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IEEE Industry Applications Society  
45<sup>th</sup> Annual Meeting

PRESIDENT'S  
BANQUET

Tuesday, October 5, 2010  
Hyatt Regency  
Houston, Texas, U.S.A.



# HOUSTON CONFERENCE COMMITTEE

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## CONFERENCE CHAIR

Bruno Lequesne

## TECHNICAL PROGRAM COORDINATOR

Regina Halpin

## TUTORIAL PROGRAM COORDINATOR

Donald Dunn / Paul Barrett

## TREASURER

R. Mark Nelms

## LOCAL COMMITTEE CHAIR

Donald Dunn

## WEBMASTER

Rangarajan Tallam

## SOCIETY TREASURER

Donald S. Zinger

## IAS AWARDS DEPARTMENT CHAIR

Andrew Bagley

## IAS MEETING DEPARTMENT CHAIR

R.Mark Nelms

## CONFERENCE COORDINATORS

Pam Wagner

Lauren Westcott

*Courtesy Associates*

# PROGRAM

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**Welcome** Thomas A. Nondahl

**Dinner**

**Introductions** Thomas A. Nondahl

**Awards Presentations** Andrew Bagley

Industry Application Society Awards Thomas A. Nondahl

Distinguished Lecturers Thomas A. Nondahl

Chapter Awards Peter Magyar

Society Magazine Prize Awards Louie Powell

Society Transactions Prize Awards Carlton E. Speck

2009 Fellows Andrew Bagley

**2011 Annual Meeting** Bruno Lequesne

**Closing Remarks** Thomas A. Nondahl



IEEE Industry Applications Society  
**2010**  
**ANDREW W. SMITH**  
**OUTSTANDING YOUNG MEMBER**  
**AWARD**  
*to*  
**Dr. Wei Qiao**

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2010 IEEE Industry Applications Society  
45th Annual Meeting

Tuesday, October 5, 2010  
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## Dr. Wei Qiao

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Recipient

2010 IEEE IAS ANDREW W. SMITH  
OUTSTANDING YOUNG MEMBER AWARD

*“In recognition of outstanding achievement through involvement in IEEE Industry Applications Society activities by an engineer less than 35 years of age”*

## BIOGRAPHY OF Dr. Wei Qiao

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**Wei Qiao** (S'05–M'08) received his B.Eng. and M.Eng. degrees in electrical engineering from Zhejiang University, Hangzhou, China, in 1997 and 2002, respectively, his M.S. degree in high performance computation for engineered systems from Singapore-MIT Alliance, Singapore in 2003, and his Ph.D. degree in electrical engineering from Georgia Institute of Technology, Atlanta in 2008.

From 1997 to 1999, he was an Electrical Engineer in China Petroleum & Chemical Corporation (Sinopec). Since August 2008, he has been Assistant Professor in the Department of Electrical Engineering at the University of Nebraska–Lincoln, USA. His research interests cover broad areas of electric power and energy systems, including renewable energy systems, smart grids, power system control and optimization, condition monitoring and fault diagnosis, energy storage, power electronics, and high-performance computation for electric power and energy systems. Currently, he is supervising eleven Ph.D. students, four Master's student, and several undergraduate students conducting research in these areas. He is the principal investigator of more than \$2.5 million ongoing research projects supported by the U.S. National Science Foundation (NSF), Department of Energy (DOE), Department of Transportation (DOT), Nebraska Center for Energy Sciences Research (NCESR), and industry. He has published 2 book chapters, 15 refereed journal papers, and more than 40 refereed international conference proceeding papers concerning the electric power and energy systems.

Dr. Qiao is a member of the IEEE, IAS, PES, PELS and CIS. He is the Chair of the IEEE PES Task Force on Intelligent Control for Wind Plants and the Co-Chair of the IEEE PELS Sustainable Energy Sources Subcommittee. He was the Technical Program Co-Chair and Finance Co-Chair of the 2009 IEEE Symposium on Power Electronics and Machines in Wind Applications. He has organized and chaired several special and regular sessions at IEEE-sponsored international conferences, including the IEEE IAS 44th Annual Meeting, IEEE PES General Meeting 2010, and 2009 International Joint Conference on Neural Networks. He has served as a reviewer for numerous IEEE journals and other peer-reviewed journals, including the IEEE Transactions on Industry Applications, IEEE Transactions on Power Electronics, IEEE Transactions on Energy Conversion, IEEE Transactions on Industrial Electronics, IEEE Transactions on Control Systems Technology, IEEE Transactions on Smart Grid, etc. He has served as a reviewer of papers or digests for many IEEE-sponsored conferences, including the IEEE IAS Annual Meetings 2007-2009 and the IEEE PES General Meetings 2008-2010. He has also served or been invited to serve as a panelist to judge grant proposals for several federal agencies, including the NSF and DOE.

Dr. Qiao was the recipient of a 2010 NSF CAREER Award, which is the NSF's most prestigious award for outstanding pre-tenure faculty. He was the recipient of the First Prize in the Student Poster-Paper Contest of the IEEE PES General Meeting 2006 in Montreal, Canada.

## **IEEE IAS ANDREW W. SMITH OUTSTANDING YOUNG MEMBER AWARD**

The IAS Andrew W. Smith Outstanding Young Member Award honors outstanding achievement through involvement in IEEE-IAS activities by an engineer less than 35 years of age. The recipient has been judged to have made an outstanding contribution to the profession in the form of IEEE/IAS activities such as (but not limited to) authorship of technical papers, IAS chapter leadership, IAS committee work, conference leadership, and standards working groups.

The award consists of a suitably inscribed plaque, honorarium and expenses to attend the IAS Annual Meeting.

### PAST RECIPIENTS OF IAS OUTSTANDING YOUNG MEMBER AWARD

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Dr. Ayman M. EL-Refaei.....	2009
Nadezhda A. Dvurechenskaya.....	2008
Leila Parsa.....	2007
Burak Ozpineci.....	2006
Ganesh Kumar Venayagamoorthy .....	2005
Daniel R. Neeser.....	2004
Michael J. Hittel.....	2003
Giovanna Oriti.....	2002
Leon M. Tolbert.....	2001
Annette R. von Jouanne.....	2000
Kimberly K. Eastwood.....	1999
Iqbal Husain.....	1998
S. Mark Halpin.....	1997
Christine M. Kent.....	1996



IEEE Industry Applications Society

**2010 OUTSTANDING ACHIEVEMENT  
AWARD**

*to*

**Dr. Tomy Sebastian**

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2010 IEEE Industry Applications Society  
45<sup>th</sup> Annual Meeting

Tuesday, October 5, 2010  
Hyatt Regency  
Houston, Texas, U.S.A.





## Dr. Tomy Sebastian

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Recipient  
2010 IEEE IAS OUTSTANDING  
ACHIEVEMENT AWARD

*“In Recognition of Outstanding Contributions to the  
Applications of Electricity to Industry”*

## **BIOGRAPHY OF Dr. Tomy Sebastian**

**Tomy Sebastian** (S'80, M'86-SM'94-F'03) received the B.Sc. (Eng.) degree from Regional Engineering College Calicut (presently National Institute of Technology, Calicut), India, in 1979, the M.S. degree from Indian Institute of Technology Madras in 1982, and MA.Sc. and Ph.D. degrees from the University of Toronto, Canada, in 1984 and 1986, respectively. From 1979 to 1980, he was with the R & D Center of KELTRON, Trivandrum, India. From 1987 to 1992, he was with the Research and Applied Technology Division of Black and Decker Corporation, Towson, MD. Since 1992 he has been working at the Innovation Center of Nexteer Automotive in, Saginaw, MI, USA, where he is currently the Chief Scientist. He also taught several courses on Power Electronics, Motor Drives and Advanced Motor Design at University of Maryland, College Park, MD, The Ohio State University, Columbus, OH and University of Toronto, Ontario, Canada at various times.

Dr. Sebastian has done extensive research in the area of brushless motor issues and applications in automotive steering systems. The work resulted in the first ever brushless motor based electric power steering system in the market. He has published over 40 technical articles and holds 23 US patents. He is co-recipient of an IEEE Industry Application Society Transactions first-prize paper award. In 2003 he was elected as a Fellow of IEEE. He was inducted in to the Delphi Innovation Hall of Fame in 2006.

Dr. Sebastian has been the Secretary (1992-1993), Vice Chair for Programs (1994-1995), Vice Chair for Paper reviews (1996-1997) and Chairman (1998-1999) of the Industrial Drives Committee of the Industry Applications Society. During 2002-2003, he has been the Vice Chair for paper reviews for the Industrial Power Conversion Systems Dept. of the IAS. As the Chair of the Industrial Power Conversion Systems Department, he also served in the IEEE Industry Application Society Board during 2004-2005. He has been the General Chair for the First IEEE Energy Conversion Congress and Exposition (IEEE ECCE 2009) held in San Jose, CA. Currently he is the Steering Committee Chair for the ECEE. He also serves on the editorial Advisory Board for the International Journal of Vehicle Autonomous Systems and for the Korean Institute of Electrical Engineers International Transactions on Electrical Machinery and Energy Conversion Systems.

During 2008-2009 as a distinguished lecture of the IEEE Industry Applications Society, Dr. Sebastian has given more than 15 lectures all over the world. He is the IEEE Student Chapter mentor at the Rajiv Gandhi Institute of Technology in Kerala, India. He is also an ABET program evaluator representing

# IEEE IAS OUTSTANDING ACHIEVEMENT AWARD

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The Society Outstanding Achievement Award honors a member who has made an outstanding contribution in the application of electricity to industry in accordance within the scope of the Industry Applications Society. The contribution may have been through invention, technical development, or through executive or managerial direction. In selecting recipient, the committee may apply any of the following criteria:

1. Invention in the field as exemplified by issued patents
2. Contribution to the general engineering or scientific basis of the technologies found within the scope of the IAS, or
3. Executive or managerial contribution in the organization or operation of enterprises associated with the scope of the IAS

The award consists of a handcrafted statuette and honorarium.

## PAST RECIPIENTS OF IAS OUTSTANDING ACHIEVEMENT AWARD

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Dr. Kaushik Rajashekara.....	2009
Peresh C. Sen.....	2008
Caio A. Ferreira.....	2007
Jacobus Daniel van Wyk.....	2006
Nobuyuki Matsui.....	2005
Hirofumi Akagi.....	2004
Robert D. Lorenz.....	2003
Rick W. De Doncker.....	2002
L. Bruce McClung.....	2001
Kouki Matsuse.....	2000
Akira Nabae.....	1999
Donald W. Novotny.....	1998
Joachim Holtz.....	1997
Austin H. Bonnett.....	1996
C. James Erickson.....	1995
Ray P. Stratford.....	1994
Bimal K. Bose.....	1993
Azizur Rahman.....	1992
Thomas E. Sparling.....	1991
George W. Walsh.....	1990
Donald K. Ross.....	1989
G. Curtis Herskind.....	1988
Thomas A. Lipo.....	1986
Russel W. Mills.....	1984
Ion I. Incullet.....	1983
Anthony C. Lordi.....	1982
Edward A.E. Rich.....	1981
Richard M. Emberson.....	1980
Frank A. Furfari.....	1979
Richard H. Kaufmann.....	1978
Irvin N. Howell.....	1977
Ralph H. Lee.....	1976
Walter R. Harris.....	1975
Harold Winograd.....	1974
Robert V. Watcher.....	1973
Boris Mokrytski.....	1972
Donald S. Brereton.....	1971
Charles F. Dalziel.....	1970
Robert B. Moore.....	1969



*Presentation of the*

IEEE Industry Applications Society

**2010 DISTINGUISHED SERVICE  
AWARD**

*to*

**Mark Harris**

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2010 IEEE Industry Applications Society  
Conference

The 45th IAS Annual Meeting

Tuesday, October 5, 2010

Hyatt Regency

Houston, Texas, U.S.A.



## Mark Harris

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Recipient

### 2010 IEEE IAS DISTINGUISHED SERVICE AWARD

*“In recognition of Dedication and Distinguished Service  
to the IEEE Industry Applications Society”*

## BIOGRAPHY OF Mark Harris

**Mark Harris** is currently employed as a principal systems engineer at Hamilton Sundstrand, Rockford Illinois, USA. Throughout his career at Hamilton Sundstrand, Mark has been involved in systems control and integration of electrical generation power systems and electrical mechanical actuation systems for commercial and military aircraft and power distribution systems for human space vehicles. Much of his technical interest lies within the boundaries of the IAS technical profile and professionally Mark has gained considerable benefit from his membership in the IAS, in the enhancement of his knowledge of comp-temporary machines, power electronics and controls.

Mark Harris holds a B.Sc. (hons) from the University of Salford, Greater Manchester, United Kingdom and a Masters in Engineering Professional Practice from the University of Wisconsin (Madison), United States.

Upon arrival in the USA in 1987, Mark joined the IEEE and was immediately involved in the creation of a local IAS chapter in the Rock River Valley Section. Mark Harris has been active member of the Industry Applications Society for over 20 years. In particular he has played significant contributing and leadership roles within the Chapters and Membership Department, as the chapter development chair with responsibilities for the growth and health of IAS Chapters world wide. From 2000 through 2004, he served on the Executive Board as Chapters Department Chair

Mark Harris joined the IEEE in 1987 and became the Rock River Valley Section secretary in Rockford, Illinois. He and Caio Ferreira organized a petition to form a new RRVS IAS chapter, which was granted in the early '90s. In 1995 the Rock River Valley Section received the IAS Best Small Chapter Award. The chapter has been active and healthy since. During this time, Mark Harris, Caio Ferreira and Clayton Reid collaborated in the production of videos to highlight membership benefits and chapters operations. The membership video is well regarded and has enjoyed many years of use in presenting the benefits of IAS membership to an audience.

Mark Harris joined the IAS Chapters and Membership Department in 1994 as the Chapter Development Officer. As the CMD Chapter Development Chair, he initiated a survey of the worldwide IEEE and IAS membership with a view to encouraging the development of new chapters, and joint chapters in cooperation with IAS sister societies. The IAS saw this as an opportunity to better serve the needs of the IAS membership by providing IAS education and technical products directly to members at a regional level. In order to encourage IAS chapter/joint chapter formations, particularly outside the USA a strategy was adopted of direct marketing to IEEE leadership and IEEE regional leadership in parallel to

IAS sponsored conference attendees. This led to participation in the IEEE sections congress in Denver 1999, in Minnesota 2002 and in Miami 2005. Over this period of time the IAS enjoyed significant growth in the number of chapters, with over 100 chapters worldwide.

As CMD Chair (2000-2004), Mark Harris played a significant role in the development of the IAS annual chapters and membership workshops held at the IAS Annual Conference. These workshops were created to give IAS chapter and IAS Area executives leadership operations training and to provide a forum whereupon all levels of the chapters and membership volunteer organization could interact. The one day workshop was developed provide opportunities for participants to share experiences, problem solving and network with colleagues worldwide. Chapters were strongly encouraged to apply for chapter and membership awards, and these awards were made during the Annual Conference Awards Luncheon. The chapter presentations and other useful material were published in hard copy and electronic forms. The chapter workshops have been run at every annual conference and have provided a significant contribution to effective communications between the society and the society membership.

During this time, Mark Harris collaborated with Region 10 and the Hong Kong Chapter leadership to initiate a IEEE IAS 1st Region 10 Technical Workshop on “Safety and Reliability – IEEE Approach”. The workshop was presented by Mark Halpin and Bruce McClung and took place in January 2004 at The Hong Kong Polytechnic University, Hunghom, Kowloon, Hong Kong. In 2004, Mark Harris collaborated with Region 8 leadership and the German IAS joint chapter to organize a Mega meeting in Berlin. This meeting held over three days, 12–14 May in Berlin, Germany, was hosted at four different locations, the German Association for Electrical, Electronic and Information Technologies (VDE) Berlin office, Siemens AG Power Transmission and Distribution–High Voltage Division, Alstom Power Conversion GmbH–General Drives, and the Berlin University of Technology Electrical Engineering and Computer Science research laboratories. This meeting had technical presentations on contemporary industrial and academic topics, facility and laboratory tours, social gatherings and chapter and membership activities. He also provided chapter leadership training during this workshop.

After completing his tenure as CMD Chair, Mark Harris became the Regional Workshop Committee Chair. Mark Harris along with Gilbert Li (Region 10E Area Chair) and others organized the first R10 East Regional Workshop that took place in Shanghai and Beijing in 2007. The workshops focused on, “Power Management and Conservation” related topics presented by the IAS distinguished lecturers, regional speakers and the industry experts. The discussion on the technical innovations and applications were supplemented with the presentation on the overview of IEEE-SA Standards Process, IEEE Color Books, IAS Chapters



and Membership Department (CMD) structure, benefits and opportunities available to the IAS chapters and members.

In 2008, again along with, Gilbert Li and the China IAS chapter leadership organized a second series of one day IEEE IAS Region 10 Workshop on the “Application of Motor Drives and Power Electronics to Transportation”. The workshop discussed those applications which previously have been the province of electromechanical and hydraulic solutions that are being seriously challenged by the new generation of electronic drives - high efficiency power electronics and advanced digital control, and the cost effective application of electrical solutions to land, sea and air vehicles. These workshops were held in Hong Kong, Shanghai and Nanjing.

# IEEE IAS DISTINGUISHED SERVICE AWARD

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The Society Distinguished Service Award is presented to a member for rendering exceptional service to the Industry Applications Society. In selecting a recipient, the committee considers contributions of the nominee to IAS through Executive Board, Technical Committee, Section or Chapter activities, which may be manifested in the following manner:

1. Exceptional administrative, managerial and leadership achievement,
2. Proposal and/or implementation of innovative new society programs, or
3. Dedication to the growth and advancement of the Society, and/or its geographic and technical entities

The award consists of an attractive plaque and honorarium

## PAST RECIPIENTS OF IAS DISTINGUISHED SERVICE AWARD

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Clayton Reid.....	2008
Peter Magyar.....	2006
Satish Chaparala.....	2005
M. Dayne Aldridge.....	2004
Andrew W. Smith.....	2003
Frederick C. Trutt.....	2002
Michael J. Foley.....	2001
Don S. Brereton .....	2000
Baldwin Bridger Jr.....	1999
F.A. (Tony) Furfari.....	1998
Edward (Ted) A.E. Rich.....	1997
John H. Kassebaum.....	1996
Lloyd A. (Pete) Morley.....	1995
Eugene J. Fagan.....	1994
Daniel L. Goldberg.....	1993
James W. Patterson.....	1992
E.G. (Al) Kiener.....	1991
James H. Beall.....	1990
Richard S. Nichols.....	1989
George W. Younkin.....	1988

## 2009-2010 DISTINGUISHED LECTURERS

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**Frede Blaabjerg**

*“Power electronics and control for renewable energy systems”*

**Mark Halpin**

*“Power and energy systems in utility and industrial applications”*

**Praveen Jain**

*“Application of power electronics and power factor correction”*

**Tsuneo Kume**

*“Power topologies and peripheral technologies within variable frequency motor drives”*

**John Nelson**

*“Power system analysis including grounding, protection, harmonics and protective relaying”*

**Juan M. Martin-Sanchez**

*“Adaptive and predictive control within industrial processes”*

**Fang Zheng Peng**

*“Application of converter and inverter topologies”*

## CHAPTER AWARDS

### Chapter Chair

**Outstanding Large Chapter**

**San Francisco Section IAS Chapter**

Jack Lin

**Outstanding Large Joint Chapter**

**Pittsburgh Section IAS / PES Joint Chapter**

Ms. Mey Ling Sen

**Outstanding Small Chapter**

**Calcutta Section IAS Chapter**

Ajit K. Chattopadhyay

**Outstanding Small Joint Chapter**

**Malaysia Section IAS / IES / PELS Joint Chapter**

Mustafar Kamal Hamzah

**Continued Outstanding Performing Chapter**

**New York Section IAS / PES Joint Chapter**

Ajoy Das

**Outstanding New Chapter**

**Sweden Section IAS Chapter**

Dr. Yung-Kang (Robert) Chin

**Outstanding Student Branch Chapter**

**Hungary Section Budapest Univ. of Technology and Economics Student Branch PES / IAS Joint Chapter**

Richard Cselko

# SOCIETY MAGAZINE PRIZE PAPER AWARDS

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## First Place

“THE WINDMILL TOPOLOGY – EVALUATION OF ADJUSTABLE SPEED DRIVE SYSTEMS” (March / April 2009) by Kevin Lee, Derek A. Paice and James E. Armes. Originally presented as “Evaluation of 3-Phase to 9-Phase Transformer, 18-Pulse Converter and Adjustable Speed Drive, Including Novel Third Harmonic Calculations”

## Second Place

“ELECTRIC ARCING PHENOMENA – A HISTORICAL PERSPECTIVE AND COMPARATIVE STUDY OF THE STANDARDS IEEE 1584 AND NFPA 70E” (May / June 2009) by Ravel F. Ammerman, P. K. Sen and John P. Nelson. Originally presented as “Arc Flash Hazard Incident Energy Calculations, A Historical Perspective and Comparative Study: IEEE 1584 and NFPA 70E”

## Third Place

“NO WIRING CONSTRAINTS – WIRELESS TECHNOLOGIES FOR INDUSTRIAL MANUFACTURING APPLICATIONS” (July / August 2009) by Martin Hanssmann, Sokwoo Rhee and Sheng Liu. Originally presented as “The Applicability of Wireless Technologies for Industrial Manufacturing Applications Including Cement Manufacturing”

# SOCIETY TRANSACTIONS PRIZE PAPER AWARDS

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**First Place**            “COMPUTER-AIDED CONTROLLER  
SETTING PROCEDURE FOR PAPER  
MACHINE DRIVE SYSTEMS”  
M.A. Valenzuela, J.M. Bentley, and R.D. Lorenz

**Second Place**        “DESIGN AND PERFORMANCE OF A 200  
KHZ ALL-SIC JFET CURRENT DC-LINK  
BACK-TO-BACK CONVERTER”  
Thomas Friedli, Simon D. Round, Johann W.  
Kolar, and Dominik Hassler

**Third Place**            “EVALUATION OF PERIPHERAL  
VISUAL PERFORMANCE WHEN USING  
INCANDESCENT AND LED MINER CAP  
LAMPS”  
John J. Sammarco, Miguel A. Reyes, John R.  
Bartels, and Sean Gallagher

**Honorable Mention**   “SENSORLESS-ORIENTED- DESIGN OF  
PM MOTORS”  
Nicola Bianchi and Silverio Bolognani

# IEEE NEWLY-ELECTED FELLOWS

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## **Shmuel (Sam) Ben-Yaakov**

*“for development of modeling and simulation methodologies for pulse width modulated and resonant converters”*

## **James Bowen**

*“for leadership in “safety by design” in electrical substation engineering”*

## **Gary Chang**

*“for contributions to power system harmonics and interharmonics”*

## **Johann Kolar**

*“for contributions to three-phase pulsed width modulation converter systems”*

## **Roger Lawrence**

*“for contributions to energy efficient Adjustable Speed Drive systems”*

## **Eduard Muljadi**

*“for contributions to wind turbine control and integration of wind power into the power system grid”*

## **Giuseppe Parise**

*“for contributions to workplace safety through analysis of power system switching procedures”*

## **Seth Sanders**

*“for contributions to integrated passive component technology and digital control of power electronic systems”*

## **Bhim Singh**

*“for contributions to active power filters and multipulse AC-DC converters”*

## **Maria Valla**

*“for contributions to non-linear control of electric drives”*

## **Craig Wellman**

*“for development of methods for calculating incident energy from electrical arc-flash sources”*

## **Fei (Fred) Wang**

*“for contributions to design and control of high-power high-density converters and drives”*

## NOTES



