Welcome to the 52ND IEEE Industry Applications Society Annual Meeting

Over the last half century, the IAS Annual meeting has established a long tradition as an international forum for practicing engineers, researchers, students and technical experts to present and discuss the latest developments in the application of electrical technology covering fields such as automation, control, electrostatics, mining, metals, and standards for electrical installations. The conference emphasizes professional development, learning, sharing of experiences, and networking with peers. This year’s conference promises to be very rewarding with a full complement of tutorials, as well as more than 210 technical paper oral presentations and poster sessions. Furthermore, this year the IAS Annual Meeting will be collocated with 2017 IEEE Energy Conversion Congress and Exposition (ECCE). The IAS Annual Meeting delegates will have the opportunity to attend selected ECCE activities and a joint registration to both events at a preferential rate is possible. This offers a unique opportunity for sharing of new experiences and networking with peers.

Please join us for the Welcome Luncheon Monday at noon where we will share important announcements and include an update on ways you can maximize your valuable time at the conference.

We will once again utilize a mobile conference application in addition to our traditional printed media. The app will offer you conference information at your fingertips, the ability to download papers, and the opportunity to interact with your peers via social media.

Be sure to check the schedule carefully to ensure that you don’t miss a technical learning opportunity or favorite event. Beyond the technical sessions and tutorials, some of the traditional activities during this week’s conference include our Sunday Chapters & Membership Department Workshop. On Sunday evening you are invited to a welcome reception for both conferences. On Sunday afternoon, there will be a session to guide first time attendees in conjunction with ECCE in the convention center with an overview of the week’s conference events. The technical program begins on Monday afternoon. Monday also includes the Myron Zucker Student luncheon (in conjunction with the Welcome Luncheon) where you will have the opportunity to meet many of the students attending the conference. Furthermore, be sure to join us on Wednesday evening at the IAS/ECCE Dinner when you can share an evening with the IAS and ECCE delegates. Finally, join us on Thursday’s IAS/ECCE Award Luncheon while we celebrate and recognize the recipients of this year’s awards. As with every annual meeting, the IAS Executive Board and IAS Council will also meet on Wednesday & Thursday to conduct the administrative business of the Society.

The organizing committee of the 52nd IAS Annual meeting has worked hard to put this conference together and hope your stay is both pleasant and productive. Again, welcome to beautiful Bluegrass Region, Cincinnati, Ohio!

Georges Zissis
General Chair
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General Meeting Information

IAS conference events will be held at the Hyatt Regency Cincinnati:
151 West Fifth Street
Cincinnati, OH 45202
Phone: (513) 579-1234

Joint special events with ECCE will be held at the Duke Energy Convention Center (DECC):
525 Elm Street
Cincinnati, OH 45202
Phone: (513) 419-7300

SESSION CHAIRS & PRESENTING AUTHORS
The Author’s Breakfast on Monday, Tuesday, Wednesday and Thursday mornings will be in Regency A from 7:00 AM – 8:00 AM. These breakfasts are open only for the session chairs and authors who will be presenting that day, to provide authors the opportunity to meet their session moderator and peers.

CONFERENCE RECORD
The Conference Record for the 2017 IAS Annual Meeting has been made available in the form of a flash drive. To access the content of the Conference Record, plug the flash drive into a USB port on your computer to open the information. Use the index pages to access hyperlinks to all other pages, including indices that list the technical papers scheduled for presentation at the Annual Meeting by title and authors’ family name. Clicking on the title of a paper in the indices will open the actual manuscript file.

NAVIGATING CINCINNATI
The hotel is located in downtown Cincinnati which is convenient for dining, shopping and entertaining. For full information about all that Cincinnati has to offer, please visit Cincinnati USA’s website at www.cincyusa.com. The Hyatt’s concierge staff will be happy to assist with recommendations and can assist in making dinner reservations.

POSTERS
Student poster displays will be available for viewing from Sunday evening through Thursday morning in the Sun Garden on the second floor of the Hyatt Regency Cincinnati.
Sponsor

The IAS Annual Meeting sincerely thanks the following sponsor for their support:

EATON

Powering Business Worldwide

etap

Powering Success

Special Events

SUNDAY, OCTOBER 1ST

CMD Chapter’s Workshop
(by invitation only)
7:00 AM – 5:00 PM
BLUEGRASS AB

Opening Reception with ECCE
5:30 PM – 7:30 PM
GRAND BALLROOM PRE-FUNCTION LOBBY
@ DUKE ENERGY CONVENTION CENTER

IAS and ECCE Newcomers Orientation
5:00 PM – 5:45 PM
ROOM 252 @ DUKE ENERGY CONVENTION CENTER

MONDAY, OCTOBER 2ND

Myron Zucker Student Luncheon
Open to all students
11:30 AM – 2:00 PM
REGENCY BALLROOM ABC

Expo Reception with ECCE
4:15 PM – 7:30 PM
EXHIBIT HALL B @ DUKE ENERGY CONVENTION CENTER

CMD Dinner
(by invitation only)
7:00 PM – 10:00 PM
REGENCY BALLROOM A

TUESDAY, OCTOBER 3RD

IEEE IAS/PELS
Young Professional Reception
6:30 PM – 9:00 PM
BAUER FARM KITCHEN (5TH & ELM STREET)

WEDNESDAY, OCTOBER 4TH

IAS Executive Board Meeting
7:30 AM – 5:30 PM
HOOSIER AB

Council Meeting/Workshop Luncheon
12:00 PM – 1:30 PM
REGENCY BALLROOM A

Industry Night Out Reception with ECCE
7:00 PM – 9:30 PM
GRAND BALLROOM
@ DUKE ENERGY CONVENTION CENTER

THURSDAY, OCTOBER 5TH

IAS Executive Board Meeting
7:30 AM – 11:00 AM
HOOSIER AB

IEEE Awards Luncheon
12:10 PM – 2:00 PM
GRAND BALLROOM
@ DUKE ENERGY CONVENTION CENTER
# Schedule at a Glance

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# Schedule at a Glance

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- **SESSION #7**: ILDC 2
- **SESSION #8**: IACC #2 AC Drives 1
- **SESSION #9**: IACC - Control of Power
- **SESSION #10**: EP 2
- **SESSION #11**: Rolling Mill and Steel Inspection
- **SESSION #12**: PSE 1
- **SESSION #13**: ES 1
- **SESSION #14**: PSP1
- **SESSION #15**: ILDC 3
- **SESSION #16**: IACC #4 Renewable Power Plants
- **SESSION #17**: Control of Microgrids II
- **SESSION #18**: EP 3
- **SESSION #19**: Applications of Power Electronics and Motor Drives
- **SESSION #20**: Pubs/Magazine
- **SESSION #21**: Codes and Standards Committee Meeting
- **SESSION #22**: In-CPS Technical Program Committee Meeting
- **SESSION #23**: Scholar One User Group
- **SESSION #24**: Writing Effective Nominations by Marcos Alonso
- **SESSION #25**: The Fellows Nomination Process by Aldo Boglietti
- **SESSION #26**: Writing Technical Papers by Louie Powell
- **SESSION #27**: I&CPS Department Committee Meeting
- **SESSION #28**: Mining Committee Meeting
- **SESSION #29**: MSDAD Department Meeting

*Post-schedule events:*
- **8:00PM**: WIE Meeting
- **9:00PM**: Poster Session
- **10:00PM**: I&CPS Department Committee Meeting
- **11:00PM**: MSDAD Department Meeting
- **12:00AM**: Writing Effective Nominations by Marcos Alonso
- **1:00AM**: The Fellows Nomination Process by Aldo Boglietti
- **2:00AM**: Writing Technical Papers by Louie Powell
- **3:00AM**: I&CPS Department Committee Meeting
- **4:00AM**: MSDAD Department Meeting
- **5:00AM**: Writing Effective Nominations by Marcos Alonso
- **6:00AM**: The Fellows Nomination Process by Aldo Boglietti
- **7:00AM**: Writing Technical Papers by Louie Powell
- **8:00AM**: I&CPS Department Committee Meeting
- **9:00AM**: MSDAD Department Meeting
# Schedule at a Glance

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**SESSION #26**

**ES3**

**SESSION #27**

**PSE 3**

**TUTORIAL:**

**Effects of High Penetration of Distributed Generation on Distribution Systems:**

David Farmer & Brian Dale

**Board Meeting**

**POSTER SESSION**

**IACC** *(8:00 AM – 12:00 PM)*

**SESSION #30**

**ES4**

**SESSION #31**

**PSE 4**

**Industry Night Out with ECCE**

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**Schedule at a Glance**

IAS.IEEE.ORG | INDUSTRY APPLICATIONS SOCIETY 52ND ANNUAL MEETING | OCTOBER 1-5, 2017
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Mobile Application (iOS and Android)

The IAS Agenda Mobile Application was developed for the IEEE Industry Applications Society (IEEE IAS). Initial purpose: the 2017 IAS Agenda Meeting. Get “IAS Agenda” on Apple “App Store” & Google “Play Store”. Sign in using only your conference registration e-mail.

The user, signed in under his conference registered e-mail can:

- **Search** or simply navigate through an extended side-menu to access all necessary Conference Information through their mobile device.
- **Reach the Conference administration**, effortlessly.
- Access the **full Conference program** (Technical, Tutorials & Workshops, Meetings, Special Events and Schedule at a Glance).
- View other **registered participants shared details**.
- Access **hotel floor plans**.
- Create, edit and delete **personal notes**. Disaclaimer: Notes are stored locally, in user’s device, for secured privacy.
- User can access an exclusive **mobile City Guide** with information on Downtown, Restaurants, Sights and Shopping places around the Conference Venue, even with Google Street View enabled.
- Navigate to key **Ground Transportation** locations inteneded to reach the Conference Venue.
- Receive **real-time Notifications** on their device.
- Visit all relative **Social Media pages**.
- Help us improve using **feedback** feature!
<table>
<thead>
<tr>
<th>Department/Committee</th>
<th>Start Time</th>
<th>End Time</th>
<th>Location</th>
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<td><strong>SATURDAY, SEPTEMBER 30, 2017</strong></td>
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<td>CMD Department Meeting</td>
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<td>CMD Workshop</td>
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<tr>
<td>TBCC Protection and Coordination</td>
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<td>TBCC MOS Working Group</td>
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<tr>
<td>TBCC Emergency Standby</td>
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<tr>
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<td>5:00 PM</td>
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<td><strong>MONDAY, OCTOBER 2, 2017</strong></td>
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<tr>
<td>Tech Standards Coordinating</td>
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<tr>
<td>PSE Program Planning Subcommittee Meeting</td>
<td>9:00 AM</td>
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<td>Healthcare and Education Subcommittee</td>
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<td>TBCC 1st Principles WG Part II</td>
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<td>TBCC Power Systems Design WG</td>
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<td>PSE Safety, Operations Subcommittee</td>
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<td><strong>TUESDAY, OCTOBER 3, 2017</strong></td>
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“All Things Nuclear” will provide an overview on what is going on in the nuclear industries of the countries with the majority of nuclear power stations. It will also touch on those countries hoping to build nuclear into their energy supply. The presentation will examine recent downturns and their driving forces in the commercial nuclear industry. “All Things Nuclear” will also provide an overview of the many uses of existing Non-power Nuclear Applications. Lastly, the presentation will explain why it is important to start a Nuclear Applications Committee within the IAS.

David Vaglia has his roots in the energy engineering. He began his career in the coal mining industry, working as an applications engineer in power distribution, and electric train haulage systems, both above and below ground. He has also worked in the renewable energy sector, investigating new concept wind generation applications and solar thermal systems. Mr. Vaglia transitioned to instrumentation and control working with supervisory control and data acquisition systems, and then to the Man-Machine Interface design of nuclear power plant control rooms. Mr. Vaglia has a Bachelor of Science in Electrical Engineering and a Bachelor of Arts in General Arts and Sciences, both from the Pennsylvania State University, and a Master of Business Administration from the University of Pittsburgh. He is a registered Professional Engineer working in the state of Pennsylvania. Mr. Vaglia has been an active in the IEEE for nearly 40 years. He is a Senior member serving the Pittsburgh Section (Region 2) in various capacities. Mr. Vaglia’s volunteer positions have included Section Awards Chair, Treasurer, and Section Chair. In the IAS-PES Pittsburgh Joint Chapter, he has served as Secretary, Treasurer, and Chair. He has also served as the General Chair of the 2008 PES Annual Meeting. Mr. Vaglia is presently Chair of the joint chapter of the IAS and PES, Pittsburgh Section.
Monday, October 2, 2017  2:00 PM – 5:00 PM

Session #1
ILDC #1

INDUSTRIAL LIGHTING AND DISPLAY

Session Chairs: Marcos Alonso (marcos@uniovi.es), Yijie Wang (wangjie@hit.edu.cn)
Session Organizer: Marco Dalla Costa
Room: Regency C

2:00 | 2017-ILDC-0861
Loss Analysis for Efficiency Improvement of the Integrated Buck-Flyback Converter for LED Driving Applications
Guirguis Z. Abdelmessih, University of Oviedo; J Marcos Alonso, University of Oviedo

2:30 | 2017-ILDC-0904
A Single-Stage Bridgeless LED Driver Based on CLCL Resonant Converter
Yijie Wang, Harbin Institute of Technology; Yuanyuan Wang, Harbin Institute of Technology; Dianguo Xu, Harbin Institute of Technology

3:00 | 2017-ILDC-0908
Performance Investigation of Silicon and Gallium Nitride Transistors in an Integrated Double-Buck-Boost LED Driver
Renan Duarte, Universidade Federal de Santa Maria; Guilherme Ferreira, Universidade Federal de Santa Maria; Marco Dalla Costa, UFSM; J Marcos Alonso, University of Oviedo

4:00 | 2017-ILDC-0902
Modeling and Compensator Design of LED Driver Systems
Ray-Lee Lin, National Cheng Kung University

4:30 | 2017-ILDC-0905
A High-Power-Factor Integrated-Stage AC-DC LED Driver Based on Flyback-Class E Converter
Shu Zhang; Yijie Wang, Harbin Institute of Technology; Yuping Qiu, Harbin Institute of Technology; Xiaosheng Liu, Harbin Institute of Technology; J Marcos Alonso, University of Oviedo; Dianguo Xu, Harbin Institute of Technology

Monday, October 2, 2017  2:00 PM – 6:00 PM

Session #2
Control of Microgrids I

INDUSTRIAL AUTOMATION AND CONTROL

Session Chair: Sukumar Kamalasadan
Session Co-chair: Fei Gao
Session Organizer: Sukumar Kamalasadan
Room: Regency E

2:00 | 2017-IACC-0901
Islanding detection of Distributed Generation based on Rate of Change of Exciter Voltage and Mechanical Power with Circuit Breaker Switching Strategy
Ali rostami, Islamic Azad University South Tehran Branch; Kashem Muttaqi, University of Wollongong; Amin Jalilian; Mehrdad Hagh, University of Tabriz; javad olamoei

2:30 | 2017-IACC-0870
Control of Islanded DC Microgrids using Nonlinear Adaptive Decentralized Controllers
Md Apel Mahmud, Deakin University Faculty of Science Engineering and Built Environment; Tushar Kanti Roy, Deakin University Faculty of Science Engineering and Built Environment; Sajeeb Saha, Deakin University Faculty of Science Engineering and Built Environment; Enamul Haque, Deakin University; Hemanshu Pota, University of New South Wales Canberra at ADFA

3:00 | 2017-IACC-0831
An Optimal Scheduling Controller for Virtual Power Plant and Microgrid Integration using Binary Backtracking Search Algorithm
M G Abdolrasol, Universiti Kebagasan Malaysia; M A. Hannon, Universiti Tenaga Nasional; A Mohamed, Universiti Kebagasan Malaysia; U A Amiruldin, Universiti Tenaga Nasional; I Abidin, Universiti Tenaga Nasional; Mohammad Uddin, Lakehead University

4:00 | 2017-IACC-0885
Resilient Cyber Infrastructure for the Minimum Wind Curtailment Remedial Control Scheme
Anurag Srivastava, Washington State University; Vignesh Krishnan, Washington State University; Ren Liu, Washington State University; Alexander Askerman, Washington State University; David Bakken, Washington State University; Patrick Paniatichi, Reseau de Transport d'Electricite

The list of contributors on the papers submitted for this Conference was provided by the authors. IEEE is not responsible for missing or misspelled names, disambiguation of authors with similar names, or the sequence in which the names are listed.
Monday, October 2, 2017  2:00 – 6:00 PM

Session #3  
Nonthermal Plasma and Environmental Applications

ELECTROSTATIC PROCESSES

Session Chair: Noureddine Zouzou, Hak-Joon Kim  
Session Organizer: Masaaki Okubo  
Room: Regency G

2:00 | 2017-EPC-0636  
NOx Removal Performance of a Wet Reduction Scrubber Combined with Oxidation by an Indirect DBD Plasma for Semiconductor Manufacturing Industries  
Hak-Joon Kim, Korea Institute of Machinery and Materials; Bangwoo Han, Korea Institute of Machinery and Materials; Chang-Gyu Woo, Korea Institute of Machinery and Materials; Yong-Jin Kim, Korea Institute of Machinery and Materials

2:30 | 2017-EPC-0637  
Oxidative Decomposition of Adsorbed Toluene Using Ozone Concentrated by Nonthermal Plasma Flow  
Tomoyuki Kuroki, Osaka Prefecture University; Kiroyuki Hirai, Osaka Prefecture University; Shigeru Matsuoka, Shimakawa Seisakusho Co., Ltd.; Jiong Youl Kim, Shimakawa Seisakusho Co., Ltd.; Masaaki Okubo, Osaka Prefecture University

3:00 | 2017-EPC-0647  
DBD Plasma for NOx Adsorption and Desorption-reduction Using GAC for the Marine Emissions Control  
Luigi Amato, Università di Napoli Federico II; Nadarajah Manivannan, Brunel University; Maysam Abbod, Brunel University; Nadarajah Manivannan, Brunel University; Wamadeva [Bala] Balachandran, Brunel University; Maysam Abbod, Brunel University; Manickam Jayamurthy, Brunel University; Francesco Di Natale, Università di Napoli Federico II

4:00 | 2017-EPC-0655  
Collection and Incineration of Particulate Matters from the Diesel Engine by Charged Dielectric Surface and Dielectric Barrier Discharge  
Keiichiro Yoshida, Osaka Institute of Technology

4:30 | 2017-EPC-0644  
High Efficient Carbon Dioxides Reduction Using Nonthermal Plasma Desorption  
Masaaki Okubo, Osaka Prefecture University; Kамиya Shuhei, Osaka Prefecture University; Kazuya Takahashi; Tomoyuki Kuroki, Osaka Prefecture University

5:00 | 2017-EPC-0646  
Fundamental Characteristic of Reduction of Energy Consumption in Water Sterilization Using Nonthermal Plasma  
Takuya Kuwahara, Nippon Institute of Technology

Session #4  
Arc Furnaces and Electrolysis

METALS INDUSTRY

Session Chair: Braz J. Cardoso Filho  
Session Organizer: Braz J. Cardoso Filho  
Room: Regency G

2:00 | 2017-METC-0702  
Electric Arc Furnaces Influence in Power Systems Area  
A.J. Ustariz-Farfan, Universidad Nacional de Colombia; S. Arias-Guzman, Universidad Nacional de Colombia; E.A. Cano-Plata, Universidad Nacional de Colombia

2:30 | 2017-METC-0703  
Real Time Detection of Interharmonics and Harmonics of AC Electric Arc Furnaces on GPU Framework  
Eda Uz Lo o lu, Middle East Technical University; Ozgul Salur, Tubitak-Uzay Metu Campus; Muammer Ermis, Middle East Technical University

3:00 | 2017-METC-0704  
Exponential Smoothing of Multiple Reference Frame Components with GPUs for Real-Time Detection of Time-Varying Harmonics and Interharmonics of EAF Currents  
Ebrahim Balouji, Chalmers tekniska hogskola; Ozgul Salur, Tubitak-Uzay Metu Campus; Muammer Ermis, Middle East Technical University

4:00 | 2017-METC-0705  
Arc Furnace Performance Validation Thru Modeling, Monitoring and Statistical Analysis  
John Gnesda, ARM EnerTech Associates, LLC; Thomas Dionise, Eaton Corporation; Sam Morello, ARM EnerTech Associates, LLC

4:30 | 2017-METC-0706  
Optimal Process in Electric Arc Furnaces  
E.A. Cano-Plata, Universidad Nacional de Colombia; A.J. Ustariz-Farfan, Universidad Nacional de Colombia; Jorge Estrada, National University of Colombia
Session #5
Chapters and Membership Development
Thesis Contest I
CMD

Session Chair: Professor Akshay Kumar Rathore,
Concordia University
Session Organizer: Peter Magyar, CMD Chair
Room: Bluegrass AB

2:00
Analysis and Design of Impulse Commutated Soft-Switching
Current-fed Converters
Radha Sree Krishna Moorthy, National University of Singapore,
Singapore

2:30
Modelling and Design of Permanent-magnet Machines for
Electric Vehicle Traction
Xiao CHEN, University of Sheffield, UK

3:00
Analysis, Design and Control of DC-DC Resonant Converter for
On-board Bidirectional Battery Charger in Electric Vehicles
Chaohui LIU, University of Sheffield, UK

4:00
Feasibility Study on Using Electrical Home Appliances for
Distributed Reactive Power Support
Samir Gautam, Dylan Lu, Yuezhu Lu and Weidong Xiao,
University of Sydney, Australia

Session #6
Chapters and Membership Development
Thesis Contest II
CMD

Session Chairs: Professor Md. Nasir Uddin, Lakehead
University; Professor Chiara Boccaletti, University of Rome
Session Organizer: Peter Magyar, CMD Chair
Room: Buckeye AB

2:00
A Novel DTFC Based Efficiency and Dynamic Performance
Improvement of IPMSM Drive
Md. Mizanur Rahman, Lakehead University, Canada

2:30
Theoretical Study and Experimental Analysis of
A Thermal-Photovoltaic Panel
Cristina Moscatiello, Sapienza University of Rome, Italy

3:00
PMU Based Fault Location Method for Distribution Systems
Aneesh Rajeev, Vellore Institute of Technology, India

4:00
Optimum Transformer Turns Ratio of Power Supply for Dielectric
Barrier Discharge Lamps
Vanesa Rueda, Pontificia Universidad Javeriana, Colombia

Session #7
ILDC Session #2
INDUSTRIAL LIGHTING AND DISPLAYS

Session Chairs: Ray-Lee Lin (rayleelin@goapp.ee.ncku.edu.tw),
Vitor Bender (bender.vitor@gmail.com)
Session Organizer: Marco Dalla Costa
Room: Regency B

8:00 | 2017-ILDC-0864
An Analysis of Frequency Response on OLED for
Lighting Applications
Norton Daniel Barth, Federal University of Santa Maria;
Tiago Marchesan, UFSM; Vitor Bender, Federal University
of Pampa
8:30 | 2017-ILDC-0913
Ripple-based Visible Light Communication Technique for Switched LED Drivers
Felipe Loose, Renan Duarte, Universidade Federal de Santa Maria; Carlos Henrique Barriquello, Universidade Federal de Santa Maria; Marco Dalla Costa, UFSC; Lucas Teixeira, Universidade Federal de Santa Maria; Alexandre Campos, Universidade Federal de Santa Maria

9:00 | 2017-ILDC-0906
Analysis and Design of a Unidirectional Resonant Switched Capacitor Step-up Converter for OLED Lamp Driving Based on Variable Inductor
Gilberto Martinez, Continental Automotive; Gilberto Martinez, Universidad de Oviedo; J Marcos Alonso, University of Oviedo; Rene Osorio, University of Guadalajara

9:30 | 2017-ILDC-0907
Photometric and Electrical Characterizations of Large Area OLEDs Aged Under Thermal and Electrical Stresses
Alaa Alchaddoud, LAPLACE Lab.; Laurent Canale, LAPLACE Lab.; Georges Zissis, University of Toulouse

Tuesday, October 3, 2017 8:00 AM – 12:00 PM

Session #8
AC Drives I
INDUSTRIAL AUTOMATION AND CONTROL

Session Chair: Abdul Ofoli
Session Co-chair: Bhim Singh
Session Organizer: Saleh Saleh
Room: Regency C

8:00 | 2017-IACC-0835
Third Harmonic Injection Based Nonlinear Control of IPMSM Drive for Wide Speed Range Operation
Md. Rahman, Lakehead University; Mohammad Uddin, Lakehead University

8:30 | 2017-IACC-0825
Design and Control of a 48/36 Switched Reluctance Motor for High Performance Direct-Drive Applications
Jiangwei Lyu, Tsinghua University; Kai Zhou, Tsinghua University; Hai Rong, Tsinghua University

9:00 | 2017-IACC-0856
Low Spikes and Low Harmonic Distortion Multilevel Inverter for Induction Motor Implementation
Ezzidin Hassan Aboodalia, International Islamic University Malaysia; Khairil Azhar Bin Aznan, International Islamic University Malaysia; Majdee Tohtayong, International Islamic University Malaysia; Sherez Khan, International Islamic University Malaysia; M. A. Hannan, Universiti Tenaga Nasional; Mohammad Uddin, Lakehead University

9:30 | 2017-IACC-0827
High Speed Coreless Axial Flux Permanent Magnet Motor with Printed Circuit Board Winding
Neethu S, Indian Institute of Technology Bombay; Saurabh Nikam, Indian Institute of Technology Bombay; Ashok Wankhede, Bhabha Atomic Research Centre; Saumitra Pal, Bhabha Atomic Research Centre; BG Fernandes, IIT Bombay

10:30 | 2017-IACC-0900
Prediction of the Lifespan of Enameled Wires Used in Low Voltage Inverter-fed Motors by using the Design of Experiments (DoE)
Mateusz Szczepanski; Pascal Maussion, Université de Toulouse; David Malec, Université de Toulouse, LAPLACE; Benoit Petitgas, NIDEC Leroy Somer; Philippe Manfè, Nidec Leroy Somer

11:00 | 2017-IACC-0866
Gear Fault Diagnosis Based on Resonance-based Sparse Signal Decomposition of Motor Current
Ming Yang, Harbin Institute of Technology; Na Chai, Harbin Institute of Technology; Qinan Ni, Harbin Institute of Technology; Dianguo Xu, Harbin Institute of Technology

11:30 | 2017-IACC-0894
Sensor Fault Resilient Operation of Permanent Magnet Synchronous Generator Based Wind Energy Conversion System
Enamul Haque, Deakin University; Saqeb Saha, Deakin University Faculty of Science Engineering and Built Environment; Enamul Haque, Deakin University; Md Apel Mahmud, Deakin University Faculty of Science Engineering and Built Environment; C.P. Tan, Monash University – Malaysia Campus

Tuesday, October 3, 2017 8:00 AM – 12:00 PM

Session #9
Control of Power Converters I
INDUSTRIAL AUTOMATION AND CONTROL

Session Chair: Arif Sarwat
Session Co-chair: Kashem Muttaqui
Session Organizer: Arif Sarwat
Room: Regency E

8:00 | 2017-IACC-0836
A 54-Pulse AC-DC Converter Fed 15-Level Inverter Based Vector Controlled Induction Motor Drive
Bhim Singh, Indian Institute of Technology Delhi; Piyush Kant, Indian Institute of Technology Delhi

8:30 | 2017-IACC-0893
A Modified PWM Scheme to Reduce Switching Stress in a Current-fed Switched Inverter
Anil Gambhir, Indian Institute of Technology Kanpur; Santanu Mishra, Indian Institute of Technology Kanpur
9:00 | 2017-IACC-0852
Self-Tuned Single-Phase AC-AC Converter for Bidirectional Inductive Power Transfer Systems
Arif Sarwat, Florida International University; Masood Moghaddami, Florida International University

9:30 | 2017-IACC-0832
A New Inductive Power Transfer Topology Using Direct AC-AC Converter with Active Source Current Control
Akshay Rathore, Concordia University; Suvendu Samanta, Concordia University

10:30 | 2017-IACC-0889
Boost Topology Based Multi-Output Converters
Santanu Mishra, Indian Institute of Technology Kanpur; Khiroday Nayak, IIT Kanpur

11:00 | 2017-IACC-0845
Implementing Modulation Schemes with Three Switching Transients in a Switching Period on Single DSP: Application to Z-Source Ultra-Sparse Matrix Converter
Amir Masoud Bozorgi, Louisiana State University; Mehdi Farasat, Louisiana State University

11:30 | 2017-IACC-0826
Fast Repetitive Control Scheme for Shunt Active Power Filter in Synchronous Rotational Frame
Hua Geng; Tianming Zou, Beijing Institute of Machinery & Equipment; Ambrish Chandra, ETS

Tuesday, October 3, 2017
Session #10
Electrostatic Precipitation and Separation
ELECTROSTATIC PROCESSES

Session Chairs: Masaaki Okubo, Thama Zeghloul
Session Organizer: Lucien Dascalescu
Room: Regency F

8:00 | 2017-EPC-0640
Considerations of Suitable Grounded Electrode Length of Pre-charger in Two-stage-type Electrostatic Precipitator
Yoshihiro Kawada, Polytechnic University of Japan; Hirota Shimizu, Polytechnic University of Japan; Akinori Zukeran, Kanagawa Institute of Technology

8:30 | 2017-EPC-0641
Removal of Polycyclic Aromatic Hydrocarbons Emitted from Diesel Engine Using an Electrostatic Precipitator and Heat Exchanger
Akinori Zukeran, Kanagawa Institute of Technology; Kohei Ito, Kanagawa Institute of Technology; Yuki Nanjo, Kanagawa Institute of Technology; Takashi Inui, Fuji Electric Co., Ltd.

9:00 | 2017-EPC-0651
Experimental Investigation of a Roll-type Tribo-electrostatic Separator of Granular Plastics Wastes
Ahlem Benabderrahmane, Institut Pprime; Lucian Dascalescu, University of Poitiers; Thami Zeghloul, University of Poitiers; Karim Medles, University Djillali Liabès Sidi Bel Abbès; Amar Tilmatine, University of Sidi bel Abbes

9:30 | 2017-EPC-0652
Premises for Industrial Application of a Two-rotating-disks-type Tribo-aero-electrostatic Separator for Micronized WEEE
Imed-Eddine Achouri, University of Poitiers; Lucian Dascalescu, University of Poitiers; Thami Zeghloul, University of Poitiers; Gontran Richard, University of Poitiers; Karim Medles, University Djillali Liabès Sidi Bel Abbès; H Nouri, University of Setif

10:30 | 2017-EPC-0643
Study of Two-stage-type Electrostatic Precipitator in Axysymmetric Configuration Applied to Finely Ground Lignocellulosic Materials
Noureddine Zouzou, University of Poitiers; Claire Mayer-Laigle, INRA – CIRAD – Montpellier SupAgro – U. Montpellier; Xavier Rouau, INRA – CIRAD – Montpellier SupAgro – U. Montpellier; Ayyoub Zouaghi, Institut Pprime, CNRS, Université de Poitiers, ISAE-ENSMA; Fouad Kherbouch, Institut Pprime, UFR 3346, CNRS – Université de Poitiers – ISAE-ENSMA; Lucian Dascalescu, University of Poitiers
Session #11
Rolling Mill and Steel Inspection

METALS INDUSTRY

Session Chair: Cheng-Tsung Liu
Session Organizer: Braz J. Cardoso Filho
Room: Regency G

8:00 | 2017-METC-0709
Use of Fault-Tolerant Techniques with Virtual Rolling to Improve Robustness to Measurement Faults in the Control for Tandem Hot Metal Strip Rolling
John Pittner, University of Pittsburgh; Marwan Simaan, University of Central Florida

8:30 | 2017-METC-0710
Retrofit of a Hot Rolling Mill Plant with Three-Level Active Front End Drives
Gonzalo Arturo Alonso Orcajo, University of Oviedo; Josué Rodríguez D., University of Oviedo; Jose M. Cano, University of Oviedo; Joaquín G. Norniella, University of Oviedo; Pablo Ardura G., ArcelorMittal; Rocio Llera T., ArcelorMittal; Diego Cifrián R., ArcelorMittal

9:00 | 2017-METC-0711
Medium-Voltage Adjustable Speed Drives Upgrade Delivers Operational Benefits for Steel Mill Runout Table Cooling System
David Durocher, Eaton Corporation; Mel Magallon, ArcelorMittal USA

9:30 | 2017-METC-0712
Real-time inspection of long steel products using 3D sensors: calibration and registration
Ruben Usamentiaga, University of Oviedo; Garcia Daniel, University of Oviedo; Francisco delacalle, University of Oviedo

10:30 | 2017-METC-0713
Inspection System for Rail Surfaces Using Differential Images
Francisco Javier de la Calle Herrera, Universidad de Oviedo; Garcia Daniel, Universidad de Oviedo; Ruben Usamentiaga, Universidad de Oviedo

11:00 | 2017-METC-0714
Positioning Error Estimation of Steel Strips in Steckel Rolling Process Using Digital Image Processing
Aline Lemos, Federal University of Sao Joao del Rei; Leonardo Adolfo Silva, Federal University of Sao Joao del Rei; Edgar Furtado, Universidade Federal de Sao Joao del-Rei; Hélder De Paula, UFMG

11:30 | 2017-METC-0715
Design of High-Reliable Converters for Medium-Voltage Rolling Mills Systems
Victor Ferreira, Universidad Federal de Minas Gerais; Allan Cupertino, Centro Federal de Educacao Tecnologica de Minas Gerais; Heverton Pereira, Universidade Federal de Vicos; Anderson Rocha, CEFET-MG – Coordenacao de Eletrotecnica; Seleme Seleme, Universidade Federal de Minas Gerais; Braz Cardoso, Federal University of Minas Gerais

Session #12
Power Systems Engineering #1

POWER SYSTEMS ENGINEERING

Session Chair: Marcelo Valdes, GE Industrial Solutions
Session Organizer: Sergio Panetta, I-Gard Corp.
Room: Buckeye AB

8:00 | 2017-PSEC-0804
3rd Harmonic Current in a Generator Neutral Earthing Resistor Connected to a Large Cable Network
Jason Mayer, Aurecon Australia Group Ltd; Ryan Turner, Aurecon Australasia Pty Ltd

8:30 | 2017-PSEC-0821
A Cascaded DSTATCOM Integrated With D-Y Connection Distribution Transformer for Reactive Power Compensation
Yu Chen, Huazhong University of Science and Technology; Minghao Wen, Huazhong University of Science and Technology; Xianggen Yin, Huazhong University of Science and Technology; Ertao Lei, Electric Power Research Institute of Guangdong Power Grid Corporation; Jimu Lai, Huazhong University of Science and Technology

9:00 | 2017-PSEC-0815
“Energy Castles” Equalized to Strategic Structures for Disaster Recovery in Emergency
Giuseppe Parisi, Sapienza University of Rome; Luigi Parisi, Ospedale Pediatrico Bambino Gesu; Luigi Martirano, Sapienza University of Rome

9:30 | 2017-PSEC-0795
Inertia-Free Stand-Alone Microgrid, Part I: Analysis on Synchronized GPS Time Based Control and Operation
Jung-Wook Park, Yonsei University; Soo Hyoung Lee, Korea Electrotechnology Research Institute; DongHee Choi, Yonsei University

10:30 | 2017-PSEC-0796
Inertia-Free Stand-Alone Microgrid, Part II: Inertia Control and Stability with PMSG Wind Turbine System
Jaewoo Kim, Yonsei University; Jung-Wook Park, Yonsei University; Soo Hyoun Lee, Korea Electrotechnology Research Institute

11:00 | 2017-PSEC-0819
Characterization of Sags due to Faults in Radial Systems Using Three-Phase Voltage Ellipse Parameters
Juan Camarillo-Peñaranda, Universidad de los Andes; Gustavo Ramos, Universidad de los Andes

11:30 | 2017-PSEC-0806
Reliability Evaluation of Electric Vehicle Charging Systems including the impact of Repair
Mohsen Ghavami, Texas A&M University; Chanan Singh, Texas A&M University

Tuesday, October 3, 2017 8:00 AM – 12:00 PM
### Tuesday, October 3, 2017  
8:00 AM – 12:00 PM

#### Session #13  
Energy Systems #1  

**ENERGY SYSTEMS**

**Session Chair:** Zhenyuan Zhang  
**Session Organizer:** Wei-Jen Lee  
**Room:** Bluegrass AB

<table>
<thead>
<tr>
<th>Time</th>
<th>Presentation</th>
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| 8:00  | **2017-ESC-0726**  
*Optimal Operation Strategy of an Industrial Plant under Deregulated Electricity Market*  
Meng Yang, North China Electric Power University; Lizi Zhang, North China Electric Power University; Zhaohao Ding, North China Electric Power University; Wei-Jen Lee, University of Texas at Arlington |
| 8:30  | **2017-ESC-0727**  
*Multi-stage Stochastic Optimization for a PV-Storage Hybrid Unit in a Household*  
Faiza Hafiz, North Carolina State University; Anderson de Queiroz, North Carolina State University; Iqbal Husain, North Carolina State University |
| 9:00  | **2017-ESC-0728**  
*Microgrid Modular Design for Tribal Healthcare Facilities: Kayenta Health Center used as Guidance for Concept Model for Navajo Nation*  
Samuel Vega Catto, Indian Health Service; Wei-Jen Lee, University of Texas at Arlington |
| 9:30  | **2017-ESC-0729**  
*Different Shapes and Dimensions of Laminated Core on Characteristics of a Practical Single-Phase Distribution Transformer Using Finite-Element Analysis*  
Li Wang, National Cheng Kung University; L-Ting Huang, National Cheng Kung University; Anton V. Prokhorov, Tomsk Polytechnic University |
| 10:30 | **2017-ESC-0730**  
*A Priority Decision Making-Based Bidding Strategy for Interactive Aggregators*  
Tianguang Lu, Shanghai Jiao Tong University; Wei-Jen Lee, University of Texas at Arlington; Qian Ai, Shanghai Jiao Tong University; Songtao Lu, Iowa State University |
| 11:00 | **2017-ESC-0731**  
*3.3kW CLLC Converter with Synchronous Rectification for Plug-in Electric Vehicles*  
Alireza Khaligh, University of Maryland; Shenli Zou, University of Maryland; Jiangheng Lu, University of Maryland; Ayan Mallik, University of Maryland at College Park |
| 11:30 | **2017-ESC-0725**  
*Fast Approach for Voltage Stability Constrained Optimal Power Flow Based on Load Impedance Modulus Margin*  
Diansheng Luo, Hunan University; Xiangkui Cao, State Grid Huangshi Electric Power Supply Company; Hongying He, Hunan University; Tianguang Lu, Shanghai Jiao Tong University |
Tuesday, October 3, 2017 2:00 – 4:30 PM

Session #15
ILDC #3

INDUSTRIAL LIGHTING AND DISPLAYS

Session Chair: Kayo Suzuki
Session Organizer: Marco Dalla Costa
Room: Regency B

2:00 | 2017-ILDC-0862
Improving Compatibility with Invisibility and Readability for New 3D Image Display System
Hiroshi Unno, Kanagawa Institute of Technology; Youichi Takashima, NTT Service Evolution Research Lab.; Kazutake Uehira, Kanagawa Institute of Technology

2:30 | 2017-ILDC-0863
Accommodation Response for Visually Equivalent Light Field 3D Display
Munekazu Date, Nippon Telegraph and Telephone Corporation; Takehito Kojima, Nagoya Daigaku Daigakuin Joho Kagaku Kenkyuka; Ryota Kimura, Nagoya Daigaku Daigakuin Joho Kagaku Kenkyuka; Kohel Iwata, Nagoya Daigaku Daigakuin Joho Kagaku Kenkyuka; Akihito Sugiura, Nagoya Daigaku Daigakuin Joho Kagaku Kenkyuka; Masaru Miyao, Nagoya Daigaku Daigakuin Joho Kagaku Kenkyuka; Hiroshi Fujii, Nippon Telegraph and Telephone Corporation; Hideaki Kimata, Nippon Telegraph and Telephone Corporation

3:00 | 2017-ILDC-0903
New Unexpected Use of Display Devices for Self-Safety Guard
Shunj Uchimura, Daiichi Institute of Technology; Tetsuya Muraoaka, Daiichi Institute of Technology; Hiroaki Ikeda, Consultant

4:00 | 2017-ILDC-0859
Bridgeless Buck-Boost PFC Converter for Multistring LED Driver
Aman Jha, Indian Institute of Technology Delhi; Bhim Singh, Indian Institute of Technology, Delhi

Tuesday, October 3, 2017 2:00 – 6:00 PM

Session #16
Renewable Power Generation and Control

INDUSTRIAL AUTOMATION AND CONTROL

Session Chair: Fei Gao, Geng Hua (co-chair)
Session Organizer: Geng Hua
Room: Regency C

2:00 | 2017-IACC-0869
A Synchronization Control Technique for Soft Connection of Doubly-fed Induction Generator based Wind Turbines to the Power Grid
Kashem Muttaqi, University of Wollongong; Mehrdad Hagh, University of Tabriz

2:30 | 2017-IACC-0828
Experimental Validation of a DFIG based Current Harmonics Mitigation Technique
Mahdi Debozua, Khalifa University of Science Technology and Research; Ahmed Al Durra, Khalifa University of Science and Technology; S. M. Muyeen, Curtin University; Rachid Errouissi, Khalifa University of Science and Technology

3:00 | 2017-IACC-0838
A Modified DC Chopper for Limiting the Fault Current and Controlling the DC Link Voltage to Enhance Ride-Through Capability of Doubly-Fed Induction Generator Based Wind Turbine
Seyed Behzad Naderi, University of Trasmania; Michael Negnevitsky, University of Trasmania; Kashem Muttaqi, University of Wollongong

4:00 | 2017-IACC-0844
New Control Approach for High Performance of Offshore Wind Farm under DC Fault Using Three-Level NPC VSC-HVDC and DC Chopper
Seghir Benhalima, Ecole de technologie superieure; Ambrish Chandra, ETS; Rezkallah Miloud, Ecole de technologie superieure; Sanjeev Singh, Sant Longowaal Institute of Engineering & Technology Longowal

4:30 | 2017-IACC-0892
Solar PV Fed Sensorless DTC of Induction Motor Drive for Water Pumping
Saurabh Shukla, IIT Delhi; Bhim Singh, Indian Institute of Technology Delhi

5:00 | 2017-IACC-0855
Damping of Power Oscillations induced by Photovoltaic Plants using Distributed Series-Connected FACTS devices
Govind Chavan, North Carolina State University; Sayan Acharya, North Carolina State University; Subhashish Bhattacharya, North Carolina State University; Haroon Inam, Smart Wires, Inc

5:30 | 2017-IACC-0891
Nonlinear Control Operation of DFIG based WECS with Stability Analysis
Khairul Amin Ifte, Lakehead University; Mohammad Uddin, Lakehead University
Tuesday, October 3, 2017
2:00 – 4:30 PM

Session #18
Electrostatic Measurement and Electrohydrodynamics

ELECTROSTATIC PROCESSES

Session Chair: Maciej Noras, Feng. C. Lai
Session Organizer: Rajesh Sharma
Room: Regency F

2:00 | 2017-EPC-0638
Particle Behavior Analysis in Hole-type Electrostatic Precipitator Using PIV
Hirotaka Miyashita, Tokyo City University; Yasuyoshi Ehara, Tokyo City University; Takashi Inui, Fuji Electric Co., Ltd.; Yukio Aoki, Fuji Electric Co., Ltd.

2:30 | 2017-EPC-0639
Comparison of Vibrating and Fixed Kelvin Probe for Non-Destructive Evaluation
Michael Reznikov, Physical Optics Corporation; Maciej Noras, University of North Carolina at Charlotte; Matthew Salazar, Physical Optics Corporation

3:00 | 2017-EPC-0648
Performance of a Two-Stage EHD Gas Pump in a Circular Pipe Operating at Uneven Applied Voltages
Feng Lai, University of Oklahoma; Yilma Birhane, Addis Ababa University; S. Lin, National Taiwan University of Science and Technology

4:00 | 2017-EPC-0656
Effect of Travelling Wave Electric Field on Fine Particles Motion on an Electrodynamic Board
Ayyoub Zouaghi, Institut Pprime, CNRS, Université de Poitiers, ISAE-ENSMA; Noureddine Zouzou, University of Poitiers; Lucian Dascalescu, University of Poitiers

Tuesday Tech Session
Tuesday, October 3, 2017 2:00 – 6:00 PM

Session #19
Applications of Power Electronics and Motor Drives

METALS INDUSTRY

Session Chair: Juan Lopera
Session Organizer: Braz J. Cardoso Filho
Room: Regency G

2:00 | 2017-METC-0716
Starting Current Analysis for Conditioning Monitoring of Medium Voltage Induction Motors in the Steel Industry
Chanseung Yang, Korea University; Sang Bin Lee, Korea University; Genuik Jang, Pohang Iron and Steel Company; Seongnam Kim, Pohang Iron and Steel Company; Kyungyung Jung, Pohang Iron and Steel Company; Junghoon Lee, Pohang Iron and Steel Company; Sangwook Shim, Pohang Iron and Steel Company; Youngkab Lim, Pohang Iron and Steel Company; Jinpyo Kim, MND Technology; Sungbong Park, MND Technology

2:30 | 2017-METC-0717
Theoretical and Experimental Investigations of the Electromagnetic Steel Compositions for Synchronous Reluctance Motors
Cheng-Tsun Liu, National Sun Yat-Sen University; Pei-Chun Shih, National Sun Yat-sen University; Sheng-Chan Yen, Nidec Taiwan Corporation; Hsin-Nan Lin, Nidec Taiwan Corporation; Yu-Wei Hsu, Nidec Taiwan Corporation; Sheng-Yang Lin, China Steel Corporation

3:00 | 2017-METC-0718
Effects of PWM Excitations on Iron Loss in Electrical Steels and Machines
David Lowther, McGill University; Sajid Hussain, McGill University; Mohammad Hosseim Mohammadi, McGill University; Karanvir Sidhu, McGill University; David Lowther, McGill University

4:00 | 2017-METC-0719
Fault-Tolerant Operation of a Nine-Phase Induction Machine with Open Phases
Tamires Souza, Universidade Federal de Minas Gerais; Rodrigo Bastos, UFMG; Braz Cardoso, Federal University of Minas Gerais

4:30 | 2017-METC-0720
Modeling and Control of a Nine-Phase Induction Machine with Open Phases
Tamires Souza, Universidade Federal de Minas Gerais; Rodrigo Bastos, UFMG; Braz Cardoso, Federal University of Minas Gerais

5:00 | 2017-METC-0721
A Simple Torque Estimator for In-Service Efficiency Determination of Induction Motors
Marcelo Stopa, CEFET/MG; Marcos Alberto Saldanha, Centro Federal de Educacao Tecnologica de Minas Gerais; Alex-Sander Luiz, Centro Federal Eduacao Tecnologica de Minas Gerais; Lane Baccarini, UFSJ; George Andre Lacerda, Universidade Federal de Sao Joao del-Rei

Tuesday, October 3, 2017 2:00 – 6:00 PM

Session #20
Power Systems Engineering #2

POWER SYSTEMS ENGINEERING

Session Chair: Kent Sayler, P2S Engineering, Inc.
Session Organizer: Sergio Panetta, I-Gard Corp.
Room: Regency G

2:00 | 2017-PSEC-0789
Adaptive Capacitor Switching for Wind Energy Generation
Willis Edmondson, UC Synergetic; Srijib Mukherjee, UC Synergetic

2:30 | 2017-PSEC-0791
Fuzzy Secondary Controller Based Virtual Synchronous Generator Control Scheme for Microgrids
Chowdhury Andalib-Bin-Karim, Memorial University of Newfoundland; Xiaodong Liang, Memorial University of Newfoundland; Huaguang Zhang

3:00 | 2017-PSEC-0797
The Application of Bus-Split Method for Aggregating Distributed Generation Units
Saleh Saleh, University of New Brunswick; Petrus Pi Peninsula, UNB; Eduardo Castillo, University of New Brunswick; Liuchen Chang, The University of New Brunswick

4:00 | 2017-PSEC-0805
Characterization of Voltage Dips and Swells in a DG Embedded Distribution Network During and Subsequent to Islanding Process and Grid Re-connection
M. R. Alam, American International University-Bangladesh; Kashem Muttaqi, University of Wollongong; A. Bouzerdaoum, University of Wollongong

4:30 | 2017-PSEC-0808
Parameter Identification of Synchronous Generator Based on the Results of Time Stepping Finite Element Model
Guorui Xu, North China Electric Power University; Yeping Hu, North China Electric Power University; Yang Zhan, North China Electric Power University; Haisen Zhao, North China Electric Power University; Jinning Kang, North China Electric Power University
5:00 | 2017-PSEC-0807
The influence of Rotor Slot Wedge Material and Conductivity on First Swing Stability of Turbine Generator
Guorui Xu, North China Electric Power University; Yang Zhan, North China Electric Power University; Jing Shi, North China Electric Power University; Guodong Wu, North China Electric Power University; Haisen Zhao, North China Electric Power University; Jinping Kang, North China Electric Power University

5:30 | 2017-PSEC-0810
Effective Scheduling Operation of Coordinated and Uncoordinated Wind-Hydro and Pumped-Storage in Generation Units with Modified JAYA Algorithm
Morteza Dabbaghjamanesh, Louisiana State University; Shahab Mehraeen; Abdullah Kavousi Fard, University of Michigan; Mosayeb Afshari Igder

5:00 | 2017-PSEC-0807
The influence of Rotor Slot Wedge Material and Conductivity on First Swing Stability of Turbine Generator
Guorui Xu, North China Electric Power University; Yang Zhan, North China Electric Power University; Jing Shi, North China Electric Power University; Guodong Wu, North China Electric Power University; Haisen Zhao, North China Electric Power University; Jinping Kang, North China Electric Power University

Tuesday, October 3, 2017 2:00 – 6:00 PM

Session #21
Energy Systems #2

ENERGY SYSTEMS
Session Chair: Mahesh S. Illindala, Ohio State University, Columbus, OH USA
Session Organizer: Wei-Jen Lee, University of Texas at Arlington, Arlington, TX USA
Room: Bluegrass AB

2:00 | 2017-ESC-0751
Energy Storage Based Optimal Dispatch Scheme for Financial Improvement and Fluctuation Mitigation on Wind Power Generation
Zhenyuan Zhang, The University of Texas at Arlington; Zhenyuan Zhang, University of Electronic Science and Technology of China; Yun Zhang, University of Electronic Science and Technology of China; Wei-Jen Lee, University of Texas at Arlington

2:30 | 2017-ESC-0733
Operation and Control for Multi-voltage-level DC Network to Improve the Utilization Rate of Renewable Energies
Kaiqi Sun, Shandong University; Ke-Jun Li, Shandong University; Wei-Jen Lee, University of Texas at Arlington; Zhuo-di Wang, Shandong University; Zhijie Liu, Shandong University; Meiyan Wang, Shandong University; Zahid Javid, Shandong University

3:00 | 2017-ESC-0734
Nine-Phase Induction Machine with Electric Pole Change for Emerging Heavy-Duty and Off-Road Micro/Mild Hybrid Vehicle Applications
Chen Yuan, GEIRI North America; Mahesh Illindala, The Ohio State University; Krishnakumar D. Ramamoorthy, Caterpillar Inc; Osama Alkhouli, Caterpillar Inc

4:00 | 2017-ESC-0735
How Much is the Advisable Self-sufficiency of Aggregated Prosumers with Photovoltaic-Wind Power and Storage to Avoid Grid Upgrades?
Filippo Spertino, Politecnico di Torino; Jawad Ahmad, Politecnico di Torino Dipartimento di Energia; Alessandro Ciocia, Politecnico di Torino Dipartimento di Energia; Paolo Di Leo, Politecnico di Torino Dipartimento di Energia

4:30 | 2017-ESC-0736
Multi-objective Optimization Model of Source-Load-Storage Synergetic Dispatch for Building Energy System Based on TOU Price Demand Response
Fei Wang, North China Electric Power University; Lidong Zhou, North China Electric Power University; Hui Ren, North China Electric Power University; Xiaoli Liu, North China Electric Power University; Moadreza Shafie-khah, University of Beira Interior; João Catalão, University of Beira Interior

5:00 | 2017-ESC-0748
Energy Efficiency Improvement of a Single-Phase AC Spot Welding Machine by Using An Advanced Thyristor Switched Detuning Capacitor Bank
Jyh-Cherng Gu, National Taiwan University of Science and Technology; Wei-Hsiang Ko, EE214-6, No.43, Sec. 4, Keelung Rd., Da’an Dist., Taipei, TW 106; Jyh-Cherng Gu, EE214-6, No.43, Sec. 4, Keelung Rd., Da’an Dist., Taipei, TW 106; Wei-Jen Lee, University of Texas at Arlington

5:30 | 2017-ESC-0738
Ultra-Short-Term Wind Generation Forecast Based on Multivariate Empirical Dynamic Modeling
Jiayi Ma, Power; Ming Yang, Power; Xueshan Han, Power; Zhi Li
Tuesday, October 3, 2017 2:00 – 5:30 PM

Session #22
Power Systems Protection #2/ Codes and Standards

POWER SYSTEMS PROTECTION #2/ CODES AND STANDARDS

Session Chair: Carson Bates
Session Organizer: Rob Hoerauf
Room: Mountaineer

2:00 | 2017-PSPC-0777
A Theoretical and Practical Approach for Underexcitation Protection and Control Studies of Large Hydrogenerators in a Real-Time Environment

Francisco Baracho, Ouro Preto Federal University; Aurelio Coelho, Itajuba Federal University; Clever Pereira F., Minas Gerais Federal University; Paulo Silveira, Itajuba Federal University

2:30 | 2017-PSPC-0778
Hardware and Software Integration as a Realist Scada Environment to Test Protective Relaying Control

Daniel Martinez Montaña, Universidad de los Andes; David Celeita Rodriguez, Universidad de los Andes; Diego Clavijo Rey, Universidad de los Andes; Gustavo Ramos, Universidad de los Andes

3:00 | 2017-PSPC-0779
Investigation of Fault Characteristics of Different Types of Wind Generators

Mohammed Haj-ahmed, The University of Jordan; Eyad Feilat, The University of Jordan; Hussam Khasawneh, The University of Jordan; Ahmed Abdulhalid; Alaa Awwad

4:00 | 2017-PSPC-0781
Study of Uninterrupted Switching Topology and its Control Strategy of Voltage Sags Protection

Xiaoting Gao, Northeastern University; Dongsheng Yang, Northeastern University; Zhanchao Ma, Northeastern University; Enchang Cui, Northeastern University; Huaguang Zhang

4:30 | 2017-CSC-0911
Arc Flash in the National Electrical Code: Articles 240.87, 240.67; intent and reality, does the code achieve its goals? Do you achieve its goals?

Marcelo Valdes, GE; Steve Hinton, Schneider-Electric; Francisco Martinez, GE

5:00 | 2017-CSC-0912
Modeling of Adaptive Integrated Hybrid AC/DC Microgrid Module in IEC 61850

Luja Zhan; Xuewei Pan, Harbin Institute of Technology; Daorui Ma; Xin Zhou; Xuewei Pan, Harbin Institute of Technology

Wednesday, October 4, 2017 8:00 AM – 11:00 AM

Session #23
Mining #1

MINING INDUSTRY

Session Chair: Dr. David C. Mazur
Session Organizer: Dr. David C. Mazur
Room: Regency B

8:00 | 2017-MIC-0597
Diagnosis of the Rotor Condition in Electric Motors Operating in Mining Facilities Through the Analysis of Motor Currents

Jose Antonino-Daviu, Universidad Politècnica Valencia; Alfredo Quijano-Lopez, Universitat Politècnica de Valencia; Martín Rubiolo, Motors and Generators Inc; Vicente Climente-Alarcon, Aalto University

9:00 | 2017-MIC-0603
A Technology Review of Idler Condition based Monitoring Systems for Critical Overland Conveyors in Open-pit Mining Applications

Aníbal Morales, Universidad Catolica de la Santisima Concepcion; Pablo Aqueveque, University of Concepcion; Jorge Henriquez, University of Concepcion; Francisco Saavedra, University of Concepcion; Eduardo Wiechmann, Universidad de Concepcion

10:30 | 2017-MIC-0607
Cable Parameter Calculation for Typical Industrial Installation Methods and High-Frequency Studies

Warley de Souza, Universidade Federal de Minas Gerais; Hélder De Paula, UFMG; Alberto De Conti, Universidade Federal de Minas Gerais; Renato Mesquita, Universidade Federal de Minas Gerais
Wednesday, October 4, 2017 8:00 AM – 11:00 AM

**Session #24**  
**Electrical Discharge and Applications**

**Session Chairs:** Lucien Dascalescu, Keiichiro Yoshida  
**Session Organizer:** Maciej Noras  
**Room:** Regency C

8:00 | **2017-EPC-0650**  
**Electrospaying of Dielectric Fluids in a High-Pressure Environment**  
Maciej Noras, University of North Carolina at Charlotte; Alzarrol Rolle, University of North Carolina at Charlotte; Wesley Williams, University of North Carolina at Charlotte

8:30 | **2017-EPC-0645**  
**Improvement in Molecular-level Adhesive Strength of PTFE Film Treated by Atmospheric Plasma Combined Processing**  
Keita Horii, Osaka Prefecture University; Syunsuke Fujimoto, Osaka Prefecture University; Yudai Togashi, Osaka Prefecture University; Tomoyuki Kuroki, Osaka Prefecture University; Masaaki Okubo, Osaka Prefecture University

9:00 | **2017-EPC-0649**  
**Controlled Electrospinning to Produce Polymer Nanofibers with Specified Diameters**  
Darrell Reneker, The University of Akron; Suqi Liu, The University of Akron; Kevin White, Akron Ascent Innovations, LLC; Darrell Reneker, The University of Akron

9:30 | **2017-EPC-0653**  
**Statistic Process Control of the Tribocharging Process between Polymers Slabs in Frictional Sliding Contact**  
Lucian Dascalescu, University of Poitiers; Yopa Prawataya, University of Poitiers; Khouira Senouci, University Djillali Liabès Sidi Bel Abbès; Thami Zeghloul, University of Poitiers; Bogdan Neagoe, University of Poitiers; Karim Medles, University Djillali Liabès Sidi Bel Abbès

10:30 | **2017-EPC-0654**  
**Factors that Affect Tribocharging of PE Granules after Exposure to a Dielectric Barrier Discharge (DBD)**  
Gontran Richard, University of Poitiers; Lucian Dascalescu, University of Poitiers; Ahlem Benabderrahmane, Institut Pprime; Karim Medles, University Djillali Liabès Sidi Bel Abbès; Amar Tilmarine, University of Sidi bel Abbes; Thami Zeghloul, University of Poitiers; Lucian Dascalescu, University of Poitiers

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Wednesday, October 4, 2017 8:00 AM – 12:00 PM

**Session #25**  
**AC Drives II**

**Session Chair:** Ahmed Mohamed  
**Session Co-chair:** Ambriish Chandra  
**Session Organizer:** Ahmed Mohamed  
**Room:** Regency E

8:00 | **2017-IACC-0830**  
**Quantum-Behaved Lightning Search Algorithm to Improve Indirect Field-Oriented Fuzzy-PI Control for IM Drive**  
M. A. Hannan, Universiti Tenaga Nasional; J Ali, General Company of Electricity Production Middle Region, Ministry of Electricity, Iraq; A Mohamed, Universiti Kebangsaan Malaysia; Nadia Tan, Universiti Tenaga Nasional; Mohammad Uddin, Lakehead University

8:30 | **2017-IACC-0897**  
**A Simplified Gate Pulse Generation Technique For Modified Multilevel DC-Link Inverter**  
Nareesh Pilli, Indian Institute of Technology (BHU), Varanasi; Rahul Meena, Indian Institute of Technology (BHU), Varanasi; Santosh Singh, IIT(BHU), Varanasi

9:00 | **2017-IACC-0840**  
**Operational Boundaries Calculation of Permanent Magnet Assisted Synchronous Reluctance Motor**  
Carlos López-Torres, Universitat Politècnica de Catalunya; Tomasz Michalski, Universitat Politècnica de Catalunya; Antonio García Espinosa, Universitat Politècnica de Catalunya; Luis Romeral, Universitat Politècnica de Catalunya

9:30 | **2017-IACC-0839**  
**Improved Sensorless Control Method Combining SMO and MRAS for Surface PMSM Drives**  
Danyang Bao, Harbin Institute of Technology – Shenzhen; Yi Wang, Harbin Institute of Technology-Shenzhen; Xuewei Pan, Harbin Institute of Technology; Xinhua Wang, Harbin Institute of Technology – Shenzhen; Ke Li, Harbin Institute of Technology – Shenzhen

10:30 | **2017-IACC-0895**  
**Robust Current Sensorless Control Strategy with Enhanced Dynamics**  
Adrien Corne, Universite de Lorraine ENSEM; Jean Philippe Martin, Université de Lorraine; Babak Mahdovobarakeh, Universite de Lorraine ENSEM; Serge Pierfederici, GREEN

11:00 | **2017-IACC-0851**  
**Hardware Testing of Sliding Mode Controller for Improved Performance of VSC-HVDC based Offshore Wind Farm under DC Fault**  
Mouin Benadjia, ETS; Miloud Rezzakallah, ETS; Seghir Benhalima, Ecole de technologie superieure; Abdelhamid Hamadi, Ecole de technologie superieure; Ambrish Chandra, ETS

11:30 | **2017-IACC-0847**  
**Characterization and Modeling of a Linear Variable Reluctance Motor Considering a Full Range of Feasible Tooth Widths with Finite Element Method**  
Nasir Boakye-Boateng, University of Tennessee at Chattanooga; Raga Ahmed, University of Tennessee at Chattanooga
Session #26
Energy Systems #3

ENERGY SYSTEMS

Session Chair: Yuan-Kang Wu, National Chung-Cheng University, Taiwan ROC
Session Organizer: Wei-Jen Lee, University of Texas at Arlington, Arlington, TX USA
Room: Regency F

8:00 | 2017-ESC-0739
Transformer Management System for Energy Control of Customer Demand Response and PV Systems
Chao-Shun Chen, I-Shou University; Te-Tien Ku, National Kaohsiung University of Applied Sciences; Chia-Hung Lin, National Kaohsiung University of Applied Sciences; C.T. Hsu

8:30 | 2017-ESC-0732
Automated Distributed Electric Vehicle Controller for Residential Demand Side Management
Osama Mohammed, Florida International University; Samy Fadel, Florida International University

9:00 | 2017-ESC-0740
Stacked Revenue and Technical Benefits of a Grid-connected Energy Storage System
Tian Yuting, Michigan State University; Atri Bera, Michigan State University; Mohammed Benidris, University of Nevada Reno; Joydeep Mitra, Michigan State University

9:30 | 2017-ESC-0741
Bi-Layer Multi-Objective Optimal Allocation and Sizing of Electric Vehicle Parking Garage
Osama Mohammed, Florida International University; Samy Fadel, Florida International University; Ahmed Elsayed, Florida International University

10:30 | 2017-ESC-0742
BESS Performance Assessment for Integration of Wind Generation
Farbod Jahanbakhsh, Quanta Technology; Masoud Davoudi, Quanta Technology; Vahraz Zamani, Quanta Technology; Nima Yousefpoor, Quanta Technology; Douglas Proudfoot, Quanta Technology

11:00 | 2017-ESC-0743
Analysis of Electrical and Photometric Quantities of CFL and LED Bulb Lamps
Angelo Raciti, University of Catania, Catania; Salvatore Di Mauro, University of Catania, Catania; Salvatore Musumeci, University of Catania, Catania

11:30 | 2017-ESC-0744
Practical Model for Energy Consumption Analysis of Beam Pumping Motor Systems and its Energy Saving Applications
Haifeng Zhao, North China Electric Power University; Yang Zhan, North China Electric Power University; Yilong Wang; Guorui Xu, North China Electric Power University; Xueshen Cui, North China Electric Power University; Jing Wang, North China Electric Power University

Session #27
Power Systems Engineering #3

POWER SYSTEMS ENGINEERING

Session Chair: Gary Fox, GE Industrial Solutions
Session Organizer: Sergio Panetta, I-Gard Corp.
Room: Regency G

8:00 | 2017-PSEC-0816
The Magic of the Conductors Current Density in the Time and in the Space
Giuseppe Parise, Sapienza University of Rome

8:30 | 2017-PSEC-0818
Experimental Investigation of Magnetic Field Shielding Techniques and Resulting Current Derating of Underground Power Cables
Diogo Souza, Universidade Federal de Minas Gerais; Hélder De Paula, UFMG; Carlos Caetano, Universidade Federal de Minas Gerais; Marco Túlio Evo, Universidade Federal de Sao Joao del-Rei; Ivan Lopes, Universidade Federal de Minas Gerais; José Oswaldo Paulino, Universidade Federal de Minas Gerais; Wallace Boaventura, Universidade Federal de Minas Gerais

9:00 | 2017-PSEC-0785
High Switching Frequency Performance of E-GaN FETs and Silicon MOSFETs
Dalvir Saini, Wright State University; Agasthya Ayachit, Wright State University; M.K. Kazimierzuk, Wright State University; Tadashi Suetsugu, Fukuoka Daigaku

9:30 | 2017-PSEC-0786
A Comparative Study between PI and Type-II Compensators for H-Bridge PFC Converter
Alikeezah Khaligh, University of Maryland; Aryan Mallik, University of Maryland at College Park; Jiangheng Lu, University of Maryland

10:30 | 2017-PSEC-0787
A Systematic Design Procedure for a Compact DM EMI Filter for a 3-phase Boost PFC Rectifier
Akshay Singh, University of Maryland; Alikeezah Khaligh, University of Maryland; Aryan Mallik, University of Maryland at College Park

11:00 | 2017-PSEC-0788
Analysis of a Modified Positive Output Luo Converter and its application to Solar PV system
Chaitanya Pansare, Shri Govindram Seksaria Institute of Technology and Science; Shailendra Sharma, Shri Govindram Seksaria Institute of Technology and Science; Chinmay Jain, Shakti Pumps India Ltd.; Rakesh Saxena, Shri G. S. Institute of Technology & Science

11:30 | 2017-PSEC-0794
Power Quality and Voltage Profile Analyses of High Penetration Grid-tied Photovoltaics: A Case Study
Arash Anzali, Florida International University College of Engineering and Computing; Anil Sarwat, Florida International University; Aditya Sundararajan, Florida International University; Amirhasan Moghaddasi, Florida International University
Wednesday, October 4  2:00 PM – 5:00 PM

Session #28
Mining #2

MINING INDUSTRY

Session Chair: Dr. Joseph Sottile
Session Organizer: Dr. David C. Mazur
Room: Regency B

2:00 | 2017-MIC-0606
Instrumentation and Data Acquisition for Dynamic Testing of Ground Support
Carl Sunderman, NIOSH; Jerald Richardson; Michael Raffaldi

2:30 | 2017-MIC-0605
Development of a Real-Time Respirator Seal Integrity Monitor with Low-Cost Particle Sensor
Jonathan Corey, University of Cincinnati College of Engineering and Applied Science; Yan Liu, University of Cincinnati College of Engineering and Applied Science; Michael Yermakov, University of Cincinnati College of Medicine; Bingbing Wu, University of Cincinnati College of Medicine; Sergey Grinshpun, University of Cincinnati College of Medicine

3:00 | 2017-MIC-0604
Modeling and Evaluation of Benefits of Trolley Assist System for Mining Trucks
M. Anibal Valenzuela, University of Concepcion; Javier Valenzuela C., Universidad de Concepcion

4:00 | 2017-MIC-0601
An Alternative International-Standards-based Approach for the evaluation of Intrinsically Safe systems in U.S Mines
William Calder; David Snyder, CDC NIOSH; John Burr, National Institute for Occupational Safety and Health Pittsburgh Research Laboratory

4:30 | 2017-MIC-0600
Luminance Measurement for Underground Mine Lighting
Max Martell, National Institute for Occupational Safety and Health Pittsburgh Research Laboratory; John Sammarco, NIOSH

Wednesday, October 4  2:00 PM – 6:00 PM

Session #29
Control of Grid-Connected Converters

INDUSTRIAL AUTOMATION AND CONTROL

Session Chair: Kashem Muttaqi
Session Co-chair: Santanu Mishra
Session Organizer: Kashem Muttaqi
Room: Regency E

2:00 | 2017-IACC-0873
An Automation Scheme for Emergency Operation of an Industrial Park
Moein Choobineh, Colorado School of Mines; Salman Mohagheghi, Colorado School of Mines; Deborah Silva-Ortiz, Colorado School of Mines

2:30 | 2017-IACC-0875
Advanced Control Strategies for Convertible Static Transmission Controller Enabled Dual Active Power Filters and PV-Power Integration
Faris Alfaris, North Carolina State University; Subhashish Bhattacharya, North Carolina State University

3:00 | 2017-IACC-0841
Design of PI Controller Together with Active Damping for Grid-tied LCL Filter Systems Using Disturbance Observer-Based Control Approach
Rachid Errouissi, Khalifa University of Science & Technology, PI campus; Rachid Errouissi, The Petroleum Institute; Ahmed Al Durra, Electrical & Computer Engineering Department, PI campus

4:00 | 2017-IACC-0883
Operational Cost Value Assessment and Value Based Stacked Energy Storage Management For Active Power Distribution Systems
Sheikh Hossain, University of North Carolina at Charlotte; Sukumar Kamalasadan, University of North Carolina at Charlotte; Rojan Bhattarai, University of North Carolina at Charlotte; Muhammad Ahmed, University of North Carolina at Charlotte; Sherif Abdelrazek, Duke Energy Corp

4:30 | 2017-IACC-0848
Hysteresis-based PI State Control of Grid-Connected Voltage Source Converter with LCL Filter for Power Conditioning
Johnny Chhor, Ruhr-University Bochum; Constantinos Sourkounis, Ruhr-University Bochum

5:00 | 2017-IACC-0890
Designing Energy Auction Market for Inclusion of Storage Systems and Quantifying their Impact on Network Losses – Multi Agent Approach
Anudeep Sesetti, Indian Institute of Technology Bombay; Suryanarayana Doolla, Indian Institute of Technology Bombay; HSVS Kumar Nunna, National University of Singapore; Akshay Rathore, Concordia University

5:30 | 2017-IACC-0871
Power Quality Enhancement in Single Phase Energy Distribution Systems Using DQ Optimal Control
Naima Arab, Ecole de technologie superieure; Bachir Kedjar, Ecole de technologie superieure; Alireza Javadi, Ecole de technologie superieure; Kamal Al Haddad, ETS

Wednesday, October 4  2:00 PM – 6:00 PM
Session #30
Energy Systems #4

ENERGY SYSTEMS
Session Chair: Mahesh S. Illindala, Ohio State University, Columbus, OH USA
Session Organizer: Wei-Jen Lee, University of Texas at Arlington, Arlington, TX USA
Room: Regency F

2:00 | 2017-ESC-0745
State-of-Charge Estimation for Li-Ion Battery using Extended Kalman Filter (EKF) and Central Difference Kalman Filter (CDKF)
Venu Sangwan, Malaviya National Institute of Technology; Rajesh Kumar, Malaviya National Institute of Technology; Akshay Rathore, Concordia University

2:30 | 2017-ESC-0737The Role of Demand Response as an Alternative Transmission Expansion Solution in a Capacity Market
Behdad Vatani, University of North Carolina at Charlotte; Badrul Chowdhury, University of North Carolina at Charlotte; Jeremy Lin, PJM Interconnection

3:00 | 2017-ESC-0746

An Example of Smart Building with a km Zero Energy Performance
Luigi Martrinano, Sapienza University of Rome; Emanuele Habib, Sapienza University of Rome; Giacomo Greco, Sapienza University of Rome; Matteo Manganelli, Sapienza University of Rome; Alessandro Ruivo, Universita degli Studi di Roma La Sapienza; Biagio Di Pietra, Italian National Agency for New Technologies ENEA; Alessandro Pannicelli, Italian National Agency for New Technologies ENEA; Sara Piccinelli, Italian National Agency for New Technologies ENEA; Giovanni Puglisi, Italian National Agency for New Technologies ENEA; Pasquale Regina, Italian National Agency for New Technologies ENEA

4:00 | 2017-ESC-0747
Sustainable Industrial Plants: Energy Efficient, Asset-Aware and Waste-Averse
Moein Choobineh, Colorado School of Mines; Salman Mohagheghi, Colorado School of Mines

4:30 | 2017-ESC-0749
Re-Cutin Control of Wind Turbines Based on a Combined Dead Band of Time and Wind Speed
Su Sheng, Changsha University of Science and Technology; Yin Zuliang, Changsha University of Science and Technology; Yang Hongming, Changsha University of Science and Technology; Xiao Hui, Changsha University of Science and Technology; Yazan Alsmadi, Jordan University of Science and Technology

5:00 | 2017-ESC-0750
Optimal Scheduling and Operation of the ESS for Prosumer Market Environment in Grid-Connected Industrial Complex
Sungyun Choi, Korea Electrotechnology Research Institute; Sang-Won Min, Korea Electrotechnology Research Institute

5:30 | 2017-PSEC-0811
Reduction of Three-phase Voltage Unbalance Subject to Special Winding Connections of Single-Phase Distribution Transformers of a Microgrid System Using a Designed D-STATCOM Controller
Li Wang, National Cheng Kung University; Wei-Sheng Liu, National Cheng Kung University; Chuan-Chieh Yeh, National Cheng Kung University; Chien-Hsiang Yu, National Cheng Kung University; Xiu-Yu Lu, National Cheng Kung University; Bing-Lin Kuan, National Cheng Kung University; Anton V. Prokhorov, Tomsk Polytechnic University
**Session #31**  
**Power Systems Engineering #4**  

**POWER SYSTEMS ENGINEERING**

Session Chair: Saleh Saleh, University of New Brunswick  
Session Organizer: Sergio Panetta, I-Gard Corp.  
Room: Regency G

2:00 | 2017-PSEC-0812  
**Stability Analysis of a Microgrid System with a Hybrid Offshore Wind and Ocean Energy Farm Fed to a Power Grid through an HVDC Link**  
Li Wang, National Cheng Kung University; Chun-Yu Lin, National Cheng Kung University; Anton V. Prokhorov, Tomsk Polytechnic University

2:30 | 2017-PSEC-0783  
**Rotor Current-Based Fault Diagnosis for DFIG Wind Turbine Drivetrain Gearboxes Using Frequency Analysis and a Deep Classifier**  
Fangzhou Cheng, University of Nebraska-Lincoln; Wei Qiao, University of Nebraska-Lincoln; Jun Wang, University of Nebraska-Lincoln; Liyan Qu, University of Nebraska-Lincoln

3:00 | 2017-PSEC-0784  
**Sensor Fault Detection and Isolation for a Wireless Sensor Network-Based Remote Wind Turbine Condition Monitoring System**  
Wei Qiao, University of Nebraska-Lincoln; Yayu Peng, University of Nebraska-Lincoln; Liyan Qu, University of Nebraska-Lincoln; Jun Wang, University of Nebraska-Lincoln

4:00 | 2017-PSEC-0790  
**Building Wind Farms Next to Series Capacitor Banks: Lessons Learned**  
Ahmad Abdullah, Electric Power Engineers, Inc; Billy Yancey, Electric Power Engineers, Inc; Mahdi Kefayati, Electric Power Engineers, Inc

4:30 | 2017-PSEC-0793  
**Unified Probabilistic Modeling of Wind Reserves for Demand Response and Frequency Regulation in Islanded Microgrid**  
M. Little, Memorial University of Newfoundland; S. F. Rabbi, Memorial University of Newfoundland; Kevin Pope, Memorial University of Newfoundland; John Quaicoe, Memorial University of Newfoundland

5:00 | 2017-PSEC-0817  
**Power Quality Study of Large-Scale Wind Farm with Battery Energy Storage System**  
Gustavo Ramos, Universidad de los Andes; Mario Rios, Universidad de los Andes; Diego Gomez, Universidad de los Andes; Hernan Palacios, Iaegen SA; Luis Posada, Iaegen SA

5:30 | 2017-PSEC-0809  
**Energy Storage to Improve Reliability of Wind Integrated Systems under Frequency Security Constraint**  
Nga Nguyen, Michigan State University; Atri Bera, Michigan State University; Jaydeep Mitra, Michigan State University

**Session #32**  
**Control of Power Converters II**  

**INDUSTRIAL AUTOMATION AND CONTROL**

Session Chair: Saleh Saleh  
Session Chair-chair: A. R. Beig  
Session Organizer: A. R. Beig  
Room: Regency E

8:00 | 2017-IACC-0833  
**Hybrid SVM-SOPWM Modulation of Current-Fed Three-level Inverter for High Power Application**  
Akshay Rathore, Concordia University; Gnana Sambandam; Kuothunguen, National University of Singapore; Amarendra Edpuganti, ABB Global Industries and Services Pvt Ltd; Dipti Srinivasan, National University of Singapore

8:30 | 2017-IACC-0843  
**Intelligent Adaptive Dynamic Surface Control System with Recurrent Wavelet Elman Neural Networks for DSP-Based Induction Motor Servo Drives**  
Fayez El-Sousy, Prince Sattam bin Abdulaziz University; Khaled Abushel, Prince Sattam bin Abdulaziz University

9:00 | 2017-IACC-0823  
**Frame-Angle-Based Direct Torque Controller for PMSM Drives**  
Saleh Saleh, University of New Brunswick; Ahmed Rubaai, Howard University

9:30 | 2017-IACC-0834  
**Analysis and Design of Three Phase Single Stage Isolated Cuk based PFC Converter**  
Akshay Rathore, Concordia University; Sivanagaraju Gangavarapu, Concordia University

10:30 | 2017-IACC-0824  
**The Wavelet Modulation Technique for S1\phi S CHB Multi-Level DC-AC Power Electronic Converters**  
Saleh Saleh, University of New Brunswick

11:00 | 2017-IACC-0887  
**One Switching Cycle Current Control Strategy for Triple Active Bridge Phase-Shifted DCDC Converter**  
Ritwik Chattopadhyay, North Carolina State University; Sayan Acharya, North Carolina Central University; Ghanshyam Sinh Gohil, North Carolina State University Department of Electrical and Computer Engineering; Subhashish Bhattacharya, North Carolina State University

11:30 | 2017-IACC-0867  
**Modified Hybrid L-Z Source Inverter- A Closed Loop Perspective**  
Avinash Chauhan, Indian Institute of Technology Banaras Hindu University; Mayank Jain, Indian Institute of Technology Banaras Hindu University; Santosh Singh, Indian Institute of Technology Banaras Hindu University
Session #33
Power Systems Engineering #5

POWER SYSTEMS ENGINEERING

Session Chair: Sergio Panetta, I-Gard Corp.
Session Organizer: Sergio Panetta, I-Gard Corp.
Room: Regency F

8:00 | 2017-PSEC-0798
The Formulation and Testing of Extended DQPF Method for Unbalanced 3Φ Systems
Saleh Saleh, University of New Brunswick

8:30 | 2017-PSEC-0799
Feasibility Study of Superconducting Cable Application to Oil/Gas Power Supply Network
Junichi Arai, Kogakuin University; Kohei Higashikawa, Kyushu University; Tadashi Koshizuka, Tokyo Denki University; Hisatoshi Ikeda, The University of Tokyo; Noureddine Harid, The Petroleum Institute; Ahmed Al Durra, Petroleum Institute

9:00 | 2017-PSEC-0800
Condition Monitoring Techniques for Induction Motors
Xiaodong Liang, Memorial University of Newfoundland; Kenneth Edomwandekhoe, Memorial University of Newfoundland

9:30 | 2017-PSEC-0802
Distributed Energy Storage Unit-Based Active Demand Response for Residential Loads
Saleh Saleh, University of New Brunswick; Abdelrahman Aldik, University of New Brunswick; Eduardo Castillo, University of New Brunswick

10:30 | 2017-PSEC-0801
Harmonic Mitigation through Advanced Control Methods in Grid-Connected Renewable Energy Sources
Xiaodong Liang, Memorial University of Newfoundland; Chowdhury Andalib-Bin-Karim, Memorial University of Newfoundland

11:00 | 2017-PSEC-0813
Developing and Applying Load Model Identification Software to Taiwan Power System
Sheng-Huei Lee, Chien Hsin University of Science and Technology; Department of Electrical Engineering; Yu-Jen Lin, I-Shou University; Chia-Chi Chu, National Tsing Hua University; Jin-Shyr Yang, Taiwan Power Research Institute; Guan-Chih Pu, Taiwan Power Research Institute; Ching-Jung Liao, Taiwan Power Research Institute; Shu-Min Hsu, Taiwan Power Research Institute, Electric Power Research Laboratory; Yu-Jen Lin, I-Shou University

11:30 | 2017-PSEC-0814
Design of Safety Critical Substation Earthing System Based on Soil Characteristics
Abhisek Ukil, University of Auckland; Kok Hoong Loo, Nanyang Technological University; Abhisek Ukil, University of Auckland
The risks of adding significant levels of distributed generation are systemic and potentially threaten the power quality and operation of modern distribution systems. To address these risks, one must think critically about what preemptive measures should be taken in terms of both engineering decisions as well as technical policies. Failure to do so will result in a system with legacy policies that were sensible at the time of their creation, but result in a system that cannot be effectively maintained and operated going forward. This tutorial provides power engineering personnel with the background knowledge necessary to more effectively identify and address both transient and steady-state phenomena on modern distribution systems. These include voltage and current fluctuations, harmonics, and larger scale issues that are a result of increasing levels of penetration of distributed energy resources. We will discuss methodology, guidelines, and criteria used to evaluate the risks presented by the interconnection of significant amounts of distributed generation. Topics ranging from policy decisions and system impact study procedures, to commissioning and technical inspections will provide the audience with areas of concern to take into consideration when anticipating the effects of future distributed energy resources on their systems.

To highlight the consequences of engineering decisions and technical policies, an examination of general facts, as well as specific case studies will be presented. We will discuss solutions that are currently employed, in addition to potential solutions that could be used to mitigate problems associated with distributed energy resources. The purpose of this discussion will be to find a balance among maintenance costs, power quality, and rising levels of aggregate generation on the distribution system at both the substation feeder and the customer facility level.

BIOGRAPHIES

David M. Farmer, David M. Farmer, is the Director, System Planning & Consulting Services for UC Synergetic. He is a graduate of West Virginia University Institute of Technology, a member of IEEE, and a licensed professional engineer in FL, NC, SC, VA, GA, OH, ME, MD, and HI.

Mr. Farmer has over thirty years of experience in the electric utility industry. His experience comprises a broad range of power delivery functions including distribution system design, planning, protection, reliability and system analysis. David has worked with both investors owned and electric cooperative utilities and has extensive consulting experience in the U.S. and abroad. He also has extensive experience in distribution software application and has worked on or led numerous distribution system planning and reliability studies. He is presently the Manager of the UCS Consulting Services group, with P/L responsibility for the national consulting practice. In addition, he coordinates and teaches in training and professional development seminars for both external utility clients and internal resources.

- Mr. Farmer’s specialized skills include:
  - Distribution planning and load forecasting
  - Smart grid strategy and implementation
• Distributed generation (DG) interconnection analysis
• Integrated volt/var control applications
• Distribution automation, self-healing schemes, and volt/var optimization
• System modeling and analysis
• Distribution fault analysis, protective coordination, and reliability assessment
• Distribution design and engineering
• Training and professional development
• Business and technical management

Mr. Keith Clapp has a B.S. in Electrical Engineering with a Minor in Mathematical Science from Clemson University. His experience is in Distribution Consulting including: Distributed Generation Interconnection Studies. He also has experience from various power delivery functions including: system design, planning, protection, reliability, and system analysis. He has worked with the electric utility industry in their grid management division.

Specialized Skills and Knowledge
• Distributed generation (DG) interconnection and impact studies.
• DG interconnection analysis.
• Distribution feeder analysis.
• Distribution fault analysis, protective coordination, and reliability assessment.
• Design and engineering of a distribution grid.
• Solar and rotating machine dispersed generation evaluation, including voltage rise and flicker assessment and mitigation.
• Grid management dealing with temporary switching of power distribution.
• Leadership ability of DG team.
• Training and professional development
• Dispersed generation safety evaluations in respect to IEEE 1547.

Mr. Neil Shepard has a B.S. in Electrical Engineering-Renewable Electric Energy Systems from the North Carolina State University. He is responsible for performing system impact studies for new distributed energy resources (DER) including system analysis, planning, protection, and reliability. He has helped to shape new policy and methodologies for the interconnection of DER involving solar PV, biogas, and battery energy storage. With the explosive growth of new interconnecting requests, Neil has researched new practices and strategies to ensure power quality on medium voltage distribution systems. Neil has worked for investor owned utilities and electric cooperatives in both medium voltage distribution systems and transmission systems.

His expertise and specialized skills include the following:
• Distribution system modeling and analysis
• Interconnection analysis of distributed energy resources
• Medium voltage system analysis and protective coordination
• Power quality study and analysis
• Arc-flash analysis
• Project and team leadership
• Training and professional development
IEEE-IAS Leadership

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2017 INDUSTRY APPLICATIONS SOCIETY COUNCIL

The Society Council consists of all Society Officers, Department Officers and Committee Chairs, Past Presidents and Chapter Area Chairs. The Society Council meets annually and is empowered to elect officers, ratify amendments to the Constitution and establish major policy.

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CHAIR: Daleep Mohla ...........................................
IEEE INDUSTRY APPLICATIONS SOCIETY
TECHNICAL COMMITTEES

The technical work of the Industry Application Society takes place within its Technical Committees. For administrative convenience, the committees are organized into four Operating Departments. IAS sponsors several Technical Conferences each year. The information below will help you understand the interests of these committees, identify the IAS Technical Conferences in which the committees participate, and provide e-mail contact information for current (2017) leadership. In addition to the specific IAS Conferences identified below, each year IAS has co-sponsorship arrangements with a number of non-IEEE conferences outside North America.

MANUFACTURING SYSTEMS DEVELOPMENT & APPLICATIONS DEPARTMENT

CHAIR: Mohammad Uddin, muddin@lakeheadu.ca
VC-PAPERS: Ahmed Rubaai, arubaai@Howard.edu

Electrostatic Processes Committee

The Electrostatic Processes Committee is responsible for all matters within the scope of the IAS in which the emphasis or dominant factor specifically relates to the utilization and/or control of electrostatic phenomena. Every third year, the committee holds technical sessions in conjunction with the Electrostatics Society of America (ESA). When not collocating with ESA, the committee participates in the IAS Annual Meeting.

CHAIR: Masaaki Okubo, mokubo@me.osaku-u.ac.jp
PAPERS REVIEW CHAIR: Shesha Jayaram, jayaram@uwaterloo.ca

Industrial Automation and Control Committee

The Industrial Automation & Control Committee is responsible for all matters within the scope of the IAS in which the emphasis or dominant factor specifically relates to the applications of industrial electrical and electronic control devices, systems, and methods to the conversion, regulation and utilization of electricity for the control of industrial processes, machinery and heating. IACC participates in the IAS Annual Meeting.

CHAIR: Babak Nahid-Mobarakeh, babak.nahid@gmail.com
PAPERS REVIEW CHAIR: Dr. Akshay Kumar Rathore, akshay.k.rathore@ieee.org

Industrial Lighting and Display Committee

The Industrial Lighting and Displays Committee (formerly the Production and Application of Light Committee) is responsible for all matters within the scope of the IAS in which the emphasis or dominant factor specifically relates to light and lighting. This committee holds technical sessions at the IAS Annual Meeting.

CHAIR: J. Marcos Alonso, marcos@ieee.org
PAPERS REVIEW CHAIR: Francis Dawson dawson@ele.utoronto.ca
INDUSTRIAL POWER CONVERSION SYSTEMS DEPARTMENT

CHAIR: Po-tai Cheng, ptcheng@ieee.org
VC-PAPERS: Ayman EL-Refaie, amelrefaie@gmail.com

Electric Machines Committee
The Electric Machines Committee is responsible for all matters within the scope of the IAS in which the emphasis or dominant factor specifically relates to the design, analysis, manufacture, and application of electric machines in industry. This committee participates in the IEEE Energy Conversion Congress and Exposition.

CHAIR: Andy Knight, andyknight@ieee.org
PAPERS REVIEW CHAIR: Andy Knight, andyknight@ieee.org

Industrial Drives Committee
The Industrial Drives Committee is responsible for all matters within the scope of the IAS in which the emphasis or dominant factor specifically relates to the suitability and application of electric motor drive equipment to industrial machinery and vice versa. IDC participates in the IEEE Energy Conversion Congress and Exposition.

CHAIR: Michael Harke, mcharke@ieee.org
PAPERS REVIEW CHAIR: Fernando Briz, fernando@hecate.edu.uniovi.es

Industrial Power Converter Committee
The Industrial Power Converter Committee is responsible for all matters within the scope of the IAS in which the emphasis or dominant factor specifically relates to equipment and circuits for the static conversion of electric power in industry. The committee participates in the IEEE Energy Conversion Congress and Exposition.

CHAIR: Pericle Zanchetta, Pericle.Zanchetta@nottingham.ac.uk
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Power & Electronics Devices & Components Committee
The Power Electronics Devices and Components Committee is responsible for all matters within the scope of the IAS in which the emphasis or dominant factor specifically relates to power electronics devices and components and their applications. PEDCC participates in the IEEE Energy Conversion Congress and Exposition.

CHAIR: Shashank Krishnamurthy, shashank.km@gmail.com
PAPERS REVIEW CHAIR: Filippo Chimento, filippo.chimento@ieee.com

Renewable and Sustainable Energy Conversion Systems Committee
The Renewable and Sustainable Energy Conversion Systems Committee is responsible for all matters within the scope of the IAS in which the emphasis or dominant factor specifically relates to the design, analysis, manufacture and use of electric devices and systems for renewable and sustainable energy conversion industrial applications. This committee participates in the IEEE Energy Conversion Congress and Exposition.

CHAIR: Yilmaz Sozer, ys@uakron.edu
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Transportation Systems Committee

The Transportation Systems Committee is responsible for all matters within the scope of the IAS in which the emphasis or dominant factor specifically relates to the electrification of the transportation industry, including components, systems, and infrastructure, and encompassing all modes of transportation for people and goods. This committee participates in the IEEE Energy Conversion Congress and Exposition.

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Pulp & Paper Industry Committee

The Pulp and Paper Industry Committee is responsible for all matters within the scope of the IAS in which the emphasis or dominant factor specifically relates to the manufacture and fabrication of pulp, paper and wood products. This committee sponsors the annual IEEE Pulp & Paper Industry Technical Conference.

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Petroleum & Chemicals Industry Committee

The Petroleum and Chemical Industry Committee is responsible for all matters within the scope of the IAS in which the emphasis or dominant factor specifically relates to production, manufacturing, transportation and safety of petroleum and chemical products. This committee sponsors an annual conference in North America, the IEEE Petroleum & Chemical Industry Technical Conference and related conferences in Europe, Asia and Latin America.

CHAIR: Peter Baen, peter.baen@thermon.com
PAPERS REVIEW CHAIR: Paul Sullivan, paul.b.sullivan@ieee.org

Cement Industry Committee

The Cement Industry Committee is responsible for all matters within the scope of the IAS in which the emphasis or dominant factor specifically relates to the manufacture of cement. This committee is associated with the Portland Cement Association in sponsoring the annual IEEE/PCA Cement Industry Technical Conference.

CHAIR: Ted Richardson, tkrichardson@edg.net
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Mining Industry Committee

The Mining Industry Committee is responsible for all matters within the scope of the IAS in which the emphasis or dominant factor specifically relates to all mining and related operations. It holds technical sessions at the IAS Annual Meeting.

CHAIR: David Mazur, dcmazur@ra.rockwell.com
PAPERS REVIEW CHAIR: Joseph Sottile, Jr., jsottile@ieee.org
Metal Industry Committee
The Metal Industry Committee is responsible for all matters within the scope of the IAS in which the emphasis or dominant factor specifically relates to the making, shaping, or treating of metals. Specific areas of interest at related to metals include automation & control, drives, power & distribution, rotary equipment, power quality and gauging and signal processing. Metal Industry Committee technical sessions and the annual committee meeting are held at the IAS Annual Meeting.
CHAIR: Thomas Dionise, tom.dionise@ieee.org
PAPERS REVIEW CHAIR: Juan Lopera, lopera@uniovi.es

Electrical Safety Committee
The IAS Electrical Safety Committee is responsible for treatment of all matters within the scope of the IAS in which the emphasis or dominant factor specifically relates to the hazards of electricity and the prevention of injury to individuals from electrical equipment and electrical energy. The Electrical Safety Committee organizes the annual Electrical Safety Workshop.
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PAPERS REVIEW CHAIR: Daniel Doan, doan@ieee.org

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SECRETARY: Kent Sayler, kent.sayler@p2seng.com

Power System Engineering Committee
The Power Systems Engineering Committee is responsible for the treatment of all matters within the scope of the IAS in which the emphasis or dominant factor specifically relates to the design, equipment application, analysis, installation, grounding, operation, and maintenance of safe and reliable power systems, including emergency and standby systems for industrial, commercial, and institutional facilities. Its technical sessions take place at the IEEE Industrial & Commercial Power Systems Technical Conference and the IAS Annual Meeting.
CHAIR: Sergio Panetta, spanetta@i-gard.com
PAPERS REVIEW CHAIR:

Power System Protection Committee
The Power Systems Protection Committee is responsible for all matters within the scope of the IAS in which the emphasis or dominant factor specifically relates to power system protection. Its technical sessions take place at the IEEE Industrial & Commercial Power Systems Technical Conference and the IAS Annual Meeting.
CHAIR: Rob Hoerauf, robhoerauf@earthlink.net
PAPERS REVIEW CHAIR: Rob Hoerauf, robhoerauf@earthlink.net
Codes & Standards Committee
The Codes and Standards Committee is responsible for all matters within the scope of the IAS in which the emphasis or dominant factor specifically relates to electrical codes, rules, guides and standards affecting the design, installation or maintenance of industrial and commercial electrical power systems. Its technical sessions take place at the IEEE Industrial & Commercial Power Systems Technical Conference and the IAS Annual Meeting.

CHAIR: Marcelo Valdes, marcelo.valdes@ge.com

PAPERS REVIEW CHAIR:

Energy Systems Committee
The scope of the Energy Systems Committee is the treatment of all matters within the scope of the IAS in which the emphasis or dominant factor specifically relates to control, monitoring, and management of electrical energy systems, including power generation systems for use in industrial, commercial, and institutional facilities. Its technical sessions take place at the IEEE Industrial & Commercial Power Systems Technical Conference and the IAS Annual Meeting.

CHAIR: Mahesh Illindala, millindala@ieee.org
PAPERS REVIEW CHAIR: Wei-Jen Lee, wlee@uta.edu

Rural Electric Power Committee
The Rural Electric Power Committee is responsible for all matters within the scope of the IAS in which the emphasis or dominant factor specifically relates to rural requirements especially for agriculture, including rural electric power distribution. This committee sponsors the annual IEEE Rural Electric Power Conference.

CHAIR: Christopher Brooks, CBrooks@thinkESC.com
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TECHNICAL PROGRAM: Doug Turk, dougt@deepeast.com
The 2018 IEEE Industry Applications Society Annual Meeting will address the technical interests related to industrial applications of electrical energy. Note that while the 2018 IAS Annual Meeting and the 2018 Energy Conversion Congress and Exposition will be collocated in Portland, the technical programs at these conferences will be separate. Annual Meeting papers are solicited on subjects pertaining to the scope of the participating Technical Committees of the IEEE Industry Applications Society, as listed below. For papers, draft manuscripts (NOT abstracts or digests alone) should be submitted by e-mail to the individuals identified below. Proposals for Tutorials (which may range from 4 hours to 8 hours) should include a detailed outline as well as a list of presenters and their credentials.

The Metal Industry Committee is soliciting papers relating to making, shaping, or treating of metals. Drafts of proposed papers should be sent to Prof Braz J. Cardoso Filho.

braz.cardoso@ieee.org

The Power System Engineering Committee is soliciting papers relating to electrical safety and to design, analysis, maintenance or monitoring of electrical generation or distribution systems in industrial, commercial or institutional facilities. Drafts of proposed papers should be sent to Mr. Sergio Panetta.

spanetta@i-gard.com

The Industrial Lighting and Display Committee is soliciting papers relating to light sources and drivers, and display power supplies and more general in lighting system and display technology. Drafts of proposed papers should be sent to.

marcodc@gedre.ufsm.br

The Industrial Automation and Control Committee is seeking papers that address the applications of electrical and electronic control devices, sensors, systems, and methods to the conversion, regulation and utilization of electricity for the control of industrial processes and manufacturing. Drafts of proposed papers should be submitted online at https://www.openconf.org/ias2017iacc. Any issues with the online submission.

babak.nahidmobarakhe@univ-lorraine.fr

The Power System Protection Committee is soliciting papers relating to the protection of power generation and distribution systems in industrial, commercial or institutional facilities, including both fault protection and surge protection. Drafts of proposed papers should be sent to Mr. Rob Hoerauf.

robhoerauf@earthlink.net

The Energy Systems Committee is soliciting papers related to energy sources, energy management, system control and related issues in industrial, commercial or institutional facilities. Drafts of proposed papers should be sent to Dr. Wei-Jen Lee

wlee@uta.edu

The Codes and Standards Committee is soliciting papers related to electrical codes and standards governing the electrical infrastructure in industrial or commercial facilities. Drafts of proposed papers should be sent to:

Mr. Marcelo Valdes.

marcelo.valdes@ge.com
The Mining Industry Committee is seeking papers related to electrical applications and operations in mines. Drafts of proposed papers should be sent to Dr. David C Mazur: dcmazur@ra.rockwell.com

The TUTORIAL program is seeking proposals for presentations on topics in the general technical area of industrial applications of electrical energy, please send outlines and presenter details to: Dr. Joe Sottile by 1 May 2018: jsottile@ieee.org

AUTHORS’ DEADLINES:

• 15 March 2018: Submission of full drafts of proposed papers to the respective technical committee identified above.
• 15 March 2018: Notification of acceptance or rejection by the respective technical committees.
• 15 June 2018: Authors to receive instructions for submission of final conference manuscripts.
• 15 June 2018: Deadline for submission of FINAL conference manuscripts to ScholarOne Manuscripts.

GENERAL REQUIREMENTS:

Authors must submit a draft of the proposed paper for evaluation by the sponsoring Technical Committee. Abstracts or digests alone will not be considered. One author must be designated as the corresponding author, and an e-mail address must be provided for that person. All correspondence will be conducted via e-mail. Authors are responsible for assuring that e-mail sent to the corresponding author will NOT be blocked by a spam filter.

At least one author must register to attend the conference, and pay the full conference registration fee prior to submitting each final manuscript. IEEE student members, IEEE Life Members, and unemployed attendees must select a full conference registration to qualify to submit papers. Authors are limited to submitting no more than four manuscripts against each full registration. Papers in the main technical program will be archived in IEEE Xplore. Papers that are scheduled for presentation but not actually presented will not be archived in Xplore.

Final manuscripts for the Conference Record will be submitted electronically via the IAS ScholarOne Manuscripts site. All papers will be scanned for plagiarism in CrossCheck. The submitting author must execute an IEEE Copyright Transfer at the time of manuscript submission.

• All papers sponsored for presentation by the Power System Engineering Power System Protection, Energy Systems, Codes and Standards, and Metals Industry and Mining Industry Committees will be reviewed for possible publication in IEEE Transactions on Industry Application or IEEE Industry Applications Magazine, and authors will receive feedback from this review following the 2018 IAS Annual Meeting. Note that to satisfy IEEE requirements, authors may be required to revise their papers during the course of the review.
• Authors of papers sponsored for presentation by the Industrial Automation and Control, Electrostatic Processes, and Industrial Lighting and Display Committees may request that revised versions of their paper(s) be reviewed for publication following presentation at the 2018 IAS Annual Meeting.

Not all IAS Technical Committees hold sessions at the IAS Annual Meeting every year. If a committee is not listed in this call for papers, you should contact the appropriate IAS Technical Committee or Department Chair for more information. The 2018 Energy Conversion Congress and Exposition will take place in Portland at the same time as the IAS Annual Meeting, and there may be additional opportunities to present papers at ECCE.

STUDENT ACTIVITIES AND PROGRAM:

Students are encouraged to participate in the Annual Meeting, and are welcome to submit papers for the Student Program being organized by the IAS Chapters and Membership Department. It is not necessary or expected that student presentations will be accompanied by formal manuscripts. Student papers are not included in the Annual Meeting Conference Record or archived in Xplore, and are not eligible for publication in IAS Transactions or IAS Magazine.

Zucker Travel Grants are available to provide financial support for selected students attending the Annual Meeting; for further information, visit http://ias.ieee.org/chapters-membership/chapter-promotion-programs,-awards-and-contests.html.
NOTES:
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