

2006 IAS ANNUAL MEETING

PRELIMINARY PROGRAM

Email corrections by August 21st to: ias-tpc@ieee.org

MONDAY MORNING SESSIONS

ELECTRIC MACHINES COMMITTEE

Monday, 9 October 8:00 AM – 12:00 PM

Session 1—Automotive Applications: Generators and Actuators

Session Chair: Bruno Lequesne, *Delphi, USA*

Session Organizer: Tomy Sebastian, *Delphi, USA*

IAS01p1

Ironless Axial Flux PM Machine with Active Mechanical Flux Weakening for Automotive Applications

L. Del Ferraro, *University of Rome “La Sapienza”, Italy*

F. Giulii Capponi, *University of Rome “La Sapienza”, Italy*

R. Terrigi, *University of Rome “La Sapienza”, Italy*

F. Caricchi, *University of Rome “La Sapienza”, Italy*

O. Honorati *University of Rome “La Sapienza”, Italy*

IAS01p2

Novel Selection of the Slot/Pole Ratio of the PMSM for Auxiliary Automobile

Makoto Yoneda, *Oriental Motor Co., Ltd., Japan*

Masahiro Shoji, *Musashi Institute of Technology, Japan*

Yongjae Kim, *Musashi Institute of Technology, Japan*

Hideo Dohmeki, *Musashi Institute of Technology, Japan*

IAS01p3

Optimal Control for a Wound Rotor Synchronous Starter Generator

A. Girardin, *Valeo Electrical System, France; University of Technology of Compiègne, France*

G. Friedrich, *University of Technology of Compiègne, France*

IAS01p4

Design and Analysis of a Double-Stator Cup-Rotor PM Integrated-Starter-Generator

Dong Zhang, *Shanghai University, China*

K. T. Chau, *The University of Hong Kong, China*

Shuangxia Niu, *The University of Hong Kong, China*

J. Z. Jiang, *Shanghai University, China*

IAS01p5

Low-Speed Output Power Improvement of an Interior PM Automotive Alternator

C. Z. Liaw, *University of Adelaide, Australia*

W. L. Soong, *University of Adelaide, Australia*

N. Ertugrul *University of Adelaide, Australia*

ELECTRIC MACHINES COMMITTEE

Monday, 9 October 8:00 AM – 12:00 PM

Session 2—Permanent Magnet Motors II

Session Chair: Robert D. Lorenz, *University of Wisconsin, USA*

Session Organizer: Mohammad S. Islam, *Delphi, USA*

IAS02p1

Magnetic Loading of Fractional-slot, Three-phase PM Motors with Non-overlapped Coils

Nicola Bianchi, *University of Padova, Italy*

Silverio Bolognani, *University of Padova, Italy*

Michele Dai Pré, *University of Padova, Italy*

IAS02p2

Cogging Torque Reduction in Permanent Magnet Machines

Luke Dosiek, *Clarkson University, USA*

Pragasen Pillay, *Clarkson University, USA*

IAS02p3

Modified Vector Control Algorithm for Increasing Partial-load Efficiency of Fractional-slot Concentrated Winding Surface PM Machines

Ayman M. EL-Refaie, *GE Global Research Center, USA*
 Thomas M. Jahns, *University of Wisconsin–Madison, USA*
 John W. McKeever, *Oak Ridge National Laboratory, USA*

IAS02p4

Determination of the Thermal Convection Coefficient for a Small Electric Motor

Miroslav Marković, *Ecole Polytechnique Fédérale de Lausanne, Switzerland*
 Laurie Saunders, *Ecole Polytechnique Fédérale de Lausanne, Switzerland*
 Yves Perriard, *Ecole Polytechnique Fédérale de Lausanne, Switzerland*

IAS02p5

Electromagnetic and Mechanical Design of a Fractional-slot-windings Axial-flux PM Synchronous Machine with Soft Magnetic Compound Stator

Fabrizio Marignetti, *University of Cassino, Italy*
 Giovanni Tomassi, *University of Cassino, Italy*
 Piergiacomo Cancelliere, *University of Cassino, Italy*
 Vincenzo Delli Colli, *University of Cassino, Italy*
 Roberto Di Stefano, *University of Cassino, Italy*
 Maurizio Scarano, *University of Cassino, Italy*

IAS02p6

Novel Integrated Bearingless Hollow-shaft Drive

Thomas Schneeberger, *ETH Zurich, Switzerland*
 Johann W. Kolar, *ETH Zurich, Switzerland*

IAS02p7

Modeling and Simulation of Direct Torque Controlled PMSM Drive System Incorporating Structural and Saturation Saliencies

Ying Yan, *University of Technology, Australia*
 Jianguo Zhu, *University of Technology, Australia*
 Youguang Guo, *University of Technology, Australia*
 Haiwei Lu, *University of Technology, Australia*

INDUSTRIAL DRIVES COMMITTEE

Monday, 9 October 8:00 AM – 12:00 PM

Session 3—Induction Machine Drives I

Session Chair: Gerard A. Capolino, *University of Picardie - "Jules Verne", France*

Session Organizer: Mark Sumner, *University of Nottingham, UK*

IAS03p1

Reduction in Bearing Currents in Doubly-fed Induction Generators

A. M. Garcia, *Ford Motor Company, USA*
 D. G. Holmes, *Monash University, Australia*
 T. A. Lipo, *University of Wisconsin–Madison, USA*

IAS03p2

Stability Improvement of V/F Controlled Large Capacity Voltage-source Inverter-fed Induction Motor

Kentaro Suzuki, *Toshiba Corporation, Japan*
 Suzuo Saito, *Toshiba Corporation, Japan*
 Toshiaki Kudor, *Toshiba Corporation, Japan*
 Atsushi Tanaka, *Toshiba Corporation, Japan*
 Yasuhiro Andoh, *Toshiba Mitsubishi-electric Industrial Systems Corporation, Japan*

IAS03p3

Sensorless Control of Induction Motors for Maximum Steady-State Torque and Fast Dynamics at Field Weakening

H. Abu-Rub, *University of Wuppertal, Germany*
 H. Schmirgel, *University of Wuppertal, Germany*
 J. Holtz, *University of Wuppertal, Germany*

IAS03p4

Current Control of Induction Machines in the Field-weakened Region

Gabriel Gallegos-López, *Delphi Corporation, USA*
 Fani S. Gunawan, *Delphi Corporation, USA*
 James E. Walters, *Delphi Corporation, USA*

IAS03p5

A Robust Method for Field Weakening Operation of Induction Motor Drives with Maximum Torque Capability

Domenico Casadei, *University of Bologna, Italy*
Giovanni Serra, *University of Bologna, Italy*
Angelo Tani, *University of Bologna, Italy*
Luca Zarri, *University of Bologna, Italy*

IAS03p6

A New Algorithm for Improved Dip/Sag Detection with Application to Improved Performance of Wind Turbine Generators

P. Barendse, *University of Cape Town, South Africa*
R. Naidoo, *University of Cape Town, South Africa*
P. Pillay, *University of Cape Town, South Africa*

METALS INDUSTRY COMMITTEE

Monday, 9 October 8:00 AM – 12:00 PM

Session 4—Primary Metal, Power Quality, Casting

Session Chair and Organizer: S. Douglas Cromeey, *Novelis Inc., Canada*

IAS04p1

Thyristor Switched Series Reactor for Electric Arc Furnaces

Marcelo Murta G. Cardoso, *Belgo-Arcelor Brasil, Brazil*
Braz J. Cardoso Filho, *Universidade Federal de Minas Gerais, Brazil*

IAS04p2

Field Data-based Study on Electric Arc Furnace Flicker Mitigation

Chong Han, *North Carolina State University, USA*
Alex Q. Huang, *North Carolina State University, USA*
Subhashish Bhattacharya, *North Carolina State University, USA*
Mike Ingram, *Tennessee Valley Authority, USA*

IAS04p3

Harmonic Filter Analysis and Redesign for a Modern Steel Facility with Two Melt Furnaces Using Dedicated Capacitor Banks

Thomas J. Dionise, *Eaton Electrical, USA*
Visuth Lorch, *Eaton Electrical, USA*

IAS04p4

Wavelet Analysis in Arc Furnace Systems

E. A. Cano Plata *National University of Colombia–Manizales, Colombia*

IAS04p5

Dynamic Characteristics Investigations of an In-mold Electromagnetic Stirrer for Steel Plate Manufacturing Process

Cheng-Tsung Liu, *National Sun Yat-Sen University, Taiwan*
Yen-Ming Chen, *National Sun Yat-Sen University, Taiwan*
Jen-Hsin Chen, *China Steel Corporation, Taiwan*
Muh-Jung Lu, *China Steel Corporation, Taiwan*

INDUSTRIAL POWER CONVERTER COMMITTEE

Monday, 9 October 8:00 AM – 12:00 PM

Session 5—Active Power Filters

Session Chair: Fred Wang, *Virginia Tech, USA*

Session Organizer: S. Bhattacharya, *North Carolina State University, USA*

IAS05p1

Active Filter Implementation Using a Generalized Nonactive Power Theory

Yan Xu, *The University of Tennessee, USA*
Leon M. Tolbert, *The University of Tennessee, USA; Oak Ridge National Laboratory, USA*
John N. Chiasson, *The University of Tennessee, USA*
Jeremy B. Campbell, *Oak Ridge National Laboratory, USA*
Fang Z. Peng, *Michigan State University, USA*

IAS05p2

Parallel Operation of One-Cycle Controlled Three-Phase Active Power Filter

Yang Chen, *University of California–Irvine, USA*
Keyue Smedley, *University of California–Irvine, USA*

IAS05p3

A Novel Voltage Mode Control of Parallel Active Power Filter

Xiaoyu Wang, *Xi'an Jiaotong University, China*
Jinjun Liu, *Xi'an Jiaotong University, China*

Chang Yuan, *Xi'an Jiaotong University, China*
Zhaoan Wang, *Xi'an Jiaotong University, China*

IAS05p4

A Dynamic Tuning Method for Distributed Active Filter Systems

Po-Tai Cheng, *National Tsing Hua University, Taiwan*
Tzung-Lin Lee, *National Tsing Hua University, Taiwan*

IAS05p5

New Current Control Structure for Shunt Active Power Filters

Lucian Asiminoaei, *Aalborg University, Denmark*
Cristian Lascu, *University Politehnica of Timișoara, Romania*
Frede Blaabjerg, *Aalborg University, Denmark*
Ion Boldea, *University Politehnica of Timișoara, Romania*

IAS05p6

Adaptive Compensation of Reactive Power with Shunt Active Power Filters

Lucian Asiminoaei, *Aalborg University, Denmark*
Frede Blaabjerg, *Aalborg University, Denmark*
Steffan Hansen, *Danfoss Drives A/S, Denmark*
Paul Thøgersen, *KK-Electronic A/S, Denmark*

INDUSTRIAL POWER CONVERTER COMMITTEE

Monday, 9 October 8:00 AM – 12:00 PM

Session 6—Alternative Energy Applications

Session Chair: Geza Joos, *McGill University, Canada*

Session Organizer: Philip Carne Kjaer, *Vestas, Denmark*

IAS06p1

A Hybrid Energy System Using Cascaded H-Bridge Converter

Hui Li, *Florida State University, USA*
Zhong Du, *North Carolina State University, USA*
Kaiyu Wang, *Florida State University, USA*
Leon M. Tolbert, *The University of Tennessee, USA*
Danwei Liu, *Florida State University, USA*

IAS06p2

Novel Voltage Controller for Stand-alone Induction Generator using PWM-VSI

G. V. Jayaramaiah, *Indian Institute of Technology Bombay, India*
B. G. Fernandes, *Indian Institute of Technology Bombay, India*

IAS06p3

The Internal Model Current Control for Wind Turbine Driven Doubly-fed Induction Generator

Jia-bing Hu, *Zhejiang University, China*
Yi-kang He, *Zhejiang University, China*
Jian Guo Zhu, *University of Technology, Australia*

IAS06p4

Attenuation of Wind Power Fluctuations in Wind Turbine Generators using a DC Bus Capacitor-based Filtering Control Scheme

Wei Li, *McGill University, Canada*
Géza Joós, *McGill University, Canada*
Chad Abbey, *McGill University, Canada*

IAS06p5

Current-source Topology for Wind Turbines Capable of Providing Leading Power Factor While Reducing Line Current Harmonics

P. Tenca, *University of Wisconsin–Madison, USA*
A. A. Rockhill, *University of Wisconsin–Madison, USA*
T. A. Lipo, *University of Wisconsin–Madison, USA*

IAS06p6

A Multi-Stage Converter for Domestic Generation Systems Based on Fuel Cells

Mario Cacciato, *University of Catania, Italy*
Alfio Consoli, *University of Catania, Italy*
Rosario Attanasio, *STMicroelectronics, Italy*
Francesco Gennaro, *STMicroelectronics, Italy*

PRODUCTION AND APPLICATION OF LIGHT COMMITTEE

Monday, 9 October 8:00 AM – 12:00 PM

Session 7—Ballasts for Fluorescent Lamps

Session Chair: Ron Hui, *Hong Kong City University, China*

Session Organizer: Georges Zissis, *University Toulouse 3, France*

IAS07p1

Impact of Current Crest Factor at High and Low Frequency Operation on Fluorescent Lamp Electrodes

Walter Kaiser, *Escola Politécnica da Universidade de São Paulo, Brazil*

Ricardo Paulino Marques, *Escola Politécnica da Universidade de São Paulo, Brazil*

Alexander Fernandez Correa, *Escola Politécnica da Universidade de São Paulo, Brazil*

IAS07p2

Simulation the Impedance of Electrodeless Fluorescent Lamp

Yuming Chen, *Fudan Universty, China*

Dahua Chen, *Fudan Universty, China*

IAS07p3

Designing a Wide Range High Performance Platform for Multiple Lamps

Masashi Sekine, *International Rectifier, USA*

Zan Huang, *International Rectifier, USA*

IAS07p4

Fluorescent Lamp Ballast Based on a Class-E Resonant Inverter Using a Piezoelectric Transformer

J. Ribas, *Universidad de Oviedo, Spain*

J. A. Martín, *Universidad de Oviedo, Spain*

J. García, *Universidad de Oviedo, Spain*

J. Cardesin, *Universidad de Oviedo, Spain*

A. J. Calleja, *Universidad de Oviedo, Spain*

M. Rico-Secades, *Universidad de Oviedo, Spain*

IAS07p5

Frequency Diagnostic Universal Fault Protection for Current-fed Parallel Resonant Ballast

Qinghong Yu, *Osram Sylvania, USA*

Joe Parisella, *Osram Sylvania, USA*

IAS07p6

Optimized Magnetic Components Improve Efficiency of Compact Fluorescent Lamps

Jennifer D. Pollock, *Dartmouth College, USA*

Charles R. Sullivan, *Dartmouth College, USA*

POWER SYSTEM ENGINEERING COMMITTEE

Monday, 9 October 8:00 AM – 12:00 PM

Session 8—Power Systems Reliability/Power Systems Design

Session Chair: Bill Braun, *Owens Corning, USA*

Session Organizer: Jim Harvey, *University of Michigan Hospitals, USA*

IAS08p1

What Five 9's Really Means and Managing Expectations

Robert Arno, *Alion Science and Technology, USA*

Peter Gross, *EYP Mission Critical Facilities, Inc., USA*

Robert Schuerger, *EYP Mission Critical Facilities, Inc., USA*

IAS08p2

A Novel Fuzzy Logic Technique for Power Transformer Asset Management

M. Arshad, *British Columbia Hydro, Canada*

S. M. Islam, *Curtin University of Technology, Australia*

IAS08p3

Electrical Network Design Studies for Natural Gas Liquefaction Plants

R. C. Wilson, *Mott MacDonald Transmission and Distribution, Scotland, UK*

C. L. Dall, *Mott MacDonald Transmission and Distribution, Scotland, UK*

K. S. Smith, *Mott MacDonald Transmission and Distribution, Scotland, UK*

IAS08p4

Robust Optimization of Multilayer Conductors of HTS AC Cable Using PSO and Perturbation Analysis

Shuhong Wang, *Xi'an Jiaotong University, China*

Jie Qiu, *Xi'an Jiaotong University, China*

Zhen Zhao, *Xi'an Jiaotong University, China*

Xinying Liu, *Xi'an Jiaotong University, China*

Jian Guo Zhu, *University of Technology, Australia*

Youguang Guo, *University of Technology, Australia*

Zhi Wei Lin, *University of Technology, Australia*

IAS08p5

AC Impedance Measurement by Line-to-Line Injected Current

J. Huang, *University of Missouri–Rolla, USA*

K.A. Corzine, *University of Missouri–Rolla, USA*

IAS08p6

Development and Implementation of Delphi Corporation’s Electrical Safe Work Practices (ESWP) Program

Andrew Hernandez, *Delphi Corporation, USA*

Mark Fridline, *Delphi Corporation, USA*

POWER ELECTRONICS DEVICES & COMPONENTS COMMITTEE

Monday, 9 October 8:00 AM – 12:00 PM

Session 9—Novel Power Semiconductor Devices: SiC and More

Session Chair: Jerry Hudgins, *University of Nebraska- Lincoln, USA*

Session Organizer: Enrico Santi, *University of South Carolina, USA*

IAS09p1

Comparison of Static and Switching Characteristics of 1200V 4H-SiC BJT and 1200V Si-IGBT

Yan Gao, *North Carolina State University, USA*

Alex Q. Huang, *North Carolina State University, USA*

Sumi Krishnaswami, *Cree Inc., USA*

Jim Richmond, *Cree Inc., USA*

Anant K. Agarwal, *Cree Inc., USA*

IAS09p2

Recent Advances in High-Voltage, High-Frequency Silicon-Carbide Power Devices

Allen Hefner, *National Institute of Standards and Technology, USA*

Sei-Hyung Ryu, *Cree Inc., USA*

Brett Hull, *Cree Inc., USA*

David Berning, *National Institute of Standards and Technology, USA*

Colleen Hood, *National Institute of Standards and Technology, USA*

Jose M. Ortiz-Rodriguez, *National Institute of Standards and Technology, USA*

Angel Rivera-Lopez, *National Institute of Standards and Technology, USA*

Tam Duong, *National Institute of Standards and Technology, USA*

Adwoa Akuffo, *National Institute of Standards and Technology, USA*

Madelaine Hernandez-Mora, *National Institute of Standards and Technology, USA*

IAS09p3

Generalized Test Bed for High-Voltage, High-Power SiC Device Characterization

David Berning, *National Institute of Standards and Technology, USA*

Allen Hefner, *National Institute of Standards and Technology, USA*

Jose M. Ortiz-Rodriguez, *National Institute of Standards and Technology, USA*

Colleen Hood, *National Institute of Standards and Technology, USA*

Angel Rivera, *National Institute of Standards and Technology, USA*

IAS09p4

A SiC-based Converter as a Utility Interface for a Battery System

Hui Zhang, *The University of Tennessee, USA*

Leon M. Tolbert, *The University of Tennessee, USA; Oak Ridge National Laboratory, USA*

Burak Ozpineci, *Oak Ridge National Laboratory, USA*

Madhu S. Chinthavali, *Oak Ridge National Laboratory, USA*

IAS09p5

Control Power Self-Generation and Sensors Integration in Emitter Turn-off (ETO) Thyristor

Bin Chen, *North Carolina State University, USA*

Alex Q. Huang, *North Carolina State University, USA*

Stanley Atcitty, *North Carolina State University, USA*

IAS09p6

Trench Power JFET with Integrated Junction Barrier Schottky Diode

Yang Gao, *North Carolina State University, USA*

Alex Q. Huang, *North Carolina State University, USA*

Yan Gao, *North Carolina State University, USA*

IAS09p7

A Resonant Drive Circuit for GaN Power MOSFET

B. Wang, *University of South Carolina, USA*

N. Tipirneni, *University of South Carolina, USA*

M. Riva, *Universita' degli Studi di Milano, Italy*
A. Monti, *University of South Carolina, USA*
G. Simin, *University of South Carolina, USA*
E. Santi, *University of South Carolina, USA*

MONDAY AFTERNOON SESSIONS

ELECTRIC MACHINES COMMITTEE

Monday, 9 October 2:00 PM – 6:00 PM

Session 10—Linear Machines and Actuators

Session Chair and Organizer: Elena Lomonova, *Eindhoven University of Technology, Netherlands*

IAS10p1

Micro-Actuator for New Implantable Hearing Device

Hans Bernhard, *Helbling Technik Bern AG, Switzerland*

Christof Stieger, *Inselspital University Hospital of Berne, Switzerland*

IAS10p2

The Cycloid Permanent Magnetic Gear

F. T. Joergensen *Aalborg University, Denmark*

T. O. Andersen, *Aalborg University, Denmark*

P. O. Rasmussen, *Aalborg University, Denmark*

IAS10p3

Ultrasonic Transducer Model for Optimization of a Spinal Tissue Ablation System

John Murphy, *Ecole Polytechnique Fédérale de Lausanne, Switzerland*

Daniel Porto, *Ecole Polytechnique Fédérale de Lausanne, Switzerland*

Yves Perriard, *Ecole Polytechnique Fédérale de Lausanne, Switzerland*

IAS10p4

Comparison of Linear Switched Reluctance Machines for Vertical Propulsion Application: Analysis, Design and Experimental Correlation

N. S. Lobo, *Virginia Polytechnic Institute and State University, USA*

H. S. Lim, *Virginia Polytechnic Institute and State University, USA*

R. Krishnan, *Virginia Polytechnic Institute and State University, USA*

IAS10p5

Model-based Commutation of a Long-Stroke Magnetically Levitated Linear Actuator

C. M. M. van Lierop, *Eindhoven University of Technology, The Netherlands*

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

A. A. H. Damen, *Eindhoven University of Technology, The Netherlands*

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

P. P. J. van den Bosch, *Eindhoven University of Technology, The Netherlands*

A. J. A. Vandenput, *Eindhoven University of Technology, The Netherlands*

IAS10p6

Rapid Eddy Current Loss Calculation for Transverse Flux Linear Motor

Ji-Young Lee, *Korea Electrotechnology Research Institute, Korea*

Do-Hyun Kang, *Korea Electrotechnology Research Institute, Korea*

Jung-Hwan Jang, *Korea Electrotechnology Research Institute, Korea*

Jung-Pyo Hong, *Changwon National University, Korea*

IAS10p7

Design and Bidirectional Motion Control of Double-side LSM with Slotless Iron-cored Stator and PM mover Using Control Parameters Estimation and Discrete System Modeling

S. M. Jang, *Chungnam National University, Korea*

D. J. You, *Chungnam National University, Korea*

ELECTRIC MACHINES COMMITTEE

Monday, 9 October 2:00 PM – 6:00 PM

Session 11—Induction Motors II

Session Chair: Annette Muetze, *University of Wisconsin-Madison, USA*

Session Organizer: Dan Ionel, *A. O. Smith, USA*

IAS11p1

Steady State Modeling of Series-connected Five-phase and Six-phase Two-motor Drives

Emil Levi, *Liverpool John Moores University, UK*
Martin Jones, *Liverpool John Moores University, UK*
Slobodan N. Vukosavic, *Liverpool John Moores University, UK*
Hamid A. Toliyat, *Texas A&M University, USA*

IAS11p2

Universal Induction Motor Model with Low-to-High Frequency Response Characteristics

Behrooz Mirafzal, *Rockwell Automation, USA*
Gary Skibinski, *Rockwell Automation, USA*
Ranga Tallam, *Rockwell Automation, USA*
David Schlegel, *Rockwell Automation, USA*
Richard Lukaszewski, *Rockwell Automation, USA*

IAS11p3

Efficiency Analysis of PWM Inverter-fed Three-Phase and Dual Three-Phase Induction Machines

A. Boglietti, *Politecnico di Torino, Italy*
R. Bojoi, *Politecnico di Torino, Italy*
A. Cavagnino, *Politecnico di Torino, Italy*
A. Tenconi, *Politecnico di Torino, Italy*

IAS11p4

Experimental Uncertainty in Estimation of the Losses and Efficiency of Induction Motors

Wenping Cao, *University of Teesside, UK*
K. J. Bradley, *University of Nottingham, UK*
H. Zhang, *University of Nottingham, UK*
I. French, *University of Teesside, UK*

IAS11p5

A Sensorless Adaptive Stator Winding Temperature Estimator for Mains-fed Induction Machines with Continuous Operation, Periodic Duty Cycles

Zhi Gao, *Georgia Institute of Technology, USA*
Thomas G. Habetler, *Georgia Institute of Technology, USA*
Ronald G. Harley, *Georgia Institute of Technology, USA*
Roy S. Colby, *Schneider Electric, USA*

IAS11p6

Space-Vector State Model of Induction Machines Including Rotor Slotting Effects: Towards a New Category of Observers

Maurizio Cirrincione, *Université de Technologie de Belfort-Montbéliard, France*
Marcello Pucci, *Institute on Intelligent Systems for the Automation, Italy*
Giansalvo Cirrincione, *University of Picardie-Jules Verne, France*
Abdellatif Miraoui, *Université de Technologie de Belfort-Montbéliard (UTBM), France*

IAS11p7

Modeling of a Dual Stator Winding Induction Machine Including the Effect of Main Flux Linkage Magnetic Saturation

Zhiqiao Wu, *Tennessee Technological University, USA*
Olorunfemi Ojo, *Tennessee Technological University, USA*

INDUSTRIAL DRIVES COMMITTEE

Monday, 9 October 2:00 PM – 6:00 PM

Session 12—PM Machine Drives I

Session Chair: Annette Muetze, *University of Wisconsin-Madison, USA*

Session Organizer: F. Briz del Blanco, *University of Oviedo, Spain*

IAS12p1

Fault Tolerant, Brushless DC Motor Drive for Electro-Hydraulic Actuation System in Aerospace Application

Xiaoyan Huang, *University of Nottingham, UK*
Keith Bradley, *University of Nottingham, UK*
Andrew Goodman, *University of Nottingham, UK*
Chris Gerada, *University of Nottingham, UK*
Pat Wheeler, *University of Nottingham, UK*
Jon Clare, *University of Nottingham, UK*
Chris Whitley, *Smiths Aerospace Actuation Ltd., UK*

IAS12p2

Robust Magnetic Polarity Estimation for Initialization of PM Synchronous Machines with Near Zero Saliency

Dejan Raca, *University of Wisconsin-Madison, USA*
Michael C. Harke, *University of Wisconsin-Madison, USA*

Robert D. Lorenz, *University of Wisconsin–Madison, USA*

IAS12p3

Dual Inverter Strategy for High Speed Operation of HEV Permanent Magnet Synchronous Motor

Joon Sung Park, *Postech University, S. Korea*

Kwanghee Nam, *Postech University, S. Korea*

IAS12p4

Advantages of Inset PM Machines for Zero-speed Sensorless Position Detection

Nicola Bianchi, *University of Padova, Italy*

Silverio Bolognani, *Hyundai Motor Company, Korea*

Ji–Hoon Jang, *Seoul National University, Korea*

Seung–Ki Sul, *Seoul National University, Korea*

IAS12p5

Output Maximization Control for Wind Generation System with Interior Permanent Magnet Synchronous Generator

Shigeo Morimoto, *Osaka Prefecture University, Japan*

Hajime Kato, *Osaka Prefecture University, Japan*

Masayuki Sanada, *Osaka Prefecture University, Japan*

Yoji Takeda, *Osaka Prefecture University, Japan*

METALS INDUSTRY COMMITTEE

Monday, 9 October 2:00 PM – 6:00 PM

Session 13—Strip Control, Wire Drawing, Slab Quality

Session Chair: Thomas J. Dionise, *Eaton Electrical, USA*

Session Organizer: S. Douglas Cromey, *Novelis Inc., Canada*

IAS13p1

Application of Self Organizing Maps to Predict Centerline Segregation in Steel Slabs

Ana Díaz, *Arcelor España, Spain*

Luis Sancho, *Arcelor España, Spain*

Eugenia Díaz, *University of Oviedo, Spain*

Antonio López, *University of Oviedo, Spain*

José A. Sirgo, *University of Oviedo, Spain*

IAS13p2

Measurement of Centerline Segregation in Steel Slabs

José A. Sirgo, *University of Oviedo, Spain*

Rubén Campo, *University of Oviedo, Spain*

Antonio López, *University of Oviedo, Spain*

Ana Díaz, *Arcelor España, Spain*

Luis Sancho, *Arcelor España, Spain*

IAS13p3

Compensation for Uneven Temperature in Flatness Control Systems for Steel Strips

Rubén Usamentiaga, *University of Oviedo, Spain*

Daniel F. García, *University of Oviedo, Spain*

Diego González, *University of Oviedo, Spain*

Julio Molleda, *University of Oviedo, Spain*

IAS13p4

A Low-Cost System for Flatness Monitoring in Metal Processes

J. M. Lopera, *University of Oviedo, Spain*

P. J. Villegas, *University of Oviedo, Spain*

F. F. Linera, *University of Oviedo, Spain*

F. Hernández-Magadan, *University of Oviedo, Spain*

J. Martín-Ramos, *University of Oviedo, Spain*

J. Díaz, *University of Oviedo, Spain*

G. Vecino, *Aceralia-GrupoArcelor, Spain*

J. L. Rendueles, *Aceralia-GrupoArcelor, Spain*

IAS13p5

On-Line Torque and Drawing Force Estimation in Wire Drawing Process from Electric Motor Variables

Marcelo M. Stopa, *Centro Federal de Educação Tecnológica de Minas Gerais, Brazil*

Braz J. Cardoso Filho, *Universidade Federal de Minas Gerais, Brazil*

INDUSTRIAL POWER CONVERTER COMMITTEE

Monday, 9 October 2:00 PM – 6:00 PM

Session 14—Rectifiers

Session Chair: S. Bhattacharya, *North Carolina State University, USA*

Session Organizer: Klumpner Christian, *University of Nottingham, UK*

IAS14p1

Unified One-Cycle Controller for Bidirectional Boost Power Factor Correction Rectifiers

Aluisio A. M. Bento, *Universidade Federal de Campina Grande, Brazil*

Euzeli C. dos Santos Jr., *Universidade Federal de Campina Grande, Brazil*

Edison R. C. da Silva, *Universidade Federal de Campina Grande, Brazil*

IAS14p2

Damping of PWM Current-Source Rectifier Using a Hybrid Combination Approach

Y. W. Li, *Ryerson University, Canada*

B. Wu, *Ryerson University, Canada*

N. Zargari, *Rockwell Automation, Canada*

J. Wiseman, *Rockwell Automation, Canada*

D. Xu, *Ryerson University, Canada*

IAS14p3

Active Rectifier Inner Current Loop without Reference Frame Transformations in Feedback

Eric Seymour, *Advanced Energy Industries, USA*

Annabelle Pratt, *Advanced Energy Industries, USA*

IAS14p4

Control of Three-Phase Power Factor Corrected Rectifier in Balanced and Unbalanced Systems

Jun Wen, *University of California–Irvine, USA*

Keyue Smedley, *University of California–Irvine, USA*

IAS14p5

Ship Propulsion AC–DC Conversion System Modeling and Design

Giovanna Oriti, *Power Engineering Consultant, USA*

Rob M. Cuzner, *DRS Power & Control Technologies, Inc., USA*

IAS14p6

A 20-kW, 10-kHz, Single-Phase Multilevel Active-Front-End Converter with Reactive Power Control

Konstantin P. Louganski, *Jinju National University*

Jih-Sheng Lai, *Virginia Polytechnic Institute and State University, USA*

INDUSTRIAL POWER CONVERTER COMMITTEE

Monday, 9 October 2:00 PM – 6:00 PM

Session 15—PWM and Control Techniques

Session Chair: Yaow-Ming Chen, *National Chung-Cheng University, Taiwan*

Session Organizer: Yen-Shin Lai, *National Taipei University of Technology, Taiwan*

IAS15p1

Math Demonstration and Practical Application of Fundamental Voltage Amplitude Linear Output -based SVPWM Overmodulation Control

Liwei Zhang, *Beijing Jiaotong University, China*

Xuhui Wen, *Chinese Academy of Sciences, China*

Jun Liu, *Chinese Academy of Sciences, China*

Trillion Q. Zheng, *Beijing Jiaotong University, China*

IAS15p2

Extra Wide Input Voltage Range and High Efficiency DC–DC Converter Using Hybrid Modulation

Xinke Wu, *Zhejiang University, PR China*

Wei Lu, *Zhejiang University, PR China*

Junming Zhang, *Zhejiang University, PR China*

Zhaoming Qian, *Zhejiang University, PR China*

IAS15p3

Cascaded Three-Level Inverters with Synchronized Space-Vector Modulation

V. Oleschuk, *Academy of Sciences of Moldova, Moldova*

F. Profumo, *Politecnico di Torino, Italy*

A. Tenconi, *Politecnico di Torino, Italy*

R. Bojoi, *Politecnico di Torino, Italy*

A. M. Stankovic, *Northeastern University, USA*

IAS15p4

Multilevel Operation of a Dual Two-Level Inverter with Power Balancing Capability

Gabriele Grandi, *University of Bologna, Italy*

Claudio Rossi, *University of Bologna, Italy*

Alberto Lega, *University of Bologna, Italy*
Domenico Casadei, *University of Bologna, Italy*

IAS15p5

A Hybrid 2/3 Level Converter with Minimum Switch Count
Liviu Mihalache, *Power Conversion Technologies Inc., USA*

IAS15p6

Dual Z-Source Inverter with Three-Level Reduced Common Mode Switching
F. Gao, *Nanyang Technological University, Singapore*
P. C. Loh, *Nanyang Technological University, Singapore*
F. Blaabjerg, *Aalborg University, Denmark*
D. M. Vilathgamuwa, *Nanyang Technological University, Singapore*

IAS15p7

Pulse-Width Modulation for Five-Phase Converters Based on Device Turn-On Times
Olorunfemi Ojo, *Tennessee Technological University, USA*
Gan Dong, *Tennessee Technological University, USA*
Zhiqiao Wu, *Tennessee Technological University, USA*

INDUSTRIAL AUTOMATION AND CONTROL COMMITTEE

Monday, 9 October 2:00 PM – 6:00 PM

Session 16—Intelligent Controls

Session Chair and Organizer: Donald Zinger, *Northern Illinois University, USA*

IAS16p1

Bio-inspired Algorithms for the Design of Multiple Optimal Power System Stabilizers: SPPSO and BFA
Tridib K. Das, *University of Missouri–Rolla, USA*
Ganesh K. Venayagamoorthy, *University of Missouri–Rolla, USA*

IAS16p2

Fault-Tolerant Optimal Neurocontrol for a Static Synchronous Series Compensator Connected to a Power Network
Wei Qiao, *Georgia Institute of Technology, USA*
Ronald G. Harley, *Georgia Institute of Technology, USA*

IAS16p3

Power System Control with an Embedded Neural Network in Hybrid System Modeling
Seung-Mook Baek, *Yonsei University, Korea*
Jung-Wook Park, *Yonsei University, Korea*
Ganesh K. Venayagamoorthy, *University of Missouri–Rolla, USA*

IAS16p4

Automated Online Design of Robust Speed Digital Controllers for Variable Speed Drives
Nnamdi Okaeme, *University of Nottingham, UK*
Pericle Zanchetta, *University of Nottingham, UK*
Mark Sumner, *University of Nottingham, UK*

IAS16p5

Intelligent Tool for Determining the True Harmonic Current Contribution of a Customer in a Power Distribution Network

J. Mazumdar, *Georgia Institute of Technology, USA*
R. Harley, *Georgia Institute of Technology, USA*
F. Lambert, *Georgia Institute of Technology, USA*
G. K. Venayagamoorthy, *University of Missouri–Rolla, USA*
M. L. Page, *Georgia Power Company, USA*

IAS16p6

Real-Time Implementation of a Dual Function Neuron-based Wide Area SVC Damping Controller
Sandhya R. Jetti, *University of Missouri–Rolla, USA*
Ganesh K. Venayagamoorthy, *University of Missouri–Rolla, USA*

PRODUCTION AND APPLICATION OF LIGHT COMMITTEE

Monday, 9 October 2:00 PM – 6:00 PM

Session 17—Special Session on Displays (MSDAD Committee)

Session Chair and Organizer: Horoaki Ikeda, *IKEDA Technologies, Japan*

IAS17p1

Progress in Large Screen Plasma Display and New Approach for Extra Large Screen System with Plasma Tube Technology

Kenji Awamoto, *Fujitsu Laboratories Ltd., Japan*
Manabu Ishimoto, *Fujitsu Laboratories Ltd., Japan*
Hitoshi Hirakawa, *Fujitsu Laboratories Ltd., Japan*
Tsutae Shinoda, *Fujitsu Laboratories Ltd., Japan; University of Tokyo, Japan*

IAS17p2

Wide Color Gamut Displays Using LED Backlight—Signal Processing Circuits

Hiroaki Sugiura, *Mitsubishi Electric Corporation, Japan*
Hideyuki Kaneko, *Mitsubishi Electric Corporation, Japan*
Shuichi Kagawa, *Mitsubishi Electric Corporation, Japan*
Jun Someya, *Mitsubishi Electric Corporation, Japan*
Hideki Tanizoe, *Mitsubishi Electric Corporation, Japan*

IAS17p3

Flexible Displays for Digital TV Broadcasting

Fumio Sato, *NHK Science and Technical Research Laboratories, Japan*
Taiichiro Kurita, *NHK Science and Technical Research Laboratories, Japan*
Shizuo Tokito, *NHK Science and Technical Research Laboratories, Japan*
Hideo Fijikake, *NHK Science and Technical Research Laboratories, Japan*
Hiroshi Kikuchi, *NHK Science and Technical Research Laboratories, Japan*
Youji Inoue, *NHK Science and Technical Research Laboratories, Japan*

IAS17p4

White Organic Light-Emitting Diodes (WOLEDs)

P. Destruel, *Université Paul Sabatier, France*
G. Ablart, *Université Paul Sabatier, France*
P. Jolinat, *Université Paul Sabatier, France*
I. Séguy, *Université Paul Sabatier, France*
J. Farenc, *Université Paul Sabatier, France*

IAS17p5

Driver's Perception of Images in Automotive Multicolor Display Systems

Shigeru Okabayashi, *Meijo University, Japan*
Hiromasa Miura, *Meijo University, Japan*
Noboru Sugie, *Meijo University, Japan*
Toyohiko Hatada, *Tokyo Institute of Polytechnics, Japan*

POWER SYSTEM ENGINEERING COMMITTEE

Monday, 9 October 2:00 PM – 6:00 PM

Session 18—Power Systems Analysis / Power Quality

Session Chair: Peter Sutherland, *General Electric, USA*

Session Organizer: Chris Melhorn, *Electrotek, USA*

IAS18p1

Effect of Rooftop Exposure in Direct Sunlight on Conduit Ambient Temperatures

David Brender, *Copper Development Association Inc., USA*
Travis Lindsey, *Travis Lindsey Consulting Services, Inc., USA*

IAS18p2

A Constant Gain Adaptive Observer for Speed and Resistances Identification

Xiaohong Nian, *Zhuzhou Electric Locomotive Research Institute, PR China; Central South University, PR China*
Jian Wang, *Zhuzhou Electric Locomotive Research Institute, PR China; Central South University, PR China*
Weihua Gui, *Central South University, PR China*
Jirong Huang, *Zhuzhou Electric Locomotive Research Institute, PR China; Central South University, PR China*
Zhiwu Huang, *Central South University, PR China*

IAS18p3

Performance of a Distribution Intelligent Universal Transformer under Source and Load Disturbances

Jih-Sheng Lai, *Virginia Polytechnic Institute and State University, USA*
Arindam Maitra, *EPRI-Solutions, USA*
Frank Goodman, *Electric Power Research Institute, USA*

IAS18p4

Retrofit of Power Centers within an Airport

D. S. Guenther, *CH2M Hill, USA*
S. D. Bergstrom, *Harris Group Inc., USA*

IAS18p5

Real-Time Implementation and Testing of a Wavelet-Controlled Dynamic Voltage Restorer System

S. A. Saleh, *Memorial University of Newfoundland, Canada*

M. A. Rahman, *Memorial University of Newfoundland, Canada*

IAS18p6

Transient Behavior of Three-phase Shell Transformers in a Distribution Feeder

Vinod Simha, *The University of Texas at Arlington*

Wei-Jen Lee, *The University of Texas at Arlington*

POWER ELECTRONICS DEVICES & COMPONENTS COMMITTEE

Monday, 9 October 2:00 PM – 6:00 PM

Session 19—Power Modules and Thermal Issues

Session Chair: Tamás Ruzsányi, *Gauz Transelektro Traction Electrics, Hungary*

Session Organizer: Jean-Pierre Keradec, *LEG, France*

IAS19p1

Characterization of a Multilevel HV-IGBT Module for Distribution Applications

Jih-Sheng Lai, *Virginia Polytechnic Institute and State University, USA*

Allen Hefner, *National Institute of Standards and Technology, USA*

Arindam Maitra, *EPRI-Solutions, USA*

Frank Goodman, *Electric Power Research Institute, USA*

IAS19p2

Junction Temperature Prediction of a Multiple-Chip IGBT Module under DC Condition

Lixiang Wei, *Rockwell Automation, USA*

Russ J. Kerkman, *Rockwell Automation, USA*

Richard A. Lukaszewski, *Rockwell Automation, USA*

Brian P. Brown, *Rockwell Automation, USA*

Neil Gollhardt, *Rockwell Automation, USA*

Bruce W. Weiss, *Rockwell Automation, USA*

IAS19p3

A New 1200 V Converter-Inverter-Brake (CIB) Module Family Featuring CSTBT Chips and a New 1200 V High Voltage Integrated Circuit (HVIC)

John Donlon, *Powerex, Inc., USA*

Eric Motto, *Powerex, Inc., USA*

Marco Honsberg, *Mitsubishi Electric Europe BV, Germany*

Mitsuharu Tabata, *Mitsubishi Electric Corporation, Japan*

Hiroshi Sakata, *Mitsubishi Electric Corporation, Japan*

IAS19p4

Novel Dual-side Thermal Interfacing of IPM for Elevated-temperature Applications

Jie Chang, *Florida State University, USA*

Changming Liao, *Florida State University, USA*

IAS19p5

Expanded Thermal Model for IGBT Modules

B. Lu, *University of Nebraska, USA*

J. L. Hudgins, *University of Nebraska, USA*

A. T. Bryant, *University of Warwick, UK*

E. Santi, *University of South Carolina, USA*

P. R. Palmer, *Cambridge University, UK*

IAS19p6

Electro-Thermal Design of a Heat Pipe -based High Power Voltage Source Converter Using Emitter Turn-Off Thyristor

Karan Tewari, *North Carolina State University, USA*

Shoubhik R. Doss, *North Carolina State University, USA*

Bin Chen, *North Carolina State University, USA*

Alex Q. Huang, *North Carolina State University, USA*

Subhashish Bhattacharya, *North Carolina State University, USA*

Zhong Du, *North Carolina State University, USA*

IAS19p7

Fabrication and Thermal Performance of Yhin Flat Heat Pipes with Innovative Sintered Copper Wick Structure

N. Popova, *INPG, France*

C. Schaeffer, *INPG, France*

Y. Avenas, *INPG, France*

G. Kapelski, *INPG, France*

TUESDAY MORNING SESSIONS

Preliminary Program—Subject to Change

ELECTRIC MACHINES COMMITTEE

Tuesday, 10 October 8:00 AM – 12:00 PM

Session 20—Induction Motors I

Session Chair: Sandy Smith, *University of Manchester, UK*

Session Organizer: Aldo Boglietti, *Politecnico di Torino, Italy*

IAS20p1

Analysis of the Endwinding Cooling Effects in TEFC Induction Motors

A. Boglietti, *Politecnico di Torino, Italy*

A. Cavagnino, *Politecnico di Torino, Italy*

IAS20p2

Novel Direct Field and Direct Torque Control of Six-Phase Induction Machine with Special Phase Current Waveform

Yong-le Ai, *University of Stellenbosch, South Africa*

Maarten J. Kamper, *University of Stellenbosch, South Africa*

Abraham D. Le Roux, *University of Stellenbosch, South Africa*

IAS20p3

Impact of PWM Schemes on Induction Motor Losses

Y. Wu, *Cambridge University, UK*

R. A. McMahon *Cambridge University, UK*

Y. Zhan, *University of Alberta, Canada*

A. M. Knight, *University of Alberta, Canada*

IAS20p4

A Multi-Sliced Finite Element Model for Induction Machines Incorporating Inter-Bar Current

Piotr J. Holik, *The University of Glasgow, UK*

David G. Dorrell, *The University of Glasgow, UK*

Patrick Lombard, *CEDRAT, France*

Hans-Jørgen Thouggaard, *Grundfos Management A/S, Denmark*

Finn Jensen, *Grundfos Management A/S, Denmark*

IAS20p5

Computation of Core Losses in Electrical Machines Using Improved Models for Laminated Steel

D. M. Ionel, *A.O. Smith Corp., USA*

M. Popescu, *The University of Glasgow, UK*

M. McGilp, *The University of Glasgow, UK*

T. J. E. Miller *The University of Glasgow, UK*

S. Dellinger, *A.O. Smith Corp., USA*

R. J. Heideman, *A.O. Smith Corp., USA*

IAS20p6

Vibration Suppression of a Flexible Shaft with a Simplified Bearingless Induction Motor Drive

Akira Chiba, *Tokyo University of Science, Japan*

Tadashi Fukao, *iTSCOM, Japan*

M. Azizur Rahman, *Memorial University of Newfoundland, Canada*

IAS20p7

Vibratory and Acoustic Behavior of Induction Traction Motors, Machine Design Improvement

V. Lanfranchi, *Université de Technologie de Compiègne, France*

A. Ait-Hammouda, *Université de Technologie de Compiègne, France*

G. Friedrich, *Université de Technologie de Compiègne, France*

M. Hecquet, *Ecole Centrale de Lille, France*

A. Randria, *Alstom Transport, France*

APPLICATION INDUSTRY COMMITTEE

Tuesday, 10 October 8:00 AM – 12:00 PM

Session 21—Low-Cost Motor Drive Systems and Applications

Session Chair and Organizer: Zheng Zhang, *Whirlpool Corporation, USA*

IAS21p1

A New Low-Cost Hybrid Switched Reluctance Motor for Adjustable-Speed Pump Applications

K. Y. Lu, *Aalborg University, Denmark*

P. O. Rasmussen, *Aalborg University, Denmark*

S. J. Watkins, *Aalborg University, Denmark*

F. Blaabjerg, *Aalborg University, Denmark*

IAS21p2

Chaoization of a Single-Phase Induction Motor for Washing Machines

S. Ye, *The University of Hong Kong, China*
K. T. Chau, *The University of Hong Kong, China*
Shuangxia Niu, *The University of Hong Kong, China*

IAS21p3

A Novel Starting Method of the SPM-Type BLDC Motors without Position Sensor for Reciprocating Compressor

Dae-kyong Kim, *Korea Electronics Technology Institute, Korea; Hanyang University, Korea*
Kwang-woon Lee, *Samsung Electronics, Korea*
Byung-taek Kim, *Kunsan University, Korea*
Byung-il Kwon, *Hanyang University, Korea*

IAS21p4

Sensorless Direct Field-oriented Control of Three-Phase Induction Motor Drives for Low Cost Applications

R. Bojoi, *Politecnico di Torino, Italy*
P. Guglielmi, *Politecnico di Torino, Italy*
G. Pellegrino, *Politecnico di Torino, Italy*

IAS21p5

Sliding Mode Sensorless Control of PM Synchronous Motor for Direct-Driven Washing Machines

Song Chi, *The Ohio State University, USA*
Longya Xu, *The Ohio State University, USA*
Zheng Zhang, *Whirlpool Corporation, USA*

INDUSTRIAL DRIVES COMMITTEE

Tuesday, 10 October 8:00 AM – 12:00 PM

Session 22—Drives I

Session Chair and Organizer: Mahesh Swamy, *Yaskawa Electric, USA*

IAS22p1

Common Mode and Differential Mode Analysis of Three Phase Cables for PWM AC Drives

Gary Skibinski, *Rockwell Automation, USA*
Rangarajan Tallam, *Rockwell Automation, USA*
Robert Reese, *Rockwell Automation, USA*
Brian Buchholz, *Rockwell Automation, USA*
Richard Lukaszewski, *Rockwell Automation, USA*

IAS22p2

Effects and Compensation of Dead-time and Minimum Pulse-width Limitations in Two-level PWM Voltage Source Inverters

Brian A. Welchko, *General Motors Advanced Technology Center, USA*
Steven E. Schulz, *General Motors Advanced Technology Center, USA*
Silva Hiti, *General Motors Advanced Technology Center, USA*

IAS22p3

Accuracy and Bandwidth Limits of Carrier Signal Injection-based Sensorless Control Methods

Pablo García, *University of Oviedo, Spain*
Fernando Briz, *University of Oviedo, Spain*
Michael W. Degner, *Ford Motor Company, USA*
David Diaz-Reigosa, *University of Oviedo, Spain*

IAS22p4

Identification of the Mechanical Parameters for Servo Drive

Tae-Suk Kwon, *Seoul National University, Korea*
Seung-Ki Sul, *Seoul National University, Korea*
Hiroshi Nakamura, *Yaskawa Electric Corporation, Japan*
Kazuhiro Tsuruta, *Kyushu Sangyo University, Japan*

IAS22p5

A Dead Time Compensation Method in Voltage-fed PWM Inverter

Ho-Seon Ryu, *Korea Electric Power Research Institute, Korea*
Ick-Hun Lim, *Korea Electric Power Research Institute, Korea*
Joo-Hyun Lee, *Korea Electric Power Research Institute, Korea*
Seon-Hwan Hwang, *Pusan National University, Korea*
Jang-Mok Kim, *Pusan National University, Korea*

IAS22p6

Disturbance Torque and Motion State Estimation Using Low Resolution Position Interfaces

Tod R. Tesch, *Ballard Power Systems, USA*
Robert D. Lorenz, *University of Wisconsin–Madison, USA*

IAS22p7

Why Do Incremental Encoders Do a Reasonably Good Job in Electrical Drives with Digital Control?

Ralph M. Kennel, *Wuppertal University, Germany*

MINING INDUSTRY COMMITTEE

Tuesday, 10 October 8:00 AM – 12:00 PM

Session 23—Safety and Productivity

Session Chair: Jorge Pontt, *Technical University Federico Santa Maria, Chile*

Session Organizer: John J Sammarco, *National Institute for Occupational Health and Safety, USA*

IAS23p1

A Method for Estimating the Probability of Lightning Causing a Methane Ignition in an Underground Mine

H. K. Sacks, *Virginia Polytechnic Institute and State University, USA*

Thomas Novak, *Virginia Polytechnic Institute and State University, USA*

IAS23p2

Efficient Artificial Lighting System for Surface Mine Haul Roads

M. Aruna, *National Institute of Technology Karnataka, India*

R. Y. UdayKumar, *National Institute of Technology Karnataka, India*

IAS23p3

Safety, Reliability and Economics in Mining Systems

Jorge Pontt, *UTFSM, Chile*

José Rodríguez, *UTFSM, Chile*

Juan Dixon, *Pontificia Universidad, Chile*

IAS23p4

Fuzzy Modeling Approaches for the Prediction of Machine Utilization in Hard Rock Tunnel Boring Machines

Marcelo G. Simões, *Colorado School of Mines, USA*

Taehong Kim, *Parsons Brinckerhoff Quade & Douglas, Inc., USA*

IAS23p5

Through-the-Earth, Two-Way, Mine Emergency, Voice Communication Systems

Thomas D. Barkand, *U.S. Department of Labor, USA*

Nicholas W. Damiano, *U.S. Department of Labor, USA*

Wesley A. Shumaker, *U.S. Department of Labor, USA*

INDUSTRIAL POWER CONVERTER COMMITTEE

Tuesday, 10 October 8:00 AM – 12:00 PM

Session 24—Multilevel Converters

Session Chair: Edison da Silva, *University of Campina Grande, Brazil*

Session Organizer: Lixiang Wei, *Rockwell Automation-Allen Bradley, USA*

IAS24p1

A Neural Point Voltage Balancing Method for Multi-Level GTO Inverters

Lazhar Ben-Brahim, *Qatar University, Qatar*

IAS24p2

A Multilevel Modular Capacitor Clamped DC–DC Converter

Faisal H. Khan, *The University of Tennessee, USA*

Leon M. Tolbert, *The University of Tennessee, USA*

IAS24p3

Multilevel Cascade Inverter with Voltage and Current Output Regulated Using a Passivity-based Controller

H. Miranda, *CIEP–FI–UASLP, Mexico*

V. Cárdenas, *CIEP–FI–UASLP, Mexico*

G. Espinosa-Pérez, *DEPFI–UNAM, Mexico*

D. Noriega-Pineda, *DEPFI–UNAM, Mexico*

IAS24p4

Multisource DC–DC Converter for the Supply of Hybrid Multilevel Converter

S. Mariethoz, *University of Nottingham, UK*

A. Rufer, *Ecole Polytechnique Fédérale de Lausanne, Switzerland*

IAS24p5

A Simple and Reliable PWM Synchronization and Phase-Shift Method for Cascaded H-Bridge Multilevel Inverters

Based on a Standard Serial Communication Protocol

Young-Min Park, *Hyundai Heavy Industries Company, Korea; Korea University, Korea*

Han-Seong Yoo, *Hyundai Heavy Industries Company, Korea*

Hyun-Won Lee, *Hyundai Heavy Industries Company, Korea*
Myung-Gil Jung, *Hyundai Heavy Industries Company, Korea*
Se-Hyun Lee, *Hyundai Heavy Industries Company, Korea*
Choong-Dong Lee, *Hyundai Heavy Industries Company, Korea*
Sang-Bin Lee, *Korea University, Korea*
Ji-Yoon Yoo, *Korea University, Korea*

INDUSTRIAL POWER CONVERTER COMMITTEE

Tuesday, 10 October 8:00 AM – 12:00 PM

Session 25—Utility Interface and Power Quality I

Session Chair: Jinjun Liu, *Xian Jiaotong University, China*

Session Organizer: Sewan Choi, *Seoul National University of Tech., Korea*

IAS25p1

A Cost Effective, Three-Phase Grid-Connected Inverter with Maximum Power Point Tracking

Yang Chen, *University of California–Irvine, USA*

Keyue Smedley, *University of California–Irvine, USA*

Jack Brouwer, *University of California–Irvine, USA*

IAS25p2

Dynamic Behavior of a 21-Level (Line-to-Line) BTB System Based on Series Connection of Sixteen Converter-Cells under a Single-Line-to-Ground Fault Condition: Experimental Verification by a 200-V, 20-kW Laboratory System

Makoto Hagiwara, *Tokyo Institute of Technology, Japan*

Keiji Wada, *Tokyo Institute of Technology, Japan*

Hideaki Fujita, *Tokyo Institute of Technology, Japan*

Hirofumi Akagi, *Tokyo Institute of Technology, Japan*

IAS25p3

A Transformerless Two-Level Inverter -based Static Var Generator with Multiple Functions in Medium Voltage Application

Kuang Li, *Xi'an Jiaotong University, China*

Jinjun Liu, *Xi'an Jiaotong University, China*

Guopeng Zhao, *Xi'an Jiaotong University, China*

Zhaoan Wang, *Xi'an Jiaotong University, China*

IAS25p4

Linear and Nonlinear Control of Distributed Power Generation Systems

Adrian V. Timbus, *Aalborg University, Denmark*

Remus Teodorescu, *Aalborg University, Denmark*

Frede Blaabjerg, *Aalborg University, Denmark*

Marco Liserre, *Polytechnic of Bari, Italy*

Pedro Rodriguez, *Technical University of Catalonia, Spain*

IAS25p5

Design of an Impulse Commutation Bridge for the Solid-State Transfer Switch

Po-Tai Cheng, *National Tsing Hua University, Taiwan*

Yu-Hsing Chen, *National Tsing Hua University, Taiwan*

IAS25p6

Design and Implementation of a Utility Interactive Converter for Small Distributed Generation

Ruben Barros Godoy, *Federal University of Mato Grosso do Sul, Brazil*

Helder Zandonadi Maia, *Federal University of Mato Grosso do Sul, Brazil*

Faete Jacques Teixeira Filho, *Federal University of Mato Grosso do Sul, Brazil*

Luigi Galotto Júnior, *Federal University of Mato Grosso do Sul, Brazil*

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

Gilberto Shimada Tatibana, *Federal University of Mato Grosso do Sul, Brazil*

IAS25p7

An ETO Thyristor and Modular H-Bridge PWM Converter-based 4.5 MVA STATCOM: 480 V/500 A Transformerless Grid-Connected Experimentation

Chong Han, *North Carolina State University, USA*

Bin Chen, *North Carolina State University, USA*

Karan Tewari, *North Carolina State University, USA*

Wei Liu, *North Carolina State University, USA*

Alex Q. Huang, *North Carolina State University, USA*

Mike Ingram, *Tennessee Valley Authority, USA*

Abdel-Aty Edris, *Electric Power Research Institute, USA*

INDUSTRIAL AUTOMATION AND CONTROL COMMITTEE

Tuesday, 10 October 8:00 AM – 12:00 PM

Session 26—Advanced Controls

Session Chair: D. Kankam, *NASA Glenn Research Center, USA*

Session Organizer: M. N. Uddin,

IAS26p1

AC Voltage Regulation of a Bidirectional High-Frequency Link Converter Using a Deadbeat Controller

L. S. Toh, *Universiti Teknologi Malaysia, Malaysia*

M. Z. Ramli, *Universiti Teknologi Malaysia, Malaysia*

Z. Salam, *Universiti Teknologi Malaysia, Malaysia*

Malik E. Elbuluk, *University of Akron, USA*

IAS26p2

Study on Grid Connected Inverter Used in High Power Wind Generation System

Qiang Zhang, *Hefei University of Technology, China*

Lewei Qian, *Florida State University, USA*

Chongwei Zhang, *Hefei University of Technology, China*

David Cartes, *Florida State University, USA*

IAS26p3

Bayesian Network Supervision on Fault Tolerant Fuel Cells

Luis A.M. Riascos, *University of Sao Paulo, Brazil*

Fábio G. Cozman, *University of Sao Paulo, Brazil*

Paulo E. Miyagi, *University of Sao Paulo, Brazil*

Marcelo G. Simões, *Colorado School of Mines, USA*

IAS26p4

An Improved Adaptive Detection Method for Power Quality Improvement

Lewei Qian, *Florida State University, USA*

David Cartes, *Florida State University, USA*

Hui Li, *Florida State University, USA*

IAS26p5

Real-Time Implementation of a STATCOM on a Wind Farm Equipped with Doubly-fed Induction Generators

Wei Qiao, *Georgia Institute of Technology, USA*

Ganesh K. Venayagamoorthy, *University of Missouri–Rolla, USA*

Ronald G. Harley, *Georgia Institute of Technology, USA*

PRODUCTION AND APPLICATION OF LIGHT COMMITTEE

Tuesday, 10 October 8:00 AM – 12:00 PM

Session 27—Ballasts for HID Lamps #1

Session Chair: Walter Kaiser, *Escola Politécnica da Universidade de São Paulo, Brasil*

Session Organizer: Georges Zissis, *University Toulouse 3, France*

IAS27p1

Electronic Ballast to Supply HID Lamps Based on Differential Connection of Two DC–DC Converters

Murilo Cervi, *Federal University of Santa Maria, Brazil*

Tiago Bandeira Marchesan, *Federal University of Santa Maria, Brazil*

Alexandre Campos, *Federal University of Santa Maria, Brazil*

Ricardo Nederson do Prado, *Federal University of Santa Maria, Brazil*

IAS27p2

An Improved Dimmable Electronic Ballast with T-type Resonant Inverter at Very High Frequency

Weixia Liang, *Zhejiang University, China*

Min Chen, *Zhejiang University, China*

Conglei Shao, *Zhejiang University, China*

Yifeng Jiang, *Zhejiang University, China*

Zhaoming Qian, *Zhejiang University, China*

IAS27p3

Dimming Characteristics of Large Scale, High-Intensity-Discharge (HID) Lamp Lighting Networks using a Central, Energy Saving System

Wei Yan, *City University of Hong Kong, China*

S. Y. R. Hui, *City University of Hong Kong, China*

IAS27p4

A Constant Power Control Strategy of Electronic Ballast for HID Lamp

Jianbing Xu, *Zhejiang University, China*
Min Chen, *Zhejiang University, China*
Ting Zhang, *Zhejiang University, China*
Zhaoming Qian, *Zhejiang University, China*

IAS27p5

Power Control Strategy of Electronic Ballast for HID Lamps

Min Chen, *Zhejiang University, China*
Jianbing Xu, *Zhejiang University, China*
Weixia Liang, *Zhejiang University, China*
Zhaoming Qian, *Zhejiang University, China*

IAS27p6

A Family of Electronic Ballasts Integrating Power Factor Correction and Power Control Stages to Supply HPS Lamps

Tiago Bandeira Marchesan, *Universidade Federal de Santa Maria, Brazil*
Murilo Cervi, *Universidade Federal de Santa Maria, Brazil*
Alexandre Campos, *Universidade Federal de Santa Maria, Brazil*
Ricardo Nederson do Prado, *Universidade Federal de Santa Maria, Brazil*

IAS27p7

Investigation of the Series Inductance Value of Step-Up Transformers for HID Lamps Igniters

J. Garcia, *University of Oviedo, Spain*
J. Cardesin, *University of Oviedo, Spain*
J. A. Martin, *University of Oviedo, Spain*
M. Dalla-Costa, *University of Oviedo, Spain*
J. M. Lopera, *University of Oviedo, Spain*

ENERGY SYSTEMS COMMITTEE

Tuesday, 10 October 8:00 AM – 12:00 PM

Session 28—Energy System I

Session Chair and Organizer: Wei-Jen Lee, *University of Texas at Arlington, USA*

IAS28p1

Comparison of Two Optimal Control Strategies for a Grid Independent Photovoltaic System

Richard L. Welch, *University of Missouri–Rolla, USA*
Ganesh K. Venayagamoorthy, *University of Missouri–Rolla, USA*

IAS28p2

Intelligent Integration of a Wind Farm to an Utility Power Network with Improved Voltage Stability

Vamsi K. Polisetty, *University of Missouri–Rolla, USA*
Sandhya R. Jetti, *University of Missouri–Rolla, USA*
Ganesh K. Venayagamoorthy, *University of Missouri–Rolla, USA*
Ronald G. Harley, *Georgia Institute of Technology, USA*

IAS28p3

Modeling and Passivity-based Control of Hybrid Sources: Fuel Cell and Supercapacitors

M. Becherif, *UTBM, France*
M. Y. Ayad, *UTBM, France*
A. Miraoui, *UTBM, France*

IAS28p4

Impact Study on Intentional Islanding of Distributed Generation Connected to Radial Subtransmission System in Thailand's Electric Power System

Pradit Fuangfoo, *Provincial Electricity Authority, Thailand*
Wei-Jen Lee, *University of Texas at Arlington, USA*
Ming-Tse Kuo, *University of Texas at Arlington, USA*

IAS28p5

Control and Design of DC-Grids for Offshore Wind Farms

Christoph Meyer, *RWTH Aachen University, Germany*
Markus Höing, *RWTH Aachen University, Germany*
Anders Peterson, *RWTH Aachen University, Germany*
Rik W. De Doncker, *RWTH Aachen University, Germany*

POWER ELECTRONICS DEVICES & COMPONENTS COMMITTEE

Tuesday, 10 October 8:00 AM – 12:00 PM

Session 29—Power Electronics Devices and Components Products and Services Presentations

Session Chair: Richard F. Schmerda, *DRS Power & Control Technologies, Inc.*

Session Organizer: Richard Lukaszewski, *Rockwell Automation*

Thermal Design with New Chip Technology IGBT4 and EmCon4
Michael Hornkamp, *Infineon Technologies Industrial Power, Inc.*

Latest Advances in Transfer Molded Package Technology
John Donlon, *Powerex, Inc.*

Investigations of New Structure for High Temperature IGBT Module
Eiji Mochizuki, *Fuji Electric Device Technology*
Masafumi Horio, *Fuji Electric Device Technology*
Rikihiro Maruyama, *Fuji Electric Device Technology*
Tatsuo Nishizawa, *Fuji Electric Device Technology*
Y. Takahashi, *Fuji Electric Device Technology*

Investigations of all Lead Free IGBT Module Structure with Low Thermal Resistance and High Reliability
Eiji Mochizuki, *Fuji Electric Device Technology*
Yoshitaka Nishimura, *Fuji Electric Device Technology*
A. Morozumumi, *Fuji Electric Device Technology*
Y. Takahashi, *Fuji Electric Device Technology*

Large Area 1200V Silicon Carbide Schottky Diodes
David Hinchley, *Converteam, LTD*
Roger Bassett, *AREVA T&D Technology Centre*

TUESDAY AFTERNOON SESSIONS

ELECTRIC MACHINES COMMITTEE

Tuesday, 10 October 2:00 PM – 6:00 PM

Session 30—Reluctance Machines

Session Chair: Roy McCann, *University of Arkansas, USA*

Session Organizer: Avoki Omekanda, *Delphi, USA*

IAS30p1

Two-Phase SRM with Flux Reversal Free Stator: Concept, Analysis, Design and Experimental Verification
Seok-Gyu Oh, *Jinju National University, Korea*
R. Krishnan, *Virginia Polytechnic Institute and State University, USA*

IAS30p2

Effectiveness of Noise Reducing Measures in Switched Reluctance Drives
Jens O. Fiedler, *RWTH Aachen University, Germany*
Knut A. Kasper, *RWTH Aachen University, Germany*
Felipe Chaparro, *RWTH Aachen University, Germany*
Rik W. De Doncker, *RWTH Aachen University, Germany*

IAS30p3

Radial Force Control of a Switched Reluctance Motor with Two-Phase Sinusoidal Excitations
Feng-Chieh Lin, *Tamkang University, Taiwan*
Sheng-Ming Yang, *Tamkang University, Taiwan*

IAS30p4

New Approach to Power Equation for Comparison of Doubly Salient Electrical Machines
Jianzhong Zhang, *Southeast University, China*
Ming Cheng, *Southeast University, China*
Wei Hua, *Southeast University, China*
Xiaoyong Zhu, *Southeast University, China*

IAS30p5

Torque Performance of Optimally Designed Six-Phase Reluctance DC Machine
Edward T. Raghathi, *University of Stellenbosch, South Africa*
Maarteen J. Kamper, *University of Stellenbosch, South Africa*
Abraham D. Le Roux, *University of Stellenbosch, South Africa*

IAS30p6

Rotor Flux–Barrier Design for Torque Ripple Reduction in Synchronous Reluctance Motors
Nicola Bianchi, *University of Padova, Italy*
Silverio Bolognani, *University of Padova, Italy*
Diego Bon, *University of Padova, Italy*

Michele Dai Pré, *University of Padova, Italy*

IAS30p7

Constrained Optimization of High Power Synchronous Reluctance Motor Using Non-Linear Reluctance Network Modeling

T. Raminosoa, *Institut national polytechnique de Lorraine, Nancy, France*

I. Rasoanarivo, *Institut national polytechnique de Lorraine, Nancy, France*

F-M. Sargos, *Institut national polytechnique de Lorraine, Nancy, France*

R. N. Andriamalala, *Institut national polytechnique de Lorraine, Nancy, France*

APPLICATION INDUSTRY COMMITTEE

Tuesday, 10 October 2:00 PM – 6:00 PM

Session 31—Energy Conversion Components and Devices

Session Chair: Dengming Peng, *Whirlpool Corporation, USA*

Session Organizer: Zheng Zhang, *Whirlpool Corporation, USA*

IAS31p1

Software-based Separation of Conductive EMI Signals

Po-Shen Chen, *National Taipei University of Technology, Taiwan*

Yen-Shin Lai, *National Taipei University of Technology, Taiwan*

IAS31p2

Modelling and pPerformance Analysis of a Wind/Diesel Hybrid Power System

Atul S. Kini, *National Institute of Technology Karnataka, India*

R. Y. Udaykumar, *National Institute of Technology Karnataka, India*

IAS31p3

Latest Progress in Power Modules for Appliance Inverter Applications

E. Motto, *Powerex Incorporated, USA*

J. Donlon, *Powerex Incorporated, USA*

Shinya Shirakawa, *Mitsubishi Electric Corporation, Japan*

Toru Iwagami, *Mitsubishi Electric Corporation, Japan*

Hisashi Kawafuji, *Mitsubishi Electric Corporation, Japan*

Mamoru Seo, *Mitsubishi Electric Corporation, Japan*

Katsumi Satou, *Mitsubishi Electric Corporation, Japan*

IAS31p4

New Motion Control Architecture Simplifies Washing Machine Motor Control System Development

Aengus Murray, *International Rectifier, USA*

Eddy Ho, *International Rectifier, USA*

INDUSTRIAL DRIVES COMMITTEE

Tuesday, 10 October 2:00 PM – 6:00 PM

Session 32—Traction Drives

Session Chair: Hamid Toliyat, *University of Texas A&M, USA*

Session Organizer: M.F. Rahman, *University of New South Wales, Australia*

IAS32p1

Wound Rotor Salient Pole Synchronous Machine Drive for Electric Traction

Claudio Rossi, *University of Bologna, Italy*

Domenico Casadei, *University of Bologna, Italy*

Alessio Pilati, *University of Bologna, Italy*

Matteo Marano, *University of Bologna, Italy*

IAS32p2

Sensorless Power Control for Induction Motor Drives Fed by a Matrix Converter

Kyo-Beum Lee, *Chonbuk National University, Korea*

Frede Blaabjerg, *Aalborg University, Denmark*

IAS32p3

Experimental Study on a PEMFC-fed Railway Vehicle Motor Drive System

Takemasa Furuya, *Railway Technical Research Institute, Japan*

Keiichiro Kondo, *Railway Technical Research Institute, Japan*

Takamitsu Yamamoto, *Railway Technical Research Institute, Japan*

IAS32p4

Field-oriented Control of Dual Three-Phase Induction Motor Drives using a Luenberger Flux Observer

R. Bojoi, *Politecnico di Torino, Italy*

G. Griva, *Politecnico di Torino, Italy*

F. Profumo, *Politecnico di Torino, Italy*

IAS32p5

A Sliding Mode Flux Observer for Direct Torque Controlled Integrated Starter/Alternator

Jun Zhang, *The University of New South Wales, Australia*

M. Faz Rahman, *The University of New South Wales, Australia*

IAS32p6

Stator Flux Trajectory Tracking Control for High-Performance Drives

Nikolaos Oikonomou, *University of Wuppertal, Germany*

Joachim Holtz, *University of Wuppertal, Germany*

IAS32p7

Optimal Power and Torque Control of a Brushless DC (BLDC) Motor/Generator Drive in Electric and Hybrid Electric Vehicles

Taehyung Kim, *University of Michigan–Dearborn, USA*

Hyung-Woo Lee, *Korea Railroad Research Institute, Korea*

Leila Parsa, *Rensselaer Polytechnic Institute, USA*

Mehrdad Ehsani, *Texas A&M University, USA*

MINING INDUSTRY COMMITTEE

Tuesday, 10 October 2:00 PM – 6:00 PM

Session 33—High-Power Rectifiers and Drives

Session Chair and Organizer: John Sammarco, *National Institute for Occupational Health and Safety, USA*

IAS33p1

Multi-Cell High-Current Rectifier

Eduardo P. Wiechmann, *University of Concepcion, Chile*

Pablo E. Aqueveque, *University of Concepcion, Chile*

Aníbal S. Morales, *University of Concepcion, Chile*

Pablo F. Acuña, *University of Concepcion, Chile*

Rolando P. Burgos, *Virginia Polytechnic Institute and State University, USA*

IAS33p2

On the Efficiency and Reliability of High-Current Rectifiers

Pablo E. Aqueveque, *University of Concepcion, Chile*

Eduardo P. Wiechmann, *University of Concepcion, Chile*

Rolando P. Burgos, *Virginia Polytechnic Institute and State University, USA*

IAS33p3

Resonance Mitigation and Dynamical Behavior of Systems with Harmonic Filters for Improving Reliability in Mining Plants

J. Pontt, *Technical University Federico Santa Maria, Chile*

J. Rodriguez, *Technical University Federico Santa Maria, Chile*

J. San Martin, *Technical University Federico Santa Maria, Chile*

R. Aguilera, *Technical University Federico Santa Maria, Chile*

R. Bernal, *Technical University Federico Santa Maria, Chile*

P. Newman, *Technical University Federico Santa Maria, Chile*

IAS33p4

Integrated Monitoring and Control of Cycloconverter Drive System for Fault Diagnosis and Predictive Maintenance

J. Pontt, *Technical University Federico Santa Maria, Chile*

José Rodríguez, *Technical University Federico Santa Maria, Chile*

Erardo Cáceres, *Technical University Federico Santa Maria, Chile*

Ian Illanes, *Technical University Federico Santa Maria, Chile*

IAS33p5

A New All AC Gearless Drive System for Large Mining Draglines

Walter Koellner, *Siemens Energy & Automation Inc., USA*

INDUSTRIAL POWER CONVERTER COMMITTEE

Tuesday, 10 October 2:00 PM – 6:00 PM

Session 34— Industrial Power Converter Products and Services Presentations

Session Chair and Organizer: Leon Tolbert, *University of Tennessee – Knoxville, USA*

Power Electronic Converters for Renewable Energy Applications

Ray Hudson,

Wind Power Technology and grid connection

Morten Lindholm,
Power Conversion for Renewable Energy and Oil & Gas
Richard Zhang,
High Power Density IGBT and IGCT Technology for Drives and Frequency Converters
Oscar Apeldoorn,
DC-DC Converter for Fuel Cell and Hybrid Vehicle
Lizhi Zhu,
Integrated Power Modules Simplify System Designs
John Mookken,
Application of high-current, high-junction-temperature SiC field effect transistors in traction motor drives
Mike Mazzola,

INDUSTRIAL AUTOMATION AND CONTROL COMMITTEE

Tuesday, 10 October 2:00 PM – 6:00 PM

Session 35—Industrial Controls

Session Chair and Organizer: G. Venayagamoorthy, *University of Missouri-Rolla, USA*

IAS35p1

Fixed-Order H-infinity Decentralized Control with Model-based Feedforward for Elastic Web Winding Systems

Dominique Knittel, *University of Strasbourg I, France*
Marc Vedrines, *Institut National des Sciences Appliquées de Strasbourg, France*
Didier Henrion, *LAAS-CNRS, France*
Prabhakar Pagilla, *Oklahoma State University, USA*

IAS35p2

Proposal of the Stationary Discontinuous Armature Permanent Magnet Linear Synchronous Motor for Factory Automation Systems

Yong-Jae Kim, *Musashi Institute of Technology, Japan*
Masaya Watada, *Musashi Institute of Technology, Japan*
Hideo Dohmeki, *Musashi Institute of Technology, Japan*

IAS35p3

Development of an Automatic On-line Gap Detection Scheme for Levitated Industrial Steel Plate Conveyance System

Cheng-Tsung Liu, *National Sun Yat-Sen University, Taiwan*
Yung-Yi Yang, *National Sun Yat-Sen University, Taiwan*
Sheng-Yang Lin, *China Steel Corporation, Taiwan*

IAS35p4

Expert System -based Dynamic Load Shedding Scheme for Shipboard Power Systems

Zhiping Ding, *Florida State University, USA*
Sanjeev Srivastava, *Florida State University, USA*
Dave Cartes, *Florida State University, USA*

IAS35p5

Nonlinear Modified PI Control of Multi-Module GCSCs in a Large Power System

Swakshar Ray, *University of Missouri–Rolla, USA*
Ganesh K. Venayagamoorthy, *University of Missouri–Rolla, USA*

IAS35p6

An Improved Stochastic Load Model for Industrial Power Market

N. S. Sisworahardjo, *University of South Alabama, USA*
M. S. Alam, *University of South Alabama, USA*
A. A. El-Keib, *The Petroleum Institute, United Arab Emirates*

IAS35p7

dSPACE DSP-based Rapid Prototyping of Fuzzy PID Controls for High Performance Brushless Servo Drives

Ahmed Rubaai, *Howard University, USA*
Abdul Ofoli, *Howard University, USA*
Marcel Castro, *Howard University, USA*

PRODUCTION AND APPLICATION OF LIGHT COMMITTEE

Tuesday, 10 October 2:00 PM – 6:00 PM

Session 36—Ballasts for HID Lamps #2

Session Chair: M. Rico-Secades, *Universidad de Oviedo, Spain*

Session Organizer: Georges Zissis, *University Toulouse 3, France*

IAS36p1

Influence of Mount Structure on Performance of Ceramic Metal Halide Lamps
Junming Tu, *Philips Lighting Company, USA*

IAS36p2

Investigations into LFSW Ballast-induced Instabilities in Ceramic Metal Halide Lamps
Ray G. Gibson, *Philips Lighting Company, USA*

IAS36p3

2.65 MHz Self-Oscillating Complementary Electronic Ballast with Constant-Lamp-current Control for Metal Halide Lamp

Ray-Lee Lin, *National Cheng Kung University, Taiwan*
Zhi-Qiang Wang, *National Cheng Kung University, Taiwan*
Yan-Der Lee, *National Cheng Kung University, Taiwan*

IAS36p4

Analysis, Design and Experimentation of a Closed Loop, Metal Halide Lamp Electronic Ballast

M. A. Dalla Costa, *Universidad de Oviedo, Spain*
J. M. Alonso, *Universidad de Oviedo, Spain*
J. García-García, *Universidad de Oviedo, Spain*
J. Cardesín *Universidad de Oviedo, Spain*
J. Ribas, *Universidad de Oviedo, Spain*

IAS36p5

Physics-based MATLAB Model for Ceramic Metal Halide Lamps

D. H. J. van Casteren, *Technical University of Eindhoven, The Netherlands*
J. L. Duarte, *Technical University of Eindhoven, The Netherlands*
M. A. M. Hendrix, *Technical University of Eindhoven, The Netherlands*

IAS36p6

Investigation on HID Lamps Impedance Using Commercial Lamps

R. Ruscassié, *Université Montpellier II, France*
C. Glaize, *Université Montpellier II, France*
G. Zissis, *Université Toulouse III, France*

ENERGY SYSTEMS COMMITTEE

Tuesday, 10 October 2:00 PM – 6:00 PM

Session 37—Energy System II

Session Chair and Organizer: Wei-Jen Lee, *University of Texas at Arlington, USA*

IAS37p1

Economic Evaluation of a Distribution Automation Project

Chun-Lien Su, *National Kaohsiung Marine University, Taiwan*
Jen-Ho Teng, *I-Shou University, Taiwan*

IAS37p2

Ocean Wave Energy Conversion—A Survey

A. Muetze, *University of Wisconsin–Madison, USA*
J. G. Vining, *University of Wisconsin–Madison, USA*

IAS37p3

On-Line Dynamic Cable Rating System for an Industrial Power Plant in the Restructured Electric Market

Shun-Hsien Huang, *Energy Systems Research Center, USA*
Wei-Jen Lee, *Energy Systems Research Center, USA*
Ming-Tse Kuo, *Energy Systems Research Center, USA*

IAS37p4

Estimation of Electric Load Composition on a Utility Side

Soon Lee, *Yonsei University, Korea*
Jung-Wook Park, *Yonsei University, Korea*

IAS37p5

The Optimal LC Compensator Corresponding to Maximum Annual Reduction in the Source Losses

Ahmed Faheem Zobaa, *Cairo University, Egypt*
Wei-Jen Lee, *University of Texas at Arlington, USA*

POWER ELECTRONICS DEVICES & COMPONENTS COMMITTEE

Tuesday, 10 October 2:00 PM – 6:00 PM

Session 38—Semiconductor Modeling

Session Chair: Enrico Santi, *University of South Carolina, USA*

Session Organizer: Alper Akdag, *ABB Semiconductors Inc, Switzerland*

IAS38p1

Power MOSFET Switching Loss Analysis: A New Insight

Z. John Shen, *University of Central Florida, USA*

Yali Xiong, *University of Central Florida, USA*

Xu Cheng, *University of Central Florida, USA*

Yue Fu, *University of Central Florida, USA*

Pavan Kumar, *Intel Corporation, USA*

IAS38p2

Modeling and Simulation of Low-Voltage MOSFETs Accounting for the Effect of the Gate Parasitic-RC

Distribution

F. Chimento, *University of Catania, Italy*

S. Musumeci, *University of Catania, Italy*

F. Privitera, *University of Catania, Italy*

A. Raciti, *University of Catania, Italy*

F. Frisina, *STMicroelectronics, Italy*

A. Magri, *STMicroelectronics, Italy*

M. Melito, *STMicroelectronics, Italy*

IAS38p3

Physical Modeling and Parameter Extraction Procedure for p-i-n Diodes with Lifetime Control

L. Lu, *University of South Carolina, USA*

A. Bryant, *University of Warwick, UK*

E. Santi, *University of South Carolina, USA*

J. L. Hudgins, *University of Nebraska, USA*

P. R. Palmer, *Cambridge University, UK*

IAS38p4

Physics-based Model of IGBT Including MOS Side Two-Dimensional Effects

L. Lu, *University of South Carolina, USA*

A. Bryant, *University of Warwick, UK*

E. Santi, *University of South Carolina, USA*

J. L. Hudgins, *University of Nebraska, USA*

P. R. Palmer, *Cambridge University, UK*

IAS38p5

Exploration of Power Device Reliability using Compact Device Models and Fast Electro-Thermal Simulation

A. Bryant, *University of Warwick, UK*

P. A. Mawby, *University of Warwick, UK*

P. R. Palmer, *Cambridge University, UK*

E. Santi, *University of South Carolina, USA*

J. L. Hudgins, *University of Nebraska, USA*

IAS38p6

SOA in High Power Semiconductors

Alper Akdag, *ABB Switzerland Ltd., Switzerland*

WEDNESDAY MORNING SESSIONS

ELECTRIC MACHINES COMMITTEE

Wednesday, 11 October 8:00 AM – 12:00 PM

Session 39—Permanent Magnet Motors I

Session Chair: Z. Q. Zhu, *University of Sheffield, UK*

Session Organizer: Roy McCann, *University of Arkansas, USA*

IAS39p1

Embedded Finite-Element Solver for Computation of Permanent-Magnet Brushless Motors

T. J. E Miller, *The University of Glasgow, UK*

M. Popescu, *The University of Glasgow, UK*

C. Cossar, *The University of Glasgow, UK*

M. I. McGilp, *The University of Glasgow, UK*

M. Olaru, *The University of Glasgow, UK*

A. J. Davies, *Areva T&D Technology Centre, UK*

J. P. Sturgess, *Areva T&D Technology Centre, UK*

A. M. Sitzia, *Areva T&D Technology Centre, UK*

IAS39p2

Preliminary Program—Subject to Change

Impact of Winding Layer Number and Magnet Type on Synchronous Surface PM Machines Designed for Wide Constant-Power Speed Range Operation

Ayman M. EL-Refaie, *GE Global Research Center, USA*
Thomas M. Jahns, *University of Wisconsin–Madison, USA*

IAS39p3

Design Considerations for Permanent Magnet Brushless Machines for Zero-Speed Sensorless Position Estimation

R. Wrobel, *University of Bristol, UK*
A. S. Budden, *University of Bristol, UK*
D. Holliday, *University of Bristol, UK*
P. H. Mellor, *University of Bristol, UK*
P. Sangha, *Goodrich Corporation, UK*

IAS39p4

Vibration Characteristics of Modular Permanent Magnet Brushless AC Machines

Jiabin Wang, *University of Sheffield, UK*
Zhen P. Xia, *University of Sheffield, UK*
David Howe, *University of Sheffield, UK*
Stephen A. Long, *Rolls-Royce plc, UK*

IAS39p5

Analytical and Experimental Investigation of a Low Torque, Ultra-High Speed Drive System

C. Zwyssig, *ETH Zurich, Switzerland*
S. D. Round, *ETH Zurich, Switzerland*
J. W. Kolar, *ETH Zurich, Switzerland*

IAS39p6

Investigation of Proximity Losses in a High Speed Brushless Permanent Magnet Motor

Phil H. Mellor, *University of Bristol, UK*
Rafal Wrobel, *University of Bristol, UK*
Neville McNeill, *University of Bristol, UK*

ELECTRIC MACHINES COMMITTEE

Wednesday, 11 October 8:00 AM – 12:00 PM

Session 40—Faults and Diagnostics II

Session Chair: Uday Deshpande, *Dewalt, USA*

Session Organizer: Ronghai Qu, *GE CRD, USA*

IAS40p1

Analysis of Stator Winding Inter-Turn Short-Circuit Faults in Induction Machines for Identification of the Faulty Phase

Ahmed Sayed-Ahmed, *Marquette University, USA*
Chia-Chou Yeh, *Marquette University, USA*
Nabeel A. O. Demerdash, *Marquette University, USA*
Behrooz Mirafzal, *Rockwell Automation, USA*

IAS40p2

Diagnostic Technique Based on Rotor Modulating Signals Signature Analysis for Doubly-fed Induction Machines in Wind Generator Systems

Domenico Casadei, *University of Bologna, Italy*
Fiorenzo Filippetti, *University of Bologna, Italy*
Claudio Rossi, *University of Bologna, Italy*
Andrea Stefani, *University of Bologna, Italy*
Amine Yazidi, *University of Picardie “Jules Verne”, France*
Gerard Andre Capolino, *University of Picardie “Jules Verne”, France*

IAS40p3

A Nonintrusive and In-Service Motor Efficiency Estimation Method using Air-Gap Torque with Considerations of Condition Monitoring

Bin Lu, *Georgia Institute of Technology, USA*
Thomas G. Habetler, *Georgia Institute of Technology, USA*
Ronald G. Harley, *Georgia Institute of Technology, USA*

IAS40p4

New Rotor Fault Indicators for Squirrel Cage Induction Motors

Claudio Bruzzese, *University of Rome “La Sapienza”, Italy*
Onorato Honorati, *University of Rome “La Sapienza”, Italy*
Ezio Santini, *University of Rome “La Sapienza”, Italy*
Donato Sciuinnache, *University of Rome “La Sapienza”, Italy*

IAS40p5

Distinguishing Load Torque Oscillations and Eccentricity Faults in Induction Motors Using Stator Current Wigner Distributions

Martin Blödt, *ENSEEIH, France*
Jérémi Regnier, *ENSEEIH, France*
Jean Faucher, *ENSEEIH, France*

IAS40p6

Application of Real-Time Rotor Current Measurements Using Bluetooth Wireless Technology in Study of the Brushless Doubly-fed Induction Machine (BDFM)

Ehsan Abdi-Jalebi, *University of Cambridge, UK*
Richard McMahon, *University of Cambridge, UK*

IAS40p7

An Advanced Stator Winding Insulation Quality Assessment Technique for Inverter-fed Machines

Jinkyu Yang, *Korea University, Korea*
Jintae Cho, *Korea University, Korea*
Sang Bin Lee, *Korea University, Korea*
Jiyeon Yoo, *Korea University, Korea*

INDUSTRIAL DRIVES COMMITTEE

Wednesday, 11 October 8:00 AM – 12:00 PM

Session 41—Automotive Applications—Drives & Systems

Session Chair and Organizer: Tomy Sebastian, *Delphi Corporation, USA*

IAS41p1

Switched Reluctance and Permanent Magnet Brushless Motors in Highly Dynamic Situations: A Comparison in the Context of Electric Brakes

Avoki M. Omekanda, *Delphi Corporation, USA*
Bruno Lequesne, *Delphi Corporation, USA*
Harald Klode, *Delphi Corporation, USA*
Suresh Gopalakrishnan, *General Motors, USA*
Iqbal Husain, *University of Akron, USA*

IAS41p2

A Prognostic and Warning System for Power Electronic Modules in Electric, Hybrid, and Fuel Cell Vehicles

Y. Xiong, *University of Central Florida, USA*
X. Cheng, *University of Central Florida, USA*
Z. J. Shen, *University of Central Florida, USA*
C. Mi, *University of Michigan–Dearborn, USA*
H. Wu, *University of Michigan–Dearborn, USA*
V. Garg, *Ford Motor Company, USA*

IAS41p3

Control Design of an Induction Machine-based Integrated Starter Alternator for 42 V PowerNet

C. P. Mudannayake, *The University of New South Wales, Australia*
M. F. Rahman, *The University of New South Wales, Australia*

IAS41p4

Evaluation of SOFC Hybrid Systems for Automotive Propulsion Applications

Kaushik Rajashekara, *Rolls-Royce Corporation, USA*
John A. MacBain, *Delphi Corporation, USA*
M. James Grieve, *Delphi Corporation, USA*

IAS41p5

Methods to Control Wheel Locks and Wheel Spins for Electric Vehicles with the Structure Having Independently Driven Front and Rear Wheels

Nobuyoshi Mutoh, *Tokyo Metropolitan University, Japan*
Hiromichi Yahagi, *Tokyo Metropolitan University, Japan*

IAS41p6

Control of Two Permanent Magnet Machines Using Five-Leg Inverter for Automotive Applications

Gui-Jia Su, *Oak Ridge National Laboratory, USA*
Lixin Tang, *Oak Ridge Associated Universities, USA*
Xianghui Huang, *GE Global Research USA*

IAS41p7

Temperature Supervision of an Integrated Starter Generator

Christophe Forgez, *Université de Technologie de Compiègne, France*

Emmanuel Foulon, *Ecole Polytechnique de l'Université de Nantes, France*
Luc Loron, *Ecole Polytechnique de l'Université de Nantes, France*
Sokha Ly, *Valeo Electrical Systems, France*
Cedric Plasse, *Valeo Electrical Systems, France*

INDUSTRIAL DRIVES COMMITTEE

Wednesday, 11 October 8:00 AM – 12:00 PM

Session 42—PM Machine Drives II

Session Chair: M. F. Rahman, *The University of New South Wales, Australia*

Session Organizer: Leila Parsa, *Rensselaer Polytechnic Institute, USA*

IAS42p1

Implementation Issues and Performance Evaluation of Surface-Mounted PM Machine Drives with Hall-Effect Position Sensors and a Vector-Tracking Observer

M. C. Harke, *University of Wisconsin–Madison, USA*

G. De Donato, *University of Rome “La Sapienza”, Italy*

F. Giulii Capponi, *University of Rome “La Sapienza”, Italy*

T. R. Tesch, *Ballard Power Systems, USA*

R. D. Lorenz, *University of Wisconsin–Madison, USA*

IAS42p2

Assessment of Pulse-Width Modulation Techniques for Brushless DC Motor Drives

Yen-Shin Lai, *National Taipei University of Technology, Taiwan*

Yong-Kai Lin, *National Taipei University of Technology, Taiwan*

IAS42p3

Fault Tolerant Strategies for BLDC Motor Drives under Switch Faults

Byoung-Gun Park, *Hanyang University, Korea*

Tae-Sung Kim, *Hanyang University, Korea*

Ji-Su Ryu, *Hanyang University, Korea*

Dong-Seok Hyun, *Hanyang University, Korea*

IAS42p4

Commutation Torque Ripple Minimization in Direct Torque Controlled PM Brushless DC Drives

Y. Liu, *University of Sheffield, UK*

Z. Q. Zhu, *University of Sheffield, UK*

D. Howe, *University of Sheffield, UK*

IAS42p5

Design and Development of Brushless Variable Speed Motor Drive for Low Cost and High Efficiency

Keunsoo Ha, *Virginia Polytechnic Institute and State University, USA*

Cheewoo Lee, *Virginia Polytechnic Institute and State University, USA*

Jaehyuck Kim, *Virginia Polytechnic Institute and State University, USA*

R. Krishnan, *Virginia Polytechnic Institute and State University, USA*

Seok-Gyu Oh, *Virginia Polytechnic Institute and State University, USA*

IAS42p6

A New On-Line Torque Estimator for Brushless Permanent Magnet Motor Drives: Validation through the $i-\psi$ Diagram

Calum Cossar, *The University of Glasgow, UK*

T. J. E. Miller, *The University of Glasgow, UK*

Mircea Popescu, *The University of Glasgow, UK*

Malcolm McGilp, *The University of Glasgow, UK*

Mircea Olaru, *The University of Glasgow, UK*

INDUSTRIAL POWER CONVERTER COMMITTEE

Wednesday, 11 October 8:00 AM – 12:00 PM

Session 43—Inverters

Session Chair: Rik De Doncker, *RWTH-Aachen, Germany*

Session Organizer: Poh Chiang LOH, *Nanyang Technological University, Singapore*

IAS43p1

A New Single-Stage Bi-Directional High Frequency Link Inverter Design

Feng Tian, *University of Central Florida, USA*

Kasemsan Siri, *University of Central Florida, USA*

Issa Batarseh, *University of Central Florida, USA*

IAS43p2

Control of the Z-Source Inverter for Fuel Cell-Battery Hybrid Vehicles to Eliminate Undesirable Operation Modes

Miaosen Shen, *Michigan State University, USA*

Fang Z. Peng, *Michigan State University, USA*

IAS43p3

A Comparison of Redundant Inverter Topologies to Improve Voltage Source Inverter Reliability

Alexander L. Julian, *Naval Postgraduate School, USA*

Giovanna Oriti, *Power Engineering Consultant, USA*

IAS43p4

A New Three-Phase Inverter for UPS Application

Lihua Li, *University of California–Irvine, USA*

Keyue Smedley, *University of California–Irvine, USA*

Taotao Jin, *University of California–Irvine, USA*

IAS43p5

Voltage Control Method with High Order Compensation Loop for Micro-Energy PWM Inverter Supply Units

M. J. Kamper, *University of Stellenbosch, South Africa*

D. M. Jacobs, *Sasol Limited, South Africa*

IAS43p6

Behavior and Loss Modeling of a Three-Phase Resonant Pole Inverter Operating with 120° Double FlatTop Modulation

Klaus Rigbers, *RWTH Aachen University, Germany*

Stephan Thomas, *RWTH Aachen University, Germany*

Ulrich Böke, *Philips Research Laboratories, Germany*

Rik W. De Doncker, *RWTH Aachen University, Germany*

INDUSTRIAL POWER CONVERTER COMMITTEE

Wednesday, 11 October 8:00 AM – 12:00 PM

Session 44—Utility Interface and Power Quality II

Session Chair: Po-Tai Cheng, *National Tsing Hua University, Taiwan*

Session Organizer: Alexander L. Julian, *Naval Postgraduate School, USA*

IAS44p1

Investigating the Vulnerability of Slip Energy Recovery Converters to Voltage Dips

Simon Q. Davies, *University of the Witwatersrand, South Africa*

John M. Van Coller, *University of the Witwatersrand, South Africa*

IAS44p2

Improved Power Quality Control and Intelligent Protection for Grid Connected Power Electronic Converters, using Real Time Parameter Estimation

Mark Sumner, *University of Nottingham, UK*

Abdullah Abusorrah, *University of Nottingham, UK*

David Thomas, *University of Nottingham, UK*

Pericle Zanchetta, *University of Nottingham, UK*

IAS44p3

Control and Performance of a Medium-Voltage Transformerless Cascade PWM STATCOM with Star-Configuration

Tsurugi Yoshii, *Tokyo Institute of Technology, Japan*

Shigenori Inoue, *Tokyo Institute of Technology, Japan*

Hirofumi Akagi, *Tokyo Institute of Technology, Japan*

IAS44p4

Symmetry Compensation using a H-Bridge Multilevel STATCOM with Zero Sequence Injection

R. E. Betz, *University of Newcastle, Australia*

T. Summers, *University of Newcastle, Australia*

T. Furney, *University of Newcastle, Australia*

IAS44p5

An Optimal Combination Modulation Strategy for a Seven-Level Cascade Multilevel Converter-based STATCOM

Yu Liu, *North Carolina State University, USA*

Zhong Du, *North Carolina State University*

Alex Q. Huang, *North Carolina State University*

Subhashish Bhattacharya, *North Carolina State University*

IAS44p6

Field-oriented Control of Self-Excited Induction Generator for Distributed Cogeneration Plants

A. Bellini, *University of Modena Reggio Emilia, Italy*

G. Franceschini, *University of Parma, Italy*
E. Lorenzani, *University of Parma, Italy*
C. Tassoni, *University of Parma, Italy*
M. Tomaiuolo, *University of Parma, Italy*

INDUSTRIAL AUTOMATION AND CONTROL COMMITTEE

Wednesday, 11 October 8:00 AM – 12:00 PM

Session 45—Motion Control Systems

Session Chair and Organizer: A. Rubaai, *Howard University, USA*

IAS45p1

On-Line Parameter Estimation-based Speed Control of PM AC Motor Drive in Flux Weakening Region

M. Nasir Uddin, *Lakehead University, Canada*
Md. Muminul Islam Chy, *Lakehead University, Canada*

IAS45p2

Hybrid Stochastic and Neural Network Approach for Efficient FPGA Implementation of a Field-oriented Induction Motor Drive Controller

Da Zhang, *Florida State University, USA*
Hui Li, *Florida State University, USA*

IAS45p3

State Control of Servo Drives with Flexible Structural Components

Oliver Zirn, *University of Applied Sciences Giessen, Germany*
Ekkehard Batzies, *University of Applied Sciences Giessen, Germany*
Sascha Weikert, *Swiss Federal Institute of Technology, Switzerland*
Tobias Schöller, *Rückle GmbH Werkzeugfabrik, Germany*

IAS45p4

Implementation of Emotional Controller for Interior Permanent Magnet Synchronous Motor Drive

R. M. Milasi, *University of Tehran, Iran*
Caro Lucas, *University of Tehran, Iran*
B. N. Arrabi, *University of Tehran, Iran*
T. S. Radwan, *Memorial University of Newfoundland, Canada*
M. A. Rahman, *Memorial University of Newfoundland, Canada*

IAS45p5

New General MRAS Adaptive Scheme to Estimate Stator and Rotor Resistance of Induction Motors

Han Li, *Chinese Academy of Science, PR China*
Wen Xuhui, *Chinese Academy of Science, PR China*
Chen Guilan, *Chinese Academy of Science, PR China*

PRODUCTION AND APPLICATION OF LIGHT COMMITTEE

Wednesday, 11 October 8:00 AM – 12:00 PM

Session 46—Light Sources & Novel Concepts

Session Chair: Francis Dawson, *University of Toronto, Canada*

Session Organizer: Georges Zissis, *University Toulouse 3, France*

IAS46p1

Study the Buffer Gas for Microwave Sulfur Lamp

Yuming Chen, *Fudan University, China*
Dahua Chen, *Fudan University, China*

IAS46p2

Implementation of an Efficiency Indicator in an Electrical Modeling of a Dielectric Barrier Discharge Lamp

S. Bhosle, *Université Toulouse III, France*
G. Zissis, *Université Toulouse III, France*
J. J. Damelincoirt, *Université Toulouse III, France*
A. Capdevila, *Université Toulouse III, France*
K. Gupta, *University of Toronto, Canada*
F. P. Dawson, *University of Toronto, Canada*
V. F. Tarasenko, *High Current Electronics Institute, Russia*

IAS46p3

Color Shift of Head Lamps for Automotive Lighting over Lifetime

M. Kettlitz, *INP Greifswald, Germany*
O. Krylova, *INP Greifswald, Germany*
D. Ehrlichmann, *OSRAM, Germany*

K. Günther, *OSRAM, Germany*
L. Vollmer, *OSRAM, Germany*

IAS46p4

Using Tapped-Inductor Converters as Led Drivers

M. Rico-Secades, *Universidad de Oviedo, Spain*
J. Garcia, *Universidad de Oviedo, Spain*
J. Cardesin, *Universidad de Oviedo, Spain*
A. J. Calleja, *Universidad de Oviedo, Spain*

IAS46p5

Characteristics of the Getter Materials Used in High Intensity Discharge Lamps

A. Corazza, *SAES Getters S.p.A., Italy*
S. Giorgi, *SAES Getters S.p.A., Italy*
C. Boffito, *SAES Getters S.p.A., Italy*
V. Massaro, *SAES Getters S.p.A., Italy*
D. Caccia, *SAES Getters S.p.A., Italy*

POWER SYSTEM PROTECTION COMMITTEE

Wednesday, 11 October 8:00 AM – 12:00 PM

Session 47—Power System Protection I

Session Chair: Rasheek Rifaat, *Jacobos Engineering, Calgary, Canada*

IAS47p1

Effects of High Fault Currents on Ground Grid Design

Massimo Mitolo, *Chu & Gassman, USA*
Peter E. Sutherland, *GE Energy Services, USA*
R. Natarajan, *Burns & McDonnell, USA*

IAS47p2

Effects of Electrical Currents and Bonding Requirements in Buildings

Massimo Mitolo, *Chu & Gassman, USA*

IAS47p3

A Simplified Model of the Lightning Performance of a Driven Rod Earth Electrode in Multi-Layer Soil that Includes the Effect of the Soil Ionisation

Kenneth J. Nixon, *University of the Witwatersrand, South Africa*
Ian R. Jandrell, *University of the Witwatersrand, South Africa*
Andrew J. Phillips, *Electric Power Research Institute, USA*

IAS47p4

TN-Island Grounding System and the House of the Future

Giuseppe Parise, *University of Rome “La Sapienza”, Italy*
Luigi Martirano, *University of Rome “La Sapienza”, Italy*
Massimo Mitolo, *Chu & Gassman, USA*

IAS47p5

Analysis of Lightning Transients in a DC Traction Power System of Electrified Railway Using EMTP

Qi-Bin Zhou, *The Hong Kong Polytechnic University, China*
Y. Du, *The Hong Kong Polytechnic University, China*

IAS47p6

Transmission Line Frequency Impedance Characteristic and Its Influence in Transient Protection

Li Lei, *Changsha University of Science and Technology, China*
Xiangjun Zeng, *Changsha University of Science and Technology, China*
Jianhua Liu, *Changsha University of Science and Technology, China*
Zhengyi Liu, *Changsha University of Science and Technology, China*
Qian Lv, *Changsha University of Science and Technology, China*
Xiaoli Zhang, *Changsha University of Science and Technology, China*

POWER ELECTRONICS DEVICES & COMPONENTS COMMITTEE

Wednesday, 11 October 8:00 AM – 12:00 PM

Session 48—Integration and Magnetics

Session Chair: Bill Dillard, *Archangel Systems Inc., USA*

Session Organizer: Charles R. Sullivan, *Dartmouth College, USA*

IAS48p1

Frequency Scaling Effects of Integrated Passive Components in High Frequency Power Conversion

Chucheng Xiao, *Virginia Polytechnic Institute and State University, USA*

W. G. Odendaal, *Virginia Polytechnic Institute and State University, USA*

IAS48p2

LCT Integration Optimization on a Printed Circuit Board Technology Platform

E. C. W. de Jong, *Delft University of Technology, The Netherlands*

J. A. Ferreira, *Delft University of Technology, The Netherlands*

P. Bauer, *Delft University of Technology, The Netherlands*

IAS48p3

Mixed Energy Transfer (MET) Innovative Structure Based on LCT and Comparison with Traditional Structures

Benjamin Vallet, *Institut National Polytechnique de Grenoble, France*

Yves Lembeye, *Institut National Polytechnique de Grenoble, France*

Jean Paul Ferrieux, *Institut National Polytechnique de Grenoble, France*

IAS48p4

Busbar Design: How to Spare Nanohenries ?

J. M. Guichon, *Laboratoire d'Electrotechnique de Grenoble, France*

J. Aimé, *Laboratoire d'Electrotechnique de Grenoble, France*

J. L. Schanen, *Laboratoire d'Electrotechnique de Grenoble, France*

C. Martin, *Laboratoire d'Electrotechnique de Grenoble, France*

J. Roudet, *Laboratoire d'Electrotechnique de Grenoble, France*

E. Clavel, *Laboratoire d'Electrotechnique de Grenoble, France*

M. Arpillière, *STIE, France*

R. Pasterczyk, *MGE UPS SYSTEM, France*

Y. Le Floch, *CEDRAT, France*

IAS48p5

Comparison of Loss in Single-Layer and Multi-Layer Windings with a DC Current Component

Magdalena E. Dale, *Dartmouth College, USA*

Charles R. Sullivan, *Dartmouth College, USA*

IAS48p6

Design of an Inductive Contactless Power System for Multiple Users

Fredrik F. A. Van der Pijl, *Technical University of Delft, The Netherlands*

Jan A. Ferreira, *Technical University of Delft, The Netherlands*

Pavol Bauer, *Technical University of Delft, The Netherlands*

Henk Polinder, *Technical University of Delft, The Netherlands*

IAS48p7

Effect of Geometry Variation of LTCC-Distributed Air-Gap Filter Inductor on Light Load Efficiency of DC-DC Converters

Michele H. Lim, *Virginia Polytechnic Institute and State University, USA*

J. D. van Wyk, *Virginia Polytechnic Institute and State University, USA*

Zhenxian Liang, *Virginia Polytechnic Institute and State University, USA*

WEDNESDAY AFTERNOON SESSIONS

ELECTRIC MACHINES COMMITTEE

Wednesday, 11 October 2:00 PM – 6:00 PM

Session 49—PM Design Optimization

Session Chair and Organizer: Yves Perriard, *Swiss Federal Institute of Technology, Switzerland*

IAS49p1

Particle Swarm Optimisation for the Design of Brushless Permanent Magnet Machines

Rafal Wrobel, *University of Bristol, UK*

Phil H. Mellor, *University of Bristol, UK*

IAS49p2

Brushless DC Motor Optimization Process—Choice between Standard or Straight Tooth Shape

Yves Perriard, *Ecole Polytechnique Fédérale de Lausanne, France*

Patrick Ragot, *Ecole Polytechnique Fédérale de Lausanne, France*

Miroslav Markovic, *Ecole Polytechnique Fédérale de Lausanne, France*

IAS49p3

Permanent Magnet Machine Design Practice and Optimization

Wen Ouyang, *University of Wisconsin–Madison, USA*

Damir Zarko, *University of Zagreb, Croatia*

T. A. Lipo, *University of Wisconsin–Madison, USA*

IAS49p4

Design and Optimization of a Nine-Phase Axial-Flux PM Synchronous Generator with Concentrated Winding for Direct-Drive Wind Turbine

Darius Vizireanu, *Ecole Centrale de Lille, France*

Stéphane Brisset *Ecole Centrale de Lille, France*

Pascal Brochet, *Ecole Centrale de Lille, France*

IAS49p5

Electromagnetic and Thermal Design of a Linear Actuator Using Output Polynomial Mapping

L. Encica, *Eindhoven University of Technology, The Netherlands*

J. J. H. Paulides, *Eindhoven University of Technology, The Netherlands*

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

A. J. A. Vandenput, *Eindhoven University of Technology, The Netherlands*

IAS49p6

Optimal Design for Noise Reduction in Interior Permanent Magnet Motor

Sang-Ho Lee, *Changwon National University, Korea*

Jung-Pyo Hong, *Changwon National University, Korea*

Woo-Taik Lee, *Changwon National University, Korea*

Sang-Moon Hwang, *Pusan National University, Korea*

Ji-Young Lee, *Korea Electrotechnology Research Institute, Korea*

Young-Kyoun Kim, *Samsung Electronics Co., Ltd., Korea*

IAS49p7

Optimization Technique for Improving Torque Performance of Concentrated Winding Interior PM Synchronous Motor with Wide Speed Range

Sung-Il Kim, *Changwon National University, Korea*

Ji-Hyung Bhan, *Changwon National University, Korea*

Jung-Pyo Hong, *Changwon National University, Korea*

Ki-Chae Lim, *Dongsung Electric Machine Co., Ltd., Korea*

ELECTRIC MACHINES COMMITTEE

Wednesday, 11 October 2:00 PM – 6:00 PM

Session 50—Interior Permanent Magnet Motors

Session Chair: Thomas Jahns, *University of Wisconsin, USA*

Session Organizer: Nicola Bianchi, *University of Padova, Italy*

IAS50p1

Design and Experimental Verification of a 50 kW Interior Permanent Magnet Synchronous Machine

Thomas M. Jahns, *University of Wisconsin–Madison, USA*

Seok-Hee Han, *University of Wisconsin–Madison, USA*

Ayman M. EL-Refaie, *University of Wisconsin–Madison, USA*

Jei-Hoon Baek, *University of Wisconsin–Madison, USA*

Metin Aydin, *Caterpillar Inc., USA*

Mustafa K. Guven, *Caterpillar Inc., USA*

Wen L. Soong, *University of Adelaide, Australia*

IAS50p2

Design of Ultra Low Acoustic Noise and High Power Density Direct Drive Machines with Double Rotor

Yuichi Yoshikawa, *Matsushita Electric Industrial Co., Ltd., Japan*

Hu Li, *Matsushita Electric Industrial Co., Ltd., Japan*

Hiroshi Murakami, *Matsushita Electric Industrial Co., Ltd., Japan*

IAS50p3

Influence of Rotor Configuration on Sensorless Control for Interior Permanent Magnet Synchronous Motors

Nobuyuki Imai *Honda R&D Co., Ltd., Japan*

Shigeo Morimoto, *Osaka Prefecture University, Japan*

Masayuki Sanada, *Osaka Prefecture University, Japan*

Yoji Takeda, *Osaka Prefecture University, Japan*

IAS50p4

Impact of Maximum Back-EMF Limits on the Performance Characteristics of Interior Permanent Magnet Synchronous Machines

Seok-Hee Han, *University of Wisconsin–Madison, USA*

Thomas M. Jahns, *University of Wisconsin–Madison, USA*

Mustafa K. Guven, *Caterpillar Inc., USA*

IAS50p5

Diagnosis and Protection of IPM Motors Using Wavelet Packet Transform

M. A. S. K. Khan, *Memorial University of Newfoundland, Canada*

T. S. Radwan, *Memorial University of Newfoundland, Canada*
M. A. Rahman, *Memorial University of Newfoundland, Canada*

IAS50p6

Reducing Torque Pulsation of Multi-Phase Interior Permanent Magnet Machines

Leila Parsa, *Rensselaer Polytechnic Institute, USA*
Taehyung Kim, *University of Michigan, USA*

IAS50p7

Performance Comparison of IPMSM with Distributed and Concentrated Windings

Soon-O Kwon, *Changwon National University, Korea*
Sung-II Kim, *Changwon National University, Korea*
Peng Zhang, *Changwon National University, Korea*
Jung-Pyo Hong, *Changwon National University, Korea*

INDUSTRIAL DRIVES COMMITTEE

Wednesday, 11 October 2:00 PM – 6:00 PM

Session 51—Special Drives

Session Chair: Robert Lorenz, *University of Wisconsin-Madison, USA*
Session Organizer: Elena Lomonova, *Eindhoven Technology University, Netherlands*

IAS51p1

Sensorless Rotor Position Estimation in Synchronous Reluctance Motors Exploiting a Flux Deviation Approach

A. Consoli, *University of Catania, Italy*
G. Scarcella, *University of Catania, Italy*
G. Scelba, *University of Catania, Italy*
A. Testa, *University of Messina, Italy*
D. Triolo, *University of Messina, Italy*

IAS51p2

A Position Sensorless Drive Technique for Switched Reluctance Motor with Consideration of Magnetic Saturation at Low and Medium Speeds

Akitomo Komatsuzaki, *Meiji University, Japan*
Kazumasa Yoshida, *Meiji University, Japan*
Ichiro Miki, *Meiji University, Japan*

IAS51p3

A Simplified Novel Sensorless Control of SRM

Dong-Hee Lee, *Kyungshung University, Korea*
Tae-Hyoung Kim, *Kyungshung University, Korea*
Jin-Woo Ahn, *Kyungshung University, Korea*

IAS51p4

Torque Ripple Reduction Drive of Single-Phase SRM with PFC

Jianing Liang, *Kyungshung University, Korea*
Zhen-Guo Lee, *Kyungshung University, Korea*
Dong-Hee Lee, *Kyungshung University, Korea*
Jin-Woo Ahn, *Kyungshung University, Korea*

IAS51p5

Analysis of Torque Dynamics for Switched Reluctance Drives with Instantaneous Torque Control

Nisai H. Fuengwarodsakul, *RWTH Aachen University, Germany*
Jens O. Fiedler, *RWTH Aachen University, Germany*
Rik W. De Doncker, *RWTH Aachen University, Germany*

IAS51p6

Contactless Energy Transfer to a Moving Actuator

Jeroen de Boeij, *Eindhoven University of Technology, The Netherlands*
Elena Lomonova, *affiliation not cited*
Jorge Duarte, *affiliation not cited*
André Vandenput, *affiliation not cited*

INDUSTRIAL DRIVES COMMITTEE

Wednesday, 11 October 2:00 PM – 6:00 PM

Session 52—PM Sensorless Drives

Session Chair: Tom Jahns, *University of Wisconsin-Madison, USA*
Session Organizer: Fabio Giulii Capponi, *University of Rome, Italy*

IAS52p1

Dynamic Properties of Back-emf -based Sensorless Drives

Luiz A. de S. Ribeiro, *CEFET-MA, Brazil*

Michael C. Harke, *University of Wisconsin–Madison, USA*

Robert D. Lorenz, *University of Wisconsin–Madison, USA*

IAS52p2

Eddy Current Effects on Rotor Position Estimation for Sensorless Control of PM Synchronous Machine

Jiangang Hu, *The Ohio State University, USA*

Longya Xu, *The Ohio State University, USA*

Jingbo Liu, *Rockwell Automation, USA*

IAS52p3

Initial Rotor Polarity Detection and Sensorless Control of PM Synchronous Machines

Joachim Holtz, *University of Wuppertal, Germany*

IAS52p4

Sensorless Control for Four-Switch Three-Phase Brushless DC Motor Drives

Cheng-Tsung Lin, *National Taiwan University, Taiwan*

Chung-Wen Hung, *National Taiwan University, Taiwan*

Chih-Wen Liu, *National Taiwan University, Taiwan*

IAS52p5

A New Current-Ratio-Oriented Simple Vector Control Method for Starting Up Sensorless Drive of Permanent-Magnet Synchronous Motors—Feedback Control of Effective/Reactive Currents Based on “MIR Strategy”

Shinji Shinnaka, *Kanagawa University, Japan*

IAS52p6

Implementation and Sensorless Vector-Control Design and Tuning Strategy for SMPM Machines in Fan-type Applications

Parag Kshirsagar, *Virginia Polytechnic Institute and State University, USA*

Rolando P Burgos, *Virginia Polytechnic Institute and State University, USA*

Alessandro Lidozzi, *RomaTre University, Italy*

Jihoon Jang, *Hyundai Motor Company, Korea*

Fred Wang, *Virginia Polytechnic Institute and State University, USA*

Dushan Boroyevich, *Virginia Polytechnic Institute and State University, USA*

Seung-Ki Sul, *Seoul National University, Korea*

INDUSTRIAL POWER CONVERTER COMMITTEE

Wednesday, 11 October 2:00 PM – 6:00 PM

Session 53—Design, Control and Analysis in Power Converters

Session Chair: Apeldoorn Oscar, *ABB-Schweiz, Switzerland*

Session Organizer: Kevin Lee, *Eaton Corporation, USA*

IAS53p1

A Novel Circuit Topology of Three-Phase Direct AC–AC PWM Voltage Regulator

Nabil A. Ahmed, *Sophia University, Japan*

Masafumi Miyatake, *Sophia University, Japan*

Hyun Woo Lee, *Kyungnam University, Korea*

Mutsuo Nakaoka, *Kyungnam University, Korea*

IAS53p2

Output Protection Strategies for Matrix Converters in Distributed Generation Applications

B. W. Augdahl, *Schweitzer Engineering Laboratories, Inc., USA*

H. L. Hess, *University of Idaho, USA*

B. K. Johnson, *University of Idaho, USA*

IAS53p3

A Simple Current Control for Matrix Converter

Milton E. de Oliveira Filho, *Campinas University, Brazil*

Ernesto Ruppert Filho, *Campinas University, Brazil*

K. E. B. Quinderé, *Campinas University, Brazil*

Jonas R. Gazoli, *Campinas University, Brazil*

IAS53p4

DC-Capacitance Estimation of DC-Link Capacitors using AC Voltage Injection in AC/DC/AC PWM Converters

Ahmed. G. Abo-Khalil, *Yeungnam University, Korea*

Dong-Choon Lee, *Yeungnam University, Korea*

IAS53p5

Constructing a Novel Power Converter by Matrix Converter Theory and Z-Source Inverter Concepts for ISA 42 V PowerNet System

Keping You, *The University of New South Wales, Australia*
M. F. Rahman, *Universidade Federal de Campina Grande, Brazil*

IAS53p6

Single-Phase to Three-Phase DC-Link Three-Leg Converter with Minimization of the Capacitor Currents

C. B. Jacobina, *Universidade Federal de Campina Grande, Brazil*
E. C. dos Santos Jr., *Universidade Federal de Campina Grande, Brazil*
I. S. de Freitas, *Universidade Federal de Campina Grande, Brazil*
M. B. R. Correa, *Universidade Federal de Campina Grande, Brazil*
E. R. C. da Silva, *Universidade Federal de Campina Grande, Brazil*

INDUSTRIAL POWER CONVERTER COMMITTEE

Wednesday, 11 October 2:00 PM – 6:00 PM

Session 54—Soft Switching and Resonant Converters

Session Chair: Deepak Divan, *Georgia Institute of Technology, USA*

Session Organizer: Robert Guenther, *NWL, USA*

IAS54p1

High Efficiency, High Power Density DC–DC Converter with Wide Input Range

Xiangcheng Wang, *University of Central Florida, USA*
Feng Tian, *University of Central Florida, USA*
Yinxing Li, *Baoji College of Art and Science, China*
Issa Batarseh, *University of Central Florida, USA*

IAS54p2

Comparison of Two Soft Switching DC–DC Converters for Fuel Cell Applications

Aude Ivanès, *Institut National Polytechnique de Grenoble, France*
Bang Viet Dang, *Institut National Polytechnique de Grenoble, France*
Yves Lembeye, *Institut National Polytechnique de Grenoble, France*
Jean Paul Ferrieux, *Institut National Polytechnique de Grenoble, France*
Jean Barbaroux, *Institut National Polytechnique de Grenoble, France*

IAS54p3

A New High Frequency Linked Soft-Switching PWM DC–DC Converter with High and Low Side DC Rail Active Edge Resonant Snubbers for High Performance Arc Welder

Khairy Fathy, *Kyungnam University, Korea*
Toshimitsu Doi, *Daihen Corporation, Japan*
Keiki Morimoto, *Daihen Corporation, Japan*
Hyun Woo Lee, *Kyungnam University, Korea*
Mutsuo Nakaoka, *Kyungnam University, Korea; Industrial College of Technology University, Japan*

IAS54p4

Multiphase LLC Series Resonant Converter for Microprocessor Voltage Regulation

Taotao Jin, *University of California–Irvine, USA*
Keyue Smedley, *University of California–Irvine, USA*

IAS54p5

A New Circuit Geometry SAZZ for an EV Drive Application

Yukinori Tsuruta, *Yokohama National University, Japan*
Masaki Bando, *Yokohama National University, Japan*
Yoshihiro Ito, *Yokohama National University, Japan*
Atsuo Kawamura, *Yokohama National University, Japan*

IAS54p6

LCC Zero-Voltage-Switching Buck Converter with Synchronous Rectifier

Osama Abdel-Rahman, *University of Central Florida, USA*
Jun Liu, *University of Central Florida, USA*
Liangbin Yao, *University of Central Florida, USA*
Issa Batarseh, *University of Central Florida, USA*
Hong Mao, *Emerson Network Power, USA*

IAS54p7

N Interleaved Boost Converter with a Novel ZVT Cell Using a Single Resonant Inductor for High Power Applications

Nam-Ju Park, *Hanyang University, Korea*
Dong-Seok Hyun, *Hanyang University, Korea*

ENERGY SYSTEMS COMMITTEE

Wednesday, 11 October 2:00 PM – 6:00 PM

Session 55—Energy System III

Session Chair and Organizer: Wei-Jen Lee, *University of Texas at Arlington, USA*

IAS55p1

A Fully Analytical PEM Fuel Cell System Model for Control Applications

Felix Grasser, *Ecole Polytechnique Fédérale de Lausanne, France*

Alfred C. Rufer, *Ecole Polytechnique Fédérale de Lausanne, France*

IAS55p2

Cost Considerations on Fuel Cell Renewable Energy Systems

M. Godoy Simoes, *Colorado School of Mines, USA*

Caroline S. Uriarte, *Colorado School of Mines, USA*

Felix. A. Farret, *Federal University of Santa Maria, Brazil*

IAS55p3

A Novel Motor Energy Monitoring Scheme using Wireless Sensor Networks

Bin Lu, *Georgia Institute of Technology, USA*

Thomas G. Habetler, *Georgia Institute of Technology, USA*

Ronald G. Harley, *Georgia Institute of Technology, USA*

IAS55p4

Solid Oxide Fuel Cell/Gas Turbine Hybrid APU System for Aerospace Applications

Kaushik Rajashekara, *Delphi Corporation, USA*

James Grieve, *Delphi Corporation, USA*

David Daggett, *Boeing Commercial Airplanes, USA*

PRODUCTION AND APPLICATION OF LIGHT COMMITTEE

Wednesday, 11 October 2:00 PM – 6:00 PM

Session 56—Light and Applications

Session Chair and Organizer: Georges Zissis, *University Toulouse 3, France*

IAS56p1

Influence of Voltage and Frequency Dimming on Power Losses in HF Electronic Ballasts for Compact Fluorescent Lamps

Mohsin Ayaz Shafi, *University of Cambridge, UK*

R. A. McMahon, *University of Cambridge, UK*

IAS56p2

Comparison of Class E and Half Bridge Inverters for Use in Electronic Ballasts

Ashish Ekbote, *Northern Illinois University, USA*

Donald S. Zinger, *Northern Illinois University, USA*

IAS56p3

Physical and Mathematical Meaning of the Alpha Constant, Einstein's Equation, and Planck Dimensions

Ed Hammer, *HammerTek Advisory LLC, USA*

IAS56p4

Extended Simplification of Einstein's Famous Equation

Ed Hammer, *HammerTek Advisory LLC, USA*

IAS56p5

Predicted Resonance with Alpha Constant and Einstein's Equation

Ed Hammer, *HammerTek Advisory LLC, USA*

POWER SYSTEM PROTECTION COMMITTEE

Wednesday, 11 October 2:00 PM – 6:00 PM

Session 57—Power System Protection II

Session Chair: Carey Cook, *S&C Electric Company, USA*

Session Organizer: Rasheek Rifaat, *Jacobos Engineering, Calgary, Canada*

IAS57p1

On Outdoor Lighting Installations Grounding Systems

Massimo Mitolo, *Chu & Gassman, USA*

IAS57p2

Power Lines Made by Many Parallel Single Core Cables: A Case Study

Fabio Freschi, *Politecnico di Torino, Italy*

Michele Tartaglia, *Politecnico di Torino, Italy*

IAS57p3

Ferroresonance in a 13.8 kV Distribution Line

Peter E. Sutherland, *EPRI Solutions, Inc., USA*

Robert Manning, *United Illuminating Co., USA*

IAS57p4

Voltage Sag Compensation with Z-Source Inverter-based Dynamic Voltage Restorer

D. M. Vilathgamuwa, *Nanyang Technological University, Singapore*

C. J. Gajanayake, *Nanyang Technological University, Singapore*

P. C. Loh, *Nanyang Technological University, Singapore*

Y. W. Li, *Nanyang Technological University, Singapore*

IAS57p5

A Parametric Model Approach to Arc Fault Detection for DC and AC Power Systems

S. Arunachalam, *University of Texas at El Paso, USA*

B. Diong, *Texas Christian University, USA*

POWER ELECTRONICS DEVICES & COMPONENTS COMMITTEE

Wednesday, 11 October 2:00 PM – 6:00 PM

Session 58—Drive Circuits, Paralleling Considerations and EMI

Session Chair: Braham Ferreira, *Delft University of Technology, Netherlands*

Session Organizer: Jean-Luc Schanen, *LEG, France*

IAS58p1

Real-Time Optimization of IGBT/Diode Cell Switching under Active Voltage Control

Y. Wang, *University of Cambridge, UK*

P. R. Palmer, *University of Cambridge, UK*

T. C. Lim, *University of Strathclyde, UK*

S. J. Finney, *University of Strathclyde, UK*

A. T. Bryant, *University of Warwick, UK*

IAS58p2

Optimized Gate Drivers for Internally Commutated Thyristors (ICTs)

Peter Köllensperger, *RWTH Aachen University, Germany*

Rik W. De Doncker, *RWTH Aachen University, Germany*

IAS58p3

Experiment and Simulation Studies of Current Distribution in Paralleled Thyristors

J. Wu, *University of Cambridge, UK*

Z. Wang, *University of Cambridge, UK*

P. R. Palmer, *University of Cambridge, UK*

A. T. Bryant, *University of Warwick, UK*

D. Remy, *Alstom Power Electrical and Control Systems, France*

E. Santi, *University of South Carolina, USA*

J. L. Hudgins, *University of Nebraska, USA*

IAS58p4

Power MOSFETs Paralleling Operation for High Power High Density Converters

Hongfang Wang, *Virginia Polytechnic Institute and State University, USA*

Fred Wang, *Virginia Polytechnic Institute and State University, USA*

IAS58p5

High Frequency Modeling of a Converter with an RF-EMI Filter

Andrew C. Baisden, *Virginia Polytechnic Institute and State University, USA*

Dushan Boroyevich, *Virginia Polytechnic Institute and State University, USA*

Jacobus Daniel van Wyk, *Virginia Polytechnic Institute and State University, USA*

IAS58p6

Layout Techniques for Reduction of Common Mode Current in Static Converters

Jérémie Aimé, *Institut National Polytechnique de Grenoble, France*

James Roudet, *Institut National Polytechnique de Grenoble, France*

Christian Vollaire, *Ecole Centrale de Lyon CEGELY, France*

Philippe Baudesson, *Schneider Electric, France*

Jacques Ecrabey, *Schneider Electric, France*

IAS58p7

Simplified Design of Common Mode Chokes for Reduction of Motor Ground Currents in Inverter Drives

Annette Annette, *University of Wisconsin–Madison, USA*

Charles R. Sullivan, *Dartmouth College, USA*

THURSDAY MORNING SESSIONS

ELECTRIC MACHINES COMMITTEE

Thursday, 12 October 8:00 AM – 12:00 PM

Session 59—Faults and Diagnostics I

Session Chair and Organizer: Gerard Capolino, *University of Picardie Jules Verne, France*

IAS59p1

Estimation of Static Eccentricity Severity in Induction Motors for On-Line Condition Monitoring

Jason Grieger, *University of Adelaide, Australia*
Randy Supangat, *University of Adelaide, Australia*
Nesimi Ertugrul, *University of Adelaide, Australia*
Wen L. Soong, *University of Adelaide, Australia*
Douglas A. Gray, *University of Adelaide, Australia*
Colin Hansen, *University of Adelaide, Australia*

IAS59p2

Monitoring of Induction Machine Currents by High Frequency Resolution Analysis

Alberto Bellini *University of Modena and Reggio Emilia, Italy*
Fiorenzo Filippetti, *University of Bologna, Italy*
Domenico Casadei *University of Bologna, Italy*
Amine Yazidi, *University of Picardie “Jules Verne”, France*
Gerard Capolino, *University of Picardie “Jules Verne”, France*

IAS59p3

Detection of Rotor Faults in Field-oriented Controlled Induction Machines

E. Serna, *University of Siegen, Germany*
J. M. Pacas, *University of Siegen, Germany*

IAS59p4

Non-Stationary Motor Fault Detection Using Recent Quadratic Time-Frequency Representations

Satish Rajagopalan, *Georgia Institute of Technology, USA*
Thomas G. Habetler, *Georgia Institute of Technology, USA*
Ronald G. Harley, *Georgia Institute of Technology, USA*
José A. Restrepo, *Universidad Simón Bolívar, Venezuela*
José M. Aller, *Universidad Simón Bolívar, Venezuela*

IAS59p5

A Model of Dual Stator Winding Induction Machine in Case of Stator and Rotor Faults for Diagnosis Purpose

R. N. Andriamalala, *Université Henri Poincaré, France*
H. Razik, *Université Henri Poincaré, France*
G. Didier, *Université Henri Poincaré, France*
F. M. Sargos, *Université Henri Poincaré, France*
C. R da Silva, *Universidade Federal da Paraíba, Brazil*
E. R. C da Silva, *Universidade Federal da Paraíba, Brazil*

IAS59p6

Diagnosis of Rotor Faults in Closed Loop Induction Motor Drives

S. M. A. Cruz, *University of Coimbra, Portugal*
A. J. M. Cardoso, *University of Coimbra, Portugal*

IAS59p7

Detection of Rotor Faults in Squirrel Cage Induction Motors using Adjustable Speed Drives

Carla C. Martins Cunha, *Universidade Federal do Espírito Santo, Brazil*
Braz J. Cardoso Filho, *Universidade Federal de Minas Gerais, Brazil*

ELECTRIC MACHINES COMMITTEE

Thursday, 12 October 8:00 AM – 12:00 PM

Session 60—AC Machines and Generators

Session Chair and Organizer: Andy Knight, *University of Alberta, Canada*

IAS60p1

Stator Inter-Turn Fault Detection of Synchronous Machines Using Field Current Signature Analysis

Prabhakar Neti, *University of Victoria, Canada*
Subhasis Nandi, *University of Victoria, Canada*

IAS60p2

Optimization of Shield Thickness of Finite Length Rotors for Eddy Current Loss Minimization

Manoj R. Shah, *GE Global Research Center, USA*
Sang Bin Lee, *Korea University, Korea*

IAS60p3

Prototyping a Composite SMC/Steel Axial-Flux PM Wind Generator

M. A. Khan, *University of Cape Town, South Africa*
P. Pillay, *Clarkson University, USA*
N. R. Batane, *Clarkson University, USA*
D. J. Morrison, *Clarkson University, USA*

IAS60p4

Design and Analysis of a New Hybrid Excited Doubly Salient Machine Capable of Field Control

Xiaoyong Zhu, *Southeast University, PR China*
Ming Cheng, *Southeast University, PR China*
Wei Hua, *Southeast University, PR China*
Jianzhong Zhang, *Southeast University, PR China*
Wenxiang Zhao, *Southeast University, PR China*

IAS60p5

Over-Current Simulation Test for High Temperature Superconducting Generator

Wensen Wang, *General Electric, USA*
Liang Li, *General Electric, USA*
Tao Zhang, *General Electric, USA*
James Alexander, *General Electric, USA*
Xianrui Huang, *General Electric, USA*
Trifon E. Laskaris, *General Electric, USA*
James. W. Bray, *General Electric, USA*
James M. Fogarty, *General Electric, USA*

IAS60p6

Performance and Vibration Analysis of a 75 kW Brushless Double-fed Induction Generator Prototype

F. Rincos, *WEG Electrical Equipments S.A., Brazil*
R. Carlson, *Universidade Federal de Santa Catarina, Brazil*
N. Sadowski, *Universidade Federal de Santa Catarina, Brazil*
P. Kuo-Peng, *Universidade Federal de Santa Catarina, Brazil*
H. Voltolini, *Universidade Tecnologica Federal do Parana, Brazil*

IAS60p7

Design of Flux-Switching Permanent Magnet Machine Considering the Limitation of Inverter and Flux-Weakening Capability

Wei Hua, *Southeast University, China*
Ming Cheng, *Southeast University, China*
Z. Q. Zhu, *University of Sheffield, UK*
D. Howe, *University of Sheffield, UK*

INDUSTRIAL DRIVES COMMITTEE

Thursday, 12 October 8:00 AM – 12:00 PM

Session 61—Induction Machine Drives II

Session Chair: Pragasen Pillay, *Clarkson University, USA*

Session Organizer: Peter Magyar, *Hella Corp., Germany*

IAS61p1

Frame Alignment Stability Issues in Natural Field Orientation

R. E. Betz, *University of Newcastle, Australia*
G. Mirzaeva, *University of Newcastle, Australia*

IAS61p2

An Unique Ultracapacitor Direct Integration Scheme in Multilevel Motor Drives for Large Vehicle Propulsion

Shuai Lu, *University of Missouri–Rolla, USA*
Keith A. Corzine, *University of Missouri–Rolla, USA*
Mehdi Ferdowsi, *University of Missouri–Rolla, USA*

IAS61p3

Observer-based Estimation of Stator Winding Faults in Delta-connected Induction Motors: An LMI Approach

Carsten Skovmose Kallesøe, *Grundfos Management A/S, Denmark*
Pierre Vadstrup, *Grundfos Management A/S, Denmark*
Henrik Rasmussen, *Aalborg University, Denmark*
Roosbeh Izadi-Zamanabadi, *Aalborg University, Denmark*

IAS61p4

A New Method for Induction Motors Parameter Estimation Using Genetic Algorithms and Transient Speed Measurements

Andrew Trentin, *University of Nottingham, UK*
Pericle Zanchetta, *University of Nottingham, UK*
Patrick Wheeler, *University of Nottingham, UK*
Jon Clare, *University of Nottingham, UK*
Robert Wood, *US Army Research Laboratory, USA*
Dimos Katsis, *US Army Research Laboratory, USA*

IAS61p5

Direct Torque Control with Reduced Switching Losses for Asymmetric Multilevel Inverter-fed Induction Motor Drives

Samir Kouro, *Universidad Técnica Federico Santa María, Chile*
Rafael Bernal, *Universidad Técnica Federico Santa María, Chile*
Hernán Miranda, *Universidad Técnica Federico Santa María, Chile*
José Rodríguez, *Universidad Técnica Federico Santa María, Chile*
Jorge Pontt, *Universidad Técnica Federico Santa María, Chile*

IAS61p6

A Luenberger-Sliding Mode Observer for On-line Parameter Estimation and Adaptation in High-Performance Induction Motor Drives

S. M. Nayeem Hasan, *The University of Akron, USA*
Iqbal Husain, *The University of Akron, USA*

INDUSTRIAL DRIVES COMMITTEE

Thursday, 12 October 8:00 AM – 12:00 PM

Session 62—Drives II

Session Chair: Fabio Giulii Capponi, *University of Rome, Italy*

Session Organizer: Yen-shin Lai, *National Technological University of Taiwan, Taiwan*

IAS62p1

A Protection of the Electrolytic Capacitor-less Drive System against the Input Grid Interruption

Wook-Jin Lee, *Seoul National University, Korea*
Seung-Ki Sul, *Seoul National University, Korea*
Young-Seok Shim, *Hyundai Elevator Co., Ltd., Korea*

IAS62p2

Integration of the Measurement Vector Insertion Method (MVIM) with Discontinuous PWM for Enhanced Single Current Sensor Operation

Hongrae Kim, *University of Wisconsin–Madison, USA*
Thomas M. Jahns, *University of Wisconsin–Madison, USA*

IAS62p3

Compensation of Zero-Current Clamping Effects for Sensorless Drives Based on High-Frequency Signal Injection

Chan-Hee Choi, *Yeungnam University, Korea*
Jul-Ki Seok, *Yeungnam University, Korea*

IAS62p4

Slip Gain Estimation for Indirect Field Controlled Drives Using Stator Transient Signals

Juan M. Guerrero, *University of Oviedo, Spain*
Michael W. Degner, *University of Oviedo, Spain*
Fernando Briz, *Ford Motor Company, USA*

IAS62p5

Application of General Space Vector Modulation Approach of AC–AC Matrix Converter Theory to a New Bidirectional Converter for ISA 42 V System

Keping You, *The University of New South Wales, Australia*
M. F. Rahman, *The University of New South Wales, Australia*

IAS62p6

Sensorless Speed Control of Traveling Wave Ultrasonic Motor

Markus Flueckiger, *Ecole Polytechnique Fédérale de Lausanne, Switzerland*
Matteo Bullo, *Ecole Polytechnique Fédérale de Lausanne, Switzerland*
Yves Perriard, *Ecole Polytechnique Fédérale de Lausanne, Switzerland*

IAS62p7

Novel Converter Concept for Bearingless Slice Motor Systems

Martin.T. Bartholet, *Swiss Federal Institute of Technology Zurich, Switzerland*
Thomas Nussbaumer, *Swiss Federal Institute of Technology Zurich, Switzerland*

INDUSTRIAL POWER CONVERTER COMMITTEE

Thursday, 12 October 8:00 AM – 12:00 PM

Session 63—DC–DC Converters

Session Chair: Jason Lai, *Virginia Tech., USA*

Session Organizer: A. M. Khambadkone, *National University of Singapore, Singapore*

IAS63p1

High Efficiency and Fully Integrated Self Powering Technique for VIPer-based Flyback Converters

Nicolas Rouger, *INPG, France*

Stéphane Catellani, *INPG, France*

Jean-Christophe Crébier, *INPG, France*

IAS63p2

Robust Controller Using Polynomial Chaos Theory

A. Smith, *University of South Carolina, USA*

A. Monti, *University of South Carolina, USA*

F. Ponci, *University of South Carolina, USA*

IAS63p3

High Efficient Interleaved Multi-Channel DC–DC Converter Dedicated to Mobile Applications

Blaise Destraz *Ecole Polytechnique Fédérale de Lausanne, Switzerland*

Yannick Louvrier *Ecole Polytechnique Fédérale de Lausanne, Switzerland*

Alfred Rufer *Ecole Polytechnique Fédérale de Lausanne, Switzerland*

IAS63p4

Design of a Redundant Paralleled Voltage Regulator Module System with Improved Efficiency and Dynamic Response

Santanu K. Mishra, *International Rectifier, USA*

Steve Zhou, *International Rectifier, USA*

Wenkang Huang, *International Rectifier, USA*

George Schuellein, *International Rectifier, USA*

IAS63p5

Implementing Power Buffer Functionality in a DC–DC Converter by Geometric Control

Wayne W. Weaver, *University of Illinois at Champaign-Urbana, USA*

Philip T. Krein, *University of Illinois at Champaign-Urbana, USA*

IAS63p6

Quasi Linear DC–DC Converters

Deepak M. Divan, *Georgia Institute of Technology, USA*

Satish Rajagopalan, *Georgia Institute of Technology, USA*

IAS63p7

A Novel Current Tripler Rectification Topology for Isolated DC–DC Converters in High Current Applications

Liangbin Yao, *University of Central Florida, USA*

Osama Abdel-Rahman, *University of Central Florida, USA*

Issa Batarseh, *University of Central Florida, USA*

Hong Mao, *Astec Power Advanced Technology, USA*

INDUSTRIAL POWER CONVERTER COMMITTEE

Thursday, 12 October 8:00 AM – 12:00 PM

Session 64—Control Applications and Issues (includes Drives and EMI)

Session Chair: Pericle Zanchetta, *University of Nottingham, UK*

Session Organizer: Solero Luca, *University "Roma Tre", Italy*

IAS64p1

Intracorporeal Microvalve Activation System Using a Transcutaneous Parallel Resonant Converter without Magnetic Core

Alberto M. Pernía *University of Oviedo, Spain*

Iván C. Orille, *University of Oviedo, Spain*

J. A. Martinez, *University of Oviedo, Spain*

J. Martín-Ramos, *University of Oviedo, Spain*

J. A. Canal, *Valnalón, Spain*

IAS64p2

High Efficiency Energy Storage System Design for Hybrid Electric Vehicle with Motor Drive Integration

Shuai Lu, *University of Missouri–Rolla, USA*
Keith A. Corzine, *University of Missouri–Rolla, USA*
Mehdi Ferdowsi, *University of Missouri–Rolla, USA*

IAS64p3

Optimal Design of a Hybrid Winding Structure for Planar Contactless Battery Charging Platform

Xun Liu, *City University of Hong Kong, China*
S. Y. Hui, *City University of Hong Kong, China*

IAS64p4

Control of an Open Winding Machine in a Grid-Connected Distributed Generation System

Mu-Shin Kwak, *Seoul National University, Korea*
Seung-Ki Sul, *Seoul National University, Korea*

IAS64p5

Design Optimization of Industrial Motor Drive Power Stage Using Genetic Algorithms

F. Wang, *Virginia Polytechnic Institute and State University, USA*
W. Shen, *Virginia Polytechnic Institute and State University, USA*
D. Boroyevich, *Virginia Polytechnic Institute and State University, USA*
S. Ragon, *Phoenix Integration, Inc., USA*
V. Stefanovic, *V-S Drives, USA*
M. Arpilliere, *Schneider Toshiba Inverter Europe, France*

IAS64p6

Investigation of the Near Field Coupling Effects on Common Mode EMI in Power Converter

Wei Chen, *Zhejiang University, China*
Limin Feng, *Zhejiang University, China*
Henglin Chen, *Zhejiang University, China*
Zhaoming Qian, *Zhejiang University, China*

IAS64p7

Analysis and Experimental Results of Load Adaptive Voltage Regulator for Battery Powered Applications

Jaber A. Abu Qahouq, *Intel Corporation, USA*
Lilly Huang, *Intel Corporation, USA*
Osama Abdel-Rahman, *University of Central Florida, USA*
Issa Batarseh, *University of Central Florida, USA*

PRODUCTION AND APPLICATION OF LIGHT COMMITTEE

Thursday, 12 October 8:00 AM – 12:00 PM

Session 65—Special Session on LEDs

Session Chair and Organizer: Joeb Jacobs, *Philips Research Laboratories, Germany*

IAS65p1

LEDs in Real Lighting Applications: From Niche Markets to General Lighting

Matthias Wendt, *Philips Lighting, Germany*
Jan-Willem Andriess, *Philips Lighting, The Netherlands*

IAS65p2

Advanced Electronic Driver for Power LEDs with Integrated Colour Management

Franz Bernitz, *Osram GmbH, Germany*
Oskar Schallmoser, *Osram GmbH, Germany*
Wolfram Sowa, *Osram GmbH, Germany*

IAS65p3

Control of LEDs

B. Ackermann, *Philips Research Laboratories, Germany*
V. Schulz, *Philips Research Laboratories, Germany*
C. Martiny, *Philips Research Laboratories, Germany*
A. Hilgers, *Philips Research Laboratories, Germany*
X. Zhu, *Philips Research Laboratories, China*

IAS65p4

Illumination and Color Management in Solid State Lighting

Kevin Lima, *Avago Technologies, Malaysia*
Joon Chok Lee, *Avago Technologies, Malaysia*
George Panotopoulos, *Avago Technologies, USA*
Rene Helbing, *Avago Technologies, USA*

IAS65p5

Driver Electronics for LEDs

Georg Sauerländer, *Philips Research Laboratories, Germany*

Dirk Hente, *Philips Research Laboratories, Germany*
Harald Radermacher, *Philips Research Laboratories, Germany*
Eberhard Waffenschmidt, *Philips Research Laboratories, Germany*
Joep Jacobs, *Philips Research Laboratories, Germany*

POWER SYSTEM PROTECTION COMMITTEE

Thursday, 12 October 8:00 AM – 12:00 PM

Session 66—Power System Protection III

Session Chair: Louie Powell, *Engineering Consultant, Saratoga Springs, USA*

Session Organizer: Rasheek Rifaat, *Jacobs Engineering-Calgary, Canada*

IAS66p1

Analysis and Design of GaInSn Current Limiter

Huaren Wu, *Nanjing Normal University, China*

Xiaohui Li, *Nanjing Normal University, China*

Min Zhang, *Nanjing University of Science and Technology, China*

D. Stade, *Ilmenau Technical University, Germany*

H. Schau, *Ilmenau Technical University, Germany*

IAS66p2

Automatic Bus Transfer Problems in the 6.3 kV Switchgear of Hellenic Petroleum Polypropylene Plant

S. J. Kiartzis, *Hellenic Petroleum SA, Greece*

IAS66p3

Comprehensive Design of Electrical Installations by Integrating System Configuration and Operational Safety Aspects

Erling Hesla, *Hesla & Associates, USA*

Giuseppe Parise, *University of Rome "La Sapienza", Italy*

Rasheek M. Rifaat, *Jacobs Canada Inc.*

IAS66p4

Effect of Single-Phase Reclosing on Industrial Loads

Peter E. Sutherland, *GE Energy Services, USA*

Tom A. Short, *EPRI Solutions, Inc., USA*

IAS66p5

Grounding Fault Protection with Phase Current Difference for Ineffectively Earthed Power Systems

Wang Yuanyuan, *Changsha University of Science and Technology, China*

Zeng Xiangjun, *Changsha University of Science and Technology, China*

Su Sheng, *Changsha University of Science and Technology, China*