

Opening Session**Monday Morning**

Session Speaker: Professor O. A. Mohammed, IEMDC 2009 General Chairman & IEMDC International Steering Committee Chair

Symphony Ballrooms I&II 8:00-8:30 AM

Plenary Talk 1**Monday Morning**

Speaker: Mr Bart McManus, Bonneville Power Administration, USA

Title: Large Wind Integration Challenges and Solutions for Operations and System Reliability

Session Chair: Professor O. A. Mohammed, Florida International University, USA

Symphony Ballrooms I&II 8:30-9:30 AM

Coffee Break**9.30-10.00 AM****Monday Morning****Oral Session 1****Monday Morning****PM Machines (I)**

Session Chair: Professor M. A. Rahman, Memorial University of Newfoundland, Canada

Symphony Ballroom I 10:00-12:00

101 Approximate Methods for Calculating Rotor Losses in Permanent-Magnet Brushless Machines

Timothy J.E. Miller, University of Glasgow, UK

M.I. McGilp, University of Glasgow, UK

K.W. Klontz, Advanced MotorTech, U.S.A.

[IEMDC2009-11193](#)

102 A New Technique of Cogging Torque Suppression in Direct-Drive Permanent Magnet Brushless Machines

Weizhong Fei, Cranfield University, UK

Patrick Chi-Kwang Luk, Cranfield University, UK

[IEMDC2009-11208](#)

103 Generation and Harmonics in Interior Permanent Magnet Wind Generator

M. A. S. K. Khan, Power and Energy Research Laboratory, Canada

S. A. Saleh, Power and Energy Research Laboratory, Canada

M. A. Rahman, Power and Energy Research Laboratory, Canada

[IEMDC2009-10809](#)

104 Factors Affecting Eddy Current Losses of Segmented Nd-Fe-B Sintered Magnets without Insulation in Large PM Motors

Norio Takahashi, Okayama University, Japan
Hirofumi Shinagawa, Okayama University, Japan
Daisuke Miyagi, Okayama University, Japan
Yuhito Doi, Magnetic Materials R&D Center, Shin-Etsu Chemical Co., Ltd., Japan
Koji Miyata, Magnetic Materials R&D Center, Shin-Etsu Chemical Co., Ltd., Japan

[IEMDC2009-11277](#)

105 Online Loss Minimization Based Vector Control of IPMSM Drive

M. Nasir Uddin, Lakehead University, Canada
Fasil Abera, Lakehead University, Canada

[IEMDC2009-11076](#)

Oral Session 2**Monday Morning****Induction Machines (I)**

Session Chair: Professor N. A. Demerdash, Marquette University, USA

Symphony Ballroom II

10:00-12:00

201 A Comparison of direct and indirect measurement of induction motor efficiency

Emmanuel B. Agamloh, Advanced Energy, USA

[IEMDC2009-11038](#)

202 Fast Method for the Iron Losses Prediction in Inverter Fed Induction Motors

A. Boglietti, Politecnico di Torino, ITALY
A. Cavagnino, Politecnico di Torino, ITALY
M. Lazzari, Politecnico di Torino, ITALY

[IEMDC2009-10784](#)

203 Induction Machine Design Methodology for Self-Sensing: Balancing Saliencies and Power Conversion Properties

Ian P. Brown, University of Wisconsin - Madison, USA
Robert D. Lorenz, University of Wisconsin - Madison, USA

[IEMDC2009-11198](#)

204 Reduced Losses in Die-Cast Machines with Insulated Rotors

Yali Feng, University of Manchester, U.K.
Judith Apsley, University of Manchester, UK

Steve Williamson, University of Surrey, UK
A.C.Smith, University of Manchester, UK
Dan M. Ionel, AO Smith Corporate Technology Center, USA

[IEMDC2009-11151](#)

205 Space Harmonic Effect Comparison between a Standard Induction Motor and a Motor with a Novel Winding Arrangement

D.A.Kocabaş, Istanbul Technical University, TURKEY

[IEMDC2009-11075](#)

Oral Session 3

Monday Morning

Motor Drives (I)

Session Chair: Professor A. A. Arkadan, Hariri Canadian University, Lebanon

Concerto Ballroom A 10:00-12:00

301 Elimination of System Induced Torque Pulsations in Doubly Fed Induction Generators via Field Reconstruction Method

Morgan Kiani, University of Texas at Arlington, USA
Wei-Jen Lee, University of Texas at Arlington, USA

[IEMDC2009-11042](#)

302 A Low-Cost Digital Control Scheme for Brushless DC Motor Drives in Domestic Applications

Anand Sathyan, Illinois Institute of Technology, USA
Mahesh Krishnamurthy, Illinois Institute of Technology, USA
Nikola Milivojevic, Illinois Institute of Technology, USA
Ali Emadi, Illinois Institute of Technology, USA

[IEMDC2009-10913](#)

303 Pressure Control of a Nonlinear System with a Linear-PMSM and a Standard Inverter

Christian Junge, University of Wuppertal, Germany
Florian Senicar, Retostronik GmbH, Germany
Ralf Wegener, University of Wuppertal, Germany
Stefan Soter, University of Wuppertal, Retostronik GmbH, Germany

[IEMDC2009-10926](#)

304 Direct Torque Control of Permanent Magnet Motors Using a Single Current Sensor

E. Peralta-Sanchez, University of Manchester, UK
F. Alrifai, University of Manchester, UK
N. Schofield, University of Manchester, UK

[IEMDC2009-11286](#)**305 Nonlinear High-Gain Observer Design for Operation of SPM Machine Under Saturation Using Back EMF Method***Sinisa Jurkovic, Michigan State University, USA**Elias Strangas, Michigan State University, USA*[IEMDC2009-11054](#)**Oral Session 4****Monday Morning****Electric Vehicle Applications (I)****Session Chair:** Dr. Costin Ifrim, DRS Technologies, USA**Concerto Ballroom B**

10:00-12:00

401 Motor Modeling for EMC Simulation by 3-D Electromagnetic Field Analysis*Kohji Maki, Hitachi America Ltd, USA**Hiroki Funato, Hitachi America Ltd, USA**Liang Shao, Hitachi America Ltd, USA*[IEMDC2009-11056](#)**402 EM-TFL Identification for Particle Swarm Optimization of HEV Power Train***Nizar Al-Aaawar, Hariri Canadian University, Lebanon**Toufic Hijazi, Hariri Canadian University, Lebanon**Abdul Rahman Arkadan, Hariri Canadian University, Marquette University, USA*[IEMDC2009-11001](#)**403 Mathematical Description and Control Design for the simultaneous levitation and propulsion of a conveyor vehicle***Thomas Herold, RWTH Aachen University, Germany**Andre Pohlmann, RWTH Aachen University, Germany**Kay Hameyer, RWTH Aachen University, Germany*[IEMDC2009-11141](#)**404 Turn-to-Turn Voltage of Windings in Motors Fed by Inverter Drives***Koji Obata, Hitachi, Ltd., Japan**Ryozo Takeuchi, Hitachi, Ltd., Japan*[IEMDC2009-10960](#)**405 Review on Electrical Machines Applied in Electrical Vehicles**

Wei Xu, University of Technology, Sydney, Australia
Jianguo Zhu, University of Technology, Sydney, Australia
Youguang Guo, University of Technology, Sydney, Australia
David Dorrell, University of Technology, Sydney, Australia
Shuhong Wang, University of Technology, Sydney, Australia
Yi Wang, University of Technology, Sydney, Australia

[IEMDC2009-11128](#)

Oral Session 5

Monday Morning

AC Machines Modeling

Session Chair: Dr. Stephen Umans, Consultant, USA

Concerto Ballroom C 10:00-12:00

501 Magnetic Equivalent Circuit Modeling of Induction Machines under Stator and Rotor Fault Conditions

Gennadi Y. Sizov, Marquette University, USA
Chia-Chou Yeh, Marquette University, USA
Nabeel A. O. Demerdash, Marquette University, USA

[IEMDC2009-11119](#)

502 Simulation of a Broken Rotor Bar in an Induction Motor

Sheppard Salon, Rensselaer Polytechnic Institute, USA
David Burow, Rensselaer Polytechnic Institute, USA
Jerry Selvaggi, Rensselaer Polytechnic Institute, USA
MVK Chari, Rensselaer Polytechnic Institute, USA

[IEMDC2009-11012](#)

503 An Analytical Model for an N-Flux Barrier per Pole Permanent Magnet-Assisted Synchronous Reluctance Motor

Behrooz Nikbakhtian, Texas A&M University, USA
Salman Talebi, Texas A&M University, USA
Peyman Niazi, Seagate Co., USA
Hamid A. Toliyat, Texas A&M University, USA

[IEMDC2009-11268](#)

504 Generic Electric Machine Thermal Model Development using an Automated Finite Difference Approach

Dr. J. Rhett Mayor, Georgia Institute of Technology, USA
S. Andrew Semidey, Georgia Institute of Technology, USA

[IEMDC2009-11183](#)

505 Analytical Modelling and Finite Element Computation of Radial Vibration Force in Fractional-Slot Permanent Magnet Brushless Machines

Z.Q. Zhu, University of Sheffield, U.K
Z.P. Xia, University of Sheffield, U.K
L.J. Wu, University of Sheffield, U.K
G.W. Jewell, University of Sheffield, U.K

[IEMDC2009-10982](#)

Oral Session 6**Monday Morning****Multilevel and Matrix Converters****Session Chair:** Professor Philip Krein, University of Illinois, USA**Concerto Ballroom D**10:00-12:00

601 An Improved Direct Torque Control for Matrix Converter Drives Using an Overmodulation Strategy and Input Power Factor Correction

D. Xiao, University of New South Wales, Australia
M. F. Rahman, University of New South Wales, Australia

[IEMDC2009-11101](#)

602 Implementation and Test of an Optimization-Based Space-Vector Modulation Method for the 3 ϕ -3 ϕ Matrix Converter

Yuchen Lu, University of Idaho, USA
Herbert Hess, University of Idaho, USA
Brian Johnson, University of Idaho, USA

[IEMDC2009-11270](#)

603 Hybrid Multilevel Inverter Drive with Synchronous Modulation and Current Waveform Improvement

Leopoldo Cordova, Universidad Técnica Federico Santa Maria, Chile
Cesar Silva, Universidad Técnica Federico Santa Maria, Chile
Pablo Lezana, Universidad Técnica Federico Santa Maria, Chile

[IEMDC2009-11063](#)

604 A Modified Direct Torque Control for Matrix Converter Drives

D. Xiao, University of New South Wales, Australia
M. F. Rahman, University of New South Wales, Australia

[IEMDC2009-10914](#)

605 A New Method for the Detection and Location of Faults in Matrix Converters

Sérgio Cruz, University of Coimbra, PORTUGAL

Marco Ferreira, University of Coimbra, PORTUGAL
António Cardoso, University of Coimbra, PORTUGAL

[IEMDC2009-11100](#)

Lunch

12:00-1:00 PM

Symphony Ballroom IV Monday

Poster Session 1

Monday

Alternative Energy I

Session Chair: Dr. Waqas Arshad, ABB, USA

Symphony Ballroom III

1:30-3:00

1P1 Improved Dual-PI Rotor Current Control Scheme for a Wind-Driven DFIG during Asymmetrical Grid Voltage Dips

Hongsheng Wang, Zhejiang University, China
Wei Zhang, Zhejiang University, China
Jiabing Hu, Zhejiang University, China
Yikang He, Zhejiang University, China

[IEMDC2009-10931](#)

1P2 Wells turbine Control in Wave Power Generation Plants

Modesto Amundarain, University of the Basque Country, Spain
Mikel Alberdi, University of the Basque Country, Spain
Aitor Garrido, University of the Basque Country, Spain
Izaskun Garrido, University of the Basque Country, Spain

[IEMDC2009-11213](#)

1P3 High-Order Sliding Mode Control of a DFIG-Based Wind Turbine for Power Maximization and Grid Fault Tolerance

B. Beltran, University of Brest, France
M.E.H. Benbouzid, University of Brest, France
T. Ahmed-Ali, University of Caen, France

[IEMDC2009-11115](#)

1P4 Rotor Power Factor Adjustable Direct Torque Control of Doubly-Fed Induction Generators for Wind Power Generation

Yunqian Zhang, Southeast University, China
Ming Cheng, Southeast University, China
Jianzhong Zhang, Southeast University, China
Yun Yang, Southeast University, China

[IEMDC2009-10827](#)**1P5 Energy Management on board of a Reduced Scale Hybrid Automobile**

Daniel Fodorean, Technological University of Belfort-Montbéliard, France
D. Bouquain, Technological University of Belfort-Montbéliard, France
M.B. Camara, University of Havre, France
A.Miraoui, Technological University of Belfort-Montbéliard, France

[IEMDC2009-11135](#)**Poster Session 2****Monday****Induction Machines I****Session Chair:** Dr. Chris Edrington, Florida State University, USA**Symphony Ballroom III**

1:30-3:00

2P1 Effect of Variable Slip Rotor Impedance on the Performance of Singly Excited Three Phase Induction Motor

W.S.Abu-Elhaija, Princess Sumaya University for Technology, Jordan

[IEMDC2009-10871](#)**2P2 Phase shift method for radial magnetic force analysis in Induction motors with non skewed asymmetrical rotor slots**

R. Chitroju, KTH School of Electrical Engineering, Sweden
C. Sadarangani, KTH School of Electrical Engineering, Sweden

[IEMDC2009-10803](#)**2P3 The Influence of Wye and Delta Connection on Induction Motor Losses Taking Slot Opening and Skew Effect into Account**

Zhao Haisen, North China Electric Power University, China
Liu Xiaofang, North China Electric Power University, China
Hu Jia, North China Electric Power University, China
Luo Yingli, North China Electric Power University, China

[IEMDC2009-10862](#)**2P4 Adjustable flux three phase a.c. machines with combined multiple-step star-delta winding connections**

Mihail V. Cistelecan, Research Institute for Electrical Machines, Romania
Fernando Ferreira, University of Coimbra, Portugal
Mihail Popescu, Research Institute for Electrical Machines, Romania

[IEMDC2009-10902](#)

2P5 Design Upgrade of Fractional Horsepower Single Phase Induction Motor for Refrigerator Compressor

A. Bahgat, Cairo University, Egypt
M. Abdelhakim, Cairo University, Egypt
A. Hanafy, Cairo University, Egypt
T. Fawzy, Cairo University, Egypt
H. Emarras, Cairo University, Egypt
H. Hassan, Cairo University, Egypt

[IEMDC2009-10957](#)

2P6 A New Method for Determination of Induction Machine Parameters

S. Enache, University of Craiova, Romania
A. Bitoleanu, University of Craiova, Romania
M. A. Enache, University of Craiova, Romania
M. Dobriceanu, University of Craiova, Romania

[IEMDC2009-10845](#)

Poster Session 3

Monday

Modeling and Control I

Session Chair: Dr. Philippe Wendling, Magsoft Corporation, USA

Symphony Ballroom III 1:30-3:00

3P1 A Low-Cost Sensorless Drive for Slim Motors With Analog Filter and Shift Circuit Free

Jhieh-Yang Lin, Electric Motor Technology Research Center, Taiwan
Ren-Jhieh Tseng, Electric Motor Technology Research Center, Taiwan
Mi-Ching Tsai, Electric Motor Technology Research Center, Taiwan
Liang-Yi Hsu, Electric Motor Technology Research Center, Taiwan

[IEMDC2009-10836](#)

3P2 A New Passive Methodology for Controlling the Noise in Electrical Machines: Impact of some Parameters on the Modal Analysis

D. Torregrossa, UTBM, France
F. Peyraut, UTBM, France
M. Cirrincione, UTBM, France
C. Espanet, FEMTO-ST Institute, France
A. Cassat, EPFL, Switzerland
A. Miraoui, UTBM, France

[IEMDC2009-10942](#)

3P3 Improved Techniques of Restrained Search Predictive Control for Multiphase Drives

Mario J. Durán, University of Málaga, Spain
F. Barrero, University of Seville, Spain
S. Toral, University of Seville, Spain
M. Arahal, University of Seville, Spain
J. Prieto, University of Seville, Spain

[IEMDC2009-10804](#)

3P4 Synchronization Control of Dual Motors Based on Fuzzy Self-adjusting PID

Limei Wang, Shenyang University of Technology, China
Fei Huang, Shenyang University of Technology, China

[IEMDC2009-10811](#)

3P5 Control of Plant with Dynamics Asymmetry Caused by the Actuator Rate Saturation Change

A. Baskys, Semiconductor Physics Institute, Lithuania
V. Zlosnikas, Semiconductor Physics Institute, Lithuania

[IEMDC2009-10905](#)

3P6 Model Predictive Speed Control with Optimal Torque Constraints Handling of Drive Systems with Elastic Transmission

Marcin T. Cychowski, Cork Institute of Technology, Ireland
Krzysztof Szabat, Wroclaw University of Technology, Poland

[IEMDC2009-10996](#)

3P7 A Maximum Power Point Tracker using Positive Feedforward Control based on the DC Motor Dynamics and PVM Mathematical Model

Jesus Gonzalez-Llorente, University of Puerto Rico, Puerto Rico
Eduardo I. Ortiz-Rivera, University of Puerto Rico, Puerto Rico
Andres Diaz, University of Puerto Rico, Puerto Rico

[IEMDC2009-11082](#)

3P8 Enhanced Predictive Current Control Method for the Asymmetrical Dual-three phase Induction Machine

R. Gregor, Camino de los Descubrimientos s/n, SPAIN
F. Barrero, Camino de los Descubrimientos s/n, SPAIN
S. Toral, Camino de los Descubrimientos s/n, SPAIN
M.R. Arahal, Camino de los Descubrimientos s/n, SPAIN
J. Prieto, Camino de los Descubrimientos s/n, SPAIN
M.J. Durán, University of Málaga, SPAIN

[IEMDC2009-11099](#)

3P9 A MRAC Parameter Identification Algorithm for Three-Phase Induction Motors

R. Z. Azzolin, Power Electronic and Control Research Group – GEPOC, Brazil
H. A. Gründling, Federal University of Santa Maria – UFSM, Brazil

[IEMDC2009-11140](#)

3P10 PMSM Drives Sensorless Position Control with Signal Injection and Neural Filtering

Angelo Accetta, Universit`a degli studi di Palermo, Italia
Maurizio Cirrincione, Universit`e de Technologie de Belfort–Montb´eliard (UTBM), France
Marcello Pucci, I.S.S.I.A.–C.N.R., Italy
Gianpaolo Vitale, I.S.S.I.A.–C.N.R., Italy

[IEMDC2009-10873](#)

3P11 Design of Synchronous Reluctance Motor by Equivalent Magnetic Circuit Method Considering Zig-Zag Magnetic Flux

Joong-Kyoung Kim, HYOSUNG Corporation, Korea
Ki-Yeoung Kweon, HYOSUNG Corporation, Korea
Hahk-Sung Lee, HYOSUNG Corporation, Korea
Jung-Pyo Hong, CoreSteel Co. Ltd., Korea
Sang-Young Jung, Dong-A University, Korea
Sung-Chin Hahn, Dong-A University, Korea

[IEMDC2009-10967](#)

Poster Session 4

Monday

PM Machines I

Session Chair: Dr. Ranga Tallam, Rockwell Automation, USA

Symphony Ballroom III 1:30-3:00

4P1 Compensation of Cogging Torque for Flux-Switching Permanent Magnet Motor Based on Current Harmonics Injection

Hongyun Jia, Southeast University, China
Ming Cheng, Southeast University, China
Wei Hua, Southeast University, China
Zhengzhuan Yang, Southeast University, China
Yunqian Zhang, Southeast University, China

[IEMDC2009-10807](#)

4P2 Optimal Speed Control of an Interior Permanent Magnet Synchronous Motor including Cross Saturation

Carlos E. Nino-Baron, Michigan State University, USA
Abdul Rehman Tariq, Michigan State University, USA
Sinisa Jurkovic, Michigan State University, USA

Elias G. Strangas, Michigan State University, USA

[IEMDC2009-11067](#)

4P3 Control Strategies and Reconfiguration of Four-Leg Inverter PMSM Drives in Case of Single-Phase Open-Circuit Faults

Fabien Meinguet, Universit e Libre de Bruxelles, Belgium
Johan Gyselinck, Universit e Libre de Bruxelles, Belgium

[IEMDC2009-11117](#)

4P4 Influence of Skewed and Segmented Magnet Rotor on IPM Machine performance and Ripple Torque for Electric Traction

Aimeng Wang, North China Electric Power University, China
Heming Li, North China Electric Power University, China
Weifu Lu, North China Electric Power University, China

[IEMDC2009-10932](#)

4P5 Single Phase Doubly Salient Permanent Magnet Generator with Full-pitched Winding

Jianzhong Zhang, Southeast University, China
Ming Cheng, Southeast University, China
Yunqian Zhang, Southeast University, China

[IEMDC2009-10810](#)

4P6 Power-Factor and Torque Calculation under Consideration of Cross Saturation of the Interior Permanent Magnet Synchronous Motor with Brushless Field Excitation

Seong Taek Lee, Oak Ridge National Laboratory , The University of Tennessee, USA
Timothy A. Burress, Oak Ridge National Laboratory, USA
Leon M. Tolbert, Oak Ridge National Laboratory , The University of Tennessee, USA

[IEMDC2009-10824](#)

4P7 Method for Multi-objective Optimized Designs of Surface Mount Permanent Magnet Motors with Concentrated or Distributed Stator Windings

Yao Duan, Georgia Institute of Technology, USA
Ronald Harley, Georgia Institute of Technology, USA
Thomas Habetler, Georgia Institute of Technology, USA

[IEMDC2009-10832](#)

4P8 Design and Analysis of a Five-Phase Interior Permanent Magnet Generator with a Non-Integer Number of Stator Slots per Phase

Olorunfemi Ojo, Tennessee Technological University, USA

Zhiqiao Wu, Tennessee Technological University, USA
Sosthenes Karugaba, Tennessee Technological University, USA
Adeola Balogun, University of Lagos, Nigeria
Emeka Obe, University of Nigeria, Nigeria

[IEMDC2009-10833](#)

4P9 A Variable Structure Sliding Mode Particle Swarm Optimization- PSO Optimal Regulating Controller for Industrial PMDC Motor Drives

Adel M. Sharaf, University of Trinidad and Tobago, Trinidad and Tobago
Adel A. A. El-Gammal, University of Trinidad and Tobago, Trinidad and Tobago

[IEMDC2009-10908](#)

4P10 Analysis of the air-gap asymmetry in axial-flux permanent magnet generators

Mauro Andriollo, University of Padova, Italy
Manuel De Bortoli, University of Padova, Italy
Giovanni Martinelli, University of Padova, Italy
Augusto Morini, University of Padova, Italy
Andrea Tortella, University of Padova, Italy

[IEMDC2009-10949](#)

4P11 Application of Lie's Symmetries on the Modeling of an Axial Flux Permanent Magnet machine

Loureiro, L.T.R., Federal University of Rio Grande do Sul Brazil, Brazil
Flores F., A.F., Federal University of Rio Grande do Sul Brazil, Brazil
Zabadal, J.R.S, Federal University of Rio Grande do Sul Brazil, Brazil
Homrich, R.P, Federal University of Rio Grande do Sul Brazil, Brazil

[IEMDC2009-11186](#)

Poster Session 5

Monday

Power Converters I

Session Chair: Dr. Ayman El-Rafaie, General Electric Global Research Center, USA

Symphony Ballroom III

1:30-3:00

5P1 New Resonant Pole Inverter for Battery-Fed Brushless DC Motor Drive

M M Shahbazi, Isfahan University of Technology, Iran
Seyed M Madani, Isfahan University of Technology, Iran
Akbar Ebrahimi, Isfahan University of Technology, Iran

[IEMDC2009-11032](#)

5P2 Influence of Circuit Parameters on Operating Regions of PWM Rectifier under Unbalanced Voltage Supply

Miroslav Chomat, Institute of Thermomechanics, Czech Republic
Ludek Schreier, Institute of Thermomechanics, Czech Republic
Jiri Bendl, Institute of Thermomechanics, Czech Republic

[IEMDC2009-11107](#)

5P3 Enhanced-Performance Control of a DC-DC Z-Source Converter

Santiago Amodeo, Universidad Nacional del Sur, Argentina
Héctor Chiacchiarini, Universidad Nacional del Sur, Argentina
Alejandro Oliva, Universidad Nacional del Sur, Argentina
Claudio Busada, Universidad Nacional del Sur, Argentina
María Belén D'Amico, Universidad Nacional del Sur, Argentina

[IEMDC2009-11237](#)

5P4 Experimental characterisation of Linear Permanent magnet Actuator with Gas Springs

Ravindra babu ummaneni, Norwegian University of Science and technology, Norway
Caroline Jaillot, Norwegian University of Science and technology, Norway
Robert Nilssen, Norwegian University of Science and technology, Norway
Brennvall.J.E., Resonator AS, Norway

[IEMDC2009-11261](#)

5P5 An Protocol Design for Distributed Logic Controlled Parallel Operation UPS System

Fang Luo, Huazhong University of Science and Technology, China
Yu Zhang, Huazhong University of Science and Technology, China
Yong Kang, Huazhong University of Science and Technology, China
Bin Xie, Huazhong University of Science and Technology, China

[IEMDC2009-11064](#)

5P6 Harmonics Analysis on a Cascade Indirect Matrix Converter Based on Unidirectional Switches

Fen Tang, Beijing Jiaotong University, China
Xinmin Jin, Beijing Jiaotong University, China
Yibin Tong, Beijing Jiaotong University, China
Xuezhi Wu, Siemens Ltd., China
Jingdou Liu, Beijing Jiaotong University, China
Lin Ma, Beijing Jiaotong University, China

[IEMDC2009-11086](#)

5P7 DC Motor Drive Using Matrix Converter

Senad Huseinbegovic, University of Sarajevo, Bosnia-Herzegovina
Omer Tanovic, University of Sarajevo, Bosnia-Herzegovina

[IEMDC2009-11298](#)

5P8 Study on a Novel Clamped Topology of Multilevel Converters

Bo Hu, Tongji University, China
Guoqing Xu, Tongji University, China
Mingrui Zhang, Tongji University, China
Jingsong Kang, Tongji University, China
Liang Xia, Tongji University, China

[IEMDC2009-10859](#)

5P9 A Newly-Designed Multi-Input Bidirectional Converter

Rong-Jong Wai, Yuan Ze University, Taiwan
Chung-You Lin, Yuan Ze University, Taiwan
Jeng-Dao Lee, National Formosa University, Taiwan

[IEMDC2009-10792](#)

5P10 Single Phase and Three Phase P+Resonant Based Grid Connected Inverters with Reactive Power and Harmonic Compensation Capabilities

Ali Maknouninejad, University of Central Florida, USA
Marcelo Simoes, Colorado School of Mines, USA
Matthew Zolot, UQM Technologies, USA

[IEMDC2009-10798](#)

5P11 Twelve-Switch Inverter for Driving Three Three-phase Loads Independently Using FPGA Based Hardware Controller

Hoc Duy Pham, Yokohama National University, Japan
Yasutaka Fujimoto, Yokohama National University, Japan

[IEMDC2009-10923](#)

Poster Session 6

Monday

Special Machines I

Session Chair: Mr. Thomas Klamt, ALSTOM Hydro Ltd, Switzerland

Symphony Ballroom III 1:30-3:00

6P1 High Speed Electromechanical Flywheel Design for Rural Electrification in Sub Saharan Africa

R Okou, University of Cape Town, South Africa
G Mwaba, University of Cape Town, South Africa
MA Khan, University of Cape Town, South Africa
P Barendse, University of Cape Town, South Africa
P Pillay, Concordia University, Canada

[IEMDC2009-11147](#)

6P2 Design Challenges and Potentials of HTS Synchronous Motor for Superbus

S.O. Ani, Delft University of Technology, Netherlands
H. Polinder, Delft University of Technology, Netherlands
J.A. Ferreira, Delft University of Technology, Netherlands
J.W. Ockels, Delft University of Technology, Netherlands

[IEMDC2009-11106](#)

6P3 Applied Exploration of Evaporative Cooling Technique for Rotor of Electric Machine

Hou Zhe, Chinese Academy of Sciences, China
Gu Guobiao, Chinese Academy of Sciences, China

[IEMDC2009-10855](#)

6P4 The Enhancement of Transient Performance of Cascaded Induction Motors Using UPQC

P. Javanbakht, Amirkabir University of Technology, Iran
M. Abedi, Amirkabir University of Technology, Iran

[IEMDC2009-10799](#)

6P5 Analytical and 3D FEM Modeling of a Tubular Linear Motor Taking Into Account Radial Forces Due to Eccentricity

Cristofaro Pompermaier, Whirlpool S.A Embraco Unit, Brazil
Flavio J. H. Kalluf, Whirlpool S.A Embraco Unit, Brazil
Mauricio V. Ferreira da Luz, Federal University of Santa Catarina, Brazil
Sadowski Nelson, Federal University of Santa Catarina, Brazil

[IEMDC2009-10992](#)

6P6 Modeling and Experimental Verification of a Tubular Actuator for 20 g Acceleration in a Pick and Place Application

Koen Meessen, Eindhoven University of Technology, The Netherlands
Johan Paulides, Eindhoven University of Technology, The Netherlands
Elena Lomonova, Eindhoven University of Technology, The Netherlands

[IEMDC2009-11170](#)

6P7 Investigation of Linear Generator Starting Modes by Mechanical Resonance Rectangular Current Commutation

Saiful A. Zulkifli, Universiti Teknologi PETRONAS, Malaysia
Mohd N. Karsiti, Universiti Teknologi PETRONAS, Malaysia
A-Rashid A-Aziz, Universiti Teknologi PETRONAS, Malaysia

[IEMDC2009-11311](#)

6P8 Generator Solutions For Stand Alone Pico-Electric Power Plants

Daniel Fodorean, Technological University of Belfort, France
L.Szabo, Technical University of Cluj-Napoca, Romania

A.Miraoui, Technological University of Belfort, France

[IEMDC2009-11165](#)

6P9 Human-Powered Small-Scale Generation System for a Sustainable Dance Club

Johannes Paulides, Eindhoven University of Technology, The Netherlands

J.W. Jansen, Eindhoven University of Technology, The Netherlands

L. Encica, Eindhoven University of Technology, The Netherlands

E.A. Lomonova, Eindhoven University of Technology, The Netherlands

M.Smit, Sustainable dance club, The Netherlands

[IEMDC2009-11214](#)

6P10 Core Loss Prediction and Measurement in Magnetic Bearing

R. Guan, Clarkson University, USA

M.J Manyage, Manyage Technologies, South Africa

P. Pillay, Concordia University, Canada

Y. Zhang, Clarkson University, USA

[IEMDC2009-11238](#)

CCoffee Break

3:00-3:30

Monday Afternoon

Oral Session 7

Monday Afternoon

AC Generators (I)

Session Chair: Mr. Jim Oliver, Jarsco Engineering Corporation, USA

Symphony Ballroom I

3:30-5:30

701 Transient Performance of a High-Temperature-Superconducting Generator

Stephen Umans, Independent Consultant, USA

[IEMDC2009-10780](#)

702 Radial Flux High Temperature Superconductor Motor using Bulk Trapped Field Magnets

X. Feng, Teco-Westinghouse Motor Company, USA

G. Gao, Teco-Westinghouse Motor Company, USA

K. Davey, University of Texas, Austin, USA

M. Werst, University of Texas, Austin, USA

R. Hebner, University of Texas, Austin, USA

R. Weinstein, University of Houston, Houston, USA

D. Parks, University of Houston, Houston, USA

R. Sawh, University of Houston, Houston, USA

[IEMDC2009-10891](#)

703 Recent Advancements in Aircraft Generators

Jacek F. Gieras, University of Technology and Life Sciences, Poland

[IEMDC2009-11142](#)

704 Type Testing a 2000 MW Turbogenerator

K. Sedlazeck, Siemens Energy, Germany

C. Richter, Siemens Energy, Germany

S. Strack, Siemens Energy, Germany

S. Lindholm, Siemens Energy, USA

J. Pipkin, Siemens Energy, USA

F. Fu, Siemens Energy, USA

B. Humphries, Siemens Energy, USA

L. Montgomery, Siemens Energy, USA

[IEMDC2009-11111](#)

705 Large 60 Hz Turbogenerators: Mechanical Design and Improvements

B. Irwanto, ALSTOM, Switzerland

K. Steigleder, ALSTOM, Switzerland

O. Perros, ALSTOM, France

M. Verrier, ALSTOM, France

[IEMDC2009-11025](#)

Oral Session 8

Monday Afternoon

Control Applications (I)

Session Chair: Professor Elias Strangas, Michigan State University, USA

Symphony Ballroom II

3:30-5:30

801 Heuristic optimization strategies for Automated Experimental Control Design in Variable Speed Drives

Nnamdi Okaeme, University of Nottingham, UK

Pericle Zanchetta, University of Nottingham, UK

[IEMDC2009-11318](#)

802 Development of Real-Time PID Control for Maglev Transportation System Via Particle Swarm Optimization

Jeng-Dao Lee, National Formosa University, Taiwan

Rong-Jong Wai, National Formosa University, Taiwan

Kun-Lun Chuang, National Formosa University, Taiwan

[IEMDC2009-10796](#)

803 A Novel Dynamometer System for Testing High Power Variable Frequency Drives

Orges Gjini, Danfoss Drives, USA
Charles Romenesko, Danfoss Drives, USA
Tracy Newnam, Danfoss Drives, USA
Jens Godbersen, Danfoss Drives A/S, Denmark
Nicolas Trolle, Danfoss Drives A/S, Denmark

[IEMDC2009-10956](#)

804 A computationally efficient iron loss model for brushless AC machines that caters for rated flux and field weakened operation

P.H. Mellor, University of Bristol, UK
Rafal Wrobel, University of Bristol, UK
Derrick Holliday, University of Bristol, UK

[IEMDC2009-11171](#)

805 Case Study of Using Multidisciplinary Techniques to Redesign Electric Motors

Constantin D. Pitis, BC Hydro - Power Smart, Canada

[IEMDC2009-10823](#)

Oral Session 9

Monday Afternoon

Motor Drives (II)

Session Chair: Dr. Ren Wang, Black&Decker, USA

Concerto Ballroom A 3:30-5:30

901 Vector Control of a Multiphase machine with open circuit phases

David Graham, Stoyerman Controls Ltd, UK

[IEMDC2009-10794](#)

902 Motor System Energy Efficiency in the Nylon Industry: a Comparison of PWM and Square Wave Invertors

Ahmed H Eltom, University of Tennessee, USA
Aliosman Demirbas, Kordsa Inc, USA

[IEMDC2009-11061](#)

903 Torsional Dynamics of Doubly Fed Induction Machine Systems: Wind Turbine and Flywheel

Dawei Xiang, Durham University, UK
Li Ran, Durham University, UK
James Kirtley, Massachusetts Institute of Technology, USA

[IEMDC2009-11211](#)

904 Accurate and Easy-to-Implement Rotor Position Estimation Scheme for Sensorless Control of Interior Permanent Magnet Synchronous motor Drives at Full Speed Range

*Yan Yang, Montana State Univeristy, USA
HongWei Gao, Montana State University, USA*

[IEMDC2009-11284](#)

905 Mechatronics Design for Industrial Automation Using NX6 Motion

*Razvan Panaitescu, Siemens Energy and Automation, Inc, USA
Mathias Oppelt, Siemens Energy and Automation, Inc, USA*

[IEMDC2009-10760](#)

Oral Session 10**Monday Afternoon****Finite Element Simulations**

Session Chair: Professor Sheppard Salon, Rensselaer Polytechnic Institute, USA

Concerto Ballroom B 3:30-5:30

1001 Ultra-Fast Finite Element Analysis of Brushless PM Machines Based on Space – Time Transformations

*Dan Ionel, A. O. Smith Corp., U.S.A.
Mircea Popescu, Motor Design Ltd., U.K.*

[IEMDC2009-11196](#)

1002 High Speed Magnetic Network Solving

*Wolfgang Meyer, Technische Universität München, Germany
Dominik B"ucherl, Technische Universität München, Germany
Hans-Georg Herzog, Technische Universität München, Germany*

[IEMDC2009-11180](#)

1003 Investigation of the usability of 2D- and 3D-FEM for a hybrid stepper motor

*Oswald A., Technische Universit"at M"unchen, Germany
Herzof H.G., Technische Universit"at M"unchen, Germany*

[IEMDC2009-11177](#)

1004 Application of Finite-Element Modeling Tools for Analysis and Design of AC Drive Power Bus Structures

*Rangarajan M. Tallam, Rockwell Automation, USA
Richard A. Lukaszewski, Rockwell Automation, USA
Mark Solveson, Ansoft Corporation, USA*

[IEMDC2009-11185](#)**1005 Large Power Transformer-Based Stray-Field Loss Modeling and Validation**

Z.Cheng, R & D Center, Baoding Tianwei Group Co., LTD, China
N.Takahashi, Okayama University, Japan
B.Forghani, Infolytica Corp., Canada
Y.Du, R & D Center, Baoding Tianwei Group Co., LTD, China
J.Zhang, R & D Center, Baoding Tianwei Group Co., LTD, China
L.Liu, R & D Center, Baoding Tianwei Group Co., LTD, China
Y.Fan, R & D Center, Baoding Tianwei Group Co., LTD, China
Q.Hu, R & D Center, Baoding Tianwei Group Co., LTD, China
C.Jiao, R & D Center, Baoding Tianwei Group Co., LTD, China
J.Wang, R & D Center, Baoding Tianwei Group Co., LTD, China

[IEMDC2009-11092](#)**Oral Session 11****Monday Afternoon****Fault Diagnostics (I)****Session Chair:** Professor Steven Williamson, University of Surrey, UK**Concerto Ballroom C**

3:30-5:30

1101 A Generalized Condition Monitoring Method for Multi-Phase Induction Motors

Seung-deog Choi, Advanced Electric Machines & Power Electronics Laboratory, USA
Bilal Akin, Texas Instruments Inc, USA
Mina M.Rahimian, Advanced Electric Machines & Power Electronics Laboratory, USA
Hamid A.Toliyat, Advanced Electric Machines & Power Electronics Laboratory, USA
Mahmood Azadpour, Advanced Electric Machines & Power Electronics Laboratory, USA

[IEMDC2009-11058](#)**1102 Origins of Stator Current Spectra in DFIGs with Winding Faults and Excitation Asymmetries**

S. Williamson, University of Surrey, UK
S. Djurovic, The University of Manchester, UK

[IEMDC2009-10953](#)**1103 Double-Fed Three-Phase Induction Machine Model for Simulation of Inter-turn short circuit fault**

Amine Yazidi, Univ. of Picardie, France
Humberto Henao, Univ. of Picardie, France
Gérard-André Capolino, Univ. of Picardie, France
Laurent Capocchi, University of Corsica, France
Dominique Federici, University of Corsica, France

[IEMDC2009-11273](#)**1104 Modeling of Synchronous Machines with Damper Windings for Condition Monitoring**

Mina M. Rahimian, Texas A&M University, USA

Karen Butler-Purry, Texas A&M University, USA

[IEMDC2009-11102](#)**1105 On-Line Inter-Turn Fault Detection for PMSM Using Stator Resistance Estimation**

Thierry Boileau, Groupe de Recherche en Electrotechnique et Electronique de Nancy (GREEN), France

Babak Nahid-Mobarakeh, Groupe de Recherche en Electrotechnique et Electronique de Nancy (GREEN), France

Farid Meibody-Tabar, Groupe de Recherche en Electrotechnique et Electronique de Nancy (GREEN), France

[IEMDC2009-11301](#)**Oral Session 12****Monday Afternoon****Linear Machines****Session Chair:** Professor Norio Takahashi, Okayama University, Japan**Concerto Ballroom D**

3:30-5:30

1201 Design of a Linear Permanent Magnet Motor for Active Vehicle Suspension

Jiabin Wang, University of Sheffield, UK

Weiya Wang, University of Sheffield, UK

Kais Atallah, University of Sheffield, UK

David Howe, University of Sheffield, UK

[IEMDC2009-10820](#)**1202 Maximum Force/Ampere Control of Linear Induction Motor Drives in Field Weakening Region**

Haidong Yu, Whirlpool Corporation, USA

Babak Fahimi, University of Texas at Arlington, USA

[IEMDC2009-11197](#)**1203 Behavior and Effects of Induced Electrical Currents in an XY-Actuator**

Ály Ferreira Flores Filho, Federal University of Rio Grande do Sul, Brazil

Nolvi Francisco Baggio Filho, Federal University of Rio Grande do Sul, Brazil

[IEMDC2009-11031](#)**1204 Energy transfer via linear doubly-fed motor in different operating modes**

Tobias Schneider, University of Paderborn, Germany
Bernd Schulz, University of Paderborn, Germany
Christian Henke, University of Paderborn, Germany
K. Witting, University of Paderborn, Germany
D. Steenken, University of Paderborn, Germany
J. Böcker, University of Paderborn, Germany

[IEMDC2009-11189](#)

1205 Over-Load Capacity of Tubular Permanent Magnet Linear Motors

Maamar Benarous, Goodrich Actuation Systems Limited, UK
Fred Eastham, University of Bath, UK

[IEMDC2009-10947](#)

Plenary Talk 2

[Tuesday Morning](#)

Speaker: [Dr Waleed Said, Hamilton Sunstrand Corporation, USA](#)

Title: [Aerospace Applications Demand Efficient Use of Electrical Power](#)

Session Chair: [Professor O. A. Mohammed, General Chair](#)

Symphony Ballrooms I&II [8:15-9:15 AM](#)

Coffee Break

[9:15-9:30](#)

[Tuesday Morning](#)

Oral Session 13

[Tuesday Morning](#)

Sensorless Control (I)

Session Chair: [Professor Robert Lorentz, University of Wisconsin-Madison, USA](#)

Symphony Ballroom I [9:30-11:30](#)

1301 A New Generalized Speed-Varying Ellipse Voltage Injection Method for sensorless Drive of Permanent-Magnet of Permanent-Magnet Synchronous Motors with Pole Saliency

Shinji Shinnaka, Kanagawa University, Japan

[IEMDC2009-10884](#)

1302 Self-Sensing Control of a Four Phase Switched Reluctance Drive Using High Frequency Signal Injection including Saturation Effects

Ekrem Kayikci, Power Electronic Control Systems Caterpillar Electronics Mossville, USA
Robert Lorenz, University of Wisconsin – Madison, USA

[IEMDC2009-11098](#)

1303 Sensorless position control of linear tubular motors with pulsating voltage injection and improved position observer

*F. Cupertino, Politecnico di Bari Politecnico di Torino, Italy
P. Giangrande, Politecnico di Bari Politecnico di Torino, Italy
L. Salvatore, Politecnico di Bari Politecnico di Torino, Italy
G. Pellegrino, C.so Duca degli Abruzzi, Italy*

[IEMDC2009-11028](#)

1304 Comparison of a Solid and a Laminated Rotor for Sensorless Control of Radial Active Magnetic Bearings

*Matthias Hofer, Vienna University of Technology, Austria
Erich Schmidt, Vienna University of Technology, Austria
Manfred Schroedl, Vienna University of Technology, Austria*

[IEMDC2009-10978](#)

1305 Application of Unscented Kalman Filter to Sensorless Permanent-Magnet Synchronous Motor Drive

*Tze-Fun Chan, Hong Kong Polytechnic University, China
Pieter Borsje, Hong Kong Polytechnic University, China
Weimin Wang, Hong Kong Polytechnic University, China*

[IEMDC2009-11132](#)

Oral Session 14**Tuesday Morning****Electric Vehicle Applications (II)**

Session Chair: Dr. Keith Klontz, Advanced Motor Tech LLC, USA

Symphony Ballroom II

9:30-11:30

1401 Comparison of Induction Motor Drives for Electric Vehicle Applications: Dynamic Performance and Parameter Sensitivity Analyses

*A.M.Bazzi, University Of Illinois at Urbana Champaign, USA
A.P. Friedl, University Of Illinois at Urbana Champaign, USA
S.Choi, University Of Illinois at Urbana Champaign, USA
P.T. Krein, University Of Illinois at Urbana Champaign, USA*

[IEMDC2009-11200](#)

1402 Common Mode EMI Propagation in High Voltage DC supplied Induction Motor Drives for Electric Vehicles Application

*M. C. Di Piazza, Institute on Intelligent Systems for the Automation, ITALY
A. Ragusa, Institute on Intelligent Systems for the Automation, ITALY*

G. Vitale, Institute on Intelligent Systems for the Automation, ITALY

[IEMDC2009-10936](#)

1403 Simulation of the Electrical Machine's Fuel Saving Potential in Parallel Hybrid Drive Trains

Dominik Bücher, Technische Universität München, Germany

Wolfgang Meyer, Technische Universität München, Germany

Hans-Georg Herzog, Technische Universität München, Germany

[IEMDC2009-11077](#)

1404 Analytic Technique of Designing Electromagnetic Compatibility Filters for Inverter Drives

Nobuhiro Kusuno, Hitachi Research Laboratory, Japan

Tadahiko Chida, Hitachi Research Laboratory, Japan

Akira Mishima, Hitachi Research Laboratory, Japan

Tomoya Kamezawa, Hitachi Industrial Equipment Systems, Japan

Koumei Mou, Hitachi Industrial Equipment Systems, Japan

Masahiro Hiraga, Hitachi Industrial Equipment Systems, Japan

Satoshi Ibori, Hitachi Industrial Equipment Systems, Japan

[IEMDC2009-10961](#)

1405 An Integral Battery Charger with Power Factor Correction for Electric Scooter

Gianmario Pellegrino, Politecnico di Torino, Italy

Eric Armando, Politecnico di Torino, Italy

Paolo Guglielmi, Politecnico di Torino, Italy

[IEMDC2009-11020](#)

Oral Session 15

Tuesday Morning

Fault Tolerant

Session Chair: Dr. Robert Cox, UNC Charlotte, USA

Concerto Ballroom A

9:30-11:30

1501 An Observer Based Mechanical Sensor Failure Fault Tolerant Controller Structure in PMSM drive

Ahmad Akrad, LGEP/SPEE Labs, France

Mickaël Hilairet, LGEP/SPEE Labs, France

Romeo Ortega, LGEP/SPEE Labs, France

Demba Diallo, LGEP/SPEE Labs, France

[IEMDC2009-11190](#)

1502 Fault tolerant generator systems for wind turbines

H. Polinder, Delft University of Technology, Netherlands

H. Lendenmann, ABB AB, Sweden

R. Chin, ABB AB, Sweden

W. Arshad, Corporate Research, USA

[IEMDC2009-11257](#)

1503 A New Method of Fault Detection and Treatment in Five Phase Permanent Magnet Synchronous Machine Using Field Reconstruction Method

Amir Khoobroo, University of Texas at Arlington, USA

Babak Fahimi, University of Texas at Arlington, USA

[IEMDC2009-11249](#)

1504 Generation of On-line Optimal Current References for Multi-phase Permanent Magnet Machines with Open-circuited Phases

X. Kestelyn, Arts et Métiers ParisTech, France

E. Semail, Arts et Métiers ParisTech, France

Y. Crévits, Arts et Métiers ParisTech, France

[IEMDC2009-10850](#)

1505 Fault Diagnosis on a PWM Rectifier AC Drive System with Fault Tolerance Using the Average Current Park's Vector Approach

J. A. A. Caseiro, University of Coimbra, FCTUC/IT, Portugal

A. M. S. Mendes, University of Coimbra, FCTUC/IT, Portugal

A. J. Marques Cardoso, University of Coimbra, FCTUC/IT, Portugal

[IEMDC2009-11168](#)

Oral Session 16

Tuesday Morning

DC to AC Converters

Session Chair: Dr. Mehdi Abolhassani, TECO-Westinghouse Motor Company, USA

Concerto Ballroom B

9:30-11:30

1601 Current Source Inverters for PM Machine Control

S. Woolaghan, The University of Manchester, UK

N. Schofield, The University of Manchester, UK

[IEMDC2009-11289](#)

1602 FPGA Implementation of Space Vector PWM Algorithm for Multilevel Inverters Using Non-Orthogonal Moving Reference Frame

E.F.F.Lima, Federal University of Mato Grosso do Sul, Brazil

Pereira Filho, Federal University of Mato Grosso do Sul, Brazil
Pinto João Onofre P, Federal University of Mato Grosso do Sul, Brazil

[IEMDC2009-11255](#)

1603 Strategy for Online Adaptation of the Inverter Switching Frequency imposed by a Predictive Current Controller

Thomas Wolbank, Vienna University of Technology, Austria
Ronald Stumberger, Schneider Electric Power Drives GmbH, Austria
Alois Lechner, Schneider Electric Power Drives GmbH, Austria
Juergen Machl, Schneider Electric Power Drives GmbH, Austria

[IEMDC2009-10997](#)

1604 Space-Vector PWM for Inverters with Split-Wound Coupled Inductors

Behzad Vafakhah, University of Alberta, Canada
Mavungu Masiala, University of Alberta, Canada
John Salmon, University of Alberta, Canada
Andrew Knight, University of Alberta, Canada

[IEMDC2009-11073](#)

1605 Soft-Switching Converter for Full-bridge AC Motor Drives

T.W. Ching, University of Macau, China

[IEMDC2009-10952](#)

Oral Session 17

Tuesday Morning

Reluctance Machines

Session Chair: Dr. Dan Ionel, AO Smith Corporation, USA

Concerto Ballroom C 9:30-11:30

1701 Optimal Design and Comparison of Stator Winding Configurations in Permanent Magnet Assisted Synchronous Reluctance Generator

Jeihoon Baek, Texas A&M University, USA
Mina M. Rahimian, Texas A&M University, USA
Hamid A. Toliyat, Texas A&M University, USA

[IEMDC2009-10964](#)

1702 Analysis of Winding Failure of Switched Reluctance Motors

B. Schinnerl, University of Federal Defense Munich, GERMANY
D. Gerling, University of Federal Defense Munich, GERMANY

[IEMDC2009-10788](#)

1703 Miller-type Switched Reluctance Motor Driver with Continuous-Conduction-Mode Charge-Pump Power Factor Correction

*Ray-Lee Lin, National Cheng Kung University, TAIWAN
Hsiao-Ping Chi, Nan Jeon Institute of Technology, TAIWAN
Shih-Chieh Gu, National Cheng Kung University, TAIWAN*

[IEMDC2009-10818](#)

1704 Specifications for Real-Time Simulation of Switched Reluctance Drives using Microprocessors and FPGAs as Computational Engines

*Christian Dufour, Opal-RT Technologies Inc, Canada
Jean-Nicolas Paquin, Opal-RT Technologies Inc, Canada
Handy Blanchette, Opal-RT Technologies Inc, Canada
Jean Bélanger, Opal-RT Technologies Inc, Canada*

[IEMDC2009-11187](#)

1705 Design and Performance Evaluation of a Novel 6/10 Switched Reluctance Machine

*Piyush Desai, Illinois Institute of Technology, USA
Mahesh Krishnamurthy, Illinois Institute of Technology, USA
Nigel Schofield, The University of Manchester, UK
Ali Emadi, Illinois Institute of Technology, USA*

[IEMDC2009-11294](#)

Oral Session 18**Tuesday Morning****AC Generators (II)****Session Chair:** Mr. Lon Montgomery, Siemens Energy, USA**Concerto Ballroom D**

9:30-11:30

1801 Influence of Rotor Wedge Material of Large Synchronous Machine on Electric Characteristics

*D.Hiramatsu, Toshiba Corporation, Japan
T.Imai, Toshiba Corporation, Japan
M.Kobayashi, Toshiba Corporation, Japan
Y.Uemura, Toshiba Corporation, Japan
K.Nagakura, Toshiba Corporation, Japan
M.Kakiuchi, Toshiba Corporation, Japan
T.Otaka, Toshiba Corporation, Japan
M.Fujita, Toshiba Corporation, Japan
H.Ito, Toshiba Corporation, Japan
K.Nagasaka, Tokyo University of Agriculture and Technology, Japan*

[IEMDC2009-10800](#)

1802 Detection of Stator Core Faults in Large Turbo-Generators

A.C. Smith, University of Manchester, UK
D. Bertenshaw, Enelec Ltd, UK
Dr. C.W. Ho, Singapore Inst. of Manufacturing Tech., UK
T. Chan, Scott Wilson Railways, UK
M. Sasic, Iris Power LP, Canada

[IEMDC2009-10872](#)

1803 Reduction of Unbalanced Magnetic Pull (UMP) due to Equipotential Connections among Parallel Circuits of the Stator Winding

Wilian Oliveira, Alstom Hydro Energia Brasil Ltda, Brazil
Mauro Uemori, Alstom Hydro Energia Brasil Ltda, Brazil
Johnny Rocha, Alstom Hydro Energia Brasil Ltda, Brazil
Renato Carlson, Federal University of Santa Catarina, Brazil

[IEMDC2009-10904](#)

1804 Non linear half-order modelling of synchronous machine

Szymon Racewicz, Gdansk University of Technology, Poland
Delphine M. Riu, Grenoble Domaine universitaire, France
Nicolas M. Retière, Grenoble Domaine universitaire, France
Piotr J. Chrzan, Gdansk University of Technology, Poland

[IEMDC2009-10981](#)

1805 High-Voltage Stator Windings, Comparison of Factory Measurements for Quality Control with Measurements in Lab Scale

Thomas Klamt, ALSTOM Hydro (Switzerland) Ltd., Switzerland
Thomas Kunz, ALSTOM Hydro (Switzerland) Ltd., Switzerland

[IEMDC2009-11250](#)

Lunch

11:30-1:00

Tuesday

Poster Session 7

Tuesday Afternoon

Alternative Energy II

Session Chair: Professor Olorunfemi Ojo, Tennessee Technological University, USA

Symphony Ballroom III

1:00-2:30

7P1 Research on Using Induction Motor Drive System as Wind Turbine Simulator for Direct-drive Wind Power Systems

Xin Zhao, Shangyuancun, Haidian District, China
Hui Liang, Shangyuancun, Haidian District, China

[IEMDC2009-11090](#)

7P2 Parallel Interleaved Grid-connected Converters in MW-level Wind Power Generation

Fen Tang, Beijing Jiaotong University, China
Xinmin Jin, Beijing Jiaotong University, China
Yibin Tong, Beijing Jiaotong University, China
Jingdou Liu, Beijing Jiaotong University, China
Fei Zhou, Beijing Jiaotong University, China
Lin Ma, Beijing Jiaotong University, China

[IEMDC2009-10860](#)

7P3 Scaling Laws for Direct Drive Generators in Wind Turbines

Ghanshyam Shrestha, Delft University of Technology, Netherlands
Henk Polinder, Delft University of Technology, Netherlands
Jan AbrahamFerreira, Delft University of Technology, Netherlands

[IEMDC2009-11057](#)

7P4 Advanced Simulation Model for PV Generation Systems Considering Irradiation, Temperature, and Residential Loads Conditions

Hee-Sung Moon, SungKyunKwan University, Korea
Gyu-Yeong Choe, SungKyunKwan University, Korea
Jae-Sun Shim, Kangwon National University Samcheok Campus, Korea
Byoung-Kuk Lee, SungKyunKwan University, Korea

[IEMDC2009-10881](#)

7P5 Energy Management Method for Solar Race Car Design and Application

O. Ustun, Istanbul Technical University, Turkey
M. Yilmaz, Istanbul Technical University,
C. Gokce, Mekatro R&D Company TUBITAK Marmara Research Center,
U. Karakaya, Mekatro R&D Company TUBITAK Marmara Research Center,
R.N. Tuncay, Mekatro R&D Company TUBITAK Marmara Research Center,

[IEMDC2009-10976](#)

7P6 Analysis of Self-Excited Induction Generator Feeding DC Loads for Low-Cost Renewable Energy Applications

A. Nesba, Laboratoire de Recherche en Electrotechnique, ENP, Algeria
R. Ibtouen, Laboratoire de Recherche en Electrotechnique, ENP, Algeria
S. Mekhtoub, Laboratoire de Recherche en Electrotechnique, ENP, Algeria
O. Touhami, Laboratoire de Recherche en Electrotechnique, ENP, Algeria
S. Bacha, Electrical Engineering Lab Grenoble G2ELab, France

*D. Riu, Electrical Engineering Lab Grenoble G2ELab, France
M. Benhaddadi, E. Polyt. de Montréal, Canada*

[IEMDC2009-10929](#)

7P7 Dual Inverter For High Efficiency Photovoltaic Systems

*C. Attaianese, Università di Cassino - DAEIMI, Italy
M. Di Monaco, Università di Cassino - DAEIMI, Italy
V. Nardi, Università di Cassino - DAEIMI, Italy
G. Tomasso, Università di Cassino - DAEIMI, Italy*

[IEMDC2009-11184](#)

Poster Session 8

Tuesday Afternoon

Modeling and Control II

Session Chair: Dr. Tze-Fun Chan, The Hong Kong Polytechnic University, China

Symphony Ballroom III 1:00-2:30

8P1 Additional Iron Loss Modeling inside Silicon Steel Laminations

*Y.Du, Hebei University of Technology, China
Z.Cheng, R & D Center Baoding Tianwei Group Co., China
J.Zhang, R & D Center Baoding Tianwei Group Co., China
L.Liu, R & D Center Baoding Tianwei Group Co., China
Y.Fan, R & D Center Baoding Tianwei Group Co., China
W.Wu, R & D Center Baoding Tianwei Group Co., China
Z.Zhai, R & D Center Baoding Tianwei Group Co., China
J.Wang, R & D Center Baoding Tianwei Group Co., China*

[IEMDC2009-10959](#)

8P2 Some Armature Reaction Compensation Methods Numerical Design of Experiments and Optimization for a Hybrid Excitation Machine

*L.LI, Grenoble Electrical Engineering Laboratory, France
A.FOGGIA, Grenoble Electrical Engineering Laboratory, France
A.KEDOUS-.LEBOUC, Grenoble Electrical Engineering Laboratory, France
J.C. MIPO, Valeo Equipements Electriques Moteur, France
L. KOBYLANSKI, Valeo Equipements Electriques Moteur, France*

[IEMDC2009-11138](#)

8P3 Numerical Analysis of Magnetization in a Mnemonic Motor Using Time Stepping Finite Element Method Coupled with Preisach Theory

*Yu Gong, Shanghai University, China
Wei Cui, Shanghai University, China*

*K. T. Chau, University of Hong Kong, China
Chuang Yu, University of Hong Kong, China
Yunqian Zhang, Southeast University, China*

[IEMDC2009-10900](#)

8P4 Optimal design of Direct-Driven PM Wind Generator using Memetic Algorithm(MADS and GA) coupled with FEM

*Jiseong Park, Dong-A University, Korea
Hochang Jung, Dong-A University, Korea
Chang-ki Kim, Dong-A University, Korea
Cheol-Gyun Lee, Dong-Eui University, Korea
Sang-Yong Jung, Dong-A University, Korea*

[IEMDC2009-11078](#)

8P5 Function Approximation with Neural Networks for obtaining an operating point sufficiently small signal stable in Power Systems including wind Parks

*Carlos Gallardo, University of Madrid, Spain
Pablo Ledesma, University of Madrid, Spain*

[IEMDC2009-11245](#)

8P6 Experimental Validation of Iron Loss Model for Rotating Machines Based on Direct Eddy Current Analysis of Electrical Steel Sheets

*Katsumi Yamazaki, Chiba Institute of Technology, Japan
Noriaki Fukushima, Chiba Institute of Technology, Japan*

[IEMDC2009-11083](#)

8P7 Induction Motor Equivalent Circuit for Dynamic Simulation

*Andres Diaz, University of Puerto Rico at Mayaguez, Puerto Rico
Roger Saltares, University of Puerto Rico at Mayaguez, Puerto Rico
Christian Rodriquez, University of Puerto Rico at Mayaguez, Puerto Rico
Roberto F Nunez, University of Puerto Rico at Mayaguez, Puerto Rico
Eduardo I. Ortiz-Rivera, University of Puerto Rico at Mayaguez, Puerto Rico
Jesús Gonzalez-Llorente, University of Puerto Rico at Mayaguez, Puerto Rico*

[IEMDC2009-11079](#)

8P8 Flatness Based Control for Cascaded Boost Converter under Constant Power Load Conditions

*Ahmed Shahin, GREEN – INPL- Nancy-Université, France
Jean Martin, GREEN – INPL- Nancy-Université, France
Serge Pierfederici, GREEN – INPL- Nancy-Université, France
B. Davat, GREEN – INPL- Nancy-Université, France*

[IEMDC2009-10950](#)

8P9 Study of Capacitive Voltage Transformer Transient Effects on the Performance of Distance Relays

E. Abedi, Sazeh Consultants Company, Iran
S. Sadeghi, Amirkabir University of Technology, Iran

[IEMDC2009-11320](#)

8P10 Modeling and Control of 'Pseudo' Direct-Drive Brushless Permanent Magnet Machines

Jiabin Wang, University of Sheffield, UK
Kais Atallah, University of Sheffield, UK

[IEMDC2009-10821](#)

8P11 Prediction of Temperature Distribution and Internal Fluid Flow in GIS Bus Bar by Multi-Physics Analysis

Joong-Kyoung Kim, HYOSUNG Corporation, Korea
Ki-Yeoung Kweon, HYOSUNG Corporation, Korea
Sang-Young Jung, Dong-A University, Korea
Sung-Chin Hahn, Dong-A University, Korea

[IEMDC2009-10968](#)

8P12 Simplified Models for Magnetic Hysteresis Losses Evaluation in Electromagnetic Devices

C. Simão, GRUCAD/EEL/CTC/UFSC, Brazil
N. Sadowski, GRUCAD/EEL/CTC/UFSC, Brazil
N. J. Batistela, GRUCAD/EEL/CTC/UFSC, Brazil
P. Kuo-Peng, GRUCAD/EEL/CTC/UFSC, Brazil

[IEMDC2009-10808](#)

Poster Session 9**Tuesday Afternoon****Motor Drives I**

Session Chair: Dr. Haitham Abu-Rub, Texas A&M University, Qatar

Symphony Ballroom III

1:00-2:30

9P1 Suppression of Torque-ripples in DC-Brushless Drives with Arbitrary waveshape of Magnet Flux Distribution

G. Brando, University of Naples Federico II, Italy
A. Dannier, University of Naples Federico II, Italy
A. Del Pizzo, University of Naples Federico II, Italy

[IEMDC2009-10870](#)

9P2 Rotor Flux Vector Control of DFIG without Currents Rotor sensor

Marcelo Silva, Universidad Técnica Federico Santa María, CHILE
César Silva, Universidad Técnica Federico Santa María, CHILE
Sergio D'íaz, Universidad Técnica Federico Santa María, CHILE

[IEMDC2009-11194](#)

9P3 Current Reconstruction Techniques for Survivable Three Phase PWM Converters

Wei Jiang, University of Texas at Arlington, USA
Babak Fahimi, University of Texas at Arlington, USA

[IEMDC2009-11265](#)

9P4 An Energy Saving Load-Independent Single Phase Induction Motor Drive

Sadegh Vaez-Zadeh, University of Tehran, Iran
Bijan Zahedi, University of Tehran, Iran

[IEMDC2009-10782](#)

9P5 Simultaneously, Speed and Flux Control of a Induction Motor, with Brain Emotional Learning Based Intelligent Controller (BELBIC)

E. Daryabeigi, Islamic Azad University, Iran
Gh. Arab markadeh, Shahrekord University, Iran
C. Lucas, University of Tehran, Iran

[IEMDC2009-10849](#)

9P6 Voltage Firing-Angle Control of Network-Connected Induction Generator

A. F. Almarshoud, Qassim University, Saudi Arabia
M. A. Abdel-halim, Qassim University, Saudi Arabia

[IEMDC2009-10894](#)

9P7 Prediction of audible magnetic noise radiated by adjustable speed drive induction machines

Jean Le Besnerais, ALSTOM Transport, France
Vincent Lanfranchi, LEC-UTC, France
Guy Friedrich, LEC-UTC, France
Michel Hecquet, Ecole Centrale de Lille, France
Pascal Brochet, Ecole Centrale de Lille, France

[IEMDC2009-10924](#)

9P8 Improved Direct Torque Control Of Induction Motor Drive For Adjustable Speed Drive Applications

Jagdish Chaudhari
Mohan Aware

[IEMDC2009-11007](#)

9P9 Ride-through of Medium Voltage Synchronous Machine Compressor Drives

Endrejat F, Sasol Technology, South Africa
P Pillay, Concordia University, Canada

[IEMDC2009-11226](#)

9P10 A simple and accurate method for the experimental performance evaluation of high speed sensorless brushless dc motor

A.S. Nagorny, ResMed Motor Technologies Inc., USA

[IEMDC2009-10878](#)

Poster Session 10

Tuesday

PM Machines II

Session Chair: Dr. Seyed M. Madani, Isfahan University of Technology, Iran

Symphony Ballroom III 1:00-2:30

10P1 Design and Performance of Interior Permanent Magnet Motors with Saturating Magnetic Bridge

Mahmood Nagrial, University of Western Sydney, Australia
Jamal Rizk, University of Western Sydney, Australia
Ali Hellany, University of Western Sydney, Australia

[IEMDC2009-10965](#)

10P2 Comparison of different methods to achieve sinusoidal air-gap flux density of PM Motors

S. Chaithongsuk, Nancy University, INPL-GREEN, Rajamangala University of Technology, France
N. Takorabet, Nancy University, Thailand
F. Meibody-Tabar, Nancy University, Thailand

[IEMDC2009-10972](#)

10P3 Magnetic Forces Calculation in Surface PM Motors with Asymmetric Stator Windings for Avionic Applications

Nicolas Velly, Nancy University, France
Nouredine Takorabet, Nancy University, France
Farid Meibody-Tabar, Nancy University, France
Pierre-Yves Liégeois, Messier-Bugatti SAFRAN Group, France

[IEMDC2009-10980](#)

10P4 Rotor flux-barrier geometry design to reduce iron losses in synchronous IPM motors under FW operations

Massimo Barcaro, University of Padova, Italy
Nicola Bianchi, University of Padova, Italy

Freddy Magnussen, ABB Corporate Research, Sweden

[IEMDC2009-10984](#)

10P5 Configurations of fractional-slot IPM motor with a dual three-phase winding

Nicola Bianchi, University of Padova, Italy

Massimo Barcaro, University of Padova, Italy

Freddy Magnussen, ABB Corporate Research, Sweden

[IEMDC2009-10987](#)

10P6 Comparison of outer rotor PMSM with different pitch factors of $q=1/2$ and $q=1/4$ at same rotor geometry

Andreas Eilenberger, Technical University of Vienna, Austria

Johannes Heissenberger, Technical University of Vienna, Austria

Florian Kogler, Technical University of Vienna, Austria

Manfred Schrödl, Technical University of Vienna, Austria

[IEMDC2009-10990](#)

10P7 Ironless Permanent Magnet Motors: Three-Dimensional Analytical Calculation

Romain Ravaud, Maine University, France

Guy Lemarquand, Maine University, France

Valerie Lemarquand, Maine University, France

[IEMDC2009-10994](#)

10P8 Magnet Flux Optimization Method for Line-Start Permanent Magnet Motors

F. J. H. Kalluf, Department of Technological Development, Whirlpool S.A., Brazil

C. Pompermaier, Department of Technological Development, Whirlpool S.A., Brazil

M. V. Ferreira da Luz, GRUCAD, Dept. of Electrical Engineering, Federal University of Santa Catarina, Brazil

N. Sadowski, GRUCAD, Dept. of Electrical Engineering, Federal University of Santa Catarina, Brazil

[IEMDC2009-11014](#)

10P9 New Interior PM rotor Design with High Flux-Weakening Capability

Alireza Pouramin, Isfahan University of Technology, Iran

Seyed M. Madani, Isfahan University of Technology, Iran

[IEMDC2009-11039](#)

10P10 Influence of Filter Parameters/Topologies on Stability of Matrix Converter-fed Permanent Magnet Brushless Motor Drive Systems

Jiabin Wang, University of Sheffield, UK

M. Bouazdia, University of Sheffield, UK

[IEMDC2009-10822](#)

Poster Session 11

Tuesday Afternoon

Reluctance Machines

Session Chair: Mr. Behzad Forghani, Infolytica Corporation, Canada

Symphony Ballroom III 1:00-2:30

11P1 Switched Reluctance Motor Vibration Prediction: From Low Frequency To High Frequency

Shen Lei, College of Electrical Engineering, Zhejiang University, China

Wu Jianhua, College of Electrical Engineering, Zhejiang University, China

[IEMDC2009-10840](#)

11P2 Switched Reluctance Motor (SRM) Control, with the developed Brain Emotional Learning Based Intelligent Controller (BELBIC), considering Torque Ripple Reduction

E. Daryabeigi, Islamic Azad University, Iran

Gh. Arab markadeh, Shahrekord University, Iran

C. Lucas, University of Tehran, Iran

A. Askari, Islamic Azad University, Yazd branch, Iran

[IEMDC2009-10848](#)

11P3 Comparative Study on Switched Reluctance Machine Based Fault-Tolerant Electrical Drive Systems

M. Ruba, Technical University of Cluj, Romania

C. Oprea, Technical University of Cluj, Romania

L. Szabó, Technical University of Cluj, Romania

[IEMDC2009-11129](#)

11P4 Design of a Fault-Tolerant 6-phase Switched Reluctance Motor for Electric Power-Assisted Steering Systems

Claudia Martis, Technical University of Cluj Napoca, ROMANIA

Claudiu Oprea, Technical University of Cluj Napoca, ROMANIA

I.A.Viorel, Technical University of Cluj Napoca, ROMANIA

J.Gyselinck, Université Libre de Bruxelles, Belgium

[IEMDC2009-11251](#)

11P5 Synthesis of Advanced Switched Reluctance Machine Topologies Using Microscopic Force Density Analysis

Wei Jiang, University of Texas at Arlington, USA

Babak Fahimi, University of Texas at Arlington, USA

[IEMDC2009-11253](#)

11P6 An Automatic Identification of Phase Inductance for Operation of Switched Reluctance Machines without Position Sensor

*Daniel van Treek, RWTH Aachen University, Germany
Philipp Matuschek, RWTH Aachen University, Germany
Helge Brauer, RWTH Aachen University, Germany
Timo Schoenen, RWTH Aachen University, Germany
Rik De Doncker, RWTH Aachen University, Germany*

[IEMDC2009-11243](#)

Poster Session 12

Tuesday Afternoon

Special Machines II

Session Chair: Professor Guy Olivier, École Polytechnique de Montréal, Canada

Symphony Ballroom III 1:00-2:30

12P1 Performance Comparisons among Radial Flux, Multi-stage Axial Flux and Three-phase Transverse Flux PM Machines for Downhole applications

*Anyuan Chen, Norwegian University of Science and Technology, Norway
Robert Nilssen, Norwegian University of Science and Technology, Norway
Arne Nysveen, Norwegian University of Science and Technology, Norway*

[IEMDC2009-10903](#)

12P2 Mathematical Model for Parametric Analysis of Axial Flux Disc Machines

*Chiara Boccaletti, Sapienza University of Rome, Italy
Pietro Di Felice, Sapienza University of Rome, Italy
Lorenzo Petrucci, Sapienza University of Rome, Italy
Ezio Santini, Sapienza University of Rome, Italy*

[IEMDC2009-11029](#)

12P3 Design Method of an Innovative Motor for an Intra-Aortic Ventricular Assist Device

*Po-Lin Hsu, Cambridge University, UK
Richard McMahon, Cambridge University, UK*

[IEMDC2009-11030](#)

12P4 A Comparison of Radial and Axial Flux Structures in Electrical Machines

*Dean J Patterson, University of Nebraska, USA and Fasco Australia
Jessica L Colton, The Timken Company, USA*

Brad Mularcik, Fasco Australia, USA
Byron J Kennedy, Fasco Australia, USA
Steven Camilleri, Fasco Australia, USA
Rafal Rohoza, USA

[IEMDC2009-11070](#)

12P5 Design Issues of High-Speed Permanent Magnet Machines for High-Temperature Applications

D. Gerada, Cummins Generator Technologies, UK
A. Mebarki, Cummins Generator Technologies, UK
R.P. Mokhadkar, Cummins Generator Technologies, UK
N.L. Brown, Cummins Generator Technologies, UK
C. Gerada, University of Nottingham, UK

[IEMDC2009-11121](#)

12P6 Design and optimization of a rotary actuator for a two degree-of-freedom z Module

T.T. Overboom, Eindhoven University of Technology, Netherlands
J.W. Jansen, Eindhoven University of Technology, Netherlands
E.A. Lomonova, Eindhoven University of Technology, Netherlands
F. Tacken, Wijdeven B.V., Netherlands

[IEMDC2009-11182](#)

12P7 Design and Finite Element Analysis of Hybrid Stepper Motor for Spacecraft Applications

Praveen RP, India
Ravichandran MH, India
Sadasivan Achari VT, India
Dr VP Jagathy Raj, India
Dr G Madhu, India
Dr GR Bindu, India

[IEMDC2009-11146](#)

12P8 REPOWER AND EVALUATION OF NEW POWER OF SYNCHRONOUS GENERATORS

Silverio Peniny Santos, Brazil
Luciano Martins, Brazil
Edval Delbone, Brazil
Jose RobertoCardoso, Brazil,

[IEMDC2009-11047](#)

12P9 Axial Flux Permanent-Magnet Machine under Optimum Control Strategy for Wind Power Generation

Roberto Moncada, University of Concepcion, Chile
Raul Rodriguez, University of Concepcion, Chile
Juan Tapia, University of Concepcion, Chile
Thomas Jahns, University of Wisconsin-Madison, USA

[IEMDC2009-11274](#)**12P10 Test Rig for High Speed Electromechanical Flywheels in Sub Saharan Africa**

*R Okou, University of Cape Town, South Africa
MA Khan, University of Cape Town, South Africa
P Barendse, University of Cape Town, South Africa
P Pillay, Concordia University, Canada*

[IEMDC2009-11150](#)**Coffee Break****22:30-3:00****Tuesday Afternoon****Oral Session 19****Tuesday Afternoon****PM Machines (II)****Session Chair:** Professor Hamid Toliyat, Texas A&M University, USA**Symphony Ballroom I****3:00-5:00****1901 Short-Circuit Analysis of a Permanent-Magnet Generator**

*Keith W. Klontz, Advanced MotorTech LLC, USA
Timothy J.E. Miller, University of Glasgow, UK
M.I.McGilp, University of Glasgow, UK
Haran Karmaker, TECO-Westinghouse, USA
Peter Zhong, TECO-Westinghouse, USA*

[IEMDC2009-11252](#)**1902 Improved Physics-Based Permanent Magnet Synchronous Machine Model Obtained From Field Computation**

*Osama Mohammed, Florida International University, USA
Shuo Liu, Florida International University, USA
Zhiqiang Liu, Florida International University, USA
Ahmad Arshan Khan, Florida International University, USA*

[IEMDC2009-11304](#)**1903 Torque Ripple Reduction for the Modular Interior Permanent Magnet Machines Using Optimum Current Profiling Technique**

*Lusu Guo, Rensselaer Polytechnic Institute, USA
Leila Parsa, Rensselaer Polytechnic Institute, USA*

[IEMDC2009-11281](#)**1904 Design and Analysis of Halbach Array Permanent Magnet Motor for High Acceleration Applications**

Suman Dwari, Rensselaer Polytechnic Institute, USA
Leila Parsa, Rensselaer Polytechnic Institute, USA
Kamiar J. Karimi, The Boeing Company, USA

[IEMDC2009-11287](#)

1905 Qualitative Analysis of Force Distribution in a 3-Phase Permanent Magnet Synchronous Machine

Mahesh Krishnamurthy, Illinois Institute of Technology, USA
Babak Fahimi, University of Texas- Arlington, USA

[IEMDC2009-10955](#)

Oral Session 20

Tuesday Afternoon

Induction Machines (II)

Session Chair: Professor Aldo Boglietti, Politecnico di Torino, Italy

Symphony Ballroom II 3:00-5:00

2001 Comparison of numerical and analytical simulation of saturated zig-zag flux in induction machines

R. Hagen, Darmstadt University of Technology, Germany
T. Knopik, Darmstadt University of Technology, Germany
A. Binder, Darmstadt University of Technology, Germany

[IEMDC2009-10883](#)

2002 The repeatability of IEEE standard 112B induction motor efficiency tests

Emmanuel B. Agamloh, Advanced Energy Corporation, USA

[IEMDC2009-11040](#)

2003 Influence of Non-linear Loads on the Operation and Power Flow of Induction Generators

Olorunfemi Ojo, Tennessee Technological University, USA
Adeola Balogun, University of Lagos, Nigeria
Sosthenes Karugaba, Tennessee Technological University, USA

[IEMDC2009-10835](#)

2004 Proposal of a Test Bench for Switched Reluctance Motors and Fractional-Horsepower Single-Phase Induction Motors

W. C. E. Teixeira, Federal University of Goiás, Brazil
G.P. Viajante, Federal University of Goiás, Brazil
E.G. Marra, Federal University of Goiás, Brazil
B. Alvarenga, Federal University of Goiás, Brazil

M.C.Costa, University of Sao Paulo, Brazil
I.E.Chabu, University of Sao Paulo, Brazil
J.R.Cardosa, University of Sao Paulo, Brazil

[IEMDC2009-11161](#)

2005 High frequency parameters determination of small three-phase induction motors for operation with PWM inverters

Rudolf Riehl, UNESP - São Paulo State University, Brazil
Ernesto Ruppert Filho, State University of Campinas, Brazil

[IEMDC2009-11160](#)

Oral Session 21

Tuesday Afternoon

Fault Diagnostics (II)

Session Chair: Professor Antonio Cardoso, University of Coimbra, Portugal

Concerto Ballroom A

3:00-5:00

2101 On-line monitoring of electrical power quality for assessment of induction motor performance

J. Barros, University of Cantabria, Spain
M. de Apráiz, University of Cantabria, Spain
R.I. Diego, University of Cantabria, Spain

[IEMDC2009-10867](#)

2102 Fault Tolerant Permanent Magnet Motor Drives for Electric Vehicles

Mehdi T. Abolhassani, TECO-Westinghouse Motor Company, USA
Hamid A. Toliyat, Texas A&M University, USA

[IEMDC2009-11302](#)

2103 Diagnostics and Prognostics for Multiple Induction Machines Using A Single Set of Current Transducers

Prayag K. Parikh, UNC Charlotte, USA
Robert W. Cox, UNC Charlotte, USA
Rebecca L. Sawyer, UNC Charlotte, USA
Arun Shrestha, UNC Charlotte, USA
Jason Anderson, UNC Charlotte, USA

[IEMDC2009-11267](#)

2104 Broken Rotor Bar Detection in Saturated Induction Machine

Gojko Joksimovic, University of Montenegro, Montenegro

[IEMDC2009-10861](#)

2105 Interpretable Fuzzy Model-Based Fault Detection and Diagnosis: A New Approach

*Juan Contreras, Escuela Naval Almirante Padilla, Colombia
Oscar Acuña, Universidad Tecnológica de Bolívar, Colombia*

[IEMDC2009-11162](#)

Oral Session 22**Tuesday Afternoon****Motor Drives (III)**

Session Chair: Professor Thomas Habetler, Georgia Tech, USA

Concerto Ballroom B 3:00-5:00

2201 Development and Implementation of a 25 kW Virtual Induction Machine Test Bed Utilizing the Power-Hardware-in-the-Loop Concept

*F. Fleming, Florida State University,
C. S. Edrington, Florida State University,
M. Steurer, Florida State University,
O. Vodyakho, Florida State University,*

[IEMDC2009-11234](#)

2202 Hardware-in-the-Loop Experiments with a Simulated Electric Ship Power System Utilizing a 5 MW Variable Voltage Source Converter Amplifier

*Michael Sloderbeck, Florida State University,
Chris Edrington, Florida State University,
Michael Steurer, Florida State University,*

[IEMDC2009-11247](#)

2203 Optimal Design of Motor and Gear for Drives with High Acceleration and Load Torque

Horst Grotstollen, University of Paderborn, Germany

[IEMDC2009-11096](#)

2204 Direct Torque Control of Three-Phase PM Brushless AC Motor with One Phase Open-Circuit Fault

*Z.Q. Zhu, University of Sheffield, UK
K. Utaikaifa, University of Sheffield, UK
K. Hoang, University of Sheffield, UK
Y. Liu, University of Sheffield, UK
D. Howe, University of Sheffield, UK*

[IEMDC2009-10879](#)

2205 Design and Analysis of Low-Acoustic Noise Motor Drivers

Jyh-Wei Chen, National Formosa University, Taiwan

[IEMDC2009-11299](#)

Oral Session 23**Tuesday Afternoon****Brushless Machines (I)**

Session Chair: CAPT. Lynn Petersen, NAVSEA, USA

Concerto Ballroom C 3:00-5:00

2301 Real Time Estimation of Parameters for Controlling and Monitoring

Raja Ramakrishnan, Delphi Steering Systems, USA

Rakib Islam, Delphi Steering Systems, USA

Mohammad Islam, Delphi Steering Systems, USA

Tomy Sebastian, Delphi Steering Systems, USA

[IEMDC2009-11055](#)

2302 Small blower PM single phase brushless d.c. motor drives: FEM characterization with experiments

Liviu I. Iepure, University Politehnica of Timisoara, Romania

Dorin Iles-Klumpner, ebm-papst St. Georgen GmbH & Co. KG, Germany

Milorad Risticovic, ebm-papst St. Georgen GmbH & Co. KG, Germany

Ion Boldea, University Politehnica of Timisoara, Romania

[IEMDC2009-10938](#)

2303 Analytical Force Calculation in Brushless-DC Motors I: An Alternative Approach

Ewgenij Starschich, University of Warwick, UK

Annette Muetze, University of Warwick, UK

Kay Hameyer, RWTH Aachen University, Germany

[IEMDC2009-10875](#)

2304 Analytical Force Calculation in Brushless-DC Motors II: Mathematical Details of the Alternative Approach

Ewgenij Starschich, University of Warwick, UK

Annette Muetze, University of Warwick, UK

Kay Hameyer, RWTH Aachen University, Germany

[IEMDC2009-10876](#)

2305 Influence of Rotor Pole Number on Optimal Parameters in Flux-Switching PM Brushless AC machines by Lumped Parameter Magnetic Circuit Model

J.T. Chen, University of Sheffield, U.K.
Z.Q. Zhu, University of Sheffield, U.K.

[IEMDC2009-10830](#)

Oral Session 24

Tuesday Afternoon

Green Energies (I)

Session Chair: Dr. Zhenhua Jiang, University of Miami, USA

Concerto Ballroom D 3:00-5:00

2401 Gearing Ratios of a Magnetic Gear for Wind Turbines

Nicolas W. Frank, Texas A&M University, USA
Hamid A. Toliyat, Texas A&M University, USA

[IEMDC2009-10911](#)

2402 Control Method for Direct Torque Controlled PMSG in Wind Power Generation System

Yukinori Inoue, Osaka Prefecture University, Japan
Shigeo Morimoto, Osaka Prefecture University, Japan
Masayuki Sanada, Osaka Prefecture University, Japan

[IEMDC2009-10844](#)

2403 PI-Like Fuzzy Based Controller for the Load-side Converters in Stand-Alone Wind Energy Systems

Ameen Gargoom, University of Tasmania, Australia
Md Enamul Haque, University of Tasmania, Australia
Michael Negnevitsky, University of Tasmania, Australia

[IEMDC2009-11231](#)

2404 Dynamic Modeling and Control Design of Microturbine Distributed Generation Systems

Xunwei Yu, University of Miami, USA
Zhenhua Jiang, University of Miami, USA
Atideh Abbasi, University of Miami, USA

[IEMDC2009-11112](#)

2405 A Novel Hybrid Integrated Wind-PV Micro Co-Generation Energy Scheme for Village Electricity

Adel M. Sharaf, University of Trinidad and Tobago, Couva
Mohamed A. H. El-Sayed, University of Trinidad and Tobago, Couva

[IEMDC2009-10897](#)

Conference Banquet

6:30-11:30

Tuesday Evening

Plenary Talk 3

Wednesday Morning

Speaker: Captain Lynn J. Petersen, US Navy, Deputy Director , Electric Ships Office, USA**Title: Next Generation Integrated Power System: The Backbone of the Electric Warship (Hybrid Electric Drive: A Near Term Opportunity)****Session Chair: Professor O. A. Mohammed, Florida International University, USA****Symphony Ballrooms I&II**

8:15-9.15 AM

Coffee Break

9:15-9:30

Wednesday Morning

Oral Session 25

Wednesday Morning

Sensorless Control (II)**Session Chair: Dr. Mark Roberts, NSWCCD, USA****Symphony Ballroom I**

9:30-11:30

2501 Sensorless Explicit Model Predictive Control of Permanent Magnet Synchronous Motors*S'ébastien Mari'éthoz, Automatic Control Laboratory, Switzerland**Alexander Domahidi, Automatic Control Laboratory, Switzerland**Manfred Morari, Automatic Control Laboratory, Switzerland*[IEMDC2009-11262](#)**2502 Comparison of Inherent Saliency Tracking Methods for Zero Speed Sensorless Control of Standard Induction Machines***T.M. Wolbank, Vienna University of Technology, Austria**M.K. Metwally, Vienna University of Technology, Austria*[IEMDC2009-11010](#)**2503 A Comparison of Several Non-Linear Speed Observers Methods for Sensorless Induction Motor Control***M. A. Gallegos, Universidad Polit'écnica de San Luis Potos', Mexico**R. Alvarez-Salas, Universidad Aut'onoma de San Luis Potos', Mexico**J. A. Moreno, Universidad Nacional Aut'onoma de M'éxico, Mexico**G. Espinosa-Perez, Universidad Nacional Aut'onoma de M'éxico, Mexico**V. Cardenas, Universidad Aut'onoma de San Luis Potos', Mexico*[IEMDC2009-11109](#)**2504 Improved Low Speed Performance of a Sensorless Variable Structure Direct Torque Controlled IPM Synchronous Motor Drive**

Saad Sayeef, University of New South Wales, Australia
Faz Rahman, University of New South Wales, Australia

[IEMDC2009-11225](#)

2505 An Adaptive Structure Based Sensorless Position Estimator for Permanent Magnet Machines in Aerospace Applications

William D. Drury, University of Bristol, UK
Derrick Holliday, University of Bristol, UK
David Drury, University of Bristol, UK
Philip H. Mellor, University of Bristol, UK

[IEMDC2009-10930](#)

Oral Session 26

Wednesday Morning

Brushless Machines (II)

Session Chair: Dr Patrick Luk, Cranfield University, UK

Symphony Ballroom II 9:30-11:30

2601 (6+6) slot / 8 pole 3 phase IPM brushless d.c. automotive actuator: torque, emf and inductance characterization by FEM vs. experiments

Stirban Alin, Dept. of Electrical Machines and Drives, Romania
Iles Dorin, ebm-papst St. Georgen GmbH & Co, Romania
Risticevic Milorad, ebm-papst St. Georgen GmbH & Co, Germany
Boldea Ion, Dept. of Electrical Machines and Drives, Germany

[IEMDC2009-11034](#)

2602 Digital Demodulation for Fast Set-Up of Sensorless PMSM Electrical Drives Based on Magnetic Anisotropy

F. Genduso, DIEET Università degli Studi di Palermo, Italy
R. Miceli, DIEET Università degli Studi di Palermo, Italy
C. Rando, DIEET Università degli Studi di Palermo, Italy
G. Ricco Galluzzo, DIEET Università degli Studi di Palermo, Italy

[IEMDC2009-10882](#)

2603 Operating Charts for the Brushless Doubly-Fed Machine (BDFM)

Thomas Logan, University of Cambridge, UK
Richard McMahon, University of Cambridge, UK

[IEMDC2009-11049](#)

2604 A Novel Wheelchair Powered by Dual Rim Motors

Yee-Pien Yang, National Taiwan University, Taiwan
Zhou-Han Lee, National Taiwan University, Taiwan

[IEMDC2009-10864](#)

2605 A Soft-switching hybrid BLDC drive using DC-DC converter

Seyyed. M. Madani, Islamic Azad University,
M. M. Shahbazi, Isfahan University Of Technology,

[IEMDC2009-11050](#)

Oral Session 27

Wednesday Morning

Control Applications (II)

Session Chair: Dr. Jean-Frédéric Charpentier, French Naval Academy, France

Concerto Ballroom A

9:30-11:30

2701 A Study of Single Phase Hysteresis Current Control for Reducing Switching Loss Using the slope of Reference Current

Sun-Ki Hong, Servo Machine and Control Laboratory, South Korea
Thomas M. Jahns, University of Wisconsin-Madison, USA

[IEMDC2009-11017](#)

2702 Direct Torque and Flux Control of an IPM Synchronous Motor Drive Using a Backstepping Approach

Gilbert Foo, University of New South Wales, Australia
M. F. Rahman, University of New South Wales, Australia

[IEMDC2009-11204](#)

2703 Battery-Utility Interface using Soft Switched AC Link Buck Boost Converter

Mahshid Amirabadi, Texas A&M University, USA
H.A.Toliat, Texas A&M University, USA
William C. Alexander, Ideal Power Converters, USA

[IEMDC2009-11212](#)

2704 Sliding Mode Control applied to the Inner Loop of a Faulted Six Phase Induction Machine (6PIM)

M. A. FNAIECH, University of Picardie- Amiens France (LTI), France
F. BETIN, University of Picardie- Amiens France (LTI), France
G.A. CAPOLINO, University of Picardie- Amiens France (LTI), France

[IEMDC2009-11088](#)

2705 Experiments to Observe the Impact of Power Quality and Voltage-Source Inverters on the Temperature of Three-Phase Cage Induction Motors using an Infra-Red Camera

Fernando J. T. E. Ferreira, ISEC, ISR-UC, Portugal
Aníbal T. de Almeida, ISR-UC, Portugal
Joaquim F. S. Carvalho, ISEC, Portugal
Mihail V. Cistelecan, ICPE-ME, Romania

[IEMDC2009-11295](#)

Oral Session 28**Wednesday Morning****Drive Fault Diagnostics****Session Chair:** Dr. Behrooz Mirafzal, Florida International University, USA**Concerto Ballroom B**9:30-11:30

2801 Impact of Inverter Faults in the Overall Performance of Permanent Magnet Synchronous Motor Drives

Jorge O. Estima, University of Coimbra- FCTUC/IT, Portugal
A. J. M. Cardoso, University of Coimbra- FCTUC/IT, Portugal

[IEMDC2009-10999](#)

2802 An Active Stator Temperature Estimation Technique for Thermal Protection of Inverter-Fed Induction Motors with Considerations of Impaired Cooling Detection

Pinjia Zhang, Georgia Institute of Technology, USA
Bin Lu, Eaton Corporation - Innovation Center, USA
Thomas G. Habetler, Georgia Institute of Technology, USA

[IEMDC2009-10893](#)

2803 Fault diagnosis Technique of Induction Machines with Ordered Harmonic and Noise Cancellation

Seung-deog Choi, Advanced Electric Machines & Power Electronics Laboratory, USA
Bilal Akin, Texas Instruments Inc2, USA
Mina M. Rahimian, Advanced Electric Machines & Power Electronics Laboratory, USA
Hamid A. Toliyat, R & D Center, USA
M. Rayner, Advanced Electric Machines & Power Electronics Laboratory, USA

[IEMDC2009-11060](#)

2804 Assessment of Available Methods for Estimating Rotor Temperatures of Induction Motors

Yi Du, Georgia Institute of Technology, USA
Pinjia Zhang, Georgia Institute of Technology, USA
Zhi Gao, Schneider Electric Center for Innovation and Technology, USA

Thomas G. Habetler, Georgia Institute of Technology, USA

[IEMDC2009-11290](#)

2805 Fault Tolerant Control of Three-phase Synchronous Machines Supplied by Two Inverters in Series

Mohammad-Ali Shamsi-Nejad, ENSEM-INPL-Nancy University, France

Babak Nahid-Mobarakeh, ENSEM-INPL-Nancy University, France

Serge Pierfederici, ENSEM-INPL-Nancy University, France

Farid Meibody-Tabar, ENSEM-INPL-Nancy University, France

[IEMDC2009-11308](#)

Oral Session 29

Wednesday Morning

Special Machines

Session Chair: Professor Ronald Herley, Georgia Tech, USA

Concerto Ballroom C

9:30-11:30

2901 Reduced Order Observers for Rotor Position Estimation of Nonsalient PMSM

Mihai Comanescu, Penn State Altoona, USA

Todd D. Batzel, Penn State Altoona, USA

[IEMDC2009-10895](#)

2902 Space Vector Harmonic Analysis of a Five-Phase PM Motor Including Asymmetries

Nicola Bianchi, University of Padova, Italy

Emanuele Fornasiero, University of Padova, Italy

[IEMDC2009-11015](#)

2903 Multi-Objective Design Optimization of PMSM for PEFC Air Circuit with PSO Algorithms

Ali Sari, University of Franche-Comte, France

Frederic Dubas, University of Franche-Comte, France

Christophe Espanet, University of Franche-Comte, France

[IEMDC2009-11046](#)

2904 Small-scale Urban Venturi Wind Turbine: Direct-Drive Generator

Johannes Paulides, Eindhoven University of Technology, Netherlands

Laurentiu Encica, Eindhoven University of Technology, Netherlands

J.W. Jansen, Eindhoven University of Technology, Netherlands

Elena Lomonova, Eindhoven University of Technology, Netherlands

D.van Wijicj, Home Energy BV, Netherlands

[IEMDC2009-11215](#)

2905 Bearingless Segment Motor with a Consequent Pole Rotor

Thomas Stallinger, Linz Center of Mechatronics GmbH, Austria
Wolfgang Gruber, Johannes Kepler University Linz, Austria
Wolfgang Amrhein, Johannes Kepler University Linz, Austria

[IEMDC2009-10901](#)

Oral Session 30**Wednesday Morning****Parameter Extraction**

Session Chair: Dr. Dionysios Aliprantis, Iowa State University, USA

Concerto Ballroom D

9:30-11:30

3001 Parameter Estimation of Synchronous Machines by Using the Differential Evolution Algorithm

Olli Mäkelä, Helsinki University of Technology, Finland
Anna-Kaisa Repo, Helsinki University of Technology, Finland
Antero Arkkio, Helsinki University of Technology, Finland

[IEMDC2009-10925](#)

3002 Sensorless Vector Control of Permanent-Magnet Synchronous Motors Using Real-Time Parameter Identification

D. O. Kisk, University POLITEHNICA of Bucharest, Romania
Mariana Kisk, CYGNUS Computer, Romania
D. H. Kang, Korea Electrotechnology Research Institute, Korea
J. H. Chang, Korea Electrotechnology Research Institute, Korea
J. W. Kim, Korea Electrotechnology Research Institute, Korea

[IEMDC2009-10916](#)

3003 Output-Only Subspace Identification for Squirrel Cage Wind Generators

Wuxing Liang, Queen's University Belfast, UK
Tim Littler, Queen's University Belfast, UK

[IEMDC2009-11272](#)

3004 Inclusion of Hysteresis and Eddy Current Losses in Dynamic Induction Machine Models

Mikaela Ranta, Helsinki University of Technology, Finland
Marko Hinkkanen, Helsinki University of Technology, Finland
Emad Dlala, Helsinki University of Technology, Finland
Jorma Luomi, Helsinki University of Technology, Finland

[IEMDC2009-10998](#)

3005 A Study on Systematic Errors Concerning Rotor Position Estimation of PMSM Based on Back EMF Voltage Observation

*Peter Hutterer, Linz Center of Mechatronics GmbH, Austria
Herbert Grabner, Linz Center of Mechatronics GmbH, Austria
Siegfried Silber, Johannes Kepler University Linz, Austria
Wolfgang Amrhein, Johannes Kepler University Linz, Austria
W. Schaefer, Hanning Elektro-Werke GmbH & Co. KG, Germany*

[IEMDC2009-11316](#)

Lunch

11:30-1:00

Wednesday

Poster Session 13

Wednesday Afternoon

Fault Diagnostics

Session Chair: Dr Mickaël Hilairet, Laboratoire de Génie Electrique de Paris, France

Symphony Ballroom III

1:00-2:30

13P1 The Application of Wavelets for the Detection of Inter-Turn Faults in Induction Machines

*P. S. Barendse, University of Cape Town, South Africa
B. Herndler, University of Cape Town, South Africa
M. A. Khan, University of Cape Town, South Africa
P. Pillay, University of Cape Town, South Africa*

[IEMDC2009-10991](#)

13P2 A novel method for measuring the thermal and geometric distortion caused by rotary spindle based on Hall Effect Sensors

*Silvio Luiz Plategher, Indústrias Romi S/A, Brazil
Cyro Deiroz, Indústrias Romi S/A, Brazil
João Imperador Jr, Indústrias Romi S/A, Brazil*

[IEMDC2009-11035](#)

13P3 Integrated Prognosis of AC Servo Motor Driven Linear Actuator Using Hidden Semi-Markov Models

*Xin Wu, University of Wisconsin Milwaukee, USA
Yaoyu Li, University of Wisconsin Milwaukee, USA
Thomas D. Lundell, Rockwell Automation, USA
Arun K. Guru, Rockwell Automation, USA*

[IEMDC2009-11048](#)

13P4 Detection of Mechanical Faults in Induction Motors Supplied with Adjustable Speed Drives

Murat BAŞARAN, Anadolu University, Turkey
Doğan Gökhan, Anadolu University, Turkey

[IEMDC2009-11173](#)

13P5 Fault-Tolerant Operation of Brushless Machines Having Magnets in the Stator

Wenxiang Zhao, Southeast University, China
Ming Cheng, Southeast University, China
Wei Hua, Southeast University, China
Xiaoyong Zhu, Jiangsu University, China
Yunqian Zhang, Southeast University, China

[IEMDC2009-10797](#)

13P6 Evolutionary Neural Network Applied to Induction Motors Stator Fault Detection

Leite, D. F., University of Campinas, Brazil
Attux, R., University of Campinas, Brazil
VonZuben, F., University of Campinas, Brazil
Costa Jr., Catholic University of Minas Gerais, Brazil
Gomide, F., University of Campinas, Brazil

[IEMDC2009-11317](#)

13P7 Operation of An Induction Motor With An Open Circuit Fault By Controlling The Zero Sequence Voltage

O. Jasim, University of Nottingham, UK
C. Gerada, University of Nottingham, UK
M. Sumner, University of Nottingham, UK
J. Arellano-Padilla, University of Nottingham, UK

[IEMDC2009-10979](#)

13P8 Diagnosis of rotor bar breakages based on the Hilbert Transform of the current during the startup transient

R. Puche-Panadero, Universidad Politécnica de Valencia, Spain
M. Pineda-Sanchez, Universidad Politécnica de Valencia, Spain
M. Riera-Guasp, Universidad Politécnica de Valencia, Spain
J. Roger-Folch, Universidad Politécnica de Valencia, Spain
J. A. Antonino-Daviu, Perez-Cruz, Universidad Politécnica de Valencia, Spain

[IEMDC2009-11133](#)

13P9 A Distributed System Using Intelligent Techniques for Monitoring Electrical Stations

M. Dobriceanu, University of Craiova, Romania
A. Bitoleanu, University of Craiova, Romania

M. Popescu, University of Craiova, Romania
E. Subtirelu, University of Craiova, Romania
O. D. Dobriceanu, University of Craiova, Romania

[IEMDC2009-10856](#)

13P10 Analysis of 6-phase Synchronous Motor Working under Fault and Redundancy Conditions

Pedro V. Jover Rodriguez, ABB Corporate Research, Sweden
Waqas M. Arshad, ABB Corporate Research, USA
Sami Kanerva, ABB Oy, Marine and Turbocharging, Finland

[IEMDC2009-11319](#)

13P11 Improved Resolution of the MCSA Method Via Hilbert Transform, Enabling the Diagnosis of Rotor Asymmetries at Very Low Slip

R. Puche-Panadero, Universidad Politécnica de Valencia, Spain
M. Pineda-Sanchez, Universidad Politécnica de Valencia, Spain
M. Riera-Guasp, Universidad Politécnica de Valencia, Spain
J. Roger-Folch, Universidad Politécnica de Valencia, Spain
E. Hurtado-Perez, Universidad Politécnica de Valencia, Spain
J. Perez-Cruz, Universidad Politécnica de Valencia, Spain

[IEMDC2009-11166](#)

Poster Session 14

Wednesday Afternoon

Induction Machines II

Session Chair: Dr. Emmanuel Agamloh, Advanced Energy, USA

Symphony Ballroom III 1:00-2:30

14P1 Minimization of life cycle energy cost of a single-phase induction motor

V. Debusschere, SATIE, ENS Cachan Bretagne, CNRS, UEB, France
B. Multon, SATIE, ENS Cachan Bretagne, CNRS, UEB,
H. Ben Ahmed, SATIE, ENS Cachan Bretagne, CNRS, UEB,
P.E Cavarrec, Technical & Expertise Center SOMFY SAS,
P. Gerinière, Technical & Expertise Center SOMFY SAS,

[IEMDC2009-11263](#)

14P2 Managing Eddy Currents Losses and Ferromagnetic Material Nonlinearities in Distorting Regimes

L. Mandache, University of Craiova, Romania
D. Topan, University of Craiova, Romania

[IEMDC2009-11309](#)

14P3 Application of Induction Machine Efficiency Testing Standards in South Africa

H.M Mzungu, University of Cape Town, SA
M.J Manyage, University of Cape Town, SA
M.A Khan, University of Cape Town, SA
P. Barendse, University of Cape Town, SA
T.L Mthombeni, Energy Division Marshalltown, SA
P. Pillay, Concordia University, Canada

[IEMDC2009-11242](#)

14P4 Premium efficiency motors and energy saving potential

M. Benhaddadi, École Polytechnique de Montréal, 2Cégép du Vieux Montréal, Canada
G. Olivier, École Polytechnique de Montréal, Canada
D.Labrosse, Cégép du Vieux Montréal, Canada
P.Tetrault, Cégép du Vieux Montréal, Canada

[IEMDC2009-11293](#)

14P5 Rotor Cage of Single-Phase Induction Motors - Process Analysis

Claudia A. da Silva, Tecumseh do Brasil, R&D Electrical Motors, Brazil
Alvaro B. Dietrich, Tecumseh do Brasil, R&D Electrical Motors, Brazil
Renato Lopes, Tecumseh do Brasil, R&D Electrical Motors, Brazil
Renato Carlson, Federal University of Santa Catarina, Brazil

[IEMDC2009-10912](#)

14P6 High Performance VOC-FOC based Wind Generator System with Induction Machine

Marcello Pucci, I.S.S.I.A.-C.N.R., Italy
Gianpaolo Vitale, I.S.S.I.A.-C.N.R., Italy

[IEMDC2009-10828](#)

14P7 A Comparison of Speed-Sensorless Induction Motor Control with Torque Compensation

Cristiane Cauduro Gastaldini, Federal University of Santa Maria, Brazil
Rodrigo Zelir Azzolin, Federal University of Santa Maria, Brazil
Hilton Abílio Gründling, Federal University of Santa Maria, Brazil

[IEMDC2009-11043](#)

Poster Session 15

Wednesday Afternoon

Modeling and Control III

Session Chair: Dr. Thomas Wolbank, Vienna University of Technology, Austria

Symphony Ballroom III 1:00-2:30

15P1 Improved MRAS Observer and Sensorless Control of DFIG during Network Voltage Unbalance

Jiabing Hu, Zhejiang University, China
Wei Zhang, Zhejiang University, China
Hongsheng Wang, Zhejiang University, China
Yikang He, Zhejiang University, China

[IEMDC2009-10852](#)

15P2 Sensorless Control Technology of brushless DC motor for Air-Conditioner in FCV

Bo Hu, Tongji University, China
Guoqing Xu, Tongji University, China
Hao Hu, Tongji University, China
Mingrui Zhang, Tongji University, China

[IEMDC2009-10858](#)

15P3 The Nonlinear Voltage Distortion Effect of an Extended IGBT Turn-off Time in Sinusoidal PWM VSI Applications

Daniel Salt, University of Bristol, UK
David Drury, University of Bristol, UK
Derrick Holliday, University of Bristol, UK

[IEMDC2009-10885](#)

15P4 Sensorless Control of SEPIC and Ćuk Converters for DC Motors using Solar Panels

Edy E. Jiménez-Toribio, University of Puerto Rico-Mayagüez, Puerto Rico
Abel A. Labour-Castro, University of Puerto Rico-Mayagüez, Puerto Rico
Félix Muñiz-Rodríguez, University of Puerto Rico-Mayagüez, Puerto Rico
Héctor R. Pérez-Hernández, University of Puerto Rico-Mayagüez, Puerto Rico
Dr. Eduardo I. Ortiz-Rivera, University of Puerto Rico-Mayagüez, Puerto Rico

[IEMDC2009-11081](#)

15P5 Improvement of an automotive alternator using the Experimental Design Method

A Gimeno, Valeo Electrical Equipment Moteur, France
S Vivier, University of Technology of Compiègne, France
G Friedrich, University of Technology of Compiègne, France

[IEMDC2009-11169](#)

15P6 Simplified design model for fast analysis of large synchronous with magnetic saturation

J. Cros, Department de Genie Electrique& Informative, Canada
M. Taghizadeh, Department de Genie Electrique& Informative, Canada
J.R. Figueroa, Department de Genie Electrique& Informative, Canada
L. Radaorozandry, Department de Genie Electrique& Informative, Canada
Philippe Viarouge, Department de Genie Electrique& Informative, Canada

[IEMDC2009-11195](#)

15P7 A New, Ultra-low-cost, Embedded Power Quality and Energy Measurement Technology - The Future of Power Quality Measurement

*Andreas Eberhard, Power Standards Lab, USA
Alex McEachern, Power Standards Lab, USA*

[IEMDC2009-11053](#)

15P8 Dynamic Simulation of Electric Machines on FPGA Boards

*Hao Chen, Iowa University, USA
Song Sun, Iowa University, USA
Dionysios Aliprantis, Iowa University, USA
Joseph Zambreno, Iowa University, USA*

[IEMDC2009-11139](#)

15P9 General Core Loss Models on Magnetic Lamination

*Yu Zhang, Clarkson University, USA
Rui Guan, Clarkson University, USA
Pragasen Pillay, Clarkson University, USA
Ming-C. Cheng, Clarkson University, USA*

[IEMDC2009-10778](#)

15P10 Core Loss Prediction and Measurement in Magnetic Bearing

*R. Guan, Clarkson University, USA
M.J Manyage, Manyage Technologies, South Africa
P. Pillay, Concordia University, USA
Y. Zhang, Clarkson University, USA*

[IEMDC2009-10853](#)

15P11 High-Order Sliding Mode Control of a Marine Current Turbine Driven Permanent Magnet Synchronous Generator

*S.E. Ben Elghali, University of Brest, France
M.E.H. Benbouzid, University of Brest, France
J.F. Charpentier, French Naval Academy, France
T. Ahmed-Ali, University of Caen, France
I. Munteanu, Grenoble Polytechnic Institute, France*

[IEMDC2009-11143](#)

Poster Session 16

Wednesday Afternoon

Motor Drives II

Session Chair: Dr. Dean Patterson, FASCO - Asia Pacific, Australia

Symphony Ballroom III

1:00-2:30

16P1 Maximum DC-Link Voltage Utilization for Optimal Operation of IPMSM

*Timo Schoenen, RWTH Aachen, Germany
Andreas Krings, RWTH Aachen, Germany
Daniel van Treek, RWTH Aachen, Germany
Rik W. De Doncker, RWTH Aachen, Germany*

[IEMDC2009-11149](#)

16P2 Control Strategies of Doubly Fed Induction Generators to Support Grid Voltage

*M. B. C. Salles, University of São Paulo, Brazil
J. R. Cardoso, University of São Paulo,
A. P. Grilo, Federal University, Germany
C. Rahmann, RWTH Aachen University, Germany
K. Hameyer, RWTH Aachen University,*

[IEMDC2009-10892](#)

16P3 Sensorless Control of IPM Motors in the Low-Speed Range and at Stand-Still by HF-Injection and DFT Processing

*S. Bolognani, University of Padova, Italy
S. Calligaro, University of Udine, Italy
R. Petrella, University of Udine, Italy
M. Tursini, University of L'Aquila, Italy*

[IEMDC2009-11103](#)

16P4 Predicted and measured errors in estimating rotor position by signal injection for salient-pole PM synchronous motors

*Nicola Bianchi, University of Padova, Italy
Silverio Bolognani, University of Padova, Italy
Adriano Faggion, University of Padova, Italy*

[IEMDC2009-11157](#)

16P5 Sensorless Control of A surface Mounted Permanent Magnet Motor by Signal Injection associated with Space Vector Modulation Technique

*Houcine Zeroug, University of Sciences and Technology Houari Boumediene, Algeria
Lila Hocine, University of Sciences and Technology Houari Boumediene, Algeria*

[IEMDC2009-11283](#)

16P6 ARTIFICIAL NEURAL NETWORKS AND FUZZY LOGIC BASED CONTROL OF AC MOTORS

*H. Abu-Rub, Texas A&M University at Qatar, Qatar
A. Awwad, University of Erlangen-Nuremberg, Germany*

[IEMDC2009-10846](#)**16P7 Speed Control of Permanent Magnet Synchronous Motor Using Fuzzy Logic Controller**

Hassan M. Kamel, Arab Academy for Science, Technology, and Maritime Transport, Egypt

Hany M. Hasanien, Ain Shams University, Egypt

H E. A. Ibrahim, Arab Academy for Science, Technology, and Maritime Transport, Egypt

[IEMDC2009-10747](#)**16P8 Development of Fast and Robust Algorithm to Eliminate Low Frequency Current Ripples in Fuel Cell Applications**

Jong-Soo Kim, SungKyunKwan University, Korea

Hyun-Soo Kang, SungKyunKwan University, Korea

Jae-Sun Shim, Kangwon National University Samcheok Campus, Korea

Byoung-Kuk Lee, SungKyunKwan University, Korea

[IEMDC2009-10880](#)**Poster Session 17****Wednesday Afternoon****PM Machines III****Session Chair:** Dr. Judith Apsley, University of Manchester, UK**Symphony Ballroom III**

1:00-2:30

17P1 Magnetic Field Analysis of Surface-Mounted Permanent-Magnet Synchronous Motors Using Analytical and Numerical Conformal Mapping

K. Boughrara, Ecole Nationale Polytechnique (LRE-ENP), Algiers, Algeria

D. Žarko, University of Zagreb, Croatia

R. Ibtouen, Ecole Nationale Polytechnique (LRE-ENP), Algiers, Algeria

O. Touhami, Ecole Nationale Polytechnique (LRE-ENP), Algiers, Algeria

G. Olivier, École Polytechnique de Montréal, Canada

[IEMDC2009-11085](#)**17P2 Rating issues in Fault Tolerant PMSM**

Tsarafidy Raminosa, The University of Nottingham, UK

Chris Gerada, The University of Nottingham, UK

Nazri Othman, The University of Nottingham, UK

[IEMDC2009-11095](#)**17P3 Coupled Field-Circuit Analysis of a Surface-Inset Permanent-magnet Synchronous Generator Feeding a Rectifier Load**

Tze-Fun Chan, The Hong Kong Polytechnic University, China

*Weimin Wang, The Hong Kong Polytechnic University, China
Loi Lei Lai, City University London, UK*

[IEMDC2009-11130](#)

17P4 A Novel Numerical Method for the Calculation of Iron and Magnet Losses of IPMSMs

*Abdul Rehman Tariq, Michigan State University, USA
Carlos E. Nino, Michigan State University, USA
Elias G. Strangas, Michigan State University, USA*

[IEMDC2009-11201](#)

17P5 Iron Loss Characteristics of High Powered Interior Buried PM Synchronous Machine with Fractional Number Slots for Space Harmonic Reduction

*Chang-Ki Kim, Dong-A University, Korea
Ji-Seong Park, Dong-A University, Korea
Sung-Chin Han, Dong-A University, Korea
Sang-Yong Jung, Dong-A University, Korea*

[IEMDC2009-11224](#)

17P6 Development of Analytical Equations to Calculate the Cogging Torque in Transverse Flux Machines

*Mauricio Valencia Ferreira da Luz, Federal University of Santa Catarina, Brazil
Patrick Dular, F.N.R.S., ULG, Belgium
Nelson Sadowski, Federal University of Santa Catarina, Brazil
Renato Carlson, Federal University of Santa Catarina, Brazil
João Pedro Assumpção Bastos, Federal University of Santa Catarina, Brazil*

[IEMDC2009-11232](#)

17P7 Design and Performance of High Speed Air-Cored Axial-Flux Permanent-Magnet Generator with Circular Magnets and Coils

*Weizhong Fei, Cranfield University, UK
Patrick Chi-Kwang Luk, Cranfield University, UK*

[IEMDC2009-11260](#)

17P8 Design Method for Brush Permanent Magnet DC Motors

*Jerome Cros, Université Laval, Canada
Geraldo Sincero, Université Laval, Canada
Philippe Viarouge, Université Laval, Canada*

[IEMDC2009-11292](#)

17P9 Interior Permanent Magnet Synchronous Motor (IPMSM), with a developed Brain Emotional Learning Based Intelligent Controller (BELBIC)

Ehsan Daryabeigi, Islamic Azad University, Iran
Gholamreza Arab Markadeh, Shahrekord University, Iran
Lucas Caro, University of Tehran, Iran

[IEMDC2009-11314](#)

17P10 Exploitation of iron B-H local hysteresis for the rotor position detection of a PM motor

Omar Scaglione, Ecole Polytechnique Fédérale de Lausanne, Switzerland
Miroslav Markovic, Ecole Polytechnique Fédérale de Lausanne, Switzerland
Yves Perriard, Ecole Polytechnique Fédérale de Lausanne, Switzerland

[IEMDC2009-11024](#)

17P11 Design of an Interior Permanent Magnet Machine with Concentrated Winding for Field Weakening Applications

Lester Chong, University of New South Wales, Australia
Rukmi Dutta, University of New South Wales, Australia
M. F. Rahman, University of New South Wales, Australia

[IEMDC2009-10963](#)

17P12 Computation of Air-gap Field in an Axial-Flux Permanent-Magnet Machine Using The Method of Images

Tze-Fun Chan, The Hong Kong Polytechnic University, China
Loi Lei Lai, City University London, UK

[IEMDC2009-11131](#)

Poster Session 18

Wednesday Afternoon

Power Converters II

Session Chair: Professor Mohamed El-Sayed, University of Trinidad and Tobago

Symphony Ballroom III

1:00-2:30

18P1 Dead-time Compensation Method of a 600KW Electrical Balance Of Plant with LC Filter for Molten Carbonate Fuel Cell

Kwang-Seob Kim, POSCON Coporation R&D Center, Korea
Tai-Sik Hwang, POSCON Coporation R&D Center, Korea
Byung-Ki Kwon, POSCON Coporation R&D Center, Korea
Ja-Sik Kim, POSCON Coporation R&D Center, Korea
Chang-Ho Choi, POSCON Coporation R&D Center, Korea
Sung-Gap Choi, POSCON Coporation R&D Center, Korea

[IEMDC2009-10888](#)

18P2 How can be Akagi's p-q Theory Applied for Active Filtering under Non-Sinusoidal Voltage?

Alexandru Bitoleanu, University of Craiova, Romania
Mihaela Popescu, University of Craiova, Romania
Mircea Dobriceanu, University of Craiova, Romania

[IEMDC2009-10910](#)

18P3 New Active Filtering Converter for Canceling Current Undulations Generated by the DC/DC Converter

Ahmed Shahin, GREEN – INPL- Nancy-Université, France
Jean Martin, GREEN – INPL- Nancy-Université, France
Serge Pierfederici, GREEN – INPL- Nancy-Université, France
B. Davat, GREEN – INPL- Nancy-Université, France
F. Meibody-Tabar, GREEN – INPL- Nancy-Université, France

[IEMDC2009-10951](#)

18P4 Sliding Mode Based Zero-Sequence Current Mitigation of Parallel-Connected Power Converters

Yu Zhang, University of Miami, USA
Zhenhua Jiang, University of Miami, USA

[IEMDC2009-11110](#)

18P5 Dynamic Current Limiting Control of Voltage Source Inverters

Xunwei Yu, University of Miami, USA
Zhenhua Jiang, University of Miami, USA

[IEMDC2009-11116](#)

18P6 DC Voltage Control for the Three-Phase Four-Wire Shunt Split-capacitor Active Power Filter

Xie Bin, Huazhong University of Science and Technology, China
Dai Ke, Huazhong University of Science and Technology, China
Kang Yong, Huazhong University of Science and Technology, China

[IEMDC2009-11152](#)

18P7 A New 3D-SVPWM Algorithm for Four-Leg inverters

Kouzou Abdellah, University Centre of Djelfa, Algeria
Mahmoudi M.O, National Polytechnic School, Algeria
Boucherit M.S, National Polytechnic School, Algeria

[IEMDC2009-11199](#)

18P8 DC-Bus Voltage Control of Three-Phase AC/DC PWM Converters for Renewable Energy Applications

Mahmoud M. Neam, Electronics Research Institute (ERI), Egypt
Fayez F. M. El-Sousy, King Saud University, Saudi Arabia
Mohamed A. Ghazy, Helwan University, Egypt
Maged A. Abo-Adma, Helwan University, Egypt

[IEMDC2009-10768](#)**18P9 Selecting Film Bus Link Capacitors For High Performance Inverter Applications***Michael Salcone, Electronic Concepts Inc., USA**Joe Bond, Electronic Concepts Inc., USA*[IEMDC2009-11310](#)**18P10 New Developments in Power Quality Immunity and Voltage Sag Standards: Hands-on Applications in North America, Asia, and Europe***Andreas Eberhard, Power Standards Lab, USA**Alex McEachern, Power Standards Lab, USA*[IEMDC2009-11052](#)**Coffee Break****2:30-3:00****Wednesday Afternoon****Oral Session 31****Wednesday Afternoon****PM Machines (III)****Session Chair:** Professor Erich Schmidt, Vienna University of Technology, Austria**Symphony Ballroom I****3:00-5:00****3101 Fault-Tolerant PM Machines: A Review***Ayman M. EL-Refaie, GE Global Research Center, USA*[IEMDC2009-10896](#)**3102 Influence of the Stator Slot Opening on the Characteristics of the Windings with Concentrated Coils***Dieter Gerling, University of Federal Defence Munich, Germany*[IEMDC2009-10751](#)**3103 Magnetic Radial Force Density of the PM Machine with 12-teeth/10-poles Winding Topology***Gurakuq Dajaku, FEAAM GmbH, Germany**Dieter Gerling, University of Federal Defense Munich, Germany*[IEMDC2009-10787](#)**3104 Optimal Split Ratio in Fractional-Slot Interior Permanent Magnet Machines with Non-Overlapping Windings***L.J. Wu, University of Sheffield, UK*

Z.Q. Zhu, *University of Sheffield, UK*
J. T. Chen, *University of Sheffield, UK*
Z.P. Xia, *University of Sheffield, UK*
G.W. Jewell, *University of Sheffield, UK*

[IEMDC2009-10831](#)

3105 Performance Comparison of Fault Tolerant PM Machine for Static Load Holding Application

Tsarafidy Raminosoa, *The University of Nottingham, UK*
Chris Gerada, *The University of Nottingham, UK*
Nazri Othman, *The University of Nottingham, UK*

[IEMDC2009-11094](#)

Oral Session 32

Wednesday Afternoon

Electric Vehicle Applications (III)

Session Chair: Dr. Leila Parsa, Rensselaer Polytechnic Institute, USA

Symphony Ballroom II 3:00-5:00

3201 Design of a Permanent Magnet Synchronous Machine for a Flywheel Energy Storage System within a Hybrid Electric Vehicle

Ming Jiang, *University of Alberta, Canada*
John Salmon, *University of Alberta, Canada*
Andrew M. Knight, *University of Alberta, Canada*

[IEMDC2009-11113](#)

3202 Design and optimization of an IPMSM with fixed outer dimensions for application in HEVs

Thomas Finken, *RWTH Aachen University, Germany*
Kay Hameyer, *RWTH Aachen University, Germany*

[IEMDC2009-10921](#)

3203 Powerline Communication in Electric Vehicles

Ezio Bassi, *University of Pavia, Italy*
Francesco Benzi, *University of Pavia, Italy*
Luis Almeida, *University of Porto, Portugal*
Thomas Nolte, *Mälardålen University, Sweden*

[IEMDC2009-11019](#)

3204 Hybrid Permanent Magnet Generators for Electric Vehicle Applications

A. S. Al-Adsani, *The University of Manchester, UK*

N. Schofield, The University of Manchester, UK

[IEMDC2009-11285](#)

3205 A Control Scheme With Energy Saving and DC-Link Disturbance Rejection For Electric Vehicles

*D. Casadei, University of Bologna, Italy
M. Mengoni, University of Bologna, Italy
C. Rossi, University of Bologna, Italy
G. Serra, University of Bologna, Italy
A. Tani, University of Bologna, Italy
L. Zarri, University of Bologna, Italy*

[IEMDC2009-11016](#)

Oral Session 33

Wednesday Afternoon

Magnetic Actuators

Session Chair: Dr. Kent Davey, American Maglev, USA

Concerto Ballroom A

3:00-5:00

3301 A Co-Energy based Macromodel for an Electromagnetic Actuator

*Daniel Wiedemann, Institute of Applied Mechanics, Germany
Ulrich Koch, Institute of Applied Mechanics, Germany
Heinz Ulbrich, Institute of Applied Mechanics, Germany*

[IEMDC2009-11018](#)

3302 Optimization design of a linear actuator using a genetic algorithm

*Joel Maridor, Integrated Actuators Laboratory, SWITZERLAND
Miroslav Markovic, Integrated Actuators Laboratory, SWITZERLAND
Yves Perriard, Integrated Actuators Laboratory, SWITZERLAND
Dimitrios Ladas, Schneider Electric, FRANCE*

[IEMDC2009-10907](#)

3303 Optimal design of a high dynamic actuator for diaphragm pumps

*Stéphane Vivier, UTC - LEC, France
Didier Lemoine, UTC - LEC, France
Guy Friedrich, UTC - LEC, France*

[IEMDC2009-10973](#)

3304 Inductances and Forces of a Three Phase Permanent Magnet Biased Radial Active Magnetic Bearing in Dependence on the Rotor Eccentricity

Erich Schmidt, Vienna University of Technology, Austria

Matthias Hofer, Vienna University of Technology, Austria

[IEMDC2009-11002](#)

3305 A Harmonic Gear-Like Motor

Kent Davey, KD Labs, Inc., USA

[IEMDC2009-10801](#)

Oral Session 34

Wednesday Afternoon

Power System Issues

Session Chair: Mr. Jim Corey, American Electric Power, USA

Concerto Ballroom B

3:00-5:00

3401 Power System Resonance Excited by VFD Ground Fault

Jim Corey, American Electric Power, USA

[IEMDC2009-10935](#)

3402 A Suppression Method of Tower Shadow Effect in Wind Power System Using a Wound Rotor Induction Generator

T. Miyakawa, Kitakyushu National College of Technology, Japan

K. Shinohara, Osaka Prefectural College of Technology, Japan

K. Yamamoto, Kagoshima University, Japan

M. Ikeda, Kagoshima University, Japan

H. Hama, Kagoshima University, Japan

[IEMDC2009-11114](#)

3403 Design and Coordination of Wind Stabilizers for Damping Power System Oscillations using Modal Decomposition.

Carlos Gallardo, Carlos III University of Madrid, Spain

[IEMDC2009-11248](#)

3404 A DFT-based Phase Locked Loop for Phase and Amplitude Tracking in Aircraft Electrical Systems

F. Cupertino, Politecnico di Bari, Italy

L. Salvatore, Politecnico di Bari, Italy

E. Lavopa, University of Nottingham, UK

M. Sumner, University of Nottingham, UK

P. Zanchetta, University of Nottingham, UK

[IEMDC2009-11021](#)

3405 Analytical Approach for the Calculation of the Stray Field of Large Power Transformers

Erich Schmidt, Vienna University of Technology, Austria
Michael Strobach, Siemens Transformers Austria Ltd., Austria
Peter Hamberger, Siemens Transformers Austria Ltd., Austria

[IEMDC2009-11006](#)

Oral Session 35

Wednesday Afternoon

Green Energies (II)

Session Chair: Dr. Annette Muetze, University of Warwick, UK

Concerto Ballroom C 3:00-5:00

3501 Wind Speed Sensorless Maximum Power Point Tracking Control of Variable Speed Wind Energy Conversion Systems

J. S. Thongam, STAS Inc., Canada
P. Bouchard, STAS Inc., Canada
H. Ezzaidi, University of Quebec, Canada
M. Ouhrouche, University of Quebec, Canada

[IEMDC2009-11071](#)

3502 Analysis of Asynchronous Machines for Direct Drive Wind Power Generation

Luigi Alberti, University of Padova, Italy
Nicola Bianchi, University of Padova, Italy

[IEMDC2009-10886](#)

3503 Indirect Sensorless Speed Control of a PMSG for Wind Application

Sergio A. D'iaz, Universidad Técnica Federico Santa María, Chile
César Silva, Universidad Técnica Federico Santa María, Chile
Jorge Juliet, Universidad Técnica Federico Santa María, Chile
Hernán A. Miranda, Aalborg University, Denmark

[IEMDC2009-11159](#)

3504 Full-Power Converter Wind Turbines with Permanent Magnet Generator: Modeling, Control and Simulation

R. Melício, University of Beira Interior, Portugal
V. M. F. Mendes, Instituto Superior de Engenharia de Lisboa, Portugal
J. P. S. Catalão, University of Beira Interior, Portugal

[IEMDC2009-10847](#)

3505 De-rating of multiphase induction machines due to supply unbalance

J. M. Apsley, University of Manchester, UK

[IEMDC2009-10802](#)**Oral Session 36****Wednesday Afternoon****Power Converters****Session Chair:** Professor Herb Hess, University of Idaho, USA**Concerto Ballroom D**

3:00-5:00

3601 Multi-Objective Control for Cascade Boost Converter with Single Active Switch

Francisco J. Perez-Pinal, Instituto Politecnico Nacional, México
Ilse Cervantes, Instituto Politecnico Nacional, México

[IEMDC2009-11127](#)**3602 A new Forward converter Topology**

Giorgio Ponzo, University of Palermo, Italy
Giuseppe Capponi, University of Palermo, Italy
Pietro Scalia, Texas Instruments EU Design Services, Germany
Valeria Boscaino, University of Palermo, Italy

[IEMDC2009-11233](#)**3603 Protection of UPQC against the Load Side Short Circuits**

Iurie Axente, Dublin Institute of Technology, Ireland
Malabika Basu, Dublin Institute of Technology, Ireland
Micheal F.Conlon, Dublin Institute of Technology, Ireland
Kevin Gaughan, Dublin Institute of Technology, Ireland

[IEMDC2009-11256](#)**3604 Modulation Strategies for Direct-Link Drive for Open-End Winding AC Machines**

Apurva Somani, University of Minnesota, USA
Ranjan K. Gupta, University of Minnesota, USA
Krushna K. Mohapatra, University of Minnesota, USA
Kaushik Basu, University of Minnesota, USA
Ned Mohan, University of Minnesota, USA

[IEMDC2009-11279](#)**3605 Sensorless Adaptive Sliding Mode Control of an IPM Synchronous Motor Drive Using a Sliding Mode Observer and HF Signal Injection**

Gilbert Foo, University of New South Wales, Australia
Faz Rahman, University of New South Wales, Australia

[IEMDC2009-11203](#)**Closing Session****Wednesday Afternoon**

Closing & Best Poster Paper Awards

Session Chair: Professor O. A. Mohammed, General Chair

Symphony Ballroom I

5:00-5:30 PM
