International Conference on Electrical Machines

XXIth International Conference on Electrical Machines

Andel's Hotel Berlin, Germany
September 2-5, 2014

www.icem2014.de

Program

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ICEM
International Conference on Electrical Machines

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Welcome Message from the General Co-Chairs

Gérard-André Capolino

Uwe Schäfer

On behalf of the ICEM'2014 Organizing Committee, we would like to welcome you all in Berlin for the XXIst edition of the International Conference on Electrical Machines (ICEM). It is really a great honor and a pleasure as well to have the privilege to host ICEM in this city

The ICEM has been established as the oldest, the largest and the most prestigious international conference entirely devoted to electrical machines. Started in London in 1974 under the leadership of the passed Professor Arthur Ellison, ICEM is now a regular biennial event mainly organized in Europe. Very successful recent editions have been held in Helsinki, Finland in 2000, Bruges, Belgium in 2002, Cracow, Poland in 2004, Chania, Greece in 2006, Vilamoura, Portugal in 2008, Roma, Italy in 2010 and Marseille, France in 2012. Even if the ICEM is an independent and non-profit organization, it has started links with the Institute of Electrical & Electronics Engineers, Inc. (IEEE) with a technical co-sponsorship of societies in 2006. This has been the consequence of a real jump in quality and now ICEM papers are published in one of the most important scientific data bases in the world, the so-called IEEEXplore. Moreover, ICEM papers are now more referenced than in the past due to what IEEE is providing in term of international visibility. For the 2014 edition, ICEM has received the technical co-sponsorship of the IEEE Industry Applications Society and the IEEE Industrial Electronics Society.

This is the second time ICEM is coming in Germany after the 19B6 edition in München which has been successful as well with 304 papers presented and a bit more than 400 attendees. Berlin has been chosen for the 2014 edition of the conference.

No need to say that Berlin is one of the most international areas in Germany being the capital and the largest city of the country. Berlin is also a cultural and artistic city with 166 museums, 142 libraries and 60 theaters. Moreover, from a purely technical point of view, the Technical University of Berlin, funded in 1879, has a long tradition in the area of electrical machines.

The ICEM'2014 Organizing Committee wishes you a very successful conference in which you will certainly attend interesting technical sessions, you will meet new friends and colleagues for further collaborations and you will return back home with new ideas from this exciting technical field of electrical machines.

Enjoy Berlin, enjoy ICEM'2014 and join us to make it a memorable event!

ICEM'2014 General Co-Chairs

Gérard-André Capolino *Uwe Schäfer*

Message from the Technical Program Co-Chairs

The XXIth edition of ICEM is a major event of the worldwide engineering community working in the field of electrical machines and their applications. It was therefore a great honor and a pleasure for us to be responsible for the technical program of ICEM'2014. This is the fifth time after Chania in 2006, Vilamoura in 2008, Roma in 2010 and Marseille in 2012, that ICEM proposes its new shape to participants and to authors with the technical co-sponsorship of IEEE. For this purpose, it has been asked to submit a full provisional version of each paper for both regular tracks and special sessions.

For the 2014 edition, the Organizing Committee has proposed to participants:

- 4 tutorials
- 7 tracks for regular papers
- 16 special sessions on "hot" topics
- A student forum
- A technical exhibition

Altogether, 530 papers have been submitted and 403 will be in the final program involving around 1,600 authors from 48 countries in the world. The mean number of reviews per paper has been 3 involving close to 1,600 reviewers. In the technical program, the papers have been split in 3 poster sessions of around 70 papers each and 36 oral sessions of 6 papers each. The Technical Program represents the integrated effort of many individuals, namely, authors, reviewers, track co-chairs, special session organizers, and the National Scientific Committee members, whom we thank for their contributions to the success of ICEM'2014. It is our strong opinion that the world's state of the art in electrical machines is well represented across both technical tracks and special sessions. However, if few words have to be chosen, then "embedded, grid-connected, design, control and condition monitoring" are our choices of keywords that summarize the large majority of presentations. We look forward to the intellectual stimulation of all participants, and thank you again for attending ICEM'2014.

Willkommen in Berlin!

ICEM'2014 Technical Program Co-Chairs

Aldo Boglietti	*Bernd Ponick*	*Annette Muetze*
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ITALY	Germany	Austria

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Wilfried Hofmann (Germany)
Mario Pacas (Germany)
Nejila Parspour (Germany)
Manfred Stiebler (Germany)

General Program

Tuesday September 2, 2014

07:30am - 06:00pm	Registration / Student Posters
09:00am - 01:00pm	Tutorial 4 / Tutorial 2
01:00pm - 02:30pm	Lunch Break
02:30pm - 06:30pm	Tutorial 1 / Tutorial 3
06:30pm - 07:30pm	Welcome Cocktail

Wednesday September 3, 2014

08.00am - 06:00pm	Registration
09.30am - 10.00am	Opening Ceremony
10:00am - 11:00am	Plenary Session
11:00am - 11:20am	Coffee Break
11:20am - 12:40pm	Poster Session 1
12:40pm - 02:00pm	Lunch Break
02:00pm - 04:00pm	Oral Sessions
04:00pm - 04:20pm	Coffee Break
04:20pm - 06:20pm	Oral Sessions
06:30pm - 11:00pm	Social Tour Berlin

Thursday September 4, 2014

08.00am - 06:00pm	Registration
09:00am - 10:10am	Poster Session 2
10:10am - 10:30am	Coffee Break
10:30am - 12:30pm	Oral Sessions
12:30pm - 02:00pm	Lunch Break
02:00pm - 03:10pm	Poster Session 2
03:10pm - 03:30pm	Coffee Break
03:30pm - 05:30pm	Oral Sessions
07:45pm - 11:00pm	Social Dinner

Friday September 5, 2014

08.00am - 06:00pm	Registration
09:00am - 10:10am	Poster Session 3
10:10am - 10:30am	Coffee Break
10:30am - 12:30pm	Oral Sessions
12:30pm - 02:00pm	Lunch Break
02:00pm - 04:00pm	Oral Sessions
04:00pm - 04:20pm	Coffee Break
04:20pm - 05:30pm	Poster Session 3
05:40pm - 06:10pm	Paper Awards and Closing Ceremony

Student Poster Forum

Room: Poster Area **07:30 am - 09:00 am**

Chair: Shahin Hedayati Kia

1 **Tooth-Coil PMSMs and Torque Ripple Reduction**
Pavel Ponomarev

2 **Optimization of High Voltage Geared Permanent-Magnet Synchronous Generator Systems**
Daleel Lilla

3 **Control of Permanent Magnet Brushless Motors with Nonsinusoidal Back-EMF**
Cassio Luciano Baratieri

4 **Procedure for Fast Electromagnetic Design of Axial Flux Permanent Magnet Machines**
Werner Jara Montecinos

5 **Effects of Fluid Flow on Heat Transfer in Large Rotating Electrical Machines**
Nicolas Lancial

6 **PhD Activity on Synchronous Reluctance Motor Design**
Gamba Matteo

7 **Low Voltage Ride-Through Control of Doubly-Fed Induction Generator at Synchronism**
Nguyen Van Binh

8 **Analytical Calculation of Small Three and Single Phase Induction Motors**
Dejan Strbac

9 **Modeling, Design and Optimization of Electromagnetic Devices**
Tiago Staudt

10 **Eigenvalue Analysis Method Applied to the Stability Study of Power Networks with a Modular Structure**
Pedro C. O. Silva

11 **High Thrust Permanent Magnet Linear Motor**
G. Damiano Zito

12 **A Global Approach for the Study of Forces Developed by a Tubular Linear Moving Magnet**
Allias Jean-François

13 **Design, Modeling and testing of Dual Rotor Motor for Electric Vehicle Application**
Ankit Dalal

14 **PM Power Loss Analysis of Brushless AC PM Machines**
Xiaopeng Wu

15 **Performance Analysis of a Large Hydro Generator After Disconnection of Damaged Coils**
Ana B.M. Aguiar

16 **New Diagnostic Methods to Detect Faults in Cage Induction Motors**
Konstantinos N. Gyftakis

17 **High-Efficiency Electromechanical Conversion Systems, Efficiency Improvement in Micro-hydroelectric Power Generator**
Omar Bottesi

18 **Self-Sensing Control of PMSM Using Two-Degree-of-Freedom Current Control**
Markus Seilmeier

19 **Determination of Gas Distribution in Turbo Generators through Combination of Finite Element- and Network Methods**
Kaining Zhao

20 **Low Cost PMSM Solutions**
Ilya Petrov

21 **Design of High-Speed Electrical Machines**
Uzhegov Nikita

22 **Study of Noise and Vibrations of Electromagnetic Origin in Electrical Machines**
Guillaume Verez

23 **Optimum Efficiency Control and Increase of Exploitable Wind Speed Region for Wind Energy Conversion Systems with Induction Generators**
Athanasios Mesemanolis

24 **Research on Electromagnetic and Thermal Design of Permanent Magnet Synchronous Machines for Electric Vehicle Applications**
Bin Zhang, Ronghai Qu

25 **Elimination of Inrush Current Using a New Prefluxing Method. Application to a Single-Phase Transformer**
Vinicius Oiring

26 **Fault Tolerant Full Electric High Lift System**
Gussipe Fabri

27 **New Advanced Techniques for Diagnosis of Electrical Machines both Steady-State and Transient Regimes**
Angel Sapena Baño

Tutorials

Room: Amethyst **09:00 am - 01:00 pm**

Tutorial 4:
Reduction of Acoustic Noise and Vibrations due to Magnetic Forces in Synchronous Machines

Jean Le Besnerais, EOMYS ENGINEERING, France

Biography

Following a M.Sc. specialized in Applied Mathematics (Ecole Centrale Paris, France), J. LE BESNERAIS made an industrial PhD thesis in Electrical Engineering at the L2EP laboratory of the Ecole Centrale de Lille, North of France, on the reduction of electromagnetic noise and vibrations in traction induction machines with ALSTOM Transport.

After four years in the railway industry, he then worked three years in the wind industry (SIEMENS Wind Power in Denmark and NENUPHAR Wind in France) on various aspects of wind turbine design: generator cooling, acoustic noise and vibrations, electromagnetic optimization, structural mechanics and aerodynamics.

In 2013 he founded EOMYS ENGINEERING, a company providing applied research and development services in electrical engineering, more especially on the optimal multi-physics design of electromechanical systems. EOMYS has developed a strong expertise in noise and vibrations due to electromagnetic forces in terms of modelling, simulation and experimental characterization.

01:00 pm - 02:30 pm Lunch Break • Room: andel's Hotel

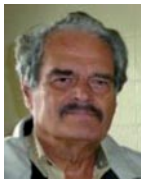
Tutorials

Room: Saphir 2 **09:00 am - 01:00 pm**

Tutorial 2
Electric Machine Design Strategies to Achieve IE2, IE3 & HEM (IE4) Efficiencies

James Hendershot, IEEE, USA

Biography



James Hendershot has over 40 years experience in practical hands-on experience with PM synchronous, Switched Reluctance brushless & AC Induction machine design, manufacturing and development. He has designed hundreds of brushless motors for computer disc drives, servo systems, high speed machine tool spindles, traction drives, hybrid vehicles, micro-turbines and diesel generators. He has written numerous technical papers, publications and presented design tutorial/workshops on many different electric motor topics.

James Hendershot is the co-author with Professor TJE Miller of two of the leading textbooks on Permanent Magnet Brushless Motors and Generator Design. (ISBN 1-881855-03-1 RED BOOK) and the 2010 newly published "Design of Brushless Permanent-Magnet Machines (ISBN-13: 9780984068708 GREEN BOOK.) Both available at motordesignbooks.com)

James Hendershot holds a B.S. in Physics from Baldwin-Wallace University plus graduate studies at Cleveland State University and Case-Western Reserve University. His broad experience designing, manufacturing and applying electric motors for a wide variety of applications includes most all types of electric machines. He is an IEEE Life Fellow and long time member of the SAE.

01:00 pm - 02:30 pm Lunch Break • Room: andels' Hotel

Tuesday, September 2, 2014

Room: Saphir 3 **02:30 am - 06:30 pm**

Tutorial 3:
Electric Motor Cooling System Design

Dave Staton, Motor Design Ltd, United Kingdom

Biography

Dr. David Staton did his PhD in computer aided design of electric motors at Sheffield University in the mid 1980's. Since then he has worked on motor design and in particular development of motor design software at Thorn EMI, SPEED Laboratory at Glasgow University and Control Techniques who are part of Emerson Electric. At the SPEED labs he helped with developing the SPEED software for electric motor design. In 1999 he founded Motor Design Ltd. (MDL) focusing on development of software for design of electric machines. MDL have developed the Motor-CAD and Motor-LAB software for electromagnetic and thermal simulation and design of electric motors and generators.

06:30 pm - 08:00 pm Welcome Cocktail • Room: Foyer

Tutorials

Room: Amethyst **02:30 am - 06:30 pm**

Tutorial 1:
High Speed Drives

Andreas Binder, Kersten Reis, TU Darmstadt, Germany;
Prof. em. Wolf-Rüdiger Canders, TU Braunschweig, Germany

Biography

Univ. Prof. Dr.-Ing. Habil. Dr. h.c. Andreas Binder, Senior Member IEEE, Member VDE, IET, VDI, EPE, received the degrees Dipl.-Ing. (diploma) and Dr. techn. (PhD) for Electrical Engineering from the University of Technology, Vienna/Austria, in 1981 and 1988, respectively. From 1981 to 1983 he worked at ELIN-Union AG, Vienna, on large synchronous generator design. From 1983 to 1989 he joined the Institute of Electrical Machines and Drives, Technical University, Vienna, as researcher. From 1989 to 1997 he rejoined industry, leading groups for developing DC and inverter-fed AC motors and drives, at Siemens AG, Bad Neustadt and Erlangen, Germany. Since 1994 he is lecturer (habilitation) at University of Technology, Vienna/Austria, and received in 1997 the ETG-Literature Award of the German Assoc. of Electrical Engineers, VDE. Since October 1997, he is Head of the Institute of Electrical Energy Conversion, Darmstadt University of Technology, as a full professor, being responsible for teaching and research for electrical machines, drives and railway systems. He is the author or co-author of more than 280 scientific publications and two books and holds several patents. He received Dr. h.c. from University of Technology Bucharest in 2007 and is the recipient of the Medal of Honour of the ETG/VDE 2009 for outstanding contributions at VDE.

Kersten Reis was born in Germany, in July 1985. He received the Dipl.-Ing. (diploma) degree from the Technical University Darmstadt in 2010. Since 2011, he has been working at the Institute for Electrical Energy Conversion, Darmstadt University of Technology as researcher. His interests include the development of highly utilized electric motors for the use in wheel-hub drives.

06:30 pm - 08:00 pm Welcome Cocktail • Room: Foyer

Tuesday, September 2, 2014

Prof. Canders – born 1947- studied electrical engineering at the Technical University in Braunschweig and after receiving the diplom engineer degree in 1974 he continued with scientific work in the field of electric driven vehicles and later on in the field of kinetic energy storage systems (super flywheel) at the Institute for Electrical Machines, Drives and Traction (Prof.H. Weh) of the Technical University Braunschweig.

After receiving his ph.D degree in 1982 he started work in Industry in the field of the development of common industrial drives and rotating UPS (uninterruptable power supplys) with a power range up to 1.6 MW at the RWE Piller company where in 1990 he became head of the development department for electrical machines.

In 1995 he returned to the Technical Universtity of Braunschweig following Prof. Weh on the chair for Electrical Machines, Drives and Traction and served as a university professor in Braunschweig. He is now retired since April 2012, but still active with scientific work in his field.

His main scientific interests are high speed machines, high torque machines and vehicle drive systems.

Prof. Canders is member of IEEE, VDE /ETG, Braunschweigische Wissenschaftliche Gesellschaft (academye of science) and was until retirement member of National Platform for Electromobility of the german government.

06:30 pm - 08:00 pm Welcome Cocktail • Room: Foyer

Plenary Session

Room: Foyer **08:00 am - 06:00 pm**

Registration

Room: Rubin **09:30 am - 10:00 am**

Opening Ceremony

Welcome Address:

Uwe Schäfer
on behalf of the ICEM 2014 Organizing Committee

Gérard-André Capolino
ICEM SC Chair

Room: Foyer **10:00 am - 11:00 am**

Plenary Session

Keynote:

Super Large Drives for High Speed Applications

Dr.-Ing. Axel Möhle,
Siemens AG, Berlin
und ggf. Leitung Engineering

11:00 am - 11:20 am Coffee Break • Room: Exhibition

Poster Session 1

Room: Poster Area **11:20 am - 12:30 pm**

Chairs: Franck Betin, Raphael Romary

TT4 - Design and related problems

P001 • GD-000108
Torque Ripple Reduction in 12-slot 10-pole Fractional Slot Permanent Magnet Synchronous Motors with Non-Overlapping Windings by Implementation of Unequal Stator Teeth Widths
Ilya Petrov, Pavel Ponomarev, Juha Pyrhönen, LUT, Finland

P002 • GD-000329
Study of Losses in Permanent Magnet Couplings due to Highly Conductive Walls
Thomas Matsumoto, Ivan Chabu, Universidade de São Paulo, Brazil

P003 • GD-000485
An algorithm for the filling factor calculation of electrical machines standard slots
Nick Raabe, Sterling Industry Consult GmbH, Germany

P004 • GD-001015
Optimization Methods Evaluation for the Design of Radial Flux Surface PMSM
Yannis L Karnavas, Christos D Korkas, Democritus University of Thrace, Greece

P005 • GD-001082
Novel cooling methods using Flux-barriers
Alexander Nollau, Dieter Gerling, Universität der Bundeswehr München, Germany

P006 • GD-001163
Torque Ripple Reduction in Double-Layer 18/16 TC-PMSMs by Adjusting Teeth Widths to Minimize Local Saturation
Pavel Ponomarev, Ilya Petrov, Juha Pyrhönen, LUT, Finland

P007 • GD-001244
Multiobjective Optimization of IPM synchronous motors using Response Surface Methodology and filtered Monte Carlo approach
Robert Seifert, Ramon Bargallo, EUETIB-UPC, Spain

12:40 pm - 02:00 pm Lunch Break • Room: andel's Hotel

P008 • GD-002399
A Multi-physics Multi-objective Optimal Design Approach of PM Synchronous Machines
Osama Mohammed, Ali Sarikhani, Florida International University, USA

P009 • GD-002402
Design and Characteristic Analysis for New Structure of Bone Conduction Speaker
Koya Yoshikawa, Wataru Kitagawa, Takaharu Takeshita, Nagoya Institute of Technology, Japan

P010 • GD-002453
Experimental Verification of Proposed Electromagnetic Clutch Structure for Surge Voltage Suppression
Junya Muramatsu, Takashi Kojima, Hiroya Tanaka, Yoshiyuki Hattori, Hiroshi Okada, Hiroki Keino, Takashi Nakanishi, Keisuke Fujisaki, Toyota Central R&D Labs., Inc., Japan

P011 • GD-002526
Design of a Traction Motor with Two-Step Gearbox for High-Torque Applications
Juho Montonen, Simo Sinkko, Pia Lindh, Juha Pyrhönen, Lappeenranta, Finland

P012 • GD-002925
Losses due to transverse flux in axial flux permanent magnet synchronous machines
Bart Scheerlinck, Peter Sergeant, Herbert De Gersem, Ghent University, Belgium

P013 • GD-002976
Effects of Loading on Radial Magnetic Forces in Low-Speed Permanent Magnet Machine with Concentrated Windings
Mostafa Valavi, Arne Nysveen, Robert Nilssen, Norwegian University of Science and Technology (NTNU), Norway

P014 • GD-003263
Thermal Performance analysis of the double sided-Linear Switched Reluctance Motor
Jordi Garcia Amoros, Ramon Bargallo Perpiña, Pere Andrada, Baldui Blanque, University Rovira i Virgili, Spain

P015 • GD-003379
Stator Thermal Model for Short-Time Thermal Transients
Aldo Boglietti, Enrico Carpaneto, Marco Cossale, Alex Lucco Borlera, Politecnico di Torino, Italy

12:40 pm - 02:00 pm Lunch Break • Room: andel's Hotel

Wednesday, September 3, 2014 Poster Session 1

P016 • GD-003433
New Analytical Method for PMSM Magnet Losses Estimation based on Fourier Series
Alejandro Rodríguez, Damián Gómez, Irma Villar, Amaia López-de-Heredia, Ion Etxeberria-Otadui, IK4-IKERLAN, Spain

P017 • GD-003441
Improved Analytical Multiphysical Modeling of a Surface PMSM
Alejandro Rodríguez, Damián Gómez, Irma Villar, Amaia López-de-Heredia, Ion Etxeberria-Otadui, IK4-IKERLAN, Spain

P018 • GD-003875
An effect of Electromagnetic Force on Acoustic Noise of Axial-gap In-wheel SR Motor
Takahiro Tokita, Hiroki Goto, Osamu Ichinokura, Graduate School of Engineering, Tohoku University, Japan

P019 • GD-004006
Improved Permeance Network Model for Embedded Magnet Synchronous Machines
Damián Gómez, Alejandro Rodríguez, Irma Villar, Amaia López-de-Heredia, Ion Etxeberria, Zi-Qiang Zhu, IK4-IKERLAN, Spain

P020 • GD-004014
Magnet Design Based on Transient Bahavior of an IPMSM in Event of Malfunction
Sicong Liu, Matthias Gregor, Kay Hameyer, RWTH Aachen/Daimler AG, Germany

P021 • GD-004057
Modeling and Reduction of Stator Teeth Eddy-Current Losses in IPM Machines
Julian Blum, Joerg Merwerth, Hans-Georg Herzog, BMW AG, Germany

P022 • GD-004324
Gradient Based Optimization of Permanent Magnet Generator Design for a Tidal Turbine
Astrid Røkke, Norwegian University of Science and Technology (NTNU), Norway

P023 • GD-004502
Hysteresis Modelling of Brushless Exciters Using Finite Element Analysis
Peethamparam Anpalahan, Sorin G. Ilie, Christopher P. Riley, Alin D. Visian, Cobham Technical Services, United Kingdom

12:40 pm - 02:00 pm Lunch Break • Room: andel's Hotel

P024 • GD-004766
Identification of Three Phase Induction Machines Equivalent Circuits Parameters Using Multi-Objective Genetic Algorithms
Praveen Kumar, Ankit Dalal, Amit Kumar Singh, Indian Institute of Technology, India

P025 • GD-005479
Procedure For Fast Electromagnetic Design Of Axial Flux Permanent Magnet Machines
Werner Jara, Juan Tapia, Nicola Bianchi, Juha Pyrhönen, Rogel Wallace, University of Concepcion, Chile

P026 • GD-005983
Comparison of Time-Harmonic and Transient Finite Element Calculation of a Squirrel Cage Induction Machine for Electric Vehicles
Thomas Schuhmann, Bernd Cebulski, Stephan Paul, IAV GmbH, Germany

P027 • GD-006467
Flux Displacement in Rectangular Iron Sheets and Geometry-Dependent Hysteresis Loss
Florian Bachheibl, Dieter Gerling, Universität der Bundeswehr München, Germany

P028 • GD-006629
Comparison of no-load and load core losses for wide range of nominal power induction motors
Maria Dems, Krzysztof Komeza, Institute of Mechatronics and Information Systems Lodz University of Technology, Poland

P029 • GD-006645
Interactions between high and low frequency effects on iron losses
Lucian Petrea, Cristian Demian, Jean Francois Brudny, Thierry Belgrand, University of Artois - LSEE, France

P030 • GD-006882
Design Process of a High Torque Density Direct Drive Involving a Transverse Flux Machine
Jakob Jung, TU-Dresden, Germany

P031 • GD-007064
Permanent Magnet Synchronous Reluctance Machine - Design guidelines to improve the acoustic behavior
Sebastian Rick, Aryanti Putri, David Franck, Kay Hameyer, IEM - RWTH Aachen University, Germany

12:40 pm - 02:00 pm Lunch Break • Room: andel's Hotel

Wednesday, September 3, 2014 Poster Session 1

P032 • GD-007161
Influence of Ferromagnetic Bridges in d,q-Equivalent-Circuit Modeling of Interior Permanent-Magnet Machines
Bart Wymeersch, Frederik De Belie, Lieven Vandevelde, Claus Rasmussen, Finn Jensen, University Ghent, Belgium

P033 • GD-007366
Design of an electrical motor with wide speed range for the in-wheel drive in a heavy duty off-road vehicle
Svetlana Zhitkova, Matthias Felden, David Franck, Kay Hameyer, IEM RWTH Aachen University, Germany

P034 • GD-007498
Mechanical Construction and Analysis of an Axial Flux Segmented Armature Torus Machine
Bo Zhang, Yizhe Wang, Martin Doppelbauer, Karlsruhe Institute of Technology, Germany

P035 • GD-007773
Basics and Application of Motor-design Optimization in an Industrial Environment
Matthias Centner, Siemens AG, Germany

P036 • GD-007811
Optimal Number of Rotor Parameters for the Automatic Design of Synchronous Reluctance Machines
Matteo Gamba, Gianmario Pellegrino, Francesco Cupertino, Gianmario Pellegrino, Italy

P037 • GD-008451
Performance improvement of a high-speed permanent magnet excited synchronous machine by flux-barrier modelling
Marco Hombitzer, Silas Elfgen, David Franck, Kay Hameyer, RWTH Aachen University, Germany

P038 • GD-008761
Comparative Study of Two Winding Configurations for a Double Stator Switched Reluctance Machine
Eva Cosoroaba, Wei Wang, Babak Fahimi, The University of Texas at Dallas, USA

P039 • GD-009253
Design of Variable Flux Permanent Magnet Machine for Reduced Inverter Rating
Maged Ibrahim, Pragasen Pillay, Concordia University, Canada

12:40 pm - 02:00 pm Lunch Break • Room: andel's Hotel

P040 • GD-009512
Analytical Model of an Inverter-Fed Electrically Excited Synchronous Motor Considering Saturation
Alexander K. Hartmann, Jan Güdelhöfer, Raimund Gottkehaskamp, Mario Pacas University of Applied Sciences Düsseldorf, Dept. of Electrical Engineering, Germany

P041 • GD-009547
Magnetic Frequency Characteristics of Permanent Magnet for Arc-Shaped PM Motor
Aki Watarai, Keisuke Fujisaki, Shunya Odawara, Kohei Fujitani, Aichi Steel Corporation, Japan

P042 • GD-009709
Sizing Comparison of Axial Flux PM Motors, for Automotive Application
Antonino Di Gerlando, Giovanni Maria Foglia, Matteo Felice Iacchetti, Roberto Perini, Politecnico di Milano, Italy

P043 • GD-009717
Thermal Modeling for the Design and Check of an Axial Flux PM Motor
Antonino Di Gerlando, Giovanni Maria Foglia, Matteo Felice Iacchetti, Roberto Perini, Politecnico di Milano, Italy

P044 • GD-009806
Analytical calculation of induced EMF in PM machines with arbitrary arranged surface mounted magnets using winding function theory
Christian Schumann, Tobias Müller, Edgar Stein, Mario Pacas, University of Applied Sciences Kaiserslautern, Germany

P045 • GD-010308
Effective Switched Reluctance Drive Train in Unmanned Aerial Vehicles: Design Investigations
Christian Laudensack, Yevgen Polonskiy, Dieter Gerling, Institute of Electrical Drive and Actuators, Germany

P046 • GD-010332
Effective Switched Reluctance Drive Train in Unmanned Aerial Vehicles: Torque Investigations
Yevgen Polonskiy, Christian Laudensack, Dieter Gerling, Institute of Electrical Drive and Actuators, Germany

P047 • GD-010405
Flux Barrier and Skew Design Optimisation of Reluctance Synchronous Machines
E Howard, M.J Kamper, S Gerber, Student, South Africa

P048 • GD-010537
Development of a decentralized traction drive unit
Fabian Endert, Tobias Heidrich, Andreas Möckel, Ulf Schwalbe, TU Ilmenau, FG Kleinmaschinen, Germany

12:40 pm - 02:00 pm Lunch Break • Room: andel's Hotel

Wednesday, September 3, 2014 Poster Session 1

P049 • GD-010871
Comparison Of Hybrid Analytical Modelling And Finite Element Modelling For Pre-Design Purposes
Laoubi Yanis, Dhifli Mouheb, Amara Yacine, Barakat Georges, Greah, France

P050 • GD-011096
Electromagnetic Finite Element Design of Axial Flux Permanent Magnet Machines for Low Speed Applications
Angela Ferreira, Artur Costa, Polytechnic Institute of Bragança, Portugal

P051 • GD-011428
Performance Comparison of Tubular Linear Induction Motors with different Primary Windings Connections
Massimo Caruso, Giovanni Cipriani, Vincenzo Di Dio, Claudio Nevoloso, Rosario Miceli, Giuseppe Ricco Galluzzo, University of Palermo, Italy

P052 • GD-011908
Finite-Difference Time-Domain (FDTD) Algorithm for Multiblock Grids
Veronika Kraeck, Ingo Hahn, Chair of Electrical Drives and Machines, University of Erlangen-Nuremberg, Germany

P053 • GD-011959
Study on the Development of the Surface Magnet type Magnetic Gear
Masaru Oka, Masato Enokizono, Oita university, Japan

P054 • GD-011983
Comparison of Outer Rotor Radial Flux and Axial Flux PM Motors for CMG Application
Hulusi Bülent Ertan, Necati Cagan, ROKETSAN Missiles Inc., Turkey

P056 • GD-012319
Development of An Electrical Steel Sheet Developed by Vector Magnetic Characteristic Control
Toshiya Kajiwara, Keiichiro Ooka, Masato Enokizono, Oita university, Japan

P057 • GD-012408
Contribution to Modeling of Parasitic Couplings for Predicting EMC Behavior of Electrical Machines
José Ioav Ramos, Jean-Marc Dienot, Paul-Etienne Vidal, Christophe Viguier, Bertrand Nogarède, Novatem SAS, France

12:40 pm - 02:00 pm Lunch Break • Room: andel's Hotel

P058 • GD-011827
Analysis of Innovative Design Variations for Double-Sided Coreless-Stator Axial-Flux Permanent-Magnet Generators in Micro-Wind Power Applications
Mihai Chirca, Stefan Breban, Claudiu Oprea, Mircea M. Radulescu

TT5 - Condition monitoring, diagniosis and testing

P059 • GD-001759
Effects of Unbalanced Voltage on the Steady-State Performance of a Five-phase Induction Motor With Three Different Stator Winding Connections
Mahmoud I. Masoud, Ayman S Abdel-khalik, Rashid Al-Abri, Author, Oman

P060 • GD-012076
Detection of Static Eccentricity Faults in AFPM Machine with Asymmetric Windings Using Vibration Analysis
Oladapo Ogidi, Paul Barendse, Azeem Khan, University of Cape Town, South Africa

P061 • GD-000078
Identification of the Broken Bar Fault in Induction Motors with Rotor Air Ducts Through the Torque Spectrum
Konstantinos N. Gyftakis, Sang Bin Lee, Joya C. Kappatou, Jose A. Antonino-Daviu, University of Patras, Greece

P062 • GD-005614
Condition monitoring of electrical machines using low computing power devices
Angel Sapena-Baño, Javier Martinez-Roman, Manuel Pineda-Sanchez, Ruben Puche-Panadero, Jordi Burriel-Valencia, Jose-Miguel Cortes-Lopez, Jose Roger-Folch, Universitat Politecnica de Valencia, Spain

P063 • GD-001228
Experimental Validation of MEC Modeling for Stator and Rotor Winding Faults in WRIMs
Reza Roshanfekr, Alireza Jalilian, IUST, Iran

P064 • GD-004553
Detection of the Short-Circuit Fault in the Stator Winding of Induction Motors through Neighboring Magnetic Field Harmonics
Virgiliu Fireteanu, Patrick Lombard, Raphael Romary, Remus Pusca, Alexandru-Ionel Constantin, POLITEHNICA University of Bucharest, Romania

12:40 pm - 02:00 pm Lunch Break • Room: andel's Hotel

Wednesday, September 3, 2014 Poster Session 1

P065 • GD-012351
System for core fault detection of AC electric machines, based on magnetic field scanning
Witold Rams, Michal Rad, AGH University of Science and Technology, Krakow, Poland

P066 • GD-012904
The h-EXIN CCA for bearing fault diagnosis
Giansalvo Cirrincione, Miguel Delgado, Maurizio Cirrincione, University of Picardie Jules Verne, France

P067 • GD-010197
Fault Diagnosis of Induction Motors by Space Harmonics Analysis of the Main Air Gap Flux
Khalid Saad, Galina Mirzaeva, School of Electrical Engineering and Computer Science, University of Newcastle, Australia

P068 • GD-007285
Consideration of Rotor Eccentricity Effects in a Multi Body Dynamics Simulation using a Finite Element Based Circuit Model Approach
Martin Mohr, Oszkár Bíró, Franz Diwoky, Christian Doppler Laboratory for Multiphysical Simulation, Analysis and Design of Electrical Machines at the Institute for Fundamentals and Theory in Electrical Engineering, Austria

P069 • GD-010898
Motor Current Signal Analysis on Programmable Logic Controller
Angel Sapena-Baño, Juan Perez-Cruz, Ruben Puche-Panadero, Javier Martinez-Roman, Jordi Burriel-Valencia, Juan Lazaro-Garcia, Universitat Politecnica de Valencia, Spain

P070 • GD-008117
Electrical machine with permanent magnets as a vibration sensor – a test stand model
Bartlomiej Bedkowski, Marcin Baranski, Institute of Electrical Drives and Machines KOMEL, Poland

P071 • GD-009776
Stator Current Measurements as a Condition Monitoring Technology – The-State-of-the-Art
Bram Corne, Colin Debruyne, Patrick De Baets, Jan Desmet, University Ghent, Belgium

P072 • GD-001937
Rotor Fault Diagnosis Using External Search Coils Voltage Analysis
Ahcène Bouzida, Omar Touhami, Rachid Ibtiouen, Ecole Nationale Polytechnique, Algeria

12:40 pm - 02:00 pm Lunch Break • Room: andel's Hotel

Oral Sessions

Room: Rubin **02:00 pm - 04:00 pm**

TT4 - Design and related problems - Design for special applications

Chairs: Maarten J. Kamperr, Stellenbosch University, South Africa; Joachim Böcker, Germany

GD-000981
Polarities of the Permanent Magnets of the Magnetic-Geared Motor
Noboru Niguchi, Katsuhiro Hirata, Eiki Morimoto, Yuki Ohno, Osaka University, Japan

GD-001007
Noise Radiated by a Permanent Magnet Synchronous Motor: Simulation Methodology and Influence of Motor Defects
Jean-Baptiste Dupont, Vincent Lanfranchi, Vibratec, France

GD-001988
A Core Analysis of the Synchronous Reluctance Motor for Automotive Applications
Seyedmorteza Taghavi, Pragasen Pillay, Concordia University, Canada

GD-002062
Performance and Implementation Issues Considering the Use of Thin Laminated Steel Sheets in Segmented Armature Axial-Flux PM Machines
Peter Sergeant, Hendrik Vansompel, Luc Dupre, Ghent University, Belgium

GD-003646
Magnet-based vs. Magnet-Free Electrical Machines for Low Power Automotive Applications
Adrian-Cornel Pop, Tiberiu Rusu, Matthias Koch, Ioana Vintiloiu, Claudia Steluta Martis, Brose Fahrzeugteile GmbH & Co. KG, Würzburg, Germany

GD-009741
Evaluation, Application and Comparison of a Double-Rotor Toothed Toroidal Winding Wind Generator Over a Wide Power Range
Johannes H. J. Potgieter, Maarten J. Kamper, Stellenbosch University, South Africa

04:00 pm - 04:20 pm Coffee Break • Room: Exhibition

Wednesday, September 3, 2014 Oral Sessions

Room: Onyx **02:00 pm - 04:00 pm**

TT2 - Innovative machines and actuators - Electric machines for EV

Chairs: Vincent Lafranchi, Université de Technologie de Compiègne, Fance; Wilfried Hofmann, Germany

GD-000477
A novel hybrid excited synchronous machine for (H)EV applications
Yves Burkhardt, Klaus Schleicher, Markus Klöpzig, Siemens AG, Germany

GD-001287
Design and Test of a Novel Magnetic Lead Screw for Active Suspension System in a Vehicle
Nick Berg, Rasmus Holm, Peter Rasmussen, Aalborg University, Denmark

GD-003638
Design and analysis of a highly integrated 9-phase drivetrain for EV applications
Yves Burkhardt, Aristide Spagnolo, Peter Lucas, Michael Zavesky, Philip Brockerhoff, Siemens AG, Germany

GD-006823
Cost Reduction of a Permanent Magnet In-wheel Elec*tric Vehicle Traction Motor*
Sichao Yang, Newcastle University, United Kingdom

GD-004979
Modeling and Control of an Induction Machine Based Electrical Variable Transmission
Joachim Druant, Frederik De Belie, Peter Sergeant, Jan Melkebeek, UGent, Belgium

GD-010855
Claw Pole Magnetic-Geared Generator for Hub Dynamos
Hajime Ukaji, Katsuhiro Hirata, Noboru Niguchi, Osaka University, Japan

04:00 pm - 04:20 pm Coffee Break • Room: Exhibition

Room: Saphir 1 **02:00 pm - 04:00 pm**

SS - Thermal management of electrical machines 1

Chairs: David Howey, Malcolm McCulloch, University of Oxford, United Kingdom

GD-003026
Aspects of Electromagnetic-Thermal Coupled Optimization of Asynchronous Induction Machines for Traction Drives
Jan Buschbeck, Markus Vogelsberger, Alexander Orellano, Erich Schmidtt, Austria

GD-003719
Thermal Modelling of Switched Flux Permanent Magnet Machines
A. Thomas, Z.Q. Zhu, G.J. Li, United Kingdom

GD-006726
Thermal Model of Stator Slot for Small Synchronous Reluctance Machine
Mohd Azri Hizami Rasid, Alejandro Ospina, Khadija El Kadri Benkara, Vincent Lanfranchi, France

GD-005924
Pressure Loss Measurement in Rotor-Stator Gap of Radial Flux Electrical Machines
Yew Chuan Chong, David Staton, Markus Mueller, John Chick, United Kingdom

GD-005533
Flow and Convective Heat Transfer in Disk-Type Electric Machines with Coolant Flow
Brunthan Yoheswaran, Keith Pullen, United Kingdom

GD-003484
Radial Fan Simulations by Computational Fluid Dynamics and Experimental Validation
Unai SanAndres, Gaizka Almandoz, Javier Poza, Gaizka Ugalde, Ana Julia Escalada, Spain

04:00 pm - 04:20 pm Coffee Break • Room: Exhibition

Room: Saphir 2+3 **02:00 pm - 04:00 pm**

TT5 - Condition monitoring, diagniosis and testing - PM Synchronous Machines

Chairs: Joya Kappatou, University of Patras, Greece; Bernd Ponick, Germany

GD-003689
Iron Loss and Parameter Measurement of Permanent Magnet Synchronous Machines
Jan Richter, Andreas Dollinger, Martin Doppelbauer, Karlsruhe Institute of Technology, Germany

GD-004626
Dynamic Testing Characterization of a HEV Traction Motor
Francisco José Márquez-Fernández, Sebastian Hall, Mats Alaküla, Lund University, Sweden

GD-002097
Impact of the load in the detection of bearing faults by using the stator current in PMSM's
Christelle Piantsop Mbo'o, Thomas Herold, Kay Hameyer, Institute of Electrical Machines RWTH Aachen University, Germany

GD-012009
Development of a Test Rig for Eccentricity Fault Studies on an Axial-Flux Permanent Magnet (AFPM) Wind Generator
Oladapo Ogidi, Paul Barendse, Azeem Khan, University of Cape Town, South Africa

GD-008052
Analysis of PMSM Vibrations Based on Back-EMF Measurements
Marcin Baranski, Tomasz Jarek, Institute of Electrical Drives and Machines KOMEL, Poland

GD-004731
Consistency analysis of torque measurements performed on a PMSM using dynamic testing
Sebastian Hall, Yury Loayza Vargas, Avo Reinap, Mats Alaküla, Lund University, Sweden

04:00 pm - 04:20 pm Coffee Break • Room: Exhibition

Room: Amethyst **02:00 pm - 04:00 pm**

TT1 - Classical rotating field machines - Induction motor modeling

Chairs: Andrea Cavagnino, Politecnico di Torino, Italy; Wilfried Hofmann, Germany

GD-009873
Investigation into induction motor equivalent circuit parameter dependency on current and frequency variations
Matteo De Martin, Martino Bailoni, Alberto Tessarolo, Mauro Bortolozzi, Davide Giulivo, Freddie Agnolet, Roberto Santarossa, University of Trieste, Italy

GD-002593
Analytic Modeling of Inverter-Fed Induction Machines – A practical approach for matching measurement and simulation data
Martin Hafner, Mircea Popescu, Aldo Boglietti, Andrea Cavagnino, Schabmüller GmbH, Germany

GD-003468
Finite-Element Investigation on Zig-Zag Flux in Squirrel Cage Induction Machines
Jalal Cheaytani, Abdelkader Benabou, Abdelmounaim Tounzi, Maxime Dessoude, University of Lille 1, France

GD-011436
Difference in Maximum Torque-Speed Characteristics of Induction Machine between Motor and Generator Operation Modes for Electric Vehicle Application
Y. Guan, Z.Q. Zhu, I.A.A Afinowi, J.C. Mipo, P. Farah, University of Sheffield, United Kingdom

GD-011851
Form-wound Stator Winding for High-Speed Induction Motors
Khang Huynh, Juha Saari, Antero Arkkio, University of Agder, Norway

GD-004413
Analytical Calculation of Equivalent Circuit Parameters Accounting for Deep Bar Effect in Multiple-Cage Squirrel Cage Rotor
Thomas Delphin, Yvan Lefèvre, François Biais, Marc Tunzini, Carole Henaux, LAPLACE (CNRS), France

04:00 pm - 04:20 pm Coffee Break • Room: Exhibition

Wednesday, September 3, 2014 Oral Sessions

Room: Bernstein **02:00 pm - 04:00 pm**

SS - Fault tolerant solutions in the design of electrical machines

Chairs: Alberto Tessarolo, Universita' di Trieste, Italy; Claudio Bruzzese, Universita' La Sapenza, Roma, Italy

GD-012661
Closed-loop Control Impact on the Diagnosis of Rotor Demagnetization in Five-Phase SurfaceMounted Permanent Magnet Generator
Yasser Gritli, Angelo Tani, Michele Mengoni, Luca Zarri, Giovanni Serra, Fiorenzo Filippetti, Domenico Casadei, University of Bologna, Italy

GD-010596
Hybrid Synchronous Motor-Alternator with Dual AC/DC Excitation System for Shipboard Generation and Propulsion Applications
Gianluca Stanic, MarelliMotori, Italy

GD-008486
Brushless Mitigation of Bearing Currents via Capacitively Coupled Shunting
Daniel C. Ludois, Justin K. Reed, University of Wisconsin - Madison, United States

GD-009768
Challenging the hydraulics on its own ground: Ship steering through unconventionally-high thrust permanent-magnet direct motors with structural redundancy and fault-tolerance
Claudio Bruzzese, Alberto Tessarolo, DIAEE-University of Rome Sapienza, Italy

GD-010812
Modeling and Control of Fault Tolerant Drive Topologies for Electric Vehicle Applications
Alexander Kock, Michael Gröninger, Axel Mertens, Fraunhofer IFAM, Germany

GD-011622
Study of faulty scenarios for a fault-tolerant multi-inverter-fed linear permanent magnet motor with coil short-circuit or inverter trip
Claudio Bruzzese, Alberto Tessarolo, Mario Mezzarobba, Mauro Bortolozzi, Damiano Zito, Teresa Mazzuca, Lucio Piva, DIAEE-University of Rome Sapienza, Italy

04:00 pm - 04:20 pm Coffee Break • Room: Exhibition

Room: Rubin **04:20 pm - 06:20 pm**

TT3 - Electrical drives - Sensorless control of PM and IPM motor drives

Chairs: Domenico Casadei, Universita' di Bologna, Italy; Wilhelm Hackmann, Germany

GD-004545
Sensorless Vector Control for PM Brushless Motors with Nonsinusoidal Back-EMF
Cassio Luciano Baratieri, Humberto Pinheiro, Federal University of Santa Maria, Brazil

GD-003662
Rotor Position Error Compensation Based on Third Harmonic Back-EMF in Flux Observer Sensorless Control
J.M. Liu, Z.Q. Zhu, University of Sheffield, United Kingdom

GD-000361
Sensorless Control of PMSM for base speed range using Two-Degree-of-Freedom MTPA current control and HF test current injection for low speed range
Markus Seilmeier, Bernhard Piepenbreier, University of Erlangen-Nuremberg, Germany

GD-005657
Sensorless Control of Brushless DC Motors using Virtual Back EMF Mapping Projection
Markos Tawadros, Mahmood H. Nagrial, Jamal H. Rizk, University of Western Sydney, Australia

GD-003557
Real-Time Performance Evaluation of Extended EMF based Sensorless Drive for SPMSMs
Murat Barut, Sung-Yoon Jung, Chris Mi, NIGDE UNIVERSITY, Turkey

GD-000434
Position and Velocity Sensorless Control of IPMSM Using Full-Order Observer Based on Extended Electromotive Force with a New Observer Design Method
Taiga Goto, Yumika Sato, Shota Kondo, Mutuwo Tomita, Masaru Hasegawa, Shinji Doki, Shinji Kato, Gifu National College of Technology, Japan

Room: Onyx **04:20 pm - 06:20 pm**

TT7 - Grid Connected or emergency applications

Chairs: Gianluca Stanic, Marelli Motori, Italy; Manfred Stiebler, Germany

GD-007307
Virtual Power Plant with Pumped Storage Power Plant for Renewable Energy Integration
Antoine Béguin, Christophe Nicolet, Basile Kawkabani, François Avellan, Power Vision Engineering Sàrl, Switzerland

GD-003476
A Fault-Tolerant Power Conversion Topology for PMSG based Wind Power Systems
Giuseppe Scarcella, Giacomo Scelba, Mario Pulvirenti, Alberto Gaeta, The University of Nottingham, United Kingdom

GD-001589
Investigations into Optimum Design Rules for New Brushless Doubly-Fed Induction Generator: Rotary Converter Generation System I
Nobuhiro Kusuno, Masahiro Hori, Daichi Kawamura, Daisuke Satoh, Mamoru Kimura, Hitachi Research Laboratory, Hitachi Ltd., Japan

GD-003751
Elimination of inrush current using a new prefluxing method. Application to a single-phase transformer
Vinicius Oiring de Castro Cezar, Laure-Line Rouve, Jean-Louis Coulomb, François-Xavier Zgainski, Olivier Chadebec, Bruno Caillault, EDF Group-Hydro Generation & Engineering, France

GD-003166
Combined Maximum Power Point and Yaw Control Strategy for a Horizontal Axis Wind Turbine
Athanasios Mesemanolis, Christos Mademlis, Aristotle University of Thessaloniki, Greece

GD-001023
A Fully Modular Tool for Small-Signal Stability Analysis of Hydroelectric Systems
Pedro Camilo de Oliveira e Silva, Sébastien Alligné, Philippe Allenbach, Christophe Nicolet, Basile Kawkabani, Ecole Polytechnique Fédérale de Lausanne, Switzerland

Room: Saphir 1 **04:20 pm - 06:20 pm**

TT4 - Design and related problems - Materials, Efficiency and Losses

Chairs: Rafal Wrobel, University of Bristol, United Kingdom; Kay Hameyer, Germany

GD-004081
Practical Investigations on Cobalt-Iron Laminations for Electrical Machines
Marco Cossale, Andreas Krings, Aldo Boglietti, Andrea Cavagnino, Juliette Soulard, Politecnico di Torino, Italy

GD-010278
Experimental Characterization of a Belt-Driven Multi-Phase Induction Machine for 48 V Automotive Applications: Losses and Temperatures Assessments
Andrea Cavagnino, Alberto Tenconi, Silvio Vaschetto, Politecnico di Torino, Italy

GD-008567
Influence of PWM switching frequency on the losses in PM machines
Martin van der Geest, Henk Polinder, Braham Ferreira, Delft University of Technology, Netherlands

GD-002755
Evaluation of Loss due to the PWM Inverter in a Permanent Magnet Motor
Eri Maruyama, Satoshi Sumita, Akihito Nakahara, Hitachi, Ltd., Japan

GD-003697
Electromagnetic Loss Investigation and Mitigation in Switched Flux PM Machines
A. Thomas, Z.Q. Zhu, G.J. Li, University of Sheffield, United Kingdom

GD-007854
Impact of Lamination Processing Methods on Performance of Permanent Magnet Synchronous Motors
Yucel Demir, Oguzhan Ocak, Yusuf Ulu, Metin Aydin, Kocaeli University, Turkey

Room: Saphir 2+3 **04:20 pm - 06:20 pm**

SS - Electrical Machines for Extreme Enviroments

Chairs: Antonios Kladas, National Technical University of Athens, Geece; Chris Gerada, University of Nottingham, United Kingdom

GD-002208
Condition Monitoring of Electrical Machines for Extreme Environments using the Electromagnetic Stray Fields
Osama Mohammed, Mohammadrez Barzegaran, Florida International University, USA

GD-004022
Development of an aircraft wheel actuator for Green Taxiing
Michael Galea, Zeyuan Xu, Chris Tighe, Mohand Hamiti, Chris Gerada, Stephen Pickering, University of Nottingham, United Kingdom

GD-006904
Multi-operating points PM Motor Design Methodology for Electric Actuation systems
Athanasios Sarigiannidis, Minos Beniakar, Panagiotis Kakosimos, Antonios Kladas, National Technical University of Athens, Greece

GD-005665
Material Characterization and Geometry of a High Temperature Induction Machine
Dorin Cozonac, J-Philippe Lecointe, Stéphane Duchesne, Gabriel Vélu, UArtois LSEE, Univ. Lille Nord de France, France

GD-006599
Comparison of In-wheel Permanent Magnet Motors for Electric Traction
Minos E. Beniakar, Panagiotis E. Kakosimos, Christos T. Krasopoulos, Athanasios G. Sarigiannidis, Antonios G. Kladas, National Technical University of Athens, Greece

GD-004596
The Electromagnetic Design of a High Speed, 45kW, Switched Reluctance Machine having a Novel Rotor Geometry for Aerospace Application
James Borg Bartolo, Christopher Gerada, University of Nottingham, United Kingdom

Room: Amethyst **04:20 pm - 06:20 pm**

SS - Analystical modeling of electromagnetic devices 1

Chairs: Elena Lomonova, Johannes Paulides, Technische Universiteit Eindhoven, Netherlands

GD-007889
Analytical Flux Linkage and EMF Calculation of a Transverse Flux Machine
M.F.J. Kremers, J.J.H. Paulides, J.L.G. Janssen, E.A. Lomonova, Eindhoven University of Technology, Netherlands

GD-008478
Fast Computing Tool for Performance Evaluation in Interior Permanent Magnet Machines
Anthony Aigbomian, Puvan Arumugam, Tahar Hamiti, Chris Gerada, University of Nottingham, United Kingdom

GD-004456
Behavior Modeling of Permanent Magnet Synchronous Motors Using Flux Linkages for Coupling with Circuit Simulation
Hiroyuki Kaimori, Noriya Nakao, Takahiro Sakaue, Kan Akatsu, Science Solutions International Laboratory, Inc., Japan

GD-010669
Brushless Doubly-Fed Induction Machines: Magnetic Field Modelling
Tim Strous, Henk Polinder, Bram Ferreira, Delft University of Technology, Netherlands

GD-012939
Validation of a Magnetic Network-Based Dynamic Model of Permanent Magnet Linear Synchronous Machine Built by Finite Reluctance Method
Claudio Bruzzese, Damiano Zito, Alberto Tessarolo, DIAEE, University of Rome - Sapienza, Italy

GD-005622
A global approach for the study of forces developed by a tubular linear moving magnet actuator
Jean-François Allias, Jean-François Llibre, Carole Henaux, Yves Briere, Daniel Alazard, Université de Toulouse; INPT, UPS; CNRS LAPLACE (Laboratoire Plasma et Conversion d'Energie); ENSEEIHT, France

Room: Bernstein **04:20 pm - 06:20 pm**

SS - Electric motor and generator windings design, performance and reliability 1

Chairs: Fernando J. T. E. Ferreira University of Coimbra, Portugal; Enrique Ciro Quispe Oquena, Universidad Autónoma de Occidente, Colombia

GD-007714
A Tool to Help to Design Windings of Permanent Magnet Synchronous Machines
Damien Jarrot, Yvan Lefevre, Carole Henaux, Laplace (CNRS), France

GD-005991
Interaction of Winding Topologies and Rotor Structure in Interior Permanent Magnet Machines
Fabian Hain, Nils Domann, Markus Henke, TU Braunschweig, Institute for Electrical Machines, Traction and Drives, Germany

GD-009555
Development of MMF and Back-EMF Waveforms for Fractional-Slot Concentrated-Wound Permanent Magnet Machines
Mohammad Farshadnia, Rukmi Dutta, John Fletcher, Kazi Ahsanullah, Faz Rahman, Howard Lovatt, University of New South Wales, Australia

GD-010588
Demagnetization Performance Characteristics of Flux Switching Permanent Magnet Machines
James McFarland, Thomas Jahns, Ayman EL-Refaie, University of Wisconsin - Madison, USA

GD-005754
Comparison of PM Machines with Concentrated Windings for Automotive Application
Sachar Spas, FEAAM GmbH, Germany

GD-003867
Trial Manufacture of Magnetic Anisotropic Motor and Evaluation of Drag Loss Characteristics
Shinya Takeda, Kohei Fujitani, Shunya Odawara, Keisuke Fujisaki, Toyota Technological Institute, Japan

Poster Session 2

Room: Poster Area **09:00 am - 10:00 am**
02:00 pm - 03:10 pm

Chairs: Andrea Cavagnino, Luca Zarri

TT1 - Classical rotating field machines

P073 • GD-004405
A comparison between stationary and transient analysis of electrical machines using 3D FEA
Bo Zhang, Jianlei Liu, Martin Doppelbauer, Karlsruhe Institute of Technology, Germany

P074 • GD-008605
Novel In-field Method to Estimate Mechanical Parameters in Induction Motor Driven Systems
Fernando J. T. E. Ferreira, Adalberto Correia, Fernando Lopes, Polytechnic Institute of Coimbra (IPC/ISEC) & Institute of Systems and Robotics (ISR-UC), Portugal

P075 • GD-001651
Performance Optimization of Synchronous Reluctance Machines with Two Rotor Structures
Slimane Tahi, Rachid Ibtiouen, Said Mekhtoub, Ecole Nationale Polytechnique, Alger, Algeria

P076 • GD-003069
Dynamizing Electrical Machines Laboratories with Virtual Instruments: the U.P.V. experience
Javier Martinez-Roman, Jorge Tarín-Corachan, Juan Perez-Cruz, Manuel Pineda-Sanchez, Rubén Puche-Panadero, Angel Sapena-Baño, Martín Riera-Guasp, José Roger-Folch, Univ. Polit. Valencia, Spain

P077 • GD-001686
Analytic Calcultation of Magnetic Field and Electromagnetic Performances of Spoke Type IPM Topologies with Auxiliary Magnets
Kamel Boughrara, Noureddine Takorabet, Rachid Ibtiouen, Université de Khemis-Miliana (LESI), Algeria

P078 • GD-001317
Evaluation of Surface Mounted PM Machine's Parameters on Load Conditions Using Frozen Permeability Method. Part. II
Geyverson Paula, José Roberto Monteiro, Thales Almeida, Marcelo Santana, William Pereira, University of São Paulo, Brazil

10:10 am - 10:30 am Coffee Break • Room: Exhibition

03:10 pm - 03:30 pm Coffee Break • Room: Exhibition

Thursday, September 4, 2014 Poster Session 2

P079 • GD-006548
A Rapid Virtual Model for Analysis of DC Motors with Single Coil Windings
Christoph Wolz, Benjamin Wüchner, Maximilian Greger, Joachim Kempkes, Uwe Schäfer, University of Applied Science Wuerzburg-Schweinfurt, Germany

P080 • GD-006319
Design of Soft Magnetic Composite based Modular Four Phase SRM for Electric Vehicle Application
Saurabh Nikam, Baylon Fernandes, Indian Institute of Technology Bombay, India

P081 • GD-012777
Low Loss of a Permanent Magnet Motor by applying Local Stress
Yuichiro Kai, Masato Enokizono, Oita University, Japan

P082 • GD-000841
Computation of induced voltages and currents in the field winding of wound-field synchronous machines under transient conditions
Johann Bacher, Michael Maier, Annette Mütze, Electric Drives and Machines Institute, Graz University of Technology, Austria

P083 • GD-007358
Synchronous Generator Model Taking Into Account the Non-Uniform Saturation of the Pole Shoes
Filip Kutt, Michal Michna, Grzegorz Kostro, Mieczyslaw Ronkowski, Gdansk University of Technology, Poland

P084 • GD-001805
Interpretation and Applicability of d-q Approach for Non-ideal Synchronous Machine
Mang Cai, Markus Henke, Wolf-Rüdiger Canders, TU Braunschweig, Germany

P085 • GD-009563
On the Analytical Estimation of the Airgap Field in Sync*hronous Reluctance Machine*
Michele Degano, Alberto Tessarolo, Nicola Bianchi, University of Trieste, Italy

P086 • GD-003255
Evaluation of a switched reluctance motor with magnetic slot wedges
M'Hamed Belhadi, Guillaume Krebs, Claude Marchand, Hala Hannoun, Xavier Mininger, LGEP / Renault, France

10:10 am - 10:30 am Coffee Break • Room: Exhibition

03:10 pm - 03:30 pm Coffee Break • Room: Exhibition

P087 • GD-012289
Improved efficiency of DFIG wind energy conversion *systems by operating in the rotor-tied configuration*
Nicholas David, Dionysios Aliprantis, Purdue University, USA

P088 • GD-010618
Performance Analysis of a Large Hydro Generator after Disconnecting of Damaged Coils
Ana Aguiar, Arezki Merkhouf, Kamal Al-Haddad, ETS, Canada

P089 • GD-005045
Study of the Impact of Eccentricity in Large Synchronous Generator with Finite Elements
Hind Chit Dirani, Arezki Merkhouf, Anne-Marie Giroux, Kamal Al-Haddad, École de Technologie Supérieure, Canada

P090 • GD-000302
Modeling of Interior Permanent Magnet Synchronous Motors in the Six-Step Conduction Mode
Markus Harke, Hochschule Heilbronn, Germany

P091 • GD-007757
Synchronous Reluctance Machine Flux Barrier Design based on the Flux Line Patterns in a SolidRotor
Samer Yammine, Carole Henaux, Maurice Fadel, Sébastien Desharnais, Lionel Calegari, Laplace, France

P092 • GD-001783
Calorimetric and Input-Output Loss Determination of 90 kW SynRM
Lassi Aarniovuori, Jere Kolehmainen, Antti Kosonen, Markku Niemelä, Juha Pyrhönen, Lappeenranta University of Technology, Finland

P093 • GD-009911
Uncertainty in Motor Efficiency Measurements
Lassi Aarniovuori, Jere Kolehmainen, Antti Kosonen, Markku Niemelä, Juha Pyrhönen, Lappeenranta University of Technology, Finland

P094 • GD-004693
High-Speed Synchronous Machines: Magnetic Pulling Tensioning Forces Calculation Approach
Ilja Z. Boguslavskiy, Irina Yu. Kruchinina, Yuvenaliy Ph. Khozikov, Alexandr S. Lyubimtzev, Institute of Silicate Chemistry RAS, Russian Federation

10:10 am - 10:30 am Coffee Break • Room: Exhibition

03:10 pm - 03:30 pm Coffee Break • Room: Exhibition

Thursday, September 4, 2014 Poster Session 2

P095 • GD-005932
Energy efficiency of hoisting motors
Anna-Kaisa Repo, Juho Montonen, Vitaliy Sizonenko, Pia Lindh, Juha Pyrhönen, Konecranes, Finland

P096 • GD-008583
Minimization of Torque ripple caused by a stator winding dissymmetry in a Surface Permanent Magnet Synchronous Machine (SPMSM)
El Mehdi Bahri, Remus Pusca, Driss Belkhayat, Raphael Romary, LSEE - Artois University, France

P097 • GD-000396
Sub-transients in PM synchronous generators with diode rectifier load
Manfred Stiebler, TU Berlin, Germany

P098 • GD-004375
Effects of pole number and rotor wedge design on unbalanced magnetic pull of the synchronous generator
Miroslav Petrinic, Stjepan Tvoric, Stjepan Car, KONCAR - Electrical Engineering Institute, Inc., Croatia (Hrvatska)

10:10 am - 10:30 am Coffee Break • Room: Exhibition

03:10 pm - 03:30 pm Coffee Break • Room: Exhibition

TT2 - Innovative machines and actuators

P099 • GD-000124
Direct Drive HTS Wind Generator Design for Commercial Applications
Haran Karmaker, Mantak Ho, Edward Chen, Devdatta Kulkarni, TECO Westinghouse, United States

P100 • GD-001074
Optimization of the MMF Function of The Fractional Slot Concentrated Windings
Nassim Bekka, Mohammed-El-Hadi ZaÏM, Nicolas Bernard, Didier Trichet, IREENA, UNIVERSITY OF NANTES, France

P101 • GD-001414
Operating Characteristics Analysis of Cage-Rotor Induction Motor and Matrix-Rotor Induction Motor Using 3-D Finite Element Method
Y Kawase, T Yamaguchi, M Otsubo, Y Iwai, N Toida, K Sato, Gifu university, Japan

P102 • GD-002577
Multiple-Airgap Iron-Cored Direct-Driven Permanent Magnet Wind Generators
Mostafa Valavi, Alexey Matveev, Arne Nysveen, Robert Nilssen, Norwegian University of Science and Technology (NTNU), Norway

P103 • GD-002984
A 3.7-kW Axial-gap Switched-reluctance Motor Robustly Designed by Using a Mathematical Model
Kenta Deguchi, Satoshi Sumita, Yuji Enomoto, Hitachi, Ltd., Japan

P104 • GD-003239
Servo Flux Switching PM Machines
E Ilhan, T. L. Balyovski, J. J. H. Paulides, E. A. Lomonova, Eindhoven University of Technology, Netherlands

P105 • GD-003344
A Novel Analytical Approach and Finite Element Modelling of a BDFIM
Nils van der Blij, Tim Strous, Henk Polinder, TU Delft, Netherlands

10:10 am - 10:30 am Coffee Break • Room: Exhibition
03:10 pm - 03:30 pm Coffee Break • Room: Exhibition

Thursday, September 4, 2014 Poster Session 2

P106 • GD-003417
Analysis of Different PM Machines with Concentrated Windings and Flux Barriers in Stator Core
Gurakuq Dajaku, Dieter Gerling, FEAAM, Germany

P107 • GD-003522
Analysis and Test of the Sensorless Capability of Induction Motors with Created Saliency
Damiano Mingardi, Nicola Bianchi, Luigi Alberti, Renzo Zeni, University of Padova, Italy

P108 • GD-003883
Contactless power supply for magnetically levitated elevator systems using a SMC hybrid actuator
Rüdiger Appunn, Kay Hameyer, RWTH Aachen University, Germany

P109 • GD-004308
Torque Ripple Alleviation of A Radial Magnetic Gearbox Using Step Skewing Approach
Hassan Zaytoon, Ayman Abdel-Khalik, Shehab Ahmed, Ahmed Massoud, Elect. Dept., Alexandria University, Egypt, Egypt

P110 • GD-004537
Design and Construction of a Low-Vibration Low-Leakage Field Motor
Sheppard Salon, RPI, USA

P111 • GD-004707
Comparative Study of Novel Synchronous Machines Having Permanent Magnets in Stator Poles
J. T. Shi, Z. Q. Zhu, D. Wu, X. Liu, University of Sheffield, United Kingdom

P112 • GD-004723
Influence of Flux Focusing on Electromagnetic Torque of Novel Biased Flux PM Machines
J. T. Shi, Z. Q. Zhu, D. Wu, X. Liu, University of Sheffield, United Kingdom

P113 • GD-004758
Design and causal modelling of a piezoelectric multi-actuators system used in forging processes
Thanh Hung Nguyen, Christophe Giraud-Audine, Michel Amberg, Betty Lemaire-Semail, Gabriel Abba, Régis Bigot, ENSAM, France

10:10 am - 10:30 am Coffee Break • Room: Exhibition
03:10 pm - 03:30 pm Coffee Break • Room: Exhibition

P114 • GD-004898
Double-rotor Ironless Radial Flux Permanent Magnet Machine
Gert Immelman Oosthuizen, Peter Jan Randewijk, Stellenbosch University, South Africa

P115 • GD-004995
Design for cogging torque reduction in Two-Degree-of-Freedom Cylindrical Actuator
Yuki Yoshida, Wataru Kitagawa, Takaharu Takeshita, Nagoya Institute of Technology, Japan

P116 • GD-005118
Influence of Gear ratio and Winding Pole Numbers on the Performances and Optimal Parameters of the Surface Permanent Magnet Vernier Machines
Leilei Wu, Ronghai Qu, Dawei Li, School of Electrical and Electronic Engineering, Huazhong University of Science and Technology, China

P117 • GD-005797
Theoretical Analysis of Synchronous Machines with Displaced Reluctance Axis
Patrick Winzer, Martin Doppelbauer, Karlsruhe Institute of Technology, Germany

P118 • GD-005819
MATRIX Motor with Individual Winding Current Control Capability for Variable Parameters and Iron Loss Suppression
Hiroki Hijikata, Kan Akatsu, Yoshihiro Miyama, Hideaki Arita, Akihiro Daikoku, Shibaura Institute of Technology, Japan

P119 • GD-005894
Design of Small-size Generator for Variable Speed Micro-hydroelectric Power Plants
Omar Bottesi, Luigi Alberti, free university of Bozen - Bolzano, Italy

P120 • GD-006173
Influence of End-Effects on Static Torque Performance of Misaligned Cylindrical Permanent Magnet Couplings
S Högberg, Hilary Hansen, Bogi B. Jensen, Flemming Buus Bendixen, Stig Hoegberg, Denmark

P121 • GD-006521
Optimization and Measurement of Eddy Current Damping Applied in a Tuned Mass Damper
T.A. van Beek, K.J.W. Pluk, J.W. Jansen, E.A. Lomonova, Eindhoven University of Technology, Netherlands

10:10 am - 10:30 am Coffee Break • Room: Exhibition

03:10 pm - 03:30 pm Coffee Break • Room: Exhibition

Thursday, September 4, 2014 Poster Session 2

P122 • GD-008613
A Split Tooth Permanent Magnet Machine Design for High Torque Applications
Yasser Alamoudi, newcastle University, United Kingdom

P123 • GD-010499
Magnetic Gear Technologies: A Review
Pushman Tlali, Rong-Jie Wang, Stiaan Gerber, Stellenbosch University, South Africa

P124 • GD-011118
Analytical Approach Towards Quantitative Electrical Loss Analysis of Dual Three-phase Permanent Magnet Synchronous Motors
Aiswarya Balamurali, K. Lakshmi Varaha Iyer, Kannan Ramkumar, Narayan Kar, University of Windsor, Canada

P125 • GD-011665
On the use of spectral analysis of air-gap flux density in Permanent Magnet Bearingless Motors
Blaise Lapôtre, Noureddine Takorabet, Farid Meibody-Tabar, Ramdane Lateb, Joaquim Dasilva, UNiversité de Lorraine GREEN, France

P126 • GD-012343
Influence of Rotor Design and Geometric Parameter Variation on Global Performance of Brushless Doubly-Fed Reluctance Machines
Tiago Staudt, Frédéric Wurtz, Nelson Jhoe Batistela, Patrick Kuo-Peng, Grenoble Electrical Engineering Laboratory - G2ELAB, France

TT3 - Electrical drives

P127 • GF-011924
Overvoltage Analysis at the Terminals of Rotating-diode Bridges of Three-Stage Synchronous Machine
François Biais, Marc Tunzini, Mario Martinez, Jawad Karim, Stéphane Guguen, THALES A.E.S., France

10:10 am - 10:30 am Coffee Break • Room: Exhibition

03:10 pm - 03:30 pm Coffee Break • Room: Exhibition

SS - Electrical motor and generator windings, design performance, cost and reliability

P128 • GD-004847
A Free-Piston PM Linear Generator in Vernier Topology using quasi-Halbach-Excitation
Cornelius Bode, Henning Schillingmann, Markus Henke, TU Braunschweig, Germany

P129 • GD-008303
Analytical characterization of a Permanent Magnet Synchronous Machine with Fractional Slot Concentrated Windings
Jean François Brudny, Modobozi Amah Tchiou, Jean Philippe Lecointe, Alain Lacaze, LSEE laboratory, France

P130 • GD-009318
Design of a High Performance Servo Motor for Low Speed High Torque Application
Erkan Mese, Yusuf Yasa, Baris Ertugrul, Eyyup Sincar, Yildiz Technical University, Turkey

P131 • GD-010707
Analysis of a new topology of flexible PCB winding for slotless BLDC machines
Bruno Dehez, Francois Baudart, Yves Perriard, UCL, Belgium

P132 • GD-011835
Multi-layer Windings Effect on Interior PM Machines for EV Applications
Yawei Wang, Ronghai Qu, Jian Li, Huazhong University of Science and Technology, China

10:10 am - 10:30 am Coffee Break • Room: Exhibition

03:10 pm - 03:30 pm Coffee Break • Room: Exhibition

Thursday, September 4, 2014 Poster Session 2

SS - Multi-phase electrical machines and drives for the more-electric transport

P133 • GD-010472
A Switched-Reluctance Motor A Switched-Reluctance Motor for Aerospace Application
Marco Villani, Marco Tursini, Giuseppe Fabri, Lino Di Leonardo, Giuseppe Fabri, Italy

P134 • GD-001953
Overcoming the challenges of “drag torque” in a dual-lane actuator for an aircraft
Steve McDonald, Glynn Atkinson, Daniel Smith, Sana Ullah, Newcastle University, United Kingdom

P135 • GD-004367
Design and build-up of a high performance six-phase machine for an automotive application
Nils Domann, Markus Henke, Technische Universität Braunschweig, Institute for Electrical Machines, Drives and Traction, Germany

P136 • GD-005568
A Fast On-Board Integrated Battery Charger for Four-Motor EVs
Ivan Subotic, Martin Jones, Emil Levi, LJMU, United Kingdom

P137 • GD-000663
Predictive Control of Variable Frequency Brushless Excited Synchronous Generator for More Electric Aircraft Power System
Mohammed Alnajjar, Dieter Gerling, Universität der Bundeswehr München, Germany

10:10 am - 10:30 am Coffee Break • Room: Exhibition

03:10 pm - 03:30 pm Coffee Break • Room: Exhibition

Oral Sessions

Room: Rubin **10:30 am - 12:30 pm**

SS - The electric platform as a mean for green-shipping

Chairs: John Prousalidis, National Technical University of Athens, Greece; Chris Hodge, BMT Defence Services Ltd, United Kingdom

GD-005827
Introducing a Ship Electric Power Quality Monitoring System for Green Shipping
Stefanos Dallas, Andreas Skoufis, John Prousalidis, National and Technical University of Athens, Shool of Naval Architecture and Marine Engineering, Greece

GD-006718
Incorporating power converters for energy saving marine applications
Nick Papanikolaou, Anastasios Kyritsis, Micahil Loupis, Democritus University of Thrace, Department of Electrical & Computer Engineering, Greece

GD-006513
Green shipping in Emission Controlled Areas: Combining Smart Grids and Cold ironing
John Prousalidis, George Antonopoulos, Charalampos Patsios, Alistair Greig, Richard Bucknall, National and Technical University of Athens, Shool of Naval Architecture and Marine Engineering, Greece

GD-007897
Design Considerations in Induction Motors for Ship Thruster Propulsion
Konstantina I. Nikolaou, Minos E. Beniakar, Antonios G. Kladas, National Technical University of Athens, Greece

GD-008222
Investigating the Incorporation of a Doubly Fed Induction Machine as a Shaft Generator into a Ship's System
John Dermentzoglou, TEI of Eastern Macedonia-Thrace Region, Dept. of Electrical Engineering, Greece

GD-008419
Modern Starting Methods of Large Thrusters supplied by the Power Network of a Ship
Ioannis Pallis, Ilias Georgakopoulos, Emmanuel Tatakis, University of Patras, Greece

12:30 pm - 02:00 pm Lunch Break • Room: andel's Hotel

Thursday, September 4, 2014 Oral Sessions

Room: Onyx **10:30 am - 12:30 pm**

SS - Side effects of Motor-Converter interactions in electrical drive systems

Chairs: Hans Tischmacher, Ioannis Tsoumas, Siemens, Germany

GD-010073
Probability model for discharge activities in bearings of converter fed electric motors
Hans Tischmacher, Ioannis Tsoumas, Sven Gattermann, Siemens AG, Germany

GD-008699
Side-effects of Hall Sensors Misplacement on BLDC Motor Drive Operation
Savvas Tsotoulidis, Athanasios Safacas, University of Patras, Greece

GD-010502
Calculation and validation of a bearing impedance model for ball bearings and the influence on EDM-currents
Yves Gemeinder, Martin Schuster, Benjamin Radnai, Bernd Sauer, Andreas Binder, TU Darmstadt, Germany

GD-012262
Wound-rotor induction machine model with saturation and high-frequency effects
Yuanzhen Xu, Dionysios Aliprantis, Purdue University, United States

GD-012327
Influence of the Number of Pole Pairs on the Audible Noise of Inverter-Fed Electric Motors: Radial Force Waves and Mechanical Resonances
Ioannis Tsoumas, Hans Tischmacher, Benjamin Eichinger, Siemens, Germany

GD-007692
Signature Analysis of Switched Reluctance and Permanent Magnet Electric Vehicle Drives
Mathieu Sarrazin, Jan Anthonis, Herman Van der Auweraer, Claudia Martis, Johan Gyselinck, LMS INTERNATIONAL NV, Belgium

12:30 pm - 02:00 pm Lunch Break • Room: andel's Hotel

Room: Saphir 1 **10:30 am - 12:30 pm**

SS - Thermal management of electrical machines 2

Chairs: David Howey, University of Oxford, United Kingdom; Dave Staton, Motor-Design Ltd, United Kingdom

GD-003808
Dynamic Thermal Modeling and Application of Electrical Machine in Hybrid Drives
Zhe Huang, Francisco J. Márquez Fernández, Yury Loayza, Avo Reinap, Mats Alaküla, Sweden

GD-001597
Thermal Feasibility Study of New Type of Brushless Doubly-fed Induction Generator: Rotary Converter Generation System III
Daisuke Satoh, Nobuhiro Kusuno, Masahiro Hori, Daichi Kawamura, Mamoru Kimura, Japan

GD-005789
Application of Potting Material for a 100 kW Radial Flux PMSM
Maria Polikarpova, Pia Lindh, Juan A. Tapia, Juha Pyrhönen, Finland

GD-011169
Thermal properties on high fill factor electrical windings: Infiltrated vs non infiltrated
Leif Svensson, Mats Andersson, Avo Reinap, Mats Alaküla, Sweden

GD-007021
Thermal design of a permanent magnetic motor for direct drive wheel actuator
Zeyaun Xu, Chris Tighe, Micheal Galea, Chris Gerada, Stephen Pickering, Tahar Hamiti, United Kingdom

GD-010162
Thermal Model of Totally Enclosed Water-Cooled Permanent Magnet Synchronous Machines for Electric Vehicle Applications
Bin Zhang, Ronghai Qu, Wei Xu, Jin Wang, Yu Chen, China

12:30 pm - 02:00 pm Lunch Break • Room: andel's Hotel

Room: Saphir 2+3 **10:30 am - 12:30 pm**

TT5 - Condition monitoring, diagniosis and testing - Induction Machines

Chairs: Humberto Henao, University of Picardie, France; Harald Neudorfer, Germany

GD-009733
A Real-Time Platform Dedicated to On-Line Gear Tooth Surface Damage Fault Detection in Induction Machines
Shahin Hedayati Kia, Humberto Henao, Gérard-André Capolino, University of Picardie Juels Verne, France

GD-009342
Combination of non-invasive approaches for general assessment of induction motors
Maria Jose Picazo-RÓDenas, Jose Antonino-Daviu, Vicente Climente-Alarcon, Rafael Royo-Pastor, Ariel Mota-Villar, Universitat Politecnia de Valencia, Spain

GD-000388
The Development of a Novel Rotor Protection for Large Doubly-Fed Induction Machines
Andrew Wechsler, Giacomo Perugini, Alexander Schwery, Jean-Marie Guerin, Graeme Lloyd, Basile Kawkabani, Alstom Renewable - Hydro, Switzerland

GD-005673
Comprehensive Computations of the Response of Faulty Cage Induction Machines
Anouar Belahcen, Javier Martinez, Toomas Vaimann, Aalto University, Finland

GD-002844
Modelling of a Rotor of an Electrical Machine Using Composite Beam Elements
Mathias Mair, Stefan Haas, Katrin Ellermann, Graz University of Technology, Insitute for Mechanics, Austria

GD-006564
Detection of Induction Motors Rotor Faults by Using Negative Selection Algorithm Based on Park's Vector Approach
Osman Bilgin, Murat Ögüt, Hayri Arabaci, Selcuk University, Turkey

12:30 pm - 02:00 pm Lunch Break • Room: andel's Hotel

Room: Amethyst **10:30 am - 12:30 pm**

TT1 - Classical rotating field machines - Synchronous machine modeling

Chairs: Sheppard Salon, Rensselaer Polytechnic Institute, USA; Kay Hameyer, Germany

GD-011193
An efficient model of synchronous generator for hydraulic power plant dynamic simulations
Juste W. Tsotie, René Wamkeue, École de Génie, Université du Québec enAbitibi-Témiscamingue, Canada

GD-004618
Large turbogenerator's synchronous reactance's load dependence determined by measurements
Zlatko Maljkovic, Ivan Gašparac, Milutin Pavlica, Energy Institute Inc, Zagreb, Croatia (Hrvatska)

GD-006661
A Computationally Efficient PM Power Loss Derivation for Surface-Mounted Brushless AC PM Machines
Xiaopeng Wu, Rafal Wrobel, Phil H Mellor, Chengning Zhang, University of Bristol, United Kingdom

GD-011738
Comparison of Permanent Magnets in a Surface Permanent Magnet SMC Machine
Yik Ling Lim, Nesimi Ertugrul, Wen Soong, Gabriel Haines, The University of Adelaide, Australia

GD-010359
Analytical Model for Saturated Permanent Magnet Assisted Synchronous Reluctance Motor
Dany Prieto, Philippe Dessante, Jean-Claude Vannier, Xavier Jannot, Jacques Saint-Michel, Supélec, France

GD-000949
Temperature Dependence of a Rectified Permanent Magnet Traction Generator
Markus Neubauer, Harald Neudorfer, Traktionssysteme Austria GmbH, Austria

12:30 pm - 02:00 pm Lunch Break • Room: andel's Hotel

Room: Bernstein **10:30 am - 12:30 pm**

TT4 - Design and related problems - Optimisation methods

Chairs:Juliette Soulard, KTH Royal Institute of Technology, Sweden; Uwe Schäfer, Germany

GD-003891
A Study about Optimum Stator Pole Design of Axial-Gap Switched Reluctance Motor
Shinya Murakami, Hiroki Goto, Osamu Ichinokura, Tohoku University, Japan

GD-005711
Shape Optimization of Flux Barriers in IPMSM by using Polygon Model Method with GP
Kota Ishikawa, Wataru Kitagawa, Takaharu Takeshita, Nagoya Institute of Technology, Japan

GD-010553
Mass Producible Optimized BLDC Motor for Automotive Dynamic Pump Applications
Christian Dinca, Maximilian Bushe, Artur Giedymin, Uwe Schäfer, Technische Universität Berlin, Germany

GD-008389
Optimization of High Voltage Geared Permanent-Magnet Synchronous Generator Systems
Abdurahman Lilla, Hossein Dehnavifard, Azeem Khan, Paul Barendse, University of Cape Town, South Africa

GD-008532
Design Optimization of Single-sided Axial Flux Permanent Magnet Machines by Differential Evolution
Xu Yang, Dean Patterson, Jerry Hudgins, University of Nebraska Lincoln, USA

GD-001996
Optimal Selection of PM Flux Linkage in a PM Assisted Synchronous Reluctance Machine
Nicola Bianchi, Emanuele Fornasiero, Wen Soong, University of Padova, Italy

12:30 pm - 02:00 pm Lunch Break • Room: andel's Hotel

Room: Rubin **03:30 pm - 05:30 pm**

TT1 - Classical rotating field machines - Application-oriented electrical machine design

Chairs: Basile Kawkabani, Epfl, Switzerland; Thomas Wu, University of Central Florida, USA

GD-008494
Robust Optimization of a Traction PMASR Motor According to Given Driving Cycles
Michele Degano, Enrico Carraro, Nicola Bianchi, University of Trieste, Italy

GD-003174
The Design of Rotor Geometry in a Permanent Magnet Traction Motor for a Hybrid Bus
Pia Lindh, Paula Immonen, Yulia Alexandrova, Mohammad Tehrani, Juha Pyrhönen, Jussi Sopanen, Lappeenranta University of Technology, Finland

GD-011126
Development of a PM-Generator for a Counter-Rotating Micro-Hydro Turbine
Samuel Chevailler, David Melly, Rodolpho Horta, Cécile Münch, Hanspeter Biner, HES-SO Valais, Switzerland

GD-001295
Consideration of Design and Operation on Rotational Flux Density Distributions in Hydro Generator Stators
Jemimah C Akiror, Arezki Merkhouf, Claude Hudon, Pragasen Pillay, Concordia University, Canada

GD-000272
A Rotor Resistance MRAS Estimator for EV Induction Motor Traction Drive based on Torque and Reactive Stator Power: simulation and experimental results
Ferdinando Mapelli, Alberto Bezzolato, Davide Tarsitano, Politecnico di Milano, Italy

GD-006734
Design and Analysis of Ferrite Based Permanent Magnet Motor for Electric Assist Bicycle
Suhas Bhat, Saurabh Nikam, Baylon Fernandes, Indian Institute of Technology Bombay, India

07:45 pm - 11:00 pm Social Dinner • Room: andel's Hotel

Room: Onyx **03:30 pm - 05:30 pm**

SS - Efficent and reliable hybrid and electric propulsion systems

Chairs: Antonio Cardoso, University of Beira Interior/CISE, Portugal; Chiara Boccalletti, Universita' La Sapienza, Roma, Italy

GD-001279
Innovative Permanent-Magnet Starter Motors for Automotive Micro-Hybrid Applications
Nicolas Labbe, Raphaël Andreux, Jean-Paul Yonnet, Aurélien Vauquelin, Jean-Paul Vilain, VALEO Electrical Systems, France

GD-003018
Efficiency of Direct Driven Hydraulic Drive for Non-Road Mobile Working Machines
Tatiana Minav, Carlo Bonato, Panu Sainio, Matti Pietola, Aalto University, Finland

GD-008443
Thermal Evaluation of Different Drive Train Topologies for Electric/Hybrid Vehicles
Jorge Estima, A. J. Marques Cardoso, University of Beira Interior/CISE, Portugal

GD-010391
Development of a permanent magnet outer rotor direct drive for use in wheel-hub drives
Kersten Reis, Andreas Binder, TU Darmstadt, Germany

GD-006963
Development of a Novel Energy Management Strategy for Hybrid Electric Vehicles
Savvas Tsotoulidis, Georgia Athanasiou, Epaminondas Mitronikas, University of Patras, Greece

GD-011177
Wireless Power Transfer Structure Design for EV in Charge While Driving
Vincenzo Cirimele, Paolo Guglielmi, Fabio Freschi, Politecnico di Torino, Italy

07:45 pm - 11:00 pm Social Dinner • Room: andel's Hotel

Room: Saphir 1 **03:30 pm - 05:30 pm**

TT1 - Classical rotating field machines - Special machines

Chairs: Anouar Bbelahcen, Aalto University, Finland; Miroslav Chomat, Academy of Sciences of the Czech Republic, Czech Republic

GD-000248
Reduction of Cogging Torque and EMF Harmonics in Modulated Pole Machines
Jamie G. Washington, Glynn J. Atkinson, Nick J. Baker, Hoganas AB, Sweden

GD-008133
Continuously Variable Speed Vernier Magnetic Geared Generator
Ariff Zaini, Noboru Niguchi, Katsuhiro Hirata, Osaka University, Japan

GD-004634
Impact of Pole and Slot Combination on Noise and Vibrations of Flux-Switching PM Machines
Guillaume Verez, Georges Barakat, Yacine Amara, Ouadie Bennouna, Ghaleb Hoblos, GREAH, France

GD-010545
Design optimisation of field-intensified permanent magnet machine
Michiel Prins, Maarten Kamper, Stellenbosch University, South Africa

GD-003832
Permanent Magnet Motor with Pole Changing and Variable Magnetic Force for Variable Speed
Kazuto Sakai, Nariaki Yuzawa, Toyo University, Japan

GD-010286
A Low-cost Semi-Modular Dual-Stack PM BLDC Motor for a PV based Bore-well Submersible Pump
Sashidhar Sampathirao, Baylon Fernandes, Indian Institute of Technology Bombay, India

07:45 pm - 11:00 pm Social Dinner • Room: andel's Hotel

Room: Saphir 2+3 **03:30 pm - 05:30 pm**

SS - High speed machines and drives for industry applications

Chairs: Martin Novak, Czech Technical University in Prague, Czech Republic; Aleksandar Borisavljevic, Technische Universiteit Eindhoven, Netherlands

GD-009326
Toroidally-wound permanent magnet machines in high-speed applications
Aleksandar Borisavljevic, Sultan Jumayev, Elena Lomonova, Eindhoven University of Technology, Netherlands

GD-005525
Design of a 3kW 150k RPM Super High-Speed Permanent Magnet
Yang Hu, Thomas Wu, University of Central Florida, USA

GD-003409
Impact of Magnet Losses on Optimal Design of a High Speed Synchronous Machine
Floran Martin, Mohammed El Hadi Zaïm, Anouar Belahcen, Aalto University of Helsinki, Finland

GD-003727
Study of banding techniques with a view to reduce the rotor eddy-current loss in a high-speed actuator dedicated to an aeronautical application
Nadhem Boubaker, Daniel Matt, Philippe Enrici, Florent Nierlich, Guillaume Durand, Fabien Orlandini, Xavier Longère, Jean-Sylvain Aïgba, Institut d'Electronique du Sud, Montpellier, France

GD-008427
High Speed Electric Machines – Challenges and Design Considerations
Silong Li, Yingjie Li, Wooyoung Choi, Bulent Sarlioglu, WEMPEC, University of Wisconsin-Madison, USA

GD-006815
Combined-Heat and Power Generator with High-Speed Permanent Magnet Synchronous Machine
Martin Novak, Jaroslav Novak, Michal Schmirler, Czech Technical University in Prague, Faculty of Mechanical Engineering, Czech Republic

07:45 pm - 11:00 pm Social Dinner • Room: andel's Hotel

Room: Amethyst **03:30 pm - 05:30 pm**

SS - Monitoring, fault diagniosis and predictive maintenance in wind generators

Chairs: Martin Riera-Guasp, Joan Pons-Llinares, Universitat Politecnica de Valencia, Spain

GD-000892
Response of Doubly-Fed Induction Generator Wind Energy Conversion System in Dynamic Situations
Dimitrios G. Giaourakis, Athanasios Safacas, University of Patras, Greece

GD-005959
Investigation of Induction Generator Wide Band Vibration Monitoring Using Fibre Bragg Grating Accelerometers
Damian S. Vilchis-Rodriguez, Sinisa Djurovic, Peter Kung, Maria I. Comaneci, Alexander C. Smith, The University Of manchester, United Kingdom

GD-009881
Transient Diagnosis of Induction Generators via Atom-Based Time-Frequency Transforms
Joan Pons-Llinares, Martín Riera-Guasp, José A. Antonino-Daviu, Francisco Vedreño-Santos, Universitat Politècnica de València, Instituto de Ingeniería Energética, Spain

GD-012416
Mechanical-State Estimator for Doubly-Fed Induction Generators - Application to Encoder-Fault Tolerance and Sensorless Control
Yves Mollet, Johan Gyselinck, Université Libre de Bruxelles, Belgium

GD-010626
Harmonic Order Tracking Analysis: a Novel Method for the Diagnosis of Induction Generators
Angel Sapena-Baño, Javier Martinez-Roman, Juan Perez-Cruz, Manuel Pineda-Sanchez, Jose Roger-Folch, Martin Riera-Guasp, Ruben Puche-Panadero, Universitat Politecnica de Valencia, Spain

GD-011568
Analysis of generator bearing vibration data for diagnosing rotor circuit malfunction in DFIGs
Georgios Alexandros Skrimpas, Christian Walsted Sweeney, Bogi Bech Jensen, Nenad Mijatovic, Joachim Holbøll, Brüel and Kjær Vibro, Denmark

07:45 pm - 11:00 pm Social Dinner • Room: andel's Hotel

Room: Bernstein **03:30 pm - 05:30 pm**

TT3 - Electrical drives - SR motors and SR motor drives

Chair: Qiang Zhu, University of Sheffild, United Kingdom; Harald Neudorfer, Germany

GD-009288
Active Vibration Reduction based on Digital PWM Control for SR Motors
Hiroaki Makino, Takashi Kosaka, Nobuyuki Matsui, Nagoya Institute of Technology, Japan

GD-005576
Vector Control Techniques Specialized for Switched Reluctance Motor Drives
Noriya Nakao, Kan Akatsu, Shibaura Institute of Technology, Japan

GD-005363
Investigation and Analysis of Iterative Learning-Based Current Control Algorithm for Switched Reluctance Motor Applications
Chunyan Lai, Yi Zheng, Anas Labak, Narayan C. Kar, University of Windsor, Canada

GD-006637
Model Prediction Based Instantaneous Torque Control of Switched Reluctance Motor
Hiroki Goto, Osamu Ichinokura, Tohoku University, Japan

GD-008621
Improved Flux Linkage Method for Position Sensorless Control of High-Speed SRM
Qingqing Ma, Weihua Liang, Fernando J. T. E. Ferreira, D. Q. Bi, Baoming Ge, Polytechnic Institute of Coimbra (IPC/ISEC) & Institute of Systems and Robotics (ISR-UC), Portugal

GD-000426
Position and Velocity Sensorless Control for Synchronous Reluctance Motor at Low Speeds and under Loaded Conditions Using High-Frequency Extended EMF Observer and Heterodyne Detection
Shota Kondo, Yumika Sato, Taiga Goto, Mutuwo Tomita, Masaru Hasegawa, Shinji Doki, Shinji Kato, Gifu National College of Technology, Japan

07:45 pm - 11:00 pm Social Dinner • Room: andel's Hotel

Poster Session 3

Room: Poster Area **09:00 am - 10:10 am**
04:20 pm - 05:30 pm

Chairs: Basile Kawkabani, Pragasen Pillay

TT7 - Grid Connected or emergency applications

P138 • GD-011606
Effects of Load Variation on a Weak Grid under Unbalanced Voltage Conditions
Akrama Khan, M.Azeem Khan, Paul Barendse, University of Cape Town, South Africa

P139 • GD-002496
Fatigue Strength Prediction of Power Module for New Type of Brushless Doubly-Fed Induction Generator: Rotary Converter Generation System IV
Daichi Kawamura, Shigeki Sekine, Nobuhiro Kusuno, Masahiro Hori, Daisuke Satoh, Mamoru Kimura, Central Research Laboratory, Hitachi, Ltd., Japan

TT3 - Electrical Drives

P140 • GD-010065
Prediction of Efficiency-optimized Salient-pole Synchronous Machines' Operating Range Using a Coupled Numerical-Analytical Method
Olga Korolova, Peter Dück, André Brune, Jonathan Jürgens, Bernd Ponick, Institute for Drive Systems and Power Electronics, Leibniz University Hannover, Germany

P141 • GD-010014
Electromagnetic Design and Analysis of a Salient-Pole Synchronous Machine with Tooth-Coil Windings for Use as a Wheel Hub Motor in an Electric Vehicle
Jonathan Juergens, André Brune, Bernd Ponick, Leibniz Universität Hannover, Institute for Drive Systems and Power Electronics, Germany

10:10 am - 10:30 am Coffee Break • Room: Exhibition

05:40 pm - 06:10 pm Paper Awards and Closing Ceremony • Room: Rubin

Friday, September 5, 2014 Poster Session 3

P142 • GD-009938
Calculating the Steady-State Torque of PM Machines using the Cross-Correlation of Stator and Rotor Fields
Tobias Müller, Christian Schumann, Edgar Stein, Mario Pacas, Univertiy of Applied Sciences Kaiserslautern, Germany

P143 • GD-012297
Comparison of a 5MW Permanent Magnet Assisted Synchronous Reluctance Generator with an IPMSG for Wind Application
Poopak Roshanfekr Fard, Sonja Lundmark, Torbjörn Thiringer, Mikael Alatalo, Chalmers University of Tchnology, Sweden

P144 • GD-007293
Energy Saving during modern Lift operation
Epaminondas Mitronikas, Dionyssios Spyropoulos, Nick Papanikolaou, Emmanuel Tatakis, Nick Spyropoulos, University of Patras, Greece

P145 • GD-010847
Energy Consumption Estimation on Lift Systems: The Advantages of VVVF Drives
Athanasios Karlis, Democritus University of Thrace, Greece

P146 • GD-002666
Online Controller Modifying of a Six-Phase Induction Generator in Phase Opening Occurrence
Mehdi Taherzadeh, Sebastien Carriere, Franck Betin, Gérard André Capolino, UPJV, France

P147 • GD-005878
An Asymmetrical Six Phase Induction Machine for Flywheel Energy Storage Drive Systems
Mohamed Daoud, Mohamed Ibrahim Daoud, Qatar

P148 • GD-009024
Nine-Phase Variable Speed Drive System with Reduced Switching PWM
Zach Pan, Jouni Ikaheimo, Zach Pan, USA

P149 • GD-009725
A Voltage-Behind-Reactance Model of a Dual-Voltage Six-Phase Induction Machine
Stanko Gradev, Daniel Findeisen, Tore Toennesen, Hans-Georg Herzog, BMW Group, Germany

P150 • GD-000973
Motor-Converter Synchronization Phenomena in the Subsynchronous Cascade Drive
Ioannis Tsoumas, Siemens, Germany

10:10 am - 10:30 am Coffee Break • Room: Exhibition

05:40 pm - 06:10 pm Paper Awards and Closing Ceremony • Room: Rubin

P151 • GD-005975
FPGA implementation of a Deadbeat Direct Torque and Flux Control Scheme for Induction Machines
Gabriel Domingues, Francisco Márquez, Mats Alaküla, Lund University, Sweden

P152 • GD-012742
Compensation of Static End Effects in Linear Induction Motor Drives by Frequency-Adaptive Resonant Controllers
Angelo Accetta, Marcello Pucci, Alessandro Lidozzi, Luca Solero, Fabio Crescimbini, ISSIA-CNR, Italy

P153 • GD-009946
A Flux-Weakening Predictive Control Algorithm for Extended Constant-Power Operation of Surface-Mounted PM Machines
Alessandro Serpi, Department of Electrical and Electronic Engineering, University of Cagliari, Italy

P154 • GD-006947
An Advanced Lifetime Prediction Method for Permanent Magnet Synchronous Machines
Daniel Huger, Dieter Gerling, Universität der Bundeswehr München, Germany

P155 • GD-010413
Parameter identification of induction motor model by means of State Space-Vector Model Output Error Minimization
Angelo Accetta, Francesco Alonge, Maurizio Cirrincione, Marcello Pucci, Antonino Sferlazza, ISSIA-CNR, Italy

P156 • GD-012203
Design and Manufacture of Electric Powertrain and Its Cooling System for ITU EV Project
Ozgur Ustun, Murat Cakan, Nejat Tuncay, Mert Mokukcu, Cihan Kivanc, Yasar Mutlu, Gurkan Tosun, Istanbul Technical University, Electrical Engineering Dept., Turkey

P157 • GD-011444
Automotive Brushless Motor Powered by Fuel Cell
Valeria Boscaino, Rosario Liga, Rosario Miceli, Calogero Cavallaro, Angelo Raciti, University of Palermo, Italy

P158 • GD-000175
Teaching Lab on the DSP Implementation of the Speed Control of a DC Machine
André Hodder, Timothé Maendly, Basile Kawkabani, EPFL, Switzerland

10:10 am - 10:30 am Coffee Break • Room: Exhibition

05:40 pm - 06:10 pm Paper Awards and Closing Ceremony • Room: Rubin

Friday, September 5, 2014 Poster Session 3

P159 • GD-010561
Predictive Control for a PMSM with LC-Filter and a Virtual Multilevel Inverter
Marcelo Pozo, Mario Pacas, University of Siegen, Germany

SS - The electric platform as a mean for green-shipping

P160 • GD-006653
Optimal Energy Management Control Scheme for Fuel cell Hybrid Vehicle
Khoudir Marouani, M.N. Sid, M. Becherif, H. Alloui, Ecole Militaire Polytechnique (EMP), Algeria

SS - Recent industrial applications and case studies of electrical machines diagnosis and prognostic techniques

P161 • GD-000205
Taking Advantage of the Induction Motor Inherent Eccentricity Aiming to Discriminate the Broken Bar Fault from Load Oscillations
Konstantinos N. Gyftakis, Dionysios V. Spyropoulos, Joya C. Kappatou, Epaminondas D. Mitronikas, University of Patras, Greece

P162 • GD-000353
Evolution of High Order Fault Harmonics during a Bar Breakage with Compensation
Vicente Climente-Alarcon, Jose A. Antonino-Daviu, Ari Haavisto, Antero Arkkio, Aalto University, Finland

P163 • GD-003131
Electrical Fault Diagnosis for an Induction Motor Using an Electromechanical FE Model
Mehrnaz Farzam Far, Antero Arkkio, Janne Roivainen, Aalto University, Finland

P164 • GD-005452
Broken Rotor Bar Detection in VSD-fed Induction Motors at Startup by High-Resolution Spectral Analysis
Rene J. Romero-Troncoso, Daniel Morinigo-Sotelo, Oscar Duque-Perez, Roque A. Osornio-Rios, Mario A. Ibarra-Manzano, Arturo Garcia-Perez, Universidad de Guanajuato, Mexico

10:10 am - 10:30 am Coffee Break • Room: Exhibition

05:40 pm - 06:10 pm Paper Awards and Closing Ceremony • Room: Rubin

P165 • GD-006785
Design of Low-Voltage Induction Motor Diagnostic Using Oscillating Circuit
I.M.Y Negara, Pradika Sakti, D.A Asfani, Institut Teknologi Sepuluh Nopember, Indonesia

P166 • GD-010685
Condition-Based Monitoring and Prognostic Health Management of Electric Machine Stator Winding Insulation
Andrew S. Babel, Elias G. Strangas, Michigan State University, United States

P167 • GD-002429
Experimental Study of Mechanical Faults in Induction Motors through Thermography
Armando G Garcia-Ramirez, Luis A Morales-Hernandez, Roque A Osornio-Rios, Arturo Garcia-Perez, Rene J Romero-Troncoso, Universidad de Guanajuato, Mexico

P168 • GD-007005
Design On-line Monitoring and Sensitive Fault Detection for Three Phase Induction Motor,
D.A Asfani, H.Z Mubarok, A Mustofa, I.M.Y Negara Institut Teknologi Sepuluh Nopember, Indonesia

SS - Monitoring, fault diagniosis and predictive maintenance in wind generators

P169 • GD-012564
Fault-tolerant Control of Wound Rotor Synchronous Generator in Wind Turbines
Vinko Lesic, Mario Vasak, Goran Stojcic, Thomas M. Wolbank, University of Zagreb Faculty of Electrical Engineering and Computing, Croatia (Hrvatska)

P170 • GD-011215
Analytical Equations of the Current Excited Synchronous Machine
Konstantin Kanelis, European Patent Office, Netherlands

10:10 am - 10:30 am Coffee Break • Room: Exhibition

05:40 pm - 06:10 pm Paper Awards and Closing Ceremony • Room: Rubin

Friday, September 5, 2014 Poster Session 3

SS - Improvement in the energy efficiency of electric transformers and related smart practice

P171 • GD-001848
Modeling of single-phase core type transformer
Faouzi Aboura, Sarah-Asma Touhami, Ahmed-Islam Zama, Redouane Tahmi, Omar Touhami, Ecole Nationale Polytechnique, Algeria

P172 • GD-003743
Hot Spots Mitigation on Tank Walls of Power Transformers using Electromagnetic Shields
S. Magdaleno-Adame, J. C. Olivares-Galvan, R. Escarela, O. Raichenko, A. Kladas, National Technical Univerrsity of Athens, Greece

P173 • GD-010928
Thermal Analysis of a Dry-Type Distribution Power Transformer Using FEA
Marco Arjona, Coni Hernandez, Rafael Escarela-Perez, Enrique Melgoza, Marco Arjona, Mexico

SS - Hybrid excitation syncronous machines

P174 • GD-012858
3D Modeling of Double Excitation Synchronous Motor with Reluctance Network
Trung-Kien Hoang, Lionel Vido, Mohamed Gabsi, Frederic Gillon, SATIE, ENS Cachan, France

P175 • GD-003573
Multi-structure model to optimize a Hybrid Excitation Synchronous Generator
Maxime Ployard, Aymen Ammar, Juliana Iamamura, Frederic Gillon, Lionel Vido, Daniel Laloy, Maxime Ployard, France

SS - High speed machines and drives for industry applications

P176 • GD-001791
Design of 6-slots 2-poles High-Speed Permanent Magnet Synchronous Machines with Tooth-Coil Windings
Nikita Uzhegov, Janne Nerg, Juha Pyrhönen, Lappeenranta University of Technology, Finland

10:10 am - 10:30 am Coffee Break • Room: Exhibition

05:40 pm - 06:10 pm Paper Awards and Closing Ceremony • Room: Rubin

P177 • GD-003824
2D Analytical Torque Study of Slotted High-Speed PMSMs Considering Pole Pairs, Slots per Pole per Phase and Coil Throw
Peter Sergeant, Luc Dupré, Ghent University, Faculty of Engineering and Architecture, Belgium

P178 • GD-002682
Improving Dynamics of Vector Controlled IM Drive by Resampling SVM Under Low Frequency Ratio
Peter Stumpf, Rafael K. Járdán, István Nagy, Budapest University of Technology and Economics, Hungary

P179 • GD-010111
Speed Estimator in Closed-Loop Scalar Control Using Neural Networks
Tiago Henrique Santos, Alessandro Goedtel, Sérgio Augusto Oliveira Silva, Marcelo Suetake, Federal Institute of Paraná, Brazil

P180 • GD-010375
Study of a High-Speed Motorization for Electric Vehicle based on PMSM, IM and VRSM
Daniel Fodorean, Dan-Cristian Popa, Paul Minciunescu, Cristi Irimia, Technical University of Cluj-Napoca, Romania

SS - Fault tolerant solutions in the design of electrical machines

P181 • GD-004987
Multi-Resolution Analysis Based Data Compression for Power transformer protection
Adel Aktaibi, Memorial University of Newfoundland, Canada

P182 • GD-010596
Hybrid Synchronous Motor-Alternator with Dual AC/DC Excitation System for Shipboard Generation and Propulsion Applications
Gianluca Stanic, MarelliMotori, Italy

P183 • GD-009903
Improving the fault tolerance of grid-connected synchronous generators through electromagnetic design
Davide Giulivo, Mauro Bortolozzi, Matteo De Martin, University of Trieste, Italy

10:10 am - 10:30 am Coffee Break • Room: Exhibition

05:40 pm - 06:10 pm Paper Awards and Closing Ceremony • Room: Rubin

Friday, September 5, 2014 Poster Session 3

SS - Efficient and realiable hybrid and electric propulsion systems

P184 • GD-011185
12 Slot - 10 Pole Wound Synchronous Motor Design for ISG Applications
Bonkil Koo, Ilsu Jeong, Kwanghee Nam, POSTECH, Korea (South)

P185 • GD-002151
Modified DC-bus Voltage Balancing Algorithm for Three-Level Neutral Point Clamped PMSM Traction Inverter Drive with Low Power Factor
Abhijit Choudhury, Pragasen Pillay, Sheldon Williamson, PhD student, Canada

P186 • GD-010634
DefendHer: plug-in hybrid platform for cross-country vehicles and tractors
Antonio Matessich, Fabio Massimo Frattale Mascioli, POMOS University of Rome, Italy

P187 • GD-006688
Characterizing the Motorization of a Light Electric Vehicle through FEM and NVH Tests
Daniel Fodorean, Mathieu Sarrazin, Claudia Steluta Martis, Jan Anthonis, Herman Van der Auwerear, Technical University of Cluj-Napoca, Romania

P188 • GD-007404
Magnetic Circuit and Torque Analysis of a Brushless Transverse-Flux Dual Rotor Machine Used for HEVs
Ping Zheng, Quanbin Zhao, Jingang Bai, Bin Yu, Zhiyi Song, Jing Shang, 2 Yikuang Street, Nan Gang District, Harbin, China

SS - Analytical modeling of electromagnetic devices

P189 • GD-008338
Operation Analysis of Synchronous Reluctance Machine in Electric Power Generation
Roberto H. Moncada, Boris J. Pavez, Juan A. Tapia, Juha Pyrhönen, Universidad de La Frontera, Chile

P190 • GD-005487
Analytical Model of a Permanent Magnet Brushless DC Motor with non-linear ferromagnetic material
Ankit Dalal, Praveen Kumar, Indian Institute of Technology, India

10:10 am - 10:30 am Coffee Break • Room: Exhibition

05:40 pm - 06:10 pm Paper Awards and Closing Ceremony • Room: Rubin

Oral Sessions

Room: Rubin **10:30 am - 12:30 pm**

TT2 - Innovative machines and actuators - Axial flux and transvers flux machines

Chairs: Chris Gerada, Nottingham University, United Kingdom; Bernd Ponick, Germany

GD-001066
Analytical Computation Method of Transverse Flux Permanent Magnet Excited Machines via Nodal Analysis
Peter Seibold, Nejila Parspour, University of Stuttgart, Germany

GD-002887
Comparative Electrical Design of Radial- and Axial-Flux Permanent Magnet Synchronous Machines under Space Limitation
Akihito Nakahara, Kenta Deguchi, Satoshi Kikuchi, Yuji Enomoto, Hitachi, Ltd., Japan

GD-006033
Modeling a Transversalflux Machine for Evaluation of Sensorless Control Algorithms
Johannes Bauer, Alexander Kleimaier, University of Applied Sciences Landshut, Germany

GD-009695
Analysis of Stray Paths for Parasitic Currents in Some Topologies of Yokeless And Segmented Armature Axial Flux PM Machines
Giovanni Maria Foglia, Antonino Di Gerlando, Roberto Perini, Matteo Felice Iacchetti, Politecnico di Milano, Italy

GD-009997
PM Brushless DC Motor with exterior rotor for high efficiency household appliances
Marco Villani, Francesco Parasiliti, Mauro Castello, University of L'Aquila, Italy

GD-012106
Effect of Unbalanced and Inclined Air-gap in Double-Stator Inner-Rotor Axial Flux Permanent Magnet Machine
Jian Li, Ronghai Qu, Yun-Hyun Cho, State Key Laboratory of Advanced Electromagnetic Engineering and Technology, School of Electrical and Electronic Engineering, Huazhong University of Science and Technology, China

12:30 pm - 02:00 pm Lunch Break • Room: andel's Hotel

Friday, September 5, 2014 Oral Sessions

Room: Onyx **10:30 am - 12:30 pm**

TT3 - Electrical drives - Efficiency in electrical drives and losses minimization techniques

Chairs: Colin Debruin, University Ghent, Belgium; Markus Henke, Germany

GD-011312
Self-Tuning Adaptive Copper-Losses Minimization Control of Externally Excited Synchronous Motors
Chi Dung Nguyen, Wilfried Hofmann, TU Dresden, Germany

GD-003581
Inverter Losses Minimization Using Variable Switching Frequency Based On Multi-objective Optimization
Andreas Andersson, Torbjörn Thiringer, Chalmers University of Technology, Sweden

GD-009792
Evaluation of an Analytical, Efficiency-Optimized Torque-Speed Characteristic of Induction Machines Coupled with a Thermal-Electromagntic Energy Consumption Calculation
Kacper Emmrich, André Brune, Bernd Ponick, Leibniz University of Hanover, Germany

GD-006505
Experimental Evaluation of the Impact of Harmonics on Induction Motors Fed by Modular Multilevel Converters
Antonios Antonopoulos, Gustav Mörée, Juliette Soulard, Lennart ÄNgquist, Hans-Peter Nee, KTH Royal Institute of Technology, Sweden

GD-008575
The European Standard EN 50598 -2: Efficiency Classes of Converters and Drive Systems
Ioannis Tsoumas, Hans Tischmacher, Peter Koellensperger, Siemens, Germany

GD-012629
Efficiency Analysis in Induction Motor Drives with Discontinuous PWM and Electrical Loss Minimization
Maria Carmela Di Piazza, Marcello Pucci, ISSIA-CNR, Italy

12:30 pm - 02:00 pm Lunch Break • Room: andel's Hotel

Room: Saphir 1 **10:30 am - 12:30 pm**

SS - Improvement in the energy efficiency of electric transformers and related smart practice

Chairs: Xose M. Lopez-Fernandez, Universidade de Vigo, Spain; Hugo Campelo, EFACEC Group, Portugal

GD-007145
Reduction of Cost and Losses of Transformers by Using Composite Magnetic Cores
Themistoklis D. Kefalas, Antonios G. Kladas, National Technical University of Athens, Greece

GD-007048
Influence of the External Magnetic Field on Operation of the New Technology Current-to-Voltage Transducers
Elzbieta Lesniewska, Aleksander Lisowiec, Lodz University of Technology, Institute of Electrical Power Engineering, Poland

GD-011762
RL Frequency Response Modeling of Air-cored Reactor
Marconi Januario, Anderson Santos Nunes, Patrick Kuo-Peng, Nelson Jhoe Batistela, Universidade do Oeste de Santa Catarina, Brazil

GD-012602
Magnetostriction Force Spectrum in Power Transformer
Pawel Witczak, Lodz University of Technology, Poland

GD-012637
Thermal Hydraulic Network Modelling Performance in Real Core Type Transformers
Hugo Campelo, Luis Braña, Xose Fernandez, EFACEC Energia S.A., Portugal

GD-009652
A Novel Approach to Multiobjective Efficiency Optimisation for Distribution Transformer Based on Taguchi Method
Lidija Petkovska, Mihail Digalovski, Goga Cvetkovski, Paul Lefley, Ss. Cyril and Methodius University, Macedonia

12:30 pm - 02:00 pm Lunch Break • Room: andel's Hotel

Room: Saphir 2+3 **10:30 am - 12:30 pm**

TT5 - Condition monitoring, diagniosis and testing - Specialty Machines

Chairs: Thomas Wollbank, Vienna University of Technology, Austria; Manfred Stiebler, Germany

GD-002119
Influence of temperature on the vibro-acoustic behavior of claw-pole alternators
Antoine Tan-Kim, Vincent Lanfranchi, Jérôme Legranger, Frédéric Palleschi, Mathieu Redon, UTC, France

GD-002933
Advanced Condition Monitoring System Based on Real-Time Simulation
Michel Han, Antoine Béguin, Christophe Nicolet, Basile Kawkabani, École Polytechnique Fédérale de Lausanne, Switzerland

GD-007188
Estimating the magnetic characteristics of a salient pole synchronous machine using ampere turns distribution method
Jayaram Subramanyam, Subhasis Nandi, Ilamaprithi Thirumarai, Oliver Winter, University of Victoria, Canada

GD-003395
Effect of Magnetic Material Nonlinearities on the Acoustic Behavior of 4-phase SRMs
Haïfa Mechmeche, Michel Hecquet, Abdelmounaim Tounzi, Frédéric Gillon, Guillaume Fritz, Renault, France

GD-007072
Comparative Investigation of Fault Indicators for Synchronous Machine Failures
Subrat Sahoo, Pedro Rodriguez, ABB, Sweden

GD-012017
Detection of Inter-Turn Fault in Transformers at Incipient Level
Ravindra Bhide, Srinivas Mss, Ilia Voloh, Lead Engineer, India

12:30 pm - 02:00 pm Lunch Break • Room: andel's Hotel

Room: Amethyst **10:30 am - 12:30 pm**

SS - Multi-phase electrical machines and drives for the more-electric transport

Chairs: Emil Levi, Liverpool John Moore University, United Kingdom; Alberto Tenconi, Politecnico di Torino, Italy

GD-007609
Design of a Fractional Slot Multi-Phase PM Generator for a Direct-Drive Wind Turbine
Alfonso Damiano, Ignazio Marongiu, Andrea Monni, Università di Cagliari, Italy

GD-010103
Torque Speed Characteristic of Polyphase Permanent Magnet Motors with One Phase Fault
Jose Figueroa, Jérôme Cros, Philippe Viarouge, LEEPCI, Université Laval, Canada

GD-011401
Detection and Localization of High Resistance Connections in Quadruple Three-Phase Induction Motor Drives
Angelo Tani, Luca Zarri, Michele Mengoni, Giovanni Serra, Domenico Casadei, Dept. of Electrical, Electronic, and Information Engineering, Italy

GD-008095
New 5-Phase Concentrated Winding Machine Bi-Harmonic Structure for Automotive Application
Bassel Aslan, Eric Semail, L2EP/ARTS et METIERS PARISTECH, France

GD-012696
Multiphase Induction Machine for Aero-Engine Shaft-Line-Embedded Starter/Generator: Scaled Prototypes Testing
Andrea Cavagnino, Alberto Tenconi, Gabriele Rizzoli, Michele Mengoni, Giovanni Serra, Politecnico di Torino, Italy

GD-001503
Indirect Field Oriented Control of Five-Phase Induction Motor Based on SPWM-CSI
Mohamed Elgenedy, Ayman Abdel-Khalik, Ahmed Massoud, Shehab Ahmed, Alexandria Uneversity, Egypt

12:30 pm - 02:00 pm Lunch Break • Room: andel's Hotel

Room: Bernstein **10:30 am - 12:30 pm**

SS - Analytical modeling of electromagnetic devices 2

Chairs: Elena Lomonova, Johannes Paulides, Technische Universiteit Eindhoven, Netherlands

GD-002089
Calculation of Torque-Speed Characteristic of Induction Machine for Electrical Vehicle Application Using Analytical Method
Yang Guan, ZiQiang Zhu, Ibrahim Afinowi, Jean-Claude Mipo, Philippe Farah, University of Sheffield, United Kingdom

GD-005444
Identifying manufacturing induced rotor and stator misalignment in brushless permanent magnet motors
Mark Thiele, Greg Heins, Dean Patterson, Charles Darwin University, Australia

GD-003506
Analytical Model to Calculate the Radial Forces in Permanent-Magnet Synchronous Machine
Iratxo Gómez, Gaizka Almandoz, Javier Poza, Gaizka Ugalde, Ana Julia Escalada, Mondragon Unibertsitatea, Spain

GD-006491
Analytical Modeling of Eddy Current Losses in Axial Flux PMSM using Resistance Network
Ahmed Hemeida, Peter Sergeant, Ghent University, Belgium

GD-005835
Calculation of Induced Rotor Current in Induction Motors using a Slotted Semi-Analytical Harmonic Model
R.L.J. Sprangers, J.J.H. Paulides, B.L.J. Gysen, J. Waarma, E.A. Lomonova, Eindhoven University of Technology, Netherlands

GD-001511
A Method to Solve a FEM-Circuit Coupled Equation based on a Time Varying Approach
Raul Dominguez, Aurelio Medina, Universidad Michoacana de San Nicolas de Hidalgo, Mexico

12:30 pm - 02:00 pm Lunch Break • Room: andel's Hotel

Room: Rubin **02:00 pm - 04:00 pm**

SS - Hybrid excitation synchronous machines

Chairs: Shanming Wang, Tsinghua University, Beijing, China; Sami Hlioui, ENS Cachan, France

GD-005843
Performances of a Hybrid Excited Flux-Switching DC-Alternator: Analysis and Experiments
Agathe Dupas, Emmanuel Hoang, Sami Hlioui, Benjamin Gaussens, Michel Lecrivain, Mohamed Gabsi, SATIE ENS Cachan, France

GD-007668
Analytical Modeling of a Hysteresis Interior Permanent Magnet Motor
S. F. Rabbi, M. A. Rahman, Memorial University of Newfoundland, Canada

GD-010081
Mixed-Pole Hybrid-Excitation Machine
Gabriele Borocci, Fabio Giulii Capponi, Giulio De Donato, Federico Caricchi, University of Rome "La Sapienza", Italy

GD-010146
Performance Estimation of Hybrid Excited Machine with Alternating Pole Configuration
Avo Reinap, Mats Alaküla, Sebastian Hall, Samuel Estenlund, Lund University, Sweden

GD-010936
Analysis and Design of Axial Hybrid Synchronous Machines
Omar Laldin, Scott D. Sudhoff, Steven D. Pekarek, Purdue University, USA

GD-011533
Hybrid Excitation Permanent Magnet Synchronous Machines and Their Structures -- Combination Art of Elements of Machines
Shanming Wang, Shouhui Ni, Yonghong Xia, Xiangheng Wang, Pengsheng Su, Shaogang Huang, Tsinghua University, China

04:00 am - 04:20 am Coffee Break • Room: Exhibition

Room: Onyx **02:00 pm - 04:00 pm**

TT2 - Innovative machines and actuators - Linear machines

Chairs: Marcello Pucci, CNR, Italy; Joachim Kempkes, Germany

GD-001309
Electric to Mechanical Energy Conversion of Linear Ultra-Fast Electro-Mechanical Actuators Based on Stroke Requirements
Ara Bissal, Jesper Magnusson, Göran Engdahl, Royal Institute of Technology (KTH), Sweden

GD-003735
New linear hybrid reluctance actuator
Pere Andrada, Baldui Blanque, Eusebi Martinez, Marcel Torrent, Jordi Garcia-Amoros, Ignasi Perat, UPC, Spain

GD-007242
Minimization of Force Ripples in Coreless Linear Actuators
B.J.H. de Bruyn, J.W. Jansen, E.A. Lomonova, TU/e, Netherlands

GD-007781
Analysis of the End-Effects in Magnetic Gears and Magnetically Geared Machines
Stiaan Gerber, Rong-Jie Wang, Stellenbosch University, South Africa

GD-008176
Position Control of a Linear Transverse Flux Machine with Subordinate Current Control
Frieder Schuller, Nejila Parspour, Lei Chen, University of Stuttgart, Germany

GD-010383
Optimisation of a Transverse Flux Linear Oscillating Machine by Transient 3D Finite Element Analysis
Louis Joubert, Johannes Strauss, Stellenbosch University, South Africa

04:00 am - 04:20 am Coffee Break • Room: Exhibition

Room: Saphir 1 **02:00 pm - 04:00 pm**

SS - Recent industrial applications and case studies of electrical machine diagnosis & prognosis

Chairs: Elias G. Strangas, Michigan State University, USA; Jose Antonino-Daviu, Universitat Politecnica de Valencia, Spain

GD-003425
Insulation monitoring of three phase inverter-fed ac machines based on two current sensors only
Clemens Zoeller, Markus Vogelsberger, Peter Nussbaumer, Thomas Wolbank, Vienna Universitiy of Technology, Austria

GD-000345
Diagnosis of Induction Machines under Varying Speed Operation by Principal Slot Harmonic Tracking
Vicente Climente-Alarcon, Jose A. Antonino-Daviu, Ari Haavisto, Antero Arkkio, Aalto University, Finland

GD-004391
On Inverter Induced Bearing Currents, Bearing Maintenance Scheduling, and Prognosis
Annette Muetze, Elias Strangas, Graz University of Technology, Austria

GD-009679
New On-line Excitation-System Ground-Fault Location Method Tested in a 106 MVA Synchronous Generator
Francisco Blanquez, Miguel Pardo, Carlos Platero, Emilio Rebollo, Francisco Blazquez, Technical University of Madrid ETSII-Electrical Engineering Department, Spain

GD-000655
Demagnetization Faults Analysis in a BLDC Motor for Diagnostic Purposes
Dimitrios Athanasopoulos, Panagiotis Karagkounis, Joya Kappatou, Savvas Tsotoulidis, University of Patras, Greece

GD-004529
High Frequency Synchronous Generator Modeling and Testing for Electromagnetic Signature Analysis
Sheppard Salon, RPI, United States

04:00 am - 04:20 am Coffee Break • Room: Exhibition

Room: Saphir 2+3 **02:00 pm - 04:00 pm**

TT4 - Design and related problems - Numerical methods and simulation techniques

Chairs: Antero Arkkio, Aalto University, Finland; Osama Mohammed, Florida International University, USA

GD-010464
3D numerical calculation method of electrical machines with time efficient air gap coupling and stabilized torque and force calculation
Bogdan Funieru, Andreas Binder, TU Darmstadt, Germany

GD-002674
Study of a Taylor-Couette-Poiseuille Flow in an Annular Channel with a Slotted Rotor
Nicolas Lancial, Federico Torriano, François Beaubert, Souad Harmand, Gilles Rolland, TEMPO/DF2T - EDF, France

GD-000264
Construction of Magnetic Hysteresis Loops and Its Applications in Parameter Identification for Hysteresis Models
Dingsheng Lin, Ping Zhou, Chuan Lu, Ningning Chen, Marius Rosu, Ansys Inc., United States

GD-005649
Computationally Efficient Skew Effect Calculation in Electric Machines Utilising Harmonic Maxwellian Stress Decomposition
Christopher Spargo, Barrie Mecrow, James Widmer, Newcastle University, United Kingdom

GD-012246
Two-dimensional Magnetostriction Analysis Using E&S-W Model in Induction Motor Model Core
Daisuke Wakabayashi, Masato Enokizono, Oita University, Japan

GD-011843
Efficient finite element based rotor loss calculation for permanent magnet synchronous machines
Martin van der Geest, Henk Polinder, Braham Ferreira, Delft University of Technology, Netherlands

04:00 am - 04:20 am Coffee Break • Room: Exhibition

Room: Amethyst **02:00 pm - 04:00 pm**

TT3 - Electrical drives - Control issues in electrical drives

Chairs: Luca Zarri, Universita' di Bologna, Italy; Andreas Binder, Germany

GD-005053
Coupled Analysis of Brushless DC Motor Using Finite Elements Method & Back Electromotive Force Detecting Electrical Circuits
Yosub Sim, Noboru Niguchi, Katsuhiro Hirata, Cheongworl Kim, Osaka University, Japan

GD-002801
A robust model reference adaptive controller for the PMSM drive system with torque estimation and compensation
Qian Liu, Andreas Thul, Kay Hameyer, Institute of electrical machine, RWTH Aachen, Germany

GD-001546
Parameter Identification of Transverse Flux Machines using Harmonic Current Control
Jan Klöck, Walter Schumacher, Technische Universität Braunschweig - Institut für Regelungstechnik, Germany

GD-009113
Low Voltage Ride-Through Control of Doubly-Fed Induction Generator at Synchronism
Van Binh Nguyen, Wilfried Hofmann, TU Dresden, Germany

GD-009814
Theoretical and Experimental Evaluation of Vector Control for Doubly-Fed Reluctance Generators
Sul Ademi, Milutin Jovanovic, Northumbria University Newcastle, United Kingdom

GD-000582
Novel Prediction Technique for Direct Torque Control of Induction Motor
Dubravko Krušelj, KONAR – Electrical Engineering Institute, Croatia (Hrvatska)

04:00 am - 04:20 am Coffee Break • Room: Exhibition

Room: Bernstein **02:00 pm - 04:00 pm**

SS - Electric motor and generator windings: design, Performances and reliability 2

Chairs: Fernando J. T. E. Ferreira University of Coimbra, Portugal; Enrique Ciro Quispe Oquena, Universidad Autónoma de Occidente, Colombia

GD-002917
Geometrical and Electrical Optimization of Stator Slots in Electrical Machines with Combined Wye-Delta Winding
Oleg Moros, Dieter Gerling, FEAAM GmbH, Germany

GD-002607
Analysis of IM with Combined Six-Phase Configuration of Stator Phase Windings with Respect to Higher Spatial Harmonics
Ludek Schreier, Jiri Bendl, Miroslav Chomat, Institute of Thermomechanics ASCR, Czech Republic

GD-010642
Star- and Delta-Connected Windings Tolerance to Voltage Unbalance in Induction Motors
Fernando J. T. E. Ferreira, Enrique C. Quispe, Ge Baoming, Polytechnic Institute of Coimbra (IPC/ISEC) & Institute of Systems and Robotics, Univ. Coimbra (ISR-UC), Portugal

GD-001775
Equivalent Circuit of Stator Coil End of Inverter-Fed High-Voltage Electrical Machine
Tetsuji Kato, Kohji Maki, Hitachi ltd., Japan

GD-008397
Design and Optimization of DFIGs with alternate voltage and speed ratings for Wind Applications
Hossein Dehnavifard, A.D. Lilla, M.A. Khan, P. Barendse, University of Cape Town, South Africa

GD-001562
Comparison of CFD Analyzing Strategies for Hydro Generators
Stephan Klomberg, Ernst Farnleitner, Gebhard Kastner, Oszkar Bíró, Institute for Fundamentals and Theory in Electrical Engineering, Austria

04:00 am - 04:20 am Coffee Break • Room: Exhibition

General Information

ICEM 2014 Conference Secretariat

For detailed information please contact:
VDE-Conference Services
Ms Simone Mayer
Stresemannallee 15
60596 Frankfurt
Germany

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E-mail: simone.mayer@vde.com
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Registration On-Site

The registration desk on site will be open at the following office hours:

Tuesday,	September 2, 2014	7:30 am - 6:00 pm
Wednesday,	September 3, 2014	8:00 am - 6:00 pm
Thursday,	September 4, 2014	8:00 am - 6:00 pm
Friday,	September 5, 2014	8:00 am - 2:00 pm

Registration Fees

On-Site Registration

Full Registration Regular	750 EUR
VDE/IEEE Member*	650 EUR
Authors	550 EUR
Universities	550 EUR
Additional paper	200 EUR
Students (MSc or PhD)*	400 EUR
Accompanying person	400 EUR

Full registration includes Tuesday Tutorials and the Welcome Cocktail on Tuesday evening, all technical sessions, Conference Proceedings, Coffee Breaks, Lunch, Excursion on Wednesday evening and Social Dinner on Thursday evening.

* VDE Members and Students are required to send together with their registration a valid Member/Student-Card by e-mail to vde-conferences@vde.com or by fax to +49-69-6308-144 in order to validate their registration. Otherwise Full Registration will be required on-site.

Payment of Conference fee

Payment for registration, including bank charges and processing fees, must be made in Euro.

The following methods of payment are accepted:

- By credit card authorisation as per registration form. The 16 digit card number, expiry date and holder's name must be indicated on the registration form. Signature of the card holder is mandatory.
- Cash payment on-site in EURO (€) for conference delegates only (not applicable for authors!).

Cancellation

In case of cancellation, provided that written notice is received at the VDE-Conference Services before August 1, 2014 (except authors registration), the registration fee will be fully refunded less a handling fee of € 60,00.

After August 1, 2014 no refund will be made. Proceedings will then be sent to the registrant after the conference.

Proceedings

All papers accepted for presentation at the conference will be published in the proceedings on an USB-Stick.

The proceedings will be handed on-site to all delegates attending the event.

Badges

Delegates will receive badges for the Conference showing their name and company. All participants are kindly requested to wear their badge throughout the conference, even at social events. Lost badges will not be replaced. A new registration will be mandatory.

Tutorials

All Tutorials will be organized on September 2, 2014. The access to the Tutorials is included in the conference fee. The attendees are kindly asked to bring their own laptops for download as no printed documents will be provided.

Hotel Reservations

The conference hotel offers special room rates (incl. breakfast) for conference delegates:

€ 149,- Single Superior Room
€ 169,- Single Deluxe Room

You can make your hotel reservation directly at the conference hotel and submit the keyword "ICEM 2014" when making your reservation, to benefit from the special rates.

Andel's Hotel Berlin
Landsberger Allee 106
10369 Berlin
Germany
Phone: +49 30 453 053 0
Fax: +49 30 453 053 2099
info@andelsberlin.com
www.andelsberlin.com

The agency “smart & more GmbH” offers further hotels in different categories.

Smart and More GmbH
Phone: +49-40-88171-240
E-mail: smartfairs@smartandmore.de

Official Language

All sessions will be held in English, only.

Messages

Incoming mail, phone calls and e-mails for participants will be displayed on a message board near the registration desk.

During the conference, messages for delegates may be sent to the registration counter on-site.
E-mail: vde-conferences@vde.com

Poster Display

The Poster Area will be open for hanging up the Posters on Monday, Sept. 1st starting 4:00 pm. The Poster walls will be numbered according to the paper number. The standard Poster size is A0. The Poster Session will take place in Room "Rubin".

Poster Authors can leave their Posters on the Poster walls for the whole conference!

Insurance

The organizers may not be held responsible for any injury to participants or damage, theft and loss of personal belongings. Participants should therefore make their own insurance arrangements.

Emergency Calls

Fire/Ambulance: 112
Police: 110
From some phones an additional "0" (0112 or 0110) might be required to place a call

Tipping

Tipping is at your own discretion. In Germany all taxes and tips are included in hotel and restaurant bills. A good service may be rounded up by 5 to 10%.

Weather / Climate

In September the weather is moderate, with daily temperatures between 18 an 25 °C. However, evenings are sometimes cold. Rain is not uncommon, so be prepared!

Information for Authors

Paper presentation

In ICEM'2014 Proceedings, there will be no difference in between oral and poster presentations. All papers will be treated in the same way and will be available in the IEEEXplore after the conference only if presented.

Oral

All the authors presenting a paper in oral are kindly requested to meet their co-chairs in the session room 15 minutes before the session schedule in order to download their presentation on the computer available in the room. They have to provide their Power-Point-Presentation to the co-chairs on a USB key. It is not possible to change the computer in between presentations. The length of the presentation is restricted to 20 minutes including questions. The presenting authors are strongly advised to keep their oral presentation within 15 minutes (15 to 20 slides) and to let 5 minutes for questions. They have to verify that their bio has been printed in their final version otherwise they have to bring a short printed bio of 10 lines maximum to the session co-chairs.

Poster

A poster preparation is a difficult but rather interesting exercise. It is not allowed to simply pin up a simple copy of the published paper. The provided template has a A0 European size (119cm height, 84cm width). Please do remain strictly in these dimensions. Each poster will be hung by the presenters using material provided by the conference organizers. A poster display will catch the eye of the viewer (large figures), present a logical sequence of material in an attractive visual way and does not require the reader to examine a detailed text. During the schedule breaks (coffee and lunches), authors have to remain near to their poster in order to engage a direct discussion with the conference delegates.

Session chairs

All session chairs will have the responsibility of downloading the authors presentations at least 15 minutes before the beginning of the session. The authors have to provide them with a USB Key with their Power-Point-Presentation inside and a short bio (max. 10 lines) in order to be introduced. For poster sessions, the session co-chairs will have to identify the no-shows and to evaluate poster presentation and attendance being in the place. The session chairs have the responsibility to make the schedule strictly respected. Each presentation plus questions have to be presented within a period of 20 minutes. In case of "no show", session co-chairs have to wait 20 minutes for the next paper or to close the session if it is the last paper. Each session chair has to fill a form (one by session oral/poster) for session evaluation and to bring it back to the registration desk. All the rooms will be equipped with a video projector and screen as well as a presentation laptop. The session chairs will have technical support in each room from the beginning of the session up to the end.

Overview ICEM 2014

Room:	Rubin	Onyx	Saphir 1	Saphir 2+3	Amethyst	Bernstein
	Tuesday September 2					
07:30 am-10:00 am	Registration - Room: Foyer		07:30 am-09:00am	Student Poster Forum - Room: Poster Area		
09:00 am-01:00 pm			Tutorial 1	Tutorial 2		
01:00 pm-02:30 pm	Lunch - Room: andel's Hotel					
02:30 pm-06:30 pm			Tutorial 3	Tutorial 4		
06:30 pm-07:30 pm	Welcome Cocktail - Room: Foyer					
	Wednesday September 3					
08:00 am-06:00 pm	Registration - Room: Foyer					
09:30 am-10:00 am	Opening Ceremony - Room: Rubin					
10:00 am-11:00 am	Plenary Session - Room: Rubin					
11:00 am-11:20 am	Coffee Break - Room: Exhibition					
11:20 am-12:30 pm	Poster Session 1 - Room: Poster Area					
12:40 pm-02:00 pm	Lunch - Room: andel's Hotel					
02:00 pm-04:00 pm	TT4 - Design for special applications	TT2 - Electric machines for EV	SS - Thermal management of electrical machines 1	TT5 - Condition monitoring, diagniosis and testing - PM Synchronous Machines	TT1 - Induction motor modeling	SS - Fault tolerant solutions in the design of electrical machines
04:00 pm-04:20 pm	Coffee Break - Room: Exhibition					
04:20 pm-06:20 pm	TT3 - Sensorless control of PM and PM motor drives	TT7 - Grid Connected or emergency applications	TT4 - Materials, Efficiency and Losses	SS - Electrical Machines for Extreme Enviroments	SS - Analystical modeling of electromagnetic devices 1	SS - Electric motor and generator windings: design. Performances and reliability 1

Overview ICEM 2014

Room:	Rubin	Onyx	Saphir 1	Saphir 2+3	Amethyst	Bernstein
	Thursday September 4					
08:00 am-04:30 pm	Registration - Room: Foyer					
09:00 am-10:10 am	Poster Session 2 - Room: Poster Area					
10:10 am-10:30 am	Coffee Break - Room: Exhibition					
10:30 am-12:30 pm	SS - The electric platform as a mean for greenshipping	SS - Side effects of Motor-Converter interactions in electrical drive systems	SS - Thermal management of electrical machines 2	TT5 - Condition monitoring, diagniosis and testing - Induction Machines	TT1 - Synchronous machine modeling	TT4 - Optimisation methods
12:30 pm-02:00 pm	Lunch - Room: andel's Hotel					
02:00 pm-03:10 pm	Poster Session 2 - Room: Poster Area					
03:10 pm-03:30 pm	Coffee Break - Room: Exhibition					
03:30 pm-05:30 pm	TT1 - Application-oriented electrical machine design	SS - Efficent and reliable hybrid and electric propulsion systems	TT1 - Special machines	SS - High speed machines and drives for industry applications	SS - Monitoring, fault diagniosis and predictive maintenance in wind generators	TT3 - SR motors and SR motor drives
07:45 pm-11:00 pm	Social Dinner (Berlin)					
	Friday September 5					
08:00 am-12:00 pm	Registration - Room: Foyer					
09:00 am-10:10 am	Poster Session 3 - Room: Poster Area					
10:10 am-10:30 am	Coffee Break - Room: Exhibition					
10:30 am-12:30 pm	TT2 - Axial flux and transvers flux machines	TT3- Efficiency in electrical drives and losses minimization techniques	SS - Improvement in the energy efficiency of electric transformers and related smart practice	TT5 - Condition monitoring, diagniosis and testing - Specialty Machines	SS - Multi-phase electrical machines and drives for the more-electric transport	SS - Analystical modeling of electro-magnetic devices 2
12:30 am-02:00 pm	Lunch - Room: andel's Hotel					
02:00 pm-04:00 pm	SS - Hybrid excitation synchronous machines	TT2 - Linear machines	SS - Recent industrial applications and case studies of electrical machine diagnosis & prognosis	TT4 - Numerical methods and simulation techniques	TT3 - Control issues in electrical drives	SS - Electric motor and generator windings: design. Performances and reliability 2
04:00 pm-04:20 pm	Coffee Break - Room: Exhibition					
04:20 pm-05:30 pm	Poster Session 3 - Room: Poster Area					
05:40 pm-06:10 pm	Paper Awards and Closing Ceremony					