* S Fernandez, *Washington State University, USA*

Tu2.1.2 11:10 – 11:30
Parameter Estimation of an Induction Machine using a Chaos Particle Swarm Optimization Algorithm
H C Duy, M W Dunnigan, *Heriot-Watt University, UK*

Tu2.1.3 11:30 – 11:50
Performance of VFT when Connecting Two Power Grids Operating under Different Frequencies
E T Raslan, A S Abdel-Khalik, M A Abdulla, M Z Mustafa, *Alexandria University, Egypt*

Tu2.1.4 11:50 – 12:10
Optimum Flux Distribution with Harmonic Injection for Multiphase Induction Machine
A Abdel-Khalik, M I Masoud, *Alexandria University, Egypt,* B Williams, *Strathclyde University*, *UK*

Tu2.1.5 12:10 – 12:30
A Four-Leg Voltage Source Inverter Fed Asymmetrical Two-Phase Induction Motor Drives
Y Kumsuwan, *Rajamangala University of Technology Lanna Lampang*, *Thailand,* W Srirattanawichaikul, S Premrudeepreechacharn, *Chiang Mai University, Thailand,* H A Toliyat, *Texas A&M University, USA*

Tu2.2 Sensorless Control
Chair: tbc
Co-Chair: tbc

Tu2.2.1 10:50 – 11:10
Sensorless Control of High Power Induction Motors using Multilevel Converters
K Saleh, M Sumner, G Asher, Q Gao, *University of Nottingham, UK*

Tu2.2.2 11:10 – 11:30
Influence of Converter Capacitance In Resonance-Based Sensorless Switched Reluctance Drives
K R Geldhof, *Ghent University, Belgium*

Tu2.2.3 11:30 – 11:50
Adaptive Sensorless Position Estimation of a Field Weakened Permanent Magnet Machine over an Extended Temperature Range
W D Drury, *GenDrive Ltd., UK,* D Holliday, D Drury, P H Mellor, *University of Bristol, UK*

Tu2.2.4 11:50 – 12:10
Online Cross-Coupling and Self Incremental Inductances Determination of Salient PMSM
G El-Murr, D Giaouris, J W Finch, *Newcastle University, UK*

Tu2.2.5 12:10 – 12:30
A Comparison of the Impact and Correction of Nonlinear Distortion Effects on Carrier based Signal Injection Techniques in Stationary and Rotating Reference Frames when Applied to Low Speed Sensorless Control
D Salt, D Drury, D Holliday, *University of Bristol, UK*

Tu2.3 Power Quality & Protection
Chair: tbc
Co-Chair: tbc

Tu2.3.1 10 :50 – 11:10
Analysis of Measured Impedance by Distance Relay in Presence of SSSC
A Shojaei, S M Madani, *Isfahan University of Technology, Iran*

Tu2.3.2 11:10 – 11:30
The Operation of ZSI based DVR for Fault Current Reduction in Distribution Systems
S H Hosseini, S Torabzade, Y Mohammadrezapoor, *University of Tabriz, Iran*

Tu2.3.3 11:30 – 11:50
Design and Control Issues of a DSP-Based Single-Phase Shunt Active Power Filter Under Non-Stiff Voltage Source
M Ranjbar, A Jalilian, A Shoulaei, *Iran University of Science and Technology, Iran*

Tu2.3.4 11:50 – 12:10
Four-Wire Shunt Active Power Filter using a New 3D-SVPWM Algorithm
A Kouzon, M O Mahmoudi, M S Boucherit, *Djelfa University, Algeria*

Tu2.3.5 12:10 – 12:30
Distributed Generation Integration: Protection Issues and the Solutions
B Hussain, S M Sharkh, A Majeed, M Jamil, S Hussain, *University of Southampton, UK*

Tu2.4 Supercapacitors, Fuel Cells & Batteries
Chair: tbc
Co-Chair: tbc

Tu2.4.1 10:50 – 11:10
Comparison of Supercapacitor and Lithium-Ion Capacitor Technologies for Power Electronics Applications
S M Lambert, V Pickert, *Newcastle University, UK,* J Holden, *Hiltech Developments, UK,* H Xiangning, L Wuhua, *Zhejiang University, China*

Tu2.4.2 11:10 – 11:30
Power Electronics and Energy Management of Hybrid Power Sources with Supercapacitors
J Leuchter, M Kaczur, *University of Defence, Czech Republic*

Tu2.4.3 11:30 – 11:50
Loss Evaluation of Supercapacitor Energy Storage under Constant Power Operation
P Kulsangcharoen, C Klumpner, G Asher, *Nottingham University, UK*

Tu2.4.4 11:50 – 12:10
VRLA Battery Parameter Identification using Pseudo Random Binary Sequences (PRBS)
A J Fairweather, *VxI Power Ltd, UK,* M P Foster, D A Stone, *University of Sheffield, UK*

Tu2.4.5 12:10 – 12:30
Modelling a Reversible Solid Oxide Fuel Cell to be used as a Storage Device within AC Power Networks
J Ren, A J Roscoe, G Burt, *University of Strathclyde, UK,* S Gamble, *University of St Andrews, UK*

Tu2.5 Power Electronics
Chair: tbc
Co-Chair: tbc

Tu2.5.1 10:50 – 11:10
On-Line Control of 1Φ SHE-PWM Voltage Source Inverter
N G Apte, *Walchand College of Engineering, India,* V N Bapat, *College of Engineering Miraj, India,* N I Dhang, V S Jagdale, *Shreem Capacitores Pvt Ltd., India*

Tu2.5.2 11:10 – 11:30
Simplified Model of Forward Conduction for SiC Power PiN and Schottky Diodes with Temperature Dependency
I Abuishmais, T Undeland, *Norwegian University of Science and Technology, Norway*

Tu2.5.3 11:30 – 11:50
Parameter Extraction and Calorimetric Validation for a Silicon Carbide JFET PSpice Model
S K Singh, F Guedon, R McMahon, S Weier, *University of Cambridge*, *UK*

Tu2.5.4 11:50 – 12:10
Real Time, On Line, Age Calculation of IGBT Power Modules
P James, *Prodrive Ltd, UK,* A Forsyth, *University of Manchester, UK*

Tu2.5.5 12:10 – 12:30
Accelerated Testing of IGBT Power Modules to Determine Time to Failure
P James, *Prodrive Ltd UK,* A Forsyth, *University of Manchester, UK*

Lunch 12:30 – 13:30

Tu3.1 Power Quality
Chair: tbc
Co-Chair: tbc

Tu3.1.1 13:30 – 13:50
Design of STATCOM for Grid Voltage Regulation of Distribution Power Systems
T-L Lee, S-J Ke, *National Sun Yat-sen University, Taiwan*

Tu3.1.2 13:50 – 14:10
Dynamic Performance of STATCOM Under Single Line to Ground Faults in Power System
Y Suresh, A K Panda, *National Institute of Technology, India*

Tu3.1.3 14:10 – 14:30
Input Filter Pre-Charge Scheme for High Power PWM-CSRs Connected to a Weak Utility Supply
M Tomasini, R Feldman, P Wheeler, J C Clare, *University of Nottingham, UK*

Tu3.1.4 14:30 – 14:50
Design Optimization of Passive DC Filters for Aerospace Applications
A Griffo, *University of Bristol, UK,* J Wang, *University of Sheffield, UK*

Tu3.1.5 14:50 – 15:10
New Control Method for Distribution Network Distributed Static Series Compensator
A Pashaei, B Zahawi, D Giaouris, *Newcastle University, UK*

Tu3.2 Solar/PV
Chair: tbc
Co-Chair: tbc

Tu3.2.1 13:30 – 13:50
A Novel Transformerless Photovoltaic Inveter Connected to the Grid
B Yang, W Li, X He, *Zhejiang University, China*

Tu3.2.2 13:50 – 14:10
Assessing the Power Quality Behaviour of High Photovoltaic (PV) Penetration Levels inside the Distribution Network
M Patsalides, G F Georghiou, *University of Cyprus, Cyprus,* A Stavrou, V Efthymioum *Electricity Authority of Cyprus, Cyprus*

Tu3.2.3 14:10 – 14:30
Development of a Software Package for Sizing of Stand Alone Photovoltaic Solar Power System
K Singh Salana, A Dhingra, *Guru Nanak Dev Engineering College, India,* R Jain, *ICL Institute*

of Engineering & Technology, India

Tu3.2.4 14:30 – 14:50
A Modular PV Charger with Maximum Power Point Tracking and Pulse-Charging Schemes
T-P Lee, H-J Chiu, Y-K Lo, *National Taiwan University of Science and Technology, Taiwan*

Tu3.2.5 14:50 – 15:10
Wide Input Range Parallel Inverter Connection to Reduce Circulating Currents for Renewable Sources
E Hussain, C M Bingham, *University of Sheffield*, *UK*

Tu3.3 Tutorial 1 13:30 – 14:20
Reliability of Power Electronics in Harsh Environments
Philip Mawby,*Warwick University, UK*

Tu3.3 Tutorial 2 14:20 – 15:10
Thermal Analysis of Electrical Machines
Phil Mellor, *Bristol University*, *UK &* Dr David Staton, *Motor Designs Ltd, UK*

Tu3.4 Tutorial 3 13:30 – 14:20
Tu3.4 Tutorial 4 14:20 – 15:10

Tu3.5 Winding Design & System Identification
Chair: tbc
Co-Chair: tbc

Tu3.5.1 13:30 – 13:50
Automated AC Winding Design
A C Smith, D Delgado, *University of Manchester*, *UK*

Tu3.5.2 13:50 – 14:10
Benefits of Increasing the Number of Stator Phases in Terms of Winding Construction Technology in High-Power Electric Machines
A Tessarolo, *University of Trieste, Italy,* G Zocco, *Ansaldo Sistemi Industriali, Italy*

Tu3.5.3 14:10 – 14:30
Co-Simulation of Complex Belt Conveyor Drive Systems
N Vijayakumar, G Eltaliawi, A Seeliger, *RWTH Aachen University*, *Germany*

Tu3.5.4 14:30 – 14:50
Validating FEA Models of Complex Generator and Gearbox Assemblies using Experimental Modal Analysis
X Fan, S Bradley, J M J Pomfret, *Converteam UK Ltd., UK*

Tu3.5.5 14:50 – 15:10
Determining Synchronous and Induction Machine Model Parameters for use in Power System Simulation Programs
B Badrzadeh, *Mott MacDonald, UK*

Refreshment Break **15:10 – 15:40**

Tu4.1 Permanent Magnet and Axial Flux Machines
Chair: tbc
Co-Chair: tbc

Tu4.1.1 13:30 – 13:50
A Semi-Permeable Containment Sleeve for High-Speed PM Machines
J M Yon, P H Mellor, R Wrobel, J D Booker, S G Burrow, *University of Bristol*, *UK*

Tu4.1.2 13:50 – 14:10
Novel Bearingless Brushless Motor in Exterior Rotor Construction for Stirred Bioreactors
T Reichert, J W Kolar, *ETH Zurich*, *Switzerland,* T Nussbaumer, *Levitronix GmbH, Switzerland*

Tu4.1.3 14:10 – 14:30
Prediction and Measurement of Heat Transfer in Air-Cooled Disc-Type Electrical Machines
D A Howey, A S Holmes, *Imperial College London, UK,* K R Pullen, *City University London, UK*

Tu4.1.4 14:30 – 14:50
Thermal Modelling of Water-Cooled Axial-Flux Permanent Magnet Machine
E Odvarka, N L Brown, A Mebarki, M Shanel, S Narayanan, *Cummins Generator Technologies, UK,* C Ondrusek, *Brno University of Technology, Czech Republic*

Tu4.1.5 14:50 – 15:10
Active Stator - An Innovative Variable Speed Drive Topology
D N Lee, S Loddick, U Mupambireyi, S Ouchouche, *Converteam UK Ltd, UK*

Tu4.2 Multi-level and Matrix Converters
Chair: tbc
Co-Chair: tbc

Tu4.2.1 13 :30 – 13 :50
Self-Precharge for Single-Leg Odd-Level Multilevel Converters
S Thielemans, J Melkebeek, *Ghent University*, *Belgium,* A Ruderman, *Elmo Motion Control, Israel,* B Reznikov, *General Satellite Corp., Russia*

Tu4.2.2 13:50 – 13:50
Analysis and Testing on the Switching States Transitions of Hybrid-Clamped Multilevel Inverters
J Zhao, X He, Y Han, R Zhao, Y Chen, *Zhejiang University, China*

Tu4.2.3 13:50 – 14:10
Performance Comparison of Single-Phase Current-Fed Inverters
B Hassan, V Pickert, B Zahawi, *Newcastle University, UK*

Tu4.2.4 14:10 – 14:30
New Configuration of Stacked Multicell Converter with Reduced Number of DC Voltage Sources
S H Hosseini, A K Sadigh, *University of Tabriz, Iran*

Tu4.2.5 14:30 – 14:50
Experimental Validation of a Space Vector Modulation Method for a 4-Leg Matrix Converter
R Cardenas, *University of Santiago, Chile,* R Peña, *University of Concepcion, Chile,* P Wheeler, J Clare, *University of Nottingham*, *UK*

Tu4.3 Advanced Control
Chair: tbc
Co-Chair: tbc

Tu4.3.1 15:40 – 16:00
A Speed Loop Autotuning Method based on Signal Injection for Electrical Drives
A Costabeber, P Mattavelli, L Peretti, M Zigliotto, *University of Padova, Italy*

Tu4.3.2 16:00 – 16:20
Direct Power Control of Brushless Doubly Fed Reluctance Machines
H Chaal, M Jovanovic, *Northumbria University*, *UK*

Tu4.3.3 16:20 – 16:40
A Linear Time-Invariant Model for a Vector-Controlled Two-Phase Stepping Motor
S Derammelaere, B Vervisch, K Stockman, *Technical University College of West-Flanders*, *Belgium & Ghent University, Belgium,* J Cottyn, *Technical University College of West-Flanders*, *Belgium,* F De Belie, L Vandevelde, *Ghent University, Belgium,* G Van den Abeele, *PsiControl Mechatronics, Belgium,* P Cox, *ON Semiconductor, Belgium*

Tu4.3.4 16:40 – 17:00
Extended Kalman Filters with Augmented State Vectors to Estimate SPMSM Stator Flux
T J Vyncke, R K Boel, J A Melkebeek, *Ghent University, Belgium*

Tu4.3.5 17:00 – 17:20
Minimal Configuration PI Fuzzy Gain Scheduling Speed Controller in Indirect Vector Control Scheme
M Dragan, D Boris, K Filip, B Vladimir, *Faculty of Technical Science, Serbia*

Tu4.4 Automotive and Systems - Motor/Generator/Actuator
Chair: tbc
Co-Chair: tbc

Tu4.4.1 15:40 – 16:00
An ICE/HPM Generator Range Extender in a Series Hybrid Electric Vehicle
A S Al-Adsani, A M Jarushi, N Schofield, *University of Manchester*, *UK*

Tu4.4.2 16:00 – 16:20
A High-Power, Totally Enclosed, Permanent Magnet, Axial Flux Machine for Engine Integration
A Mebarki, K Wejrzanowski, M Shane, N L Brown, *Cummins Generator Technologies, UK*

Tu4.4.3 16:20 – 16:40
Design of Permanant Magnet Flux-Switching Machine with Hybrid Excitation for Hybrid Electric Vehicle
E Sulaiman, T Kosaka, Y Tsujimori, N Matsui, *Nagoya Institute of Technology, Japan*

Tu4.4.4 16:40 – 17:00
Design and Analysis of Segmented Secondary Linear Switched Reluctance Alternator for Hybrid Electric Vehicle Application
S E Abdollahi, B Asaei, *University of Tehran, Iran,* M Mirzaei, *Darmstadt University of Technology, Germany,* M Mirsalim, *Amirkabir University of Technology, Iran*

Tu4.4.5 17:00 – 17:20
Linear Actuator for the Steer-by-Wire Technology
W Missaoui, *Ecole Centrale de Lille, France & Ecole Nationale d'Ingénieurs de Tunis, Tunisia,* L El Amraoui Ouni, M Benrejeb, *Ecole Nationale d'Ingénieurs de Tunis, Tunisia*, F Gillon, P Brochet, *Ecole Centrale de Lille, France*

Tu4.5 Thermal and Loss Modelling
Chair: tbc
Co-Chair: tbc

Tu4.5.1 15:40 – 16:00
Study of the Electric Loading Aspects of the BDFM using a Lumped Parameter Thermal Model
M Mathekga, R McMahon, S Shao, *University of Cambridge, UK,* D Staton, *Motor Design Ltd, UK*

Tu4.5.2 16:00 – 16:20
Enclosure Design for a High-Speed Permanent Magnet Rotor
A Borisavljevic, H Polinder, J A Ferreira, *Delft University of Technology, Netherlands*

Tu4.5.3 16:20 – 16:40
Identification of Multi-Mass Systems Modal parameters using the Wavelet Transform
H Loussifi, K Nouri, *Ecole Polytechnique de Tunisie, Tunisia,* R Dhaouadi, *American University of Sharjah, United Arab Emirates*

Tu4.5.4 16:40 – 17:00
Investigating the Cooling Performance of the End Region of a Small Totally Enclosed Fan Cooled (TEFC) Induction Motor
A Saliba, C Micallef, *University of Malta, Malta*

Tu4.5.5 17:00 – 17:20
Rotor Losses in Axial-Flux Permanent-Magnet Machines with Non-Overlapped Windings
J Colton, D Patterson, J Hudgins, *University of Nebraska-Lincoln, USA*

Wednesday, 21 April 2010

We1.1 Design Synthesis of PM Machines
Chair: tbc
Co-Chair: tbc

We1.1.1 09:00 – 09:20
Combined Complex Permeance and Sub-Domain Model for Analytical Predicting Electromagnetic Performance of Surface-Mounted PM Machines
L J Wu, Z Q Zhu, *University of Sheffield*, *UK*

We1.1.2 09:20 – 09:40
Simplified Design of Slotless Halbach Machine for Micro-Satellite Electromechanical Batteries
B Abdi, J Milimonfared, J S Moghani, *Amirkabir University of Technology, Iran*

We1.1.3 09:40 – 10:00
BACK-EMF Influence in BDCM Design for Commutation Torque Ripple Reduction
B Boukais, *University of Mouloud Mammeri*, *Algeria,* H Zeroug, *University of Sciences and Technology, Houari-Doumediene, Algeria*

We1.1.4 10:00 – 10:20
Design Concept of Short-Circuit Fault-Tolerance Permanent Magnet Machine
Y Pang, X J Chen, S Channon, *Ricardo UK Ltd, UK,* Z Q Zhu, *University of Sheffield, UK*

We1.2 Actuators and Linear Machines
Chair: tbc
Co-Chair: tbc

We1.2.1 09:00 – 09:20
Analytical and Numerical Analysis of an Induction Planar Actuator
A F Flores Filho, N F Baggio Filho, *Federal University of Rio Grande do Sul, Brazil*

We1.2.2 09:20 – 09:40
A Linear Induction Motor for Low Speed Transportation with Solid Iron Secondary
M Mirzaei, A Binder*, Darmstadt University, Germany*

We1.2.3 09:40 – 10:00
Solenoid Actuator for High-Dynamics Flow Control in Ultra-High Purity Applications
B Warberger, J W Kolar, *ETH Zurich, Switzerland,* T Nussbaumer, *Levitronix GmbH, Switzerland*

We1.2.4 10:00 – 10:20
A Comparative Study between Different Structures of Rail and Actuator used in Electromagnetic Levitation
S Banerjee, *NIT, India,* P Biswsas, *AEC, India,* R Bhaduri, *BCET, India*

We1.3 Fault Tolerant Drives
Chair: tbc
Co-Chair: tbc

We1.3.1 09:00 – 09:20
Open-Circuit Fault Mitigation for Multiphase Induction Motors with a Unified Control Structure
J M Apsley, *University of Manchester, UK*

We1.3.2 09:20 – 09:40
Vibration Analysis and Backlash Identification of a Twin AC Drice for a Cement Kiln
L Bogiatzidis, A Safacas, *University of Patras, Greece*

We1.3.3 09:40 – 10:00
Fault Tolerant Matrix Converter Drives Under Open Phase Fault in Aerospace Applications
S Khwan-on, L De Lillo, L Empringham, P Wheeler, *University of Nottingham, UK*

We1.3.4 10:00 – 10:20
A Fault Tolerant Electric Drive for an Aircraft Nose Wheel Steering Actuator
J W Bennett, B C Mecrow, D J Atkinson, *Newcastle University*, *UK,* C J Maxwell, M Benarous, *Goodrich Actuation Systems, UK*

We1.4 Thermal Management/Power Measurement
Chair: tbc
Co-Chair: tbc

We1.4.1 09:00 – 09:20
Device Temperature Projection Technique for IMS based Systems
J Holmes, D Stone, M Foster, *University of Sheffield, UK*

We1.4.2 09:20 – 09:40
An Experimental and Computational Study of Water Cooled Heatsinks for HEV's
V Pickert, C Huifeng, L Pritchard, D Atkinson, *Newcastle University*, *UK*

We1.4.3 09:40 – 10:00
Loss Comparison of 2 and 3-Level Inverter Topologies
G Orfanoudakis, S Sharkh, M Abu-Sara, *University of Southampton, UK,* M Yuratich, *TSL Technology, UK*

We1.4.4 10:00 – 10:20
Temperature Rise Determination of an Induction Motor Under Blocked Rotor Conditions
M Hettegger, A Stermecki, O Bíró, *Graz University of Technology, Austria,* G Ofner, *Elin EBG Motoren GmbH, Austria*

We1.5 Power Converter Control
Chair: tbc
Co-Chair: tbc

We1.5.1 09:00 – 09:20
Ripple Current Reduction by Optimizing Load Dependend Switching Losses using Adaptive Current Control
T M Wolbank, R Stumberger, *Vienna University of Technology, Austria,* A Lechner, J Machl, *Schneider Electric Power Drives GmbH, Austria*

We1.5.2 09:20 – 09:40
Application of the Evolutionary Computing HE Improvement of the PWM AC/AC Choppers
A Kouzou*, Djelfa University, Algeria,* M O Mahmoudi, S S Boucherit, *LCP, National Polytechnic School, Algeri*

We1.5.3 09:40 – 10:00
Adaptive Control Scheme for a Practical Bidirectional DC-DC Converter with a 80 kHz Switching Frequency and a 10 kHz Sample Frequency
S De Breucker, K Engelen, P Tant, *K U Leuven, Belgium*

We1.5.4 10:00 – 10:20
Robust Fixed-Structure Casecade Controller for a Quadratic Boost Converter
S Pitsanu, K Somyot, *Institute of Technology Ladkrabang, Thailand*

We2.1 Switched Reluctance Machines
Chair: tbc
Co-Chair: tbc

We2.1.1 10:50 – 11:10
Mitigation of Torque Ripples in Switched Reluctance Motor: A Survey
J S Evangeline, S S Kumar, *Karunya University, India*

We2.1.2 11:10 – 11:30
Analysis and Design of Permanent Magnet Assisted Synchronous Reluctance Machines
R Karimagako, M Nagrial, J Rizk, *University of Western Sydney, Australia*

We2.1.3 11:30 – 11:50
New Designs of Switched Reluctance Motors with Segmental Rotors
X Chen, Z Deng, X Wang, J Peng, X Li, *Nanjing University of Aeronautics and Astronautics, China*

We2.1.4 11:50 – 12:10
A New Switching Technique for DC-link Capacitor Minimisation in Switched Reluctance Machine Drives
W Suppharangsan, J Wang, *University of Sheffield, UK*

We2.1.5 12:10 – 12:30
Comparison of Two 8/6 Switched Reluctance Motors with Bipolar Excitation
X Chen, Z Deng, J Peng, X Li, *Nanjing University of Aeronautics and Astronautics, China*

We2.2 Converters
Chair: tbc
Co-Chair: tbc

We2.2.1 10:50 – 11:10
Harmonic Distortion Factor of Space Vector PWM for a Five-Phase Inverter
D Dujic, *ABB Corporate Research, Switzerland,* M Jones, E Levi, *Liverpool John Moores University, UK*

We2.2.2 11:10 – 11:30
Frequency Response based Dynamic Performance Analysis of Switched Mode Power Amplifiers used in Electromagnetic Levitation Systems

S Banerjee, *NIT, India,* R Bhaduri, *BCET, India,* P Biswas, *AEC, India*

We2.2.3 11:30 – 11:50
Bidirectional DC-DC Converter for Aircraft Electric Energy Storage Systems
R T Naayagi, A J Forsyth, *University of Manchester, UK*

We2.2.4 11:50 – 12:10
A Novel Variable Duty Cycle Half-Forward Converter having Low Current Harmonics and High Power Factor
Q Naman, *High Tech Industrial Service, Jordan,* O F Abu Mohareb, *University of Stuttgart, Germany*

We2.2.5 12:10 – 12:30
Optimal Design of ĆUK Step-Up Converter for Photovoltaic Energy Systems
B Chong, L Zhang, A Dehghani, *University of Leeds, UK*

We2.3 Motion Control Systems
Chair: tbc
Co-Chair: tbc

We2.3.1 10:50 – 11:10
Analysis of Phase Current Reconstruction Precision for PWM-VSI
H Ma, *Beijing University of Civil Engineering and Architecture, China,* K Sung, Q Wei, L Huang, *Tsinghua University, China*

We2.3.2 11:10 – 11:30
Characterisation and Modelling of Magnetic Couplings and Gears for Servo Control Systems
R Montague, C Bingham, K Atallah, *University of Sheffield*, *UK*

We2.3.3 11:30 – 11:50
Real-Time DSP Implemenatation of DCT Neural Network based on Indution Motor
Y Sayouti, M Akherraz, *LEEP - Ecole Mohammedia d'Ingenieurs, Morocco*

We2.3.4 11:50 – 12:10
Communication Topology in a Modular Servo-Drive System based on Long Stator Permanent Magnet Synchronous Linear Motor
S Silaghiu, P Mutschler, *Darmstadt University of Technology, Germany*

We2.3.5 12:10 – 12:30
Analysis of Fast Scale Instability in DC Drive with Full-Bridge Converter using Filippov's Method
N C Okafor, D Giaouris, B Zahawi, V Pickert, *Newcastle University*, *UK*, S Banerjee, *Indian Institute of Technology, India*

We2.4 Actuators and Linear Machines & Energy Harvesting
Chair: tbc
Co-Chair: tbc

We2.4.1 10:50 – 11:10
Design of A Novel Limited-Angle Actuator for an Electromechanical Engine Valve Drive
Y Qiu, D Perreault, J Kassakian, T Keim, *Massachusetts Institute of Technology, USA*

We2.4.2 11:10 – 11:30
Fabrication and Experimental Evaluation of a Novel Limited-Angle Actuator for an Electromechanical Engine Valve Drive
Y Qiu, D Perreault, J Kassakian, T Keim, *Massachusetts Institute of Technology, USA*

We2.4.3 11:30 – 11:50

EM-PM Hybrid Levitation and Propulsion Device for Magnetically Levitated Vehicle
H-W Cho, H-S Han, J-M Lee, *Korea Institute of Machinery and Materials, Republic of Korea*

We2.4.4 11:50 – 12:10
Performance Analysis of a Tubular Linear Motor Applied in Compressors
C Pompermaier, A Zambonetti, F J H Kalluf, *Whirlpool S.A., Brazil,* M V Ferreira da Luz, N Sadowski, *Federal University of Santa Catarina, Brazil*

We2.4.5 12:10 – 12:30
Energy Harvesting with Dielectro Active Polymers
S Munk-Nielsen, J Due, R Ø Nielsen, *Aalborg University, Denmark*

We2.5 Power Converter Control
Chair: tbc
Co-Chair: tbc

We2.5.1 10:50 – 11:10
A Neutral Leg Independent Controlled Current-Regulated Delta Modulator for a Four-Leg Switching Power
X Li, Z Deng, Z Chen, Q Fei, X Chen, *Nanjing University of Aeronautics and Astronautics, China*

We2.5.2 11:10 – 11:30
Limitations of PWM Rectifier under Unbalanced Voltage Supply
M Chomat, L Schreier, J Bendl, *Institute of Thermomechanics ASCR v.v.i., Czech Republic*

We2.5.3 11:30 – 11:50
Inverter Regulation using a Simplified Fuzzy PI Controller
S M Ayob, Z Salam, N Ahmad Azli, *Universiti Teknologi Malaysia, Malaysia*

We2.5.4 11:50 – 12:10
Spread Spectrum Scheme for Two-Level Inverters using Space Vector Sigma-Delta Modulation
B Jacob, M R Baiju, *College of Engineering, India*

We2.5.5 12:10 – 12:30
A Simple Modulation Strategy to Control the Neutral Point Voltage Deviation in Three-Level NPC Inverters
F Yue, N Elliot, *Converteam, UK*

We3.1 Interior Permanent Magnet Machines
Chair: tbc
Co-Chair: tbc

We3.1.1 13:30 – 13:50
Comparison of Optimal Design and Performance of PM Machines having Non-Overlapping Winding and Different Rotor Topologies
D Evans, Z Azar, L J Wu, Z Q Zhu, *University of Sheffield, UK*

We3.1.2 13:50 – 14:10
Influence of Rotor Configuration on Iron and Magnet Losses of Fractional-Slot IPM Machines
Z Azar, L J Wu, D Evans, Z Q Zhu, *University of Sheffield, UK*

We3.1.3 14:10 – 14:30
Perfomance Calculations of 12 Pole High Torque Synchronous Permanent Magnet Motors with Concentrated Winding
M Mirzaei, A Binder, *Darmstadt University of Technology, Germany*

We3.1.4 14:30 – 14:50
Study on Five Topology IPM Machines for Hybrid Electric Vehicle Traction
A Wang, H Li, L Wei, W F Lu, *North China Electric Power University, China*

We3.2 Matrix Converters
Chair: tbc
Co-Chair: tbc

We3.2.1 13:30 – 13:50
A Fast and Accurate Simulation Method for Matrix Converters
E Ibarra, I Kortabarria, J Andreu, E Planas, I Martínez de Alegría, *University of the Basque Country, Spain*

We3.2.2 13:50 – 14:10
A Matrix Converter Control Embedded in a Single System on Chip based on a FPGA
E Ormaetxea, J Andreu, I Kortabarria, I Martínez de Alegría, *University of the Basque Country, Spain,* E Robles, *Tecnalia, Spain*

We3.2.3 14:10 – 14:30
A Fault Tolerant Modulation Strategy for Matrix Converters
P Potamianos, E Mitronikas, A Safacas, *University of Patras, Greece*

We3.2.4 14:30 – 14:50
Repetitive Control for a Four Leg Matrix Converter
W M Rohouma, S L Arevalo, P Zanchetta, P W Wheeler, *University of Nottingham, UK*

We3.2.5 14:50 – 15:10
FPGA-based Generalized Scalar Pulse-Width-Modulation for Matrix Converters
F Bradaschia, M C Cavalcanti, *Federal University of Pernambuco, Brazil,* E Ormaetxea, J Andreu, *University of the Basque Country, Spain,* S Apiñaniz, *Tecnalia, Spain*