2008 IEEE Industry Applications Society Annual Meeting

OCTOBER 5-9, 2008
WESTIN HOTEL
EDMONTON, ALBERTA
CANADA
Welcome to the 43nd IAS Annual Meeting!

I would like to extend my personal welcome to you at this 43rd Industry Applications Society Annual Meeting in Edmonton. The city of Edmonton is considered by many to be a gateway into northern Canada and the numerous heavy industry activities which are underway. It is truly appropriate to hold our Society's flagship conference here this week. You will find numerous activities spanning the scope of the IAS and I hope that you have the chance to participate in all of them that are of interest to you.

At this year’s meeting, we have more than 60 technical sessions covering technical topics ranging from industrial power systems to power electronic devices and virtually all applications found in industry. You will find a healthy mix of application, development, and research papers throughout the well-planned technical program. You can attend any paper in any session, and you may move freely between sessions as you like to listen to any paper presentation that is of interest you.

A major activity at the Annual Meeting is the standards work which takes place, typically on Sunday and Monday during the meeting week. The IAS is a major developer of IEEE Standards and many are created and discussed at the Annual Meeting. Perhaps the most recognizable of the standards which are being developed here are the IEEE Color Books which deal with industrial and commercial power systems. All of the standards development activities are open to conference attendees and your involvement would be most welcome. These meetings are listed in the program for your convenience.

In addition to the technical aspects, there are numerous social activities in which I encourage you to participate. Foremost among these are the Awards Luncheon and the President’s Banquet. At these two events, we recognize the achievements of some of our most distinguished members as well as our outstanding chapters. Prize paper awards for some of our technical committees are also presented in these venues. There is also the Myron Zucker Student Luncheon which provides a great opportunity for students to meet and interact with each other and other IAS members.

As always, the Annual Meeting is the culmination of the year’s activities. I hope you enjoy the conference and your stay in Edmonton. On behalf of all of the IAS volunteers who have put so much effort into insuring a successful event, I thank you for your participation this year.

Mark Halpin
President, IEEE Industry Applications Society
Welcome to Edmonton and to the 2008 IEEE IAS Annual Meeting!

It is my pleasure to warmly welcome you to Edmonton, the province capital of Alberta, Canada’s second most populous provincial capital (after Toronto). We are honoured that you accepted the invitation to be our IAS guest and the guest of my home city: the northernmost North American city with a metropolitan population of over one million. Edmonton covers an area larger than Chicago, Philadelphia, Toronto or Montreal, while offering all the services of a major urban center.

Edmonton, the “Festival City”, has also been named Canada’s Cultural Capital for 2007 for its thriving arts and cultural community. A number of cultural events are anchored just steps from your hotel, in the modern architectural downtown Arts District, and around the newly renovated Churchill Square. The Edmonton outdoors is most generous in our sunny city. Our river valley is the largest stretch of urban parkland in Canada.

Oil production and refining remain the basis for Alberta’s economy. But Edmonton’s economy is now the second most diverse in Canada and is known for its strong life-science sector and burgeoning high-tech industry. Much of the growth in technology sectors is due to Edmonton’s reputation as one of Canada’s premiere research and education centers. Research initiatives are anchored by educational institutions such as the University of Alberta, home to Canada’s second largest research library, which ranks first in volumes per student. Many of the research programs benefit from proactive Provincial Government initiatives such as Informatics Circle of Excellence (iCORE), Alberta Ingenuity Fund (AIF), National Institute for Nanotechnology (NINT), Edmonton Research Park, etc.

In this context, it just feels right that the 2008 IEEE Industry Application Society Conference is here, a feeling that I am hoping you share. As with any event of this magnitude, the joint effort of many people is required. I am expressing my thanks to the IEEE IAS and its Officers, especially to Dr. Mark Nelms, for their support in the process. Our tireless and generous Conference Chair, Tom Nondahl was a pleasure to work with. Lynda, thank you! I am grateful to all of you for your participation and for striving to make this conference a success. You deserve to enjoy the fruits of your hard work and I am truly hoping that you will have a very pleasant, exciting stay in Edmonton, with a lot of great stories to tell when you get back home.

Angela Antoniu
Local Committee Chair
IEEE - IAS Leadership

IEEE-IAS Executive Board

President
S. Mark Halpin
Auburn University
Electrical Engineering
200 Broun Hall
Auburn University, AL 36849
USA
334 844 1824
334 844 1809 (FAX)
halpin@eng.auburn.edu

President-Elect
Thomas A. Nondahl
Rockwell Automation
W-5S23
1201 South Second Street
Milwaukee, WI 53204
USA
414 382 0237
414 382 3500 (FAX)
t.nondahl@ieee.org

Vice President
Bruno Lequesne
Delphi Advanced Powertrain
MC 483.478.103
51786 Shelby Parkway
Shelby Township, MI 48315
USA
586 323 6060
586 323 9898 (FAX)
bruno.lequesne@ieee.org

Treasurer
Resi Lloyd
Iris Power LP
499 Lockhart Road
Innisfil, Ontario L9S 3E4
Canada
705 431 1936
302 999 6390
302 999 6273 (FAX)
h.l.floyd@ieee.org

Past-President
H. Landis (Lanny) Floyd II
DuPont Co.
Chestnut Run Plaza 7232/1106
4417 Lancaster Pike
Wilmington, DE 19805
USA
302 999 6390
302 999 6273 (FAX)
h.l.floyd@ieee.org

Operating Department Chairs

Manufacturing Systems Development and Applications
Malik Elbuluk
The University of Akron
Dept of Electrical and Computer Engineering
USA
303 972 6531
303 972 6487 (FAX)
elbuluk@uakron.edu

Process Industries
David B. Durocher
Eaton Electrical
26850 SW Kinsman Road
Wilsonville, OR 97070
USA
503 582 2714
503 582 2814 (FAX)
davidbdurocher@eaton.com

Industrial and Commercial Power Systems
Dan Neeson
Cooper Bussmann
114 Old State Road
Ellisville, MO 63021
USA
636 527 1681
dneenser@cooperbussmann.com

Industrial Power Conversion Systems
Hamid Toliyat
Advanced Electric Machines & Power Electronics Lab Department of Electrical and Computer Engineering
3128 TAMU
Texas A&M University
College Station, TX 778430-3128
979 862 3034
979 845 6259 (FAX)
toliyat@ece.tamu.edu

Staff Department Chairs

Awards
Adam Skorek
University of Quebec at Trois Rivieres
Department of Electrical and Computer Engineering
3351, boul. des Forges
Trois Rivieres, QC G9A 5A7
Canada
819 376 5011 x 3929
819 376 5219 (FAX)
a.skorek@ieee.org

Chapters and Membership
Sunita Kulkarni
Bechtel Corp.
3000 Post Oak Boulevard
PO Box 2166
Houston, TX 77252 2166
USA
713 235 2833
713 235 1613 (FAX)
skulkarni@bechtel.com

Education
Donald Dunn
Aramco Services Company
MS-1089
9009 West Loop South
Houston, TX 77096-1799
USA
713 432 8588
713 432 8275 (FAX)
donald.dunn@ieee.org

Meetings
R. Mark Nelms
Auburn University
ECE Department
200 Broun Hall
Auburn University, AL 36849-5201
USA
334 844 1830
334 844 1809 (FAX)
m.nelms@ieee.org

Publications
Kevine L. Peterson, P.E.
P2S Engineering, Inc.
5000 East Spring St.
8th Floor
Long Beach, CA 90815
USA
562 497 2999
562 497 2990 (FAX)
Kevin.peterson@p2seng.com

Standards
T. David Mills, P.E.
Savannah River Site
Bldg. 707-38B, Room 8
Aiken, SC 29808
USA
803 952 8295
803 952 8453 (FAX)
d.mills@ieee.org

Standing Committee Chairs

Constitution and Bylaws
H. Landis (Lanny) Floyd II
DuPont Co.
Chestnut Run Plaza 7232/1106
4417 Lancaster Pike
Wilmington, DE 19805
USA
302 999 6390
302 999 6273 (FAX)
h.l.floyd@ieee.org

Electronic Communication
Blake Lloyd
IRIS Power LP
1 Westside Drive #2
Toronto, Ontario M9C-1B2
Canada
416 620 5600 x222
416 620 1995 (FAX)
bblloyd@irispower.com

Financial Planning
Resi Lloyd
Iris Power LP
499 Lockhart Road
Innisfil, Ontario L9S 3E4
Canada
705 431 1936
416 620 1995 (FAX)
rlloyd@irispower.com

IEEE - IAS Leadership
Inter-Society Cooperation
Peter Magyar
Hella KGaA Hueck & Co.
GE-ADE
Beckumer Str. 130
59552 Lippstadt
Germany
49 2941 388168
49 2941 388427 (FAX)
peter.magyar@ieee.org

Long Range Planning
Bruno Lequesne
Delphi Advanced Powertrain
MC 483.478.103
51786 Shelby Parkway
Shelby Township, MI 48315
USA
586 323 6060
586 323 9898 (FAX)
bruno.lequesne@ieee.org

Nominating
H. Landis (Lanny) Floyd II
DuPont Co.
Chestnut Run Plaza 7232/1106
4417 Lancaster Pike
Wilmington, DE 19805
USA
302 999 6390
302 999 6273 (FAX)
h.l.floyd@ieee.org

Members-at-Large
Andrew Bagley
Rockwell Automation Canada
135 Dundas Street
Cambridge, ON N1R5X1
Canada
519 740 4199
519 740 9871 (FAX)
atbagley@ra.rockwell.com

Roderick Simmons
Buzzi Unicem USA, Inc.
100 Broadhead Road
Bethlehem, PA 18018
USA
610 882 5020
610 997 5920 (FAX)
rderick.simmons@uzziunicemusa.com

Michael Degner
Ford Motor Co.
23465 Highmeadow Drive
Novi, MI 48375-3228
USA
313 322 6499
313 322 6499 (FAX)
mdegner@ford.com

Uday Deshpande
Black & Decker (US) Inc.
701 East Joppa RD TW 100
Towson, MD 21286-5502
USA
410 716 2653
410 716 3653 (FAX)
uday.deshpande@bdk.com

Terence Hazel
Schneider Electric SA
L Plant
Genoble, cedex 9 38050
France
+33 (0) 4 76 57 95 06
+33 (0) 4 76 57 75 72 (FAX)
terence.hazel@fr.schneider-electric.com

Nobyuki Matsui
Nagoya Institute of Technology
Goikis Showa, Nagoya
JAPAN 466-8555
+81 52 735 5420
+81 52 735 7979 (FAX)
matsui@nitech.ac.jp

Nick Nagel
6890 Parker Avenue
Downers Grove, IL 60516-3413
USA
847 673 8300
847 693 9763 (FAX)
nnagel@mpcproducts.com

Giuseppe Parise
Electrical Engineering Dept.
Via Eudossiana, 18
Roma 184
Italy
06 44585534
Giuseppe.parise@uniroma1.it

Peter Wung
Tecumseh Products Research Laboratory
3869 Research Products Drive
Ann Arbor, MI 48108
USA
734 665 9182 ext. 369
734 665 1231 (FAX)
pwung@tpresearch.com

Administrative Office
Lynda Bernstein
IEEE PES/IAS Administrator
445 Hoes Lane
Piscataway, NJ 08855
732 465 6627
732 562 3881 (FAX)
ias-administrator@ieee.org

Conference Committee
Conference Chair
Thomas Nondahl
Rockwell Automation
1201 South Second Street
Milwaukee, WI 53204
Phone: 414-382-0237
t.nondahl@ieee.org

Technical Program Coordinator
Regina Halpin
ias-tpc@ieee.org

Treasurer
R. Mark Nelms
Auburn University
ECE Department
200 Broun Hall
Auburn University, AL 36849-5201
Phone: (334) 844-1830
Fax: (334) 844-1809
m.nelms@ieee.org

Local Committee Members
Local Committee Chair
Angela Antoniu
University of Alberta
210 3616 1195t
Edmonton, Alberta, Canada
T6J 2X6
Phone: (780) 437-2578 (W)
Fax: (780) 492-1811
antoniu@ece.ualberta.ca

Local Committee Vice-Chair
Ian Verhappen
MTL Inc.
#102, 4249 97th Street
Edmonton, Alberta, Canada
T6E 5Y7
Phone: (780) 485-3132
Fax: (780) 485-3122
iverhappen@mtl-inst.com

Arrangements Chair
TBA

IAS Meetings Department Chair
R. Mark Nelms
Auburn University
ECE Department
200 Broun Hall
Auburn University, AL 36849-5201
Phone: (334) 844-1830
Fax: (334) 844-1809
m.nelms@ieee.org

Conference Services
Courtesy Associates
2025 M Street, NW Suite 800
Washington DC 20036
Phone: (202) 367-2348
Fax: (202) 331-0111
ias@courtesyassoc.com

Webmaster
Rangarajan Tallam
Rockwell Automation
6400 W Enterprise Drive
Mequon WI 53092
Phone: (262) 512-8314
rtallam@ra.rockwell.com
Contents

President’s Welcome .......................... 2
Conference Local Chair’s Welcome .... 3
IEEE-IAS Leadership .......................... 4
Registration Hours ............................ 7
Conference Daily Amenities
& Special Events ............................... 8
Westin Hotel Floorplan ....................... 9
Committee Meetings ......................... 10
Technical Program ............................ 12
Conferences & Workshops ................. 26

Registration Hours

IEEE IAS Conference Registration Desk will be located near the escalators on the Banquet Level in the Westin Edmonton Hotel.

Sunday, October 5, 2008
7:00am-7:00pm

Monday, October 6, 2008
7:00am-6:00pm

Tuesday, October 7, 2008
7:00am-6:00pm

Wednesday, October 8, 2008
7:00am-6:30pm

Thursday, October 9, 2008
7:00am-12:00pm
Conference Daily Amenities & Special Events

Authors Breakfast

An Authors’ Breakfast will be held each morning for the authors presenting that particular day. This breakfast is meant to provide that day's presenting authors with a chance to meet with their moderators and colleagues.

- Monday, Oct. 6, 2008
  7:00 am – 8:00 am
  Centennial (Lobby Level)

- Tuesday, Oct. 7, 2008
  7:00 am – 8:00 am
  Manitoba (Banquet Level)

- Wednesday, Oct. 8, 2008
  7:00 am – 8:00 am
  Manitoba (Banquet Level)

- Thursday, Oct. 9, 2008
  7:00 am – 8:00 am
  Turner Valley (Banquet Level)

Guest Hospitality Suite

There will be a hospitality suite available to all registered guests for refreshments and networking during these hours:

- Monday, 8:00 am – 6:00 pm
- Tuesday, 8:00 am – 6:00 pm
- Wednesday, 8:00 am – 6:00 pm
- Thursday, 8:00 am – 12:00 pm

The Guest Hospitality Suite will be located in the Parlour Suite.

Daily Conference Breaks

AM Breaks 10:00am-10:30am
PM Breaks 3:30pm-4:00pm
(Foyer on Banquet Level)

Special Events

Guide to the IAS Annual Meeting for First Time Attendees
Please come learn how to take advantage of all the IAS Annual Meeting has to offer if this is your first time in attendance!

- Sunday, October 5, 2008
  5:30 pm – 7:00 pm
  Chairman (Banquet Level)

Welcome Reception
(tickets required)
- Sunday, October 5, 2008
  6:30 pm – 10:00 pm
  Saskatchewan/Manitoba (Banquet Level)
  Cocktails and light fare.
  Dinner will not be provided.

Myron Zucker Student Luncheon
(By invitation only)
- Monday, October 6, 2008
  12:00 pm – 2:00 pm
  Centennial (Lobby Level)

IEEE IAS Awards Luncheon
(By invitation only)
- Tuesday, October 7, 2008
  12:00 pm – 2:00 pm
  Saskatchewan/Manitoba (Banquet Level)

IEEE IAS President’s Special Reception
(By invitation only)
- Wednesday, October 8, 2008
  6:30 pm – 7:30 pm
  Manitoba/Saskatchewan (Banquet Level)

IEEE IAS President’s Reception & Banquet
(tickets required)
- Wednesday, October 8, 2008
  6:30 pm – 7:30 pm
  Saskatchewan/Manitoba (Banquet Level)
  7:30 pm – 9:30 pm
  Saskatchewan/Manitoba/Yukon (Banquet Level)
## Committee Meetings

### Sunday - October 5

<table>
<thead>
<tr>
<th>Event</th>
<th>Time</th>
<th>Location</th>
<th>Hotel</th>
</tr>
</thead>
<tbody>
<tr>
<td>PELS Board Meeting</td>
<td>8:00 am - 6:00 pm</td>
<td>Turner Valley</td>
<td>Westin</td>
</tr>
<tr>
<td>IAS Board Meeting</td>
<td>1:00 pm - 5:00 pm</td>
<td>Alberta</td>
<td>Westin</td>
</tr>
<tr>
<td>Annual Meeting Planning</td>
<td>11:00 am - 1:00 pm</td>
<td>Director</td>
<td>Westin</td>
</tr>
<tr>
<td>I&amp;CPS General Session - Color Book Re-Organizational Meeting</td>
<td>1:00 pm - 2:00 pm</td>
<td>Chancellor</td>
<td>Westin</td>
</tr>
<tr>
<td>I&amp;CPS Standards Training - Technical Books Coordinating Committee</td>
<td>2:00 pm - 3:00 pm</td>
<td>Chancellor</td>
<td>Westin</td>
</tr>
<tr>
<td>I&amp;CPS Standards Training - Base Book - TBCC</td>
<td>3:00 pm - 4:00 pm</td>
<td>Chancellor</td>
<td>Westin</td>
</tr>
<tr>
<td>I&amp;CPS Standards Training - Power System Engineering Executive</td>
<td>4:00 pm - 5:00 pm</td>
<td>Chancellor</td>
<td>Westin</td>
</tr>
<tr>
<td>I&amp;CPS Standards Training - Power Systems Protection Executive</td>
<td>5:00 pm - 6:00 pm</td>
<td>British Columbia</td>
<td>Westin</td>
</tr>
<tr>
<td>I&amp;CPS Standards Training - Industrial Power Conversion Systems</td>
<td>5:00 pm - 7:00 pm</td>
<td>Chancellor</td>
<td>Westin</td>
</tr>
</tbody>
</table>

### Monday - October 6

<table>
<thead>
<tr>
<th>Event</th>
<th>Time</th>
<th>Location</th>
<th>Hotel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technical Books Coordinating Committee (TBCC)</td>
<td>8:00 am - 9:00 am</td>
<td>Maligne Suite</td>
<td>Courtyard Marriott</td>
</tr>
<tr>
<td>Power Systems Design TBCC</td>
<td>9:00 am - 10:00 am</td>
<td>Maligne Suite</td>
<td>Courtyard Marriott</td>
</tr>
<tr>
<td>Power Systems Analysis TBCC</td>
<td>10:00 am - 11:00 am</td>
<td>Maligne Suite</td>
<td>Courtyard Marriott</td>
</tr>
<tr>
<td>Grounding TBCC</td>
<td>11:00 am - 12:00 am</td>
<td>Maligne Suite</td>
<td>Courtyard Marriott</td>
</tr>
<tr>
<td>Emergency / Stand-By Power Systems TBCC</td>
<td>9:00 am - 10:00 am</td>
<td>Fraser Suite</td>
<td>Courtyard Marriott</td>
</tr>
<tr>
<td>Protection and Coordination TBCC</td>
<td>10:00 am - 11:00 am</td>
<td>Fraser Suite</td>
<td>Courtyard Marriott</td>
</tr>
<tr>
<td>Maintenance, Operations, and Safety TBCC</td>
<td>11:00 am - 12:00 pm</td>
<td>Fraser Suite</td>
<td>Courtyard Marriott</td>
</tr>
<tr>
<td>Reliability TBCC</td>
<td>9:00 am - 10:00 am</td>
<td>Riverside</td>
<td>Courtyard Marriott</td>
</tr>
<tr>
<td>I&amp;CPS Technical Program Meeting</td>
<td>3:00 pm - 4:00 pm</td>
<td>Chairman</td>
<td>Westin</td>
</tr>
<tr>
<td>I&amp;CPS Meetings Committee Meeting</td>
<td>4:00 pm - 5:00 pm</td>
<td>Chairman</td>
<td>Westin</td>
</tr>
<tr>
<td>I&amp;CPS Department OpCom Meeting</td>
<td>6:00 pm - 8:00 pm</td>
<td>Chairman</td>
<td>Westin</td>
</tr>
<tr>
<td>Power System Engineering Reliability Subcommittee</td>
<td>10:30 am - 12:30 pm</td>
<td>Riverside</td>
<td>Courtyard Marriott</td>
</tr>
<tr>
<td>Power System Engineering Emergency</td>
<td>10:00 pm - 1:30 pm</td>
<td>Fraser Suite</td>
<td>Courtyard Marriott</td>
</tr>
<tr>
<td>Power System Engineering Power System Design Subcommittee</td>
<td>1:30 pm - 2:00 pm</td>
<td>Fraser Suite</td>
<td>Courtyard Marriott</td>
</tr>
<tr>
<td>Power System Engineering Forensics Working Group</td>
<td>1:00 pm - 2:00 pm</td>
<td>Maligne Suite</td>
<td>Courtyard Marriott</td>
</tr>
<tr>
<td>Power System Engineering Safety, Operations, &amp; Maintenance Subcommittee</td>
<td>2:00 pm - 3:00 pm</td>
<td>Maligne Suite</td>
<td>Courtyard Marriott</td>
</tr>
<tr>
<td>Power System Engineering Power System Analysis Subcommittee</td>
<td>2:00 pm - 3:00 pm</td>
<td>Fraser Suite</td>
<td>Courtyard Marriott</td>
</tr>
<tr>
<td>Power System Engineering Grounding Subcommittee</td>
<td>2:30 pm - 3:30 pm</td>
<td>Fraser Suite</td>
<td>Courtyard Marriott</td>
</tr>
<tr>
<td>Power System Engineering Power Quality Subcommittee</td>
<td>3:30 pm - 4:00 pm</td>
<td>Fraser Suite</td>
<td>Courtyard Marriott</td>
</tr>
<tr>
<td>Power System Engineering Main Committee</td>
<td>4:00 pm - 5:00 pm</td>
<td>Fraser Suite</td>
<td>Courtyard Marriott</td>
</tr>
<tr>
<td>Codes &amp; Standards Committee</td>
<td>5:00 pm - 6:00 pm</td>
<td>Fraser Suite</td>
<td>Courtyard Marriott</td>
</tr>
<tr>
<td>Committee</td>
<td>Time</td>
<td>Location</td>
<td>Hotel</td>
</tr>
<tr>
<td>------------------------------------------------------------------------------------------------</td>
<td>------------------</td>
<td>-------------------------</td>
<td>----------------</td>
</tr>
<tr>
<td>Power System Protection Generator Grounding Working Group</td>
<td>1:00 pm - 3:00 pm</td>
<td>Riverside</td>
<td>Courtyard Marriott</td>
</tr>
<tr>
<td>Power System Protection Medium Voltage Protection Subcommittee</td>
<td>3:00 pm - 4:00 pm</td>
<td>Maligne Suite</td>
<td>Courtyard Marriott</td>
</tr>
<tr>
<td>Power System Protection Low Voltage Protection Subcommittee</td>
<td>3:00 pm - 4:00 pm</td>
<td>Riverside</td>
<td>Courtyard Marriott</td>
</tr>
<tr>
<td>Power System Protection Surge Protection Subcommittee</td>
<td>4:00 pm - 5:00 pm</td>
<td>Riverside</td>
<td>Courtyard Marriott</td>
</tr>
<tr>
<td>Power System Protection Molded Case Circuit Breaker Working Group</td>
<td>4:00 pm - 4:30 pm</td>
<td>Maligne Suite</td>
<td>Courtyard Marriott</td>
</tr>
<tr>
<td>Power System Protection Main Committee</td>
<td>5:00 pm - 6:00 pm</td>
<td>Riverside</td>
<td>Courtyard Marriott</td>
</tr>
<tr>
<td>Energy Systems Utility Deregulation Subcommittee</td>
<td>4:30 pm - 5:00 pm</td>
<td>Maligne Suite</td>
<td>Courtyard Marriott</td>
</tr>
<tr>
<td>Energy Systems Main Committee</td>
<td>5:00 pm - 6:00 pm</td>
<td>Maligne Suite</td>
<td>Courtyard Marriott</td>
</tr>
<tr>
<td>Appliance Industry Committee</td>
<td>6:00 pm - 7:30 pm</td>
<td>Consulate</td>
<td>Westin</td>
</tr>
<tr>
<td>Power Electronics Devices and Components Committee</td>
<td>6:00 pm - 8:00 pm</td>
<td>Leduc</td>
<td>Westin</td>
</tr>
<tr>
<td>Metals Industry Committee</td>
<td>6:00 pm - 8:00 pm</td>
<td>Turner Valley</td>
<td>Westin</td>
</tr>
<tr>
<td>Industrial Drives Committee</td>
<td>6:00 pm - 8:00 pm</td>
<td>British Columbia</td>
<td>Westin</td>
</tr>
</tbody>
</table>

**Tuesday - October 7**

<table>
<thead>
<tr>
<th>Committee</th>
<th>Time</th>
<th>Location</th>
<th>Hotel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electrostatic Processes Committee</td>
<td>6:00 pm - 7:30 pm</td>
<td>Leduc</td>
<td>Westin</td>
</tr>
<tr>
<td>Electric Machines Committee</td>
<td>6:00 pm - 8:00 pm</td>
<td>Alberta</td>
<td>Westin</td>
</tr>
<tr>
<td>Industrial Power Converter Committee</td>
<td>6:00 pm - 8:00 pm</td>
<td>Strathcona</td>
<td>Westin</td>
</tr>
<tr>
<td>Industrial Light and Displays Committee</td>
<td>6:00 pm - 7:30 pm</td>
<td>Chancellor</td>
<td>Westin</td>
</tr>
<tr>
<td>Mining Industry Committee</td>
<td>6:00 pm - 8:00 pm</td>
<td>Consulate</td>
<td>Westin</td>
</tr>
<tr>
<td>Industrial Automation &amp; Control Committee</td>
<td>6:00 pm - 8:00 pm</td>
<td>Turner Valley</td>
<td>Westin</td>
</tr>
<tr>
<td>Transactions Editorial Board Meeting</td>
<td>8:00 am - 10:00 am</td>
<td>Director</td>
<td>Westin</td>
</tr>
<tr>
<td>Magazine Editorial Board Meeting</td>
<td>10:00 am - 12:00 pm</td>
<td>Director</td>
<td>Westin</td>
</tr>
<tr>
<td>IAS Board Meeting</td>
<td>2:00 pm - 8:00 pm</td>
<td>Director</td>
<td>Westin</td>
</tr>
<tr>
<td>MSDAD Meeting</td>
<td>5:00 pm - 6:30 pm</td>
<td>Manitoba</td>
<td>Westin</td>
</tr>
<tr>
<td>Chapters Workshop</td>
<td>8:00 am - 5:30 pm</td>
<td>Chairman</td>
<td>Westin</td>
</tr>
</tbody>
</table>

**Wednesday - October 8**

<table>
<thead>
<tr>
<th>Committee</th>
<th>Time</th>
<th>Location</th>
<th>Hotel</th>
</tr>
</thead>
<tbody>
<tr>
<td>IAS Executive Board Meeting</td>
<td>8:00 am - 12:00 pm</td>
<td>Manitoba</td>
<td>Westin</td>
</tr>
<tr>
<td>IEEE Energy Conversion Congress &amp; Expo (ECCE 2009)</td>
<td>2:00 pm - 6:00 pm</td>
<td>Chairman</td>
<td>Westin</td>
</tr>
<tr>
<td>Organization Meeting</td>
<td>2:00 pm - 6:00 pm</td>
<td>Strathcona</td>
<td>Westin</td>
</tr>
<tr>
<td>Time</td>
<td>Session 1 - Power System Analysis, Arc Flash</td>
<td>Session 2 - Electrostatic Precipitators and Separators</td>
<td>Session 3 - LED</td>
</tr>
<tr>
<td>-------</td>
<td>---------------------------------------------</td>
<td>-----------------------------------------------------</td>
<td>----------------</td>
</tr>
<tr>
<td>8:00 AM</td>
<td>IAS1p1 Voltage Sag in Highly Automated Factories</td>
<td>IAS2p1 Electrostatic Precipitators for Cleaning Diesel Exhaust</td>
<td>IAS3p1 Suitable Switching Converter Topologies for Automotive Signal Lamps and Headlamps Using Power LEDs</td>
</tr>
<tr>
<td>8:30 AM</td>
<td>IAS1p2 Harmonic Analysis of a Medium-Frequency Welder Application for a Metal Working Facility</td>
<td>IAS2p2 Electrohydrodynamically-Assisted Electrostatic Precipitator for Collection of Low Residue Dust</td>
<td>IAS3p2 Comparison Among Power LEDs for Automotive Lighting Applications</td>
</tr>
<tr>
<td>10:00 AM</td>
<td>Break</td>
<td>Break</td>
<td>Break</td>
</tr>
</tbody>
</table>

**Technical Program**

**Room**
- Turner Valley
- Leduc
- Chancellor
- Devonian
- Alberta

**Committee**
- Metal Industry
- Electrostatic Processes
- Industrial Lighting & Displays
- Electric Machines
- Industrial Drives
- Session Chair and Organizer: S. Douglas Cremey, Novellus Inc., Canada
- Session Chair: Akira Mizuno, Toyoohashi University of Technology, Japan
- Session Chair and Organizer: Joep Jacobs, Philips Research Laboratories, Germany
- Session Chair and Organizer: Petru Notingher, University of Montpellier 2, France

**Technical Program**

- 8:00 AM
  - IAS1p1 Voltage Sag in Highly Automated Factories
  - IAS2p1 Electrostatic Precipitators for Cleaning Diesel Exhaust
  - IAS3p1 Suitable Switching Converter Topologies for Automotive Signal Lamps and Headlamps Using Power LEDs
  - IAS4p1 Design of a Lightweight Transverse Flux Permanent Magnet Machine for Direct-Drive Wind Turbines
  - IAS5p2 A Decoupling Control Scheme of Combined Levitation-and-Propulsion SLM for Maglev Vehicle

- 8:30 AM
  - IAS1p2 Harmonic Analysis of a Medium-Frequency Welder Application for a Metal Working Facility
  - IAS2p2 Electrohydrodynamically-Assisted Electrostatic Precipitator for Collection of Low Residue Dust
  - IAS3p2 Comparison Among Power LEDs for Automotive Lighting Applications
  - IAS4p2 A Methodology to Design Linear Generators for Energy Conversion of Ambient Vibrations
  - IAS5p1 On the Contribution of PWM Methods to the Common Mode Leakage Current in Conventional Three-Phase Two-Level Inverters as Applied to AC Motor Drives

- 9:00 AM
  - IAS1p3 Protective Relay Settings of the Line Tripping and Load Shedding for an Integrated Steel-Making Cogeneration System
  - IAS2p3 Collection of Fine Particles by Novel Wet Electrostatic Precipitator
  - IAS3p3 Compact Lamp Using High-Brightness LEDs
  - IAS4p3 On the Possibilities of Using a Brushless Doubly-Fed Reluctance Generator in a 2 MW Wind Turbine
  - IAS5p3 Design of Speed Control Loop of a Variable Speed Diesel Engine Generator by Electric Governor

- 9:30 AM
  - IAS1p4 A New Field-Data Based EAF Model for Power Quality Studies
  - IAS2p4 Enhanced Performance for Electrostatic Precipitators by Means of Conventional and Fuzzy Logic Control
  - IAS3p4 Dynamic Control Point Simulation of OEEDs
  - IAS4p4 Synchronous Reference Frame Grid Current Control for Single-Phase Photovoltaic Converters
  - IAS5p4 Modeling of Torsional Resonances for Multi-Megawatt Drives Design

- 10:00 AM
  - Break

- 10:30 AM
  - IAS1p5 Design of an Ultra-Capacitor Energy Storage System (UESS) for Power Quality Improvement of Electric Arc Furnaces
  - IAS2p5 Premises for the Electrostatic Segregation of Wheat Bran Tissues
  - IAS3p5 Brushless DC Motor for a Solar Airplane Application: Comparison between Simulations and Measurements
  - IAS4p5 Regenerative Operation of DC Series Machines in Pitchsystems for Multimegawatt Windturbines

**Additional Information**
- www.ewh.ieee.org/soc/ias/
- 2008 IEEE Industry Applications Society
- 08 IAS Program2.indd 12
- 9/22/08 2:06:26 PM
<table>
<thead>
<tr>
<th>Monday, October 6, Morning Sessions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Strathcona</strong></td>
</tr>
<tr>
<td>Industrial Power Converter</td>
</tr>
<tr>
<td>Session 6 - Active Power Filters</td>
</tr>
<tr>
<td>Session Chair: Grahame Holmes, Monash University, Australia</td>
</tr>
<tr>
<td>Session Organizer: Kevin Lee, Eaton Corporation, USA</td>
</tr>
<tr>
<td>IAS6p1 High Performance Harmonic Isolation and Load Voltage Regulation of the Three-Phase Series Active Filter Utilizing the Waveform Reconstruction Method</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>
## Technical Program

<table>
<thead>
<tr>
<th>Room</th>
<th>Leduc</th>
<th>Chancellor</th>
<th>Consulate</th>
<th>Alberta</th>
</tr>
</thead>
<tbody>
<tr>
<td>Devonian</td>
<td>Electric Processes</td>
<td>Industrial Lighting &amp; Displays</td>
<td>Power System Protection</td>
<td>Electric Machines</td>
</tr>
</tbody>
</table>

### Session 21 - Applications, Protection and EMI for Power Electronics
- Session 22 - ESD, Corona and Related Phenomena
- Session 23 - Fluorescent Lighting
- Session 24 - Power System Protection I
- Session 25 - Faults and Diagnostics

### Session Chair: Adam Konopka, Baldor Electric, USA
- Session Chair: William D. Greason, University of Western Ontario, Canada
- Session Chair: Soumil Bhose, Université Paul Sabatier-Toulouse 3, France
- Session Chair and Organizer: Rasheed Rafaat, Jacobs Canada, Canada
- Session Chair: Gerard-Andre Capolino, University of Picardie, France

### Session Organizer: Alberto Bellini, University of Modena, Italy

### 8:00 AM
- IAS21p1 A Literature Review of IGBT Fault Diagnostic and Protection Methods for Power Electronics
- IAS22p1 Analysis of the Effect of ESD on the Operation of MEMs
- IAS23p1 Mercury Dosing in Fluorescent Lamps
- IAS24p1 The Status of DC Micro-Grid Protection
- IAS25p1 A New Robust Method To Detect Motor Faults in Squirrel Cage Synchronous Machines Using Structural Asymmetries

### 9:00 AM
- IAS21p2 A Novel Short-Circuit Detecting Scheme Using Turn-On Switching Characteristic of IGBT
- IAS22p2 A Study on Discharge Current and Radiative Noise of ESD from Charged Metal and Charged Human Body
- IAS23p2 Investigation of Moving Stiations in a 50kWh Low-Pressure Ar-Hg Discharge
- IAS24p2 Traveling Wave Based Distribution Lines Fault Localization Using Hilbert Transform
- IAS25p2 A New Robust Method To Detect Motor Faults in Squirrel Cage Synchronous Machines Using Structural Asymmetries

### 10:00 AM
- IAS21p3 Physical Layout of High Current Rectifiers: Modern Methods for an Old Challenge
- IAS22p3 Experimental Study of Corona Discharge Generated in a Modified Wire-Plate Electrode Configuration for Electrostatic Processes Applications
- IAS23p3 Energy Saver F32T8 Lamps and Dimming Ballasts for Sustainable Lighting
- IAS24p3 An Approach to Improve Measurement Accuracy for Electric Power Fault Recorder
- IAS25p3 Application of Piezoelectric Sensors to Rotor Fault Diagnostics in Squirrel-Cage Induction Machines

### 11:00 AM
- IAS21p4 Analysis of Current Distribution in Parallel Semiconductors of High Current Rectifiers in Electro-Insensitive Plants
- IAS22p4 Basic Research on Low Voltage Electrostatic Discharge Phenomena
- IAS23p4 A Novel Drive Circuit for Multiple Cold-Cathode Fluorescent Lamps of LCD Backlight Modules
- IAS24p4 A Mal-Trip of Bus Relay Due to Visible Light
- IAS25p4 Experimentally Validated Dynamic Fault Model for PMSM with Stator Winding Inter-Turn Fault

### 12:00 PM
- Break

### 1:00 PM
- IAS21p5 The Application of FDD with Avalanche Capability for Improvement of Power Conversion Efficiency in Output Rectifiers and PFC
- IAS22p5 Evaluation of Surface Charge Density with Electrostatic Voltmeter - Measurement Geometry Considerations
- IAS23p5 Fixed Frequency Self-Oscillating Electronic Ballast Design Procedure
- IAS24p5 Diagnosis of Bearing Faults of Induction Machines by Vibration or Current Signals: A Critical Comparison
- IAS25p5 Fast Single-Turn Sensitive Rotor Inter-Turn Fault Detection of Induction Machines Based on Positive and Negative Sequence Third Harmonic Components of Line Currents

### 2:00 PM
- IAS21p6 Analysis and Control of Soft-Commutation of Inverter at Small Residual Voltage with Bifurcated DVD/DT and Integrated Converter Module
- IAS22p6 Corona Charging and Charge Decay Characteristics of Non-Woven Filter Media
- IAS23p6 Comparison of Self-Oscillating Electrostatic Discharge Compactive Compact Fluorescent Lamps from Loss Perspective
- IAS24p6 Study of Different Architectures of Fault Tolerant Actuator Using a Double-Star PM Motor
- IAS25p6 Study of Different Architectures of Fault Tolerant Actuator Using a Double-Star PM Motor
### Tuesday, October 7, Morning Sessions

<table>
<thead>
<tr>
<th>Strathcona</th>
<th>Centennial</th>
<th>British Columbia</th>
<th>Yukon</th>
<th>Turner Valley</th>
</tr>
</thead>
<tbody>
<tr>
<td>Industrial Power Converter</td>
<td>Industrial Power Converter</td>
<td>Industrial Drives</td>
<td>Appliance Industry</td>
<td>Industrial Automation &amp; Control</td>
</tr>
<tr>
<td>Session 26 - Multilevel Converters</td>
<td>Session 27 (34) - Industrial Power Conversion Committee (IPCC) Product &amp; Service Session</td>
<td>Session 28 - Sensorless and Permanent Magnet Drives</td>
<td>Session 29 - Appliance Energy Management and Conversion</td>
<td>Session 30 - Industrial Controls</td>
</tr>
<tr>
<td>Session Chair: Burak Ozpineci, Oak Ridge National Laboratory, USA</td>
<td>Session Chair: Fabio Giuli Capponi, University of Rome–La Sapienza, Italy</td>
<td>Session Chair: Fabio Giuli Capponi, University of Rome–La Sapienza, Italy</td>
<td>Session Chair and Organizer: Roy McCann, University of Arkansas, USA</td>
<td>Session Chair and Organizer: A. Rubaai, Howard University, USA</td>
</tr>
<tr>
<td>Session Organizer: Zhenguo Pan, Direct Drive Systems, USA</td>
<td>Session Organizer: Meng Chuan, A. J. Moses, F. J. A. Anuj, Cardiff University, UK</td>
<td>Session Organizer: Meng Chuan, A. J. Moses, F. J. A. Anuj, Cardiff University, UK</td>
<td>Session Organizer: Xiaoqing Li, Dalian University of Technology, China; Zhongkai Li, Dalian University of Technology, China; Xianbo Wang, Dalian Shipbuilding Industry Co., Ltd., China</td>
<td></td>
</tr>
<tr>
<td>IAS26p1 An Effective SPMW Control Technique for 1MVAc 6000V Cascaded Neutral Point Clamped Inverter</td>
<td>IAS26p2 High-Performance Control Strategies and Applications of a New Hybrid Cascaded Multilevel Inverter</td>
<td>IAS26p3 Converter Topologies and Power Semiconductors for Industrial Medium Voltage Converters</td>
<td>IAS26p4 A New Modulation Method for Hexagon Inverter</td>
<td></td>
</tr>
<tr>
<td>IAS26p5 New Balanced Algorithm of Neutral-Point Potential in the Three-Level NPC Converters</td>
<td>IAS26p6 Carrier Signal Selection for Sensorless Control of PM Synchronous Machines at Zero and Very Low Speeds</td>
<td>IAS26p7 Sensorless Control of Linear Tubular Permanent Magnet Synchronous Motors UsingPulsating Signal Injection</td>
<td>IAS26p8 Sensorless Control of Linear Tubular Permanent Magnet Synchronous Motors Using Pulsating Signal Injection</td>
<td></td>
</tr>
<tr>
<td>IAS27p1 Shaft Position Correction Scheme for Sensorless Control of a PM Motor Based on State-Space Estimation between Variance Adjustment and Angle PI Regulation</td>
<td>IAS27p2 Design of Flux Observer Robust to Parameter Variation of Interior Permanent Magnet Synchronous Motor</td>
<td>IAS27p3 Arc Linear Motors for Direct Shovel Converter Systems Integrated with Supercapacitor</td>
<td>IAS27p4 Modeling and Analysis of a Tubular Oscillating Permanent Magnet Actuator</td>
<td></td>
</tr>
<tr>
<td>IAS29p1 Arc Linear Motors for Direct Drive Robots: Gualtiero Sposito</td>
<td>IAS29p2 Modeling and Control of Large Shovel Converter Systems Integrated with Supercapacitor</td>
<td>IAS29p3 Arc Linear Motors for Direct Drive Robots: Gualtiero Sposito</td>
<td>IAS29p4 Stochastic Sliding Mode Arbitration of Energy Management in Smart Building Systems</td>
<td></td>
</tr>
</tbody>
</table>

43rd Annual Meeting - October 5-9, 2008 www.ewh.ieee.org/soc/ias/ 17
<table>
<thead>
<tr>
<th>Room</th>
<th>Devonian</th>
<th>Leduc</th>
<th>Chancellor</th>
<th>Alberta</th>
<th>Strathcona</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Committee</strong></td>
<td>Power Electronics Devices &amp; Components</td>
<td>Electrostatic Processes</td>
<td>Industrial Lighting &amp; Displays</td>
<td>Electric Machines</td>
<td>Industrial Power Converter</td>
</tr>
<tr>
<td>Session 31 - Software Tools for Power Electronics</td>
<td>Session 32 - Material Properties and Measurement Techniques</td>
<td>Session 33 - HIL Lighting I</td>
<td>Session 35 - Reluctance Machines</td>
<td>Session 36 - Inverters</td>
<td></td>
</tr>
<tr>
<td>Session Chair: Richard Lukaszewski, Rockwell Automation USA</td>
<td>Session Chair: Kelly Robinson, Electrostatics Annex, USA</td>
<td>Session Chair: Georges Zisios, Universidad Pablo Sabater-Toulouse 3, France</td>
<td>Session Chair: Philippe Wendling, Magsoft Corporation, USA</td>
<td>Session Chair: Po-Tai Cheng, National Tsing Hua University, Taiwan</td>
<td></td>
</tr>
<tr>
<td>Session Organizer: Adam Konopka, Baldor Electric USA</td>
<td>Session Organizer: Rajesh Shama, University of Arkansas at Little Rock, USA</td>
<td>Session Organizer: Jo Olsen, Sylvania, USA</td>
<td>Session Organizer: Mohammad S. Islam, Delphi Corporation, USA</td>
<td>Session Organizer: Gui Jia Su, Oak Ridge National Laboratory, USA</td>
<td></td>
</tr>
<tr>
<td><strong>2:00 PM</strong></td>
<td>Presentation 1. Integrated Simulation Environment for Power Electronics, Drives, and Electrical Machine Design</td>
<td>IAS32p1 Non Contacting Measurement of Surface Resistivity Using Phi Type Electrodes</td>
<td>IAS33p1 Analysis of the Output Capacitor and Lamp Voltage Inversion for the Bidirectional Flyback Converter</td>
<td>IAS33p1 New Designs of a Two-Phase E-Core Switched Reluctance Machine by Optimizing the Magnetic Structure for a Specific Application: Concept, Design, and Analysis</td>
<td>IAS36p1 PMM Inverters Using Split-Wound Coupled Inductors</td>
</tr>
<tr>
<td>Scott Stanton, ANSOFIT, USA</td>
<td>Tiago B. Marchesan, Ushio Ceramica, and University of Arkansas at Little Rock, USA</td>
<td>IAS33p2 Electro-Chemical Preparation of Fine Needles for Field Ion Microscopy to Observe Biomolecules</td>
<td>IAS33p2 Envelope Analysis of a Phase-Controlled Triple LCC Resonant Inverter for Electronic Ballast Applications</td>
<td>IAS33p2 A Novel High Power Density Segmented Switched Reluctance Machine</td>
<td>IAS36p2 Embedded E2Z-Source Inverters</td>
</tr>
<tr>
<td><strong>2:30 PM</strong></td>
<td>Presentation 2. Design Support for Complex Technical Systems using Web Based Technologies</td>
<td>Christian Brailas, University of Cantabria, Spain; Francisco J. Azcondo, University of Cantabria, Spain; Rosario Casanueva, University of Cantabria, Spain</td>
<td>B. Vandana, Indian Institute of Technology-Bombay, India; Naveen Vattikuti, Indian Institute of Technology-Bombay, India; B. G. Fernando, Indian Institute of Technology-Bombay, India</td>
<td>R. Venkatesh, Indian Institute of Technology, Bombay, India</td>
<td>P. C. Lof, Naneryang Technological University, Singapore; F. Gao, Naneryang Technological University, Singapore; F. Blaabjerg, Aalborg University, Denmark</td>
</tr>
<tr>
<td>Uwe Knorr, TRANSIM, USA</td>
<td>IAS33p3 Self-Oscillating Full-Bridge Electronic Ballast with Constant-Lamp-Ccurrent Control and No-Lamp-Protection Circuit</td>
<td>IAS33p3 16,000 RPM Interior Permanent Magnet Reluctance Machine with Brushless Field Excitation</td>
<td>IAS33p3 A Class of Quasi-Z-Source Inverters</td>
<td>IAS36p3 A Non-Carton Inverter for Electronic Ballast Applications</td>
<td>IAS36p3 A Class of Quasi-Z-Source Inverters</td>
</tr>
<tr>
<td><strong>3:30 PM</strong></td>
<td>Break</td>
<td>Break</td>
<td>Break</td>
<td>Break</td>
<td>Break</td>
</tr>
<tr>
<td><strong>4:00 PM</strong></td>
<td>Presentation 4. Automatic Code Generation of Control Algorithms for Electronic Applications - Part II</td>
<td>T. J. Liang, National Cheng Kung University, Taiwan; Su-Chen Wang, National Cheng Kung University, Taiwan</td>
<td>IAS34p4 M-Phase N-Segment Flux-Reversal-Free Stator Switched Reluctance Machines</td>
<td>IAS34p5 A Novel Soft-Switching Scheme for an Isolated DC/DC Converter with Pulsating DC Output for a Three-Phase High-Frequency-Link PWM Converter</td>
<td>IAS34p6 Adjustable Control of a Dual Three-Level Inverter System for Medium-Voltage Drives</td>
</tr>
<tr>
<td>Tony Lennon, Math Works, USA</td>
<td>IAS33p5 An Optimal LCC Design Method for Dimmable Electronic Ballasts of the HID Lamp</td>
<td>IAS34p6 A Novel Low-Cost Electronic Ballast for Automotive HID Lamps</td>
<td>IAS34p6 Adjustable Control of a Dual Three-Level Inverter System for Medium-Voltage Drives</td>
<td>IAS34p6 Adjustable Control of a Dual Three-Level Inverter System for Medium-Voltage Drives</td>
<td>IAS34p6 Adjustable Control of a Dual Three-Level Inverter System for Medium-Voltage Drives</td>
</tr>
<tr>
<td><strong>4:30 PM</strong></td>
<td>Presentation 5. Rapid Virtual Prototyping in an Integrated Multi-Disciplinary Environment using VTB Pro</td>
<td>Moksonj Ang, Allstellite Co Ltd, South Korea; Byung Lim, Kangwon National University, South Korea; Chungyen Park, Kangwon National University, South Korea; N. S. Lobo, Virginia Polytechnic Institute and State University, USA; E. Swint, Virginia Polytechnic Institute and State University, USA; R. Krishnan, Virginia Polytechnic Institute and State University, USA</td>
<td>E. Swint, Virginia Polytechnic Institute and State University, USA; R. Krishnan, Virginia Polytechnic Institute and State University, USA</td>
<td>Rongjun Huang, University of Illinois at Chicago, USA; Supat Mazumder, University of Illinois at Chicago, USA</td>
<td>E. Swint, Virginia Polytechnic Institute and State University, USA; R. Krishnan, Virginia Polytechnic Institute and State University, USA</td>
</tr>
<tr>
<td>Enrico Santì, University of South Carolina, USA</td>
<td>IAS33p6 A Novel Low-Cost Electronic Ballast for Automotive HID Lamps</td>
<td>IAS34p6 A Novel Low-Cost Electronic Ballast for Automotive HID Lamps</td>
<td>IAS34p6 Adjustable Control of a Dual Three-Level Inverter System for Medium-Voltage Drives</td>
<td>IAS34p6 Adjustable Control of a Dual Three-Level Inverter System for Medium-Voltage Drives</td>
<td>IAS34p6 Adjustable Control of a Dual Three-Level Inverter System for Medium-Voltage Drives</td>
</tr>
<tr>
<td><strong>5:00 PM</strong></td>
<td>Presentation 6. Fast Inductance Computation Based on the PEEC Method Associated to System Simulations</td>
<td>Chuan-An Cheng, I-Shou University, Taiwan; Kun-Jieng Lin, I-Shou University, Taiwan</td>
<td>Joachim Holtz, University of Wuppertal, Germany; Yokosu Okonnomou, University of Wuppertal, Germany</td>
<td>Joachim Holtz, University of Wuppertal, Germany; Yokosu Okonnomou, University of Wuppertal, Germany</td>
<td></td>
</tr>
<tr>
<td>Philippe Wendling, Magsoft, France</td>
<td>IAS33p7 A Novel Single-Stage Low-Frequency Square-Wave Driven Electronic Ballast for HID Lamps</td>
<td>IAS35p7 Design of Power Supply for Driving High Power Piezoelectric Actuators</td>
<td>Joachim Holtz, University of Wuppertal, Germany; Yokosu Okonnomou, University of Wuppertal, Germany</td>
<td>Joachim Holtz, University of Wuppertal, Germany</td>
<td>Joachim Holtz, University of Wuppertal, Germany</td>
</tr>
</tbody>
</table>
Tuesday, October 7, Afternoon Sessions

<table>
<thead>
<tr>
<th>Consulate</th>
<th>British Columbia</th>
<th>Yukon</th>
<th>Turner Valley</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy Systems</td>
<td>Industrial Drives</td>
<td>Industrial Power Converter</td>
<td>Industrial Automation &amp; Control</td>
</tr>
<tr>
<td>Session Chair and Organizer: Kodjo Agbossou, Université du Québec à Trois-Rivières, Canada</td>
<td>Session Chair: Robert Betz, University of Newcastle, Australia</td>
<td>Session Chair: Sudip K. Mazumder; University of Illinois at Chicago, USA</td>
<td>Session Chair and Organizer: G. Venayagamoorthy, Missouri University of Science and Technology, USA</td>
</tr>
<tr>
<td>Session Organizer: Gao Zhi, Schneider Electric / Square D, USA</td>
<td>Session Organizer: Poh Chiang Loh, Nanyang Technological University, Singapore</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IAS37p1 Hydrogen Production from a Large Digester Gas Plant - Plant Layout, Modeling, and Evaluation</td>
<td>IAS38p1 Power Factor Control for High Power Current Source Drive with Active Front End</td>
<td>IAS39p1 Interleaving Impact on AC Passive Components of Paralleled Three-Phase Voltage-Sourced Inverters</td>
<td>IAS40p1 Analysis and Development of a Resolution-Level Vector-Controlled WM Inverter-Fed IPM Motor Drive</td>
</tr>
<tr>
<td>Sinclair Gair, Consultant, Scotland; André Martins de Martini, Promon, Brazil; Neil Finlayson, Leys Castle College, Scotland; Raun D. Mache, Comhairle nan Eilean Siar, Scotland</td>
<td>Yun Wei Li, University of Alberta, Canada; Mairash Pandi, Rockwell Automation, Canada; Naufal Zargari, Rockwell Automation, Canada; Bin Wu, Ryerson University, Canada</td>
<td>Di Zhang, Fred Wang, Rolo Burgos, Ruxin Lai, Dushan Boroyevich, Virginia Polytechnic Institute and State University, USA</td>
<td>S. A. Saleh, Memorial University of Newfoundland, Canada; M. A. Rahman, Memorial University of Newfoundland, Canada</td>
</tr>
<tr>
<td>IAS37p2 Experimental Validation of a Stand-Alone Photovoltaic Hybrid System</td>
<td>IAS38p2 A Series Connected Three-Level Inverter Topology for Medium Voltage Squirrel Cage Motor Drive Applications</td>
<td>IAS39p2 Analysis and Implementation of a Power Switch for Telecommunication Applications</td>
<td>IAS40p2 A Novel Overmodulation and Field Weakening Strategy for Direct Torque Control of Induction Machines</td>
</tr>
<tr>
<td>K. P. Adzakpa, J. Ramousse, K. Agbossou, Y. Dubé, N. Hassanzadeh, T. Zemmar, Université du Québec à Trois-Rivières, Canada</td>
<td>Suvaikut Mukherjee, Indian Institute of Technology–Kharagpur, India; Gautam Podder, Indian Institute of Technology–Kharagpur, India</td>
<td>Majid Pahlevaninezhad, Queen’s University, Canada; S. Ali Khajehoddin, Queen’s University, Canada; Alireza Bakhshi, Queen’s University, Canada; Praveen Jain, Queen’s University, Canada</td>
<td>A. Jidin, Universiti of Teknologi, Malaysia; N. R. N. Idris, Universiti of Teknologi, Malaysia; A. H. M. Yatin, University of Teknologi, Malaysia; M. Ebuluk, University of Akron, USA</td>
</tr>
<tr>
<td>Jérémy Lagorce, Stefan Giuraga, Damien Painz, Mauricio Ciminiccone, University of Technology–Belfort Montbéliard, France; Marcelo G. Simões, Colorado School of Mines, USA; Abdelwahab Missoui, University of Technology of Belfort Montbéliard, France</td>
<td>Luigi Galitto Jr, João Ostrom Pereira Pinto, Luciana C. Gente, Federal University of Mato Grosso do Sul, Brazil; Luiz Eduardo Bogo da Silva, Federal University of Piauí, Brazil; Binai K. Bose, The University of Tennessee, USA</td>
<td>Wenchoo Song, North Carolina State University, USA; Subhadip Bhattacharyya, North Carolina State University, USA; Alex. Q. Huang, North Carolina State University, USA</td>
<td>Thierry Boreux, Institut National Polytechnique de Lorraine, France; Babak Nahid-Mobarakeh, Institut National Polytechnique de Lorraine, France; Farid Meibody-Tabar, Institut National Polytechnique de Lorraine, France</td>
</tr>
<tr>
<td>Break</td>
<td>Break</td>
<td>Break</td>
<td>Break</td>
</tr>
<tr>
<td>Abraham Gebregzeghi, Delphi Steering Saginaw, USA; Pragasen Pillay, Concordia University, Canada</td>
<td>Jing Huang, Missouri University of Science &amp; Technology, USA; Keith A. Corzine, Missouri University of Science &amp; Technology, USA</td>
<td>Hyunjong Y. Cho, Sweeranging Engineering Center, USA; Enrico Santi, Sweeranging Engineering Center, USA</td>
<td>A. Lizzio, University ROMA TRE, Italy; V. Serrao, University ROMA TRE, Italy; L. Solisi, University ROMA TRE, Italy; F. Crescimbini, University ROMA TRE, Italy; A. Di Napoli, University ROMA TRE, Italy</td>
</tr>
<tr>
<td>IAS37p5 PEMFC Fault Diagnosis, Modeling, and Mitigation</td>
<td>IAS38p5 Loss Comparison between an SPWM and Harmonic Elimination Excited Small (&lt;1kW) Induction Motor Drive Using PSpice Simulation and Calculority</td>
<td>IAS39p5 High-Quality Single Phase Power Conversion by Reconsidering the Magnetic Components in the Output Stage - Building a Better Half Bridge</td>
<td>IAS40p5 Modeling and Minimization of Speed Ripple of a Faulty Induction Motor with Broken Rotor Bars</td>
</tr>
<tr>
<td>Abraham Gebregzeghi, Delphi Steering Saginaw, USA; Pragasen Pillay, Concordia University, Canada; Raghunathan Rengaswamy, Clarkson University, USA</td>
<td>C. Y. Leong, University of Oxford, UK; N. A. Parker-Allotey, University of Cambridge, UK; R. A. McMahon, University of Cambridge, UK</td>
<td>C. Chapalet, University of Alberta, Canada; J. Salmon, University of Alberta, Canada; A. Knight, University of Alberta, Canada</td>
<td>M. Naseer Uddin, Lakehead University, Canada; W. Wang, Lakehead University, Canada; and Z. R. Huang, Lakehead University, Canada</td>
</tr>
<tr>
<td>IAS38p6 Reversible AC Drive Systems Based on Parallel AC-AC DC-Link Converters</td>
<td>IAS39p6 Dynamic Control of a 2kW Interleaved Boost Converter for Traction Applications</td>
<td>IAS40p6 CORDIC Implementation of Space Vector Modulation</td>
<td>Prashanth Reddy Kambalapally, Northern Illinois University, USA; Donald S. Zinger, Northern Illinois University, USA</td>
</tr>
<tr>
<td>IAS38p7 Performance of a High Speed Motor Drive System Using a Novel Multi-Level Inverter Topology</td>
<td>IAS39p7 The Impact of Voltage Generation on Harmonic Spectra of Current and Flux Density in the Welding Transformer for a Medium Frequency Resistance Spot Welding System</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Room</td>
<td>Devonian</td>
<td>Leduc</td>
<td>Chancellor</td>
</tr>
<tr>
<td>----------</td>
<td>---------------------------</td>
<td>-----------------------</td>
<td>-------------------------------------</td>
</tr>
<tr>
<td>Com-</td>
<td>Power Electronics Devices &amp; Components</td>
<td>Electrostatic Processes</td>
<td>Industrial Lighting &amp; Displays</td>
</tr>
<tr>
<td>mittee</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Session</td>
<td>41 - Magnetics and Thermal Issues for Power Electronics</td>
<td></td>
<td></td>
</tr>
<tr>
<td>42 - Bio-electrostatic Engineering</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Session</td>
<td>Chair: Jean-Luc Scharen, LEG ENSIEG, France</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Session Chair: Ed Law, University of Georgia, USA</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Session Chair: Francis Dawson, University of Toronto, Canada</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Session Chair: Z.Q. Zhu, University of Sheffield, UK</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Session Chair and Organizer: Jorge Pintt, Technical university Federico Santa Maria, Chile</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8:00 AM</td>
<td>IAS41p1 Improved Configuration of the Inductive Core-Saturation Fault Current Limiter with the Magnetic Decoupling</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IAS42p1 Computation of Electrical Conditions Inside a Wire-Plate Electrostatic Actuator Using an Unstructured Finite Volume Method</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8:30 AM</td>
<td>IAS42p2 Multi-Layer Barrel-Wound Foil Winding Design</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IAS42p2 Graphic Materials for RF Thermal Abatement of Transformers</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9:00 AM</td>
<td>IAS43p1 Analytical and Numerical Contributions for Winding Losses Estimation in an Integrated Magnetic Component</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IAS43p2 Basic Study of Sterilization at Low Discharge Voltage by Using Microplasma</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9:30 AM</td>
<td>IAS44p1 Fast Thermal Models for Power Device Packaging</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IAS44p2 Pulsed Power Applied to Process Industry</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10:00 AM</td>
<td>Break</td>
<td>Break</td>
<td>Break</td>
</tr>
<tr>
<td>10:30 AM</td>
<td>IAS45p5 Analysis and In-Situ Measurement of Thermal/Mechanical Strain in Active Silicon Power Semiconductors</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IAS45p5 Survivability of Inoculated Versus Naturally Inoculated Bacteria in Liquid Foods under Pulsed Electric Fields</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11:00 AM</td>
<td>IAS46p1 Precision Calorimetry for the Accurate Measurement of Losses in Power Electronic Devices</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IAS46p2 Detection of Discharge Activities During Food Processing by Pulsed Electric Field</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11:30 AM</td>
<td>IAS47p1 Evaluation of Power Semiconductors Power Cycling Capabilities for Adjustable Speed Drive</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IAS47p7 A Simple Electronic Ballast to Supply HID Lamps</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Technical Program**

www.ewh.ieee.org/soc/ias/

2008 IEEE Industry Applications Society

[Link to the full technical program](#)
<table>
<thead>
<tr>
<th>Session 46 - Rectifiers</th>
<th>Session 47 - Energy Systems II</th>
<th>Session 48 - Power Quality</th>
<th>Session 49 - Power Systems Engineering</th>
<th>Session 50 - Intelligent Controls</th>
</tr>
</thead>
<tbody>
<tr>
<td>Industrial Power Converter</td>
<td>Industrial Drives</td>
<td>Break</td>
<td>Power Systems Engineering</td>
<td>Industrial Automation &amp; Control</td>
</tr>
<tr>
<td>Break</td>
<td>Energy Systems</td>
<td>Break</td>
<td>Power Systems Engineering</td>
<td>Industrial Automation &amp; Control</td>
</tr>
<tr>
<td>Session Chair and Organizer: Jim Gallojoy, J. H. Galloway &amp; Associates, USA</td>
<td>Session Chair and Organizer: Wei-Jen Lee, University of Texas at Arlington, USA</td>
<td>Session Chair: Semyon Royak, Rockwell Automation, USA</td>
<td>Session Chair: Chris Melhorn, Electric Power Research Institute, USA</td>
<td>Session Chair and Organizer: A. Starek, University of Quebec, Canada</td>
</tr>
</tbody>
</table>

### Wednesday, October 8, Morning Sessions

**Strathcona**

- **Industrial Power Converter**
- **Energy Systems**
- **Consulate**
- **Industrial Drives**
- **Session 46 - Rectifiers**
- **Session 47 - Energy Systems II**
- **Session 48 - Power Quality**
- **Session 49 - Power Systems Engineering**
- **Session 50 - Intelligent Controls**

**British Columbia**

- **Turner Valley**
- **Yukon**
- **Session Organiser: Zach Pan, Direct Drive Systems, Inc., USA**
- **Session Organiser: Peter Sutherland, GE, USA**
- **IAS46p1 Sensorless Nonlinear Control of a Three-Phase Switch/Level Vienna Rectifier Based on a Numerical Reconstruction of DC and AC Voltages**
- **IAS47p1 A Multi-Agent Fuzzy Logic Based Energy Management of Hybrid Systems**
- **IAS48p1 Examination and Linearization of Torque Control System for Direct Torque Controlled IPMSM**
- **IAS48p1 Resonance Exicted by Transformer Brush Current in Inter-Connected Offshore Power Systems**
- **IAS50p1 Improving the Torque Ripple in DTC of PMSM Using Fuzzy Logic**

**Session Chair: Chris Melhorn, Electric Power Research Institute, USA**

**Session Chair and Organizer: A. Starek, University of Quebec, Canada**

**Yukon**

- **Session 48 - Permanent Magnet Drives**
- **Power Systems Engineering**
- **Energy Systems**
- **Turner Valley**
- **British Columbia**

**IAS46p2 Power Quality Conditioning Using Bridged-T Filters for Passive Rectifiers**

**IAS47p2 A New AMI System for the Degraded Electricity Markets**

**IAS48p2 Novel Voltage Trajectory Control for Flux Weakening Operation of Surface-Mounted PM Motor Drives**

**IAS49p2 Generalization of Methods for Voltage Sag Source Detection Using Vector Space Approach**

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

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

**IAS47p3 Comparison of LCL-Filter-Based PWM Rectifier with Different Current Coordination Methods**

**IAS48p3 Precise Torque Control in Flux-Weakening Operation of Surface-Mounted PM Motor with Magnetic Saliences**

**IAS49p3 Power Quality Investigation of Surge Protective Device Failures During Open-End wind Turbine Generator Systems**

**IAS50p3 Real-Time Implementation of Intelligent Modeling and Control Techniques on a PLC Platform**

**IAS45p4 New Stationary Frame Control Scheme for Three-Phase PWM Rectifiers under Unbalanced Voltage Dips Conditions**

**IAS46p4 Influence of Wind Energy Converter Control Methods on the Grid Output Frequency Components**

**IAS47p4 Investigation and Implementation of Control Strategies for Flux-Switching Permanent Magnet Motor Drives**

**IAS48p4 Architecture of Electrical Installation: The Node Double Two**


**IAS50p4 Development and Testing of Hybrid Fuzzy Logic Controller for Car Suspension System Using Magneto-Rheological Damper**

**IAS46p5 Application of IGC in High Power Rectifiers**

**IAS47p5 Combining the Wind Power Generation System with Energy Storage Equipments**

**IAS48p5 IPM Machine Drive Design and Tests for an Integrated Starter-Alternator Application**

**IAS49p5 Prospected Evolution for Low Voltage Customers: Ecodesign of the Electrical Distribution System**

**IAS50p5 On the Fuzzy-Based Control Strategy Design and Implementation of a Non-Contacting Steel Plate Conveyance System**

**IAS46p6 Variable Speed Engine Generator with Super-Capacitor; Isolated Power Generation System and Fuel Efficiency**

**IAS47p6 Variable Speed Engine Generator with Super-Capacitor; Isolated Power Generation System and Fuel Efficiency**

**IAS48p6 Steady-State and Transient Analysis of Maximum Torque per Amperes Control for IPMSMs**

**IAS49p6 On the Fuzzy-Based Control Strategy Design and Implementation of a Non-Contacting Steel Plate Conveyance System**

**IAS47p7 Application of IGC in High Power Rectifiers**

**IAS48p7 Fault Tolerant Permanent Magnet Motor Drive Topologies for Automotive X-By-Wire Systems**

**IAS49p7 A New Stationary Frame Control Scheme for Three-Phase PWM Rectifiers under Unbalanced Voltage Dips Conditions**

**IAS50p7 A New Stationary Frame Control Scheme for Three-Phase PWM Rectifiers under Unbalanced Voltage Dips Conditions**

**IAS46p8 Video Speed Sensorless Drive with High Performance for a Six-Phase PMSM Drive**

**IAS47p8 Video Speed Sensorless Drive with High Performance for a Six-Phase PMSM Drive**

**IAS48p8 Video Speed Sensorless Drive with High Performance for a Six-Phase PMSM Drive**

**IAS49p8 Video Speed Sensorless Drive with High Performance for a Six-Phase PMSM Drive**

**IAS50p8 Video Speed Sensorless Drive with High Performance for a Six-Phase PMSM Drive**

---

<table>
<thead>
<tr>
<th>Time</th>
<th>Session Title</th>
<th>Presenter(s)</th>
<th>Institution(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2:00 PM</td>
<td>Presentation 1. How to improve EMI filters with Nanocrystalline Cores</td>
<td>IASS52p1 Capilary/Narrow Flow Channel Driven EHD Gas Pump Applications for an Advanced Thermal Management of Micro-Electronics</td>
<td>Jen-Shih Chang, McMaster University, Canada; H. Tsibone, Anatec National College of Technology, Japan; G. Dhar, University of Ontario Institute of Technology, Canada; K. Utsunomiya, McMaster University, Canada</td>
</tr>
<tr>
<td>2:30 PM</td>
<td>Presentation 2. Design of CMC's simplified by VAC simulation program.</td>
<td>IASS52p2 An Electrically Driven Impinging Liquid Jet for Direct Cooling of Heated Surfaces</td>
<td>Mirad Yadiari, Illinois Institute of Technology, USA; Jamal Sayed-Yapoopp, Illinois Institute of Technology, USA</td>
</tr>
<tr>
<td>3:00 PM</td>
<td>Presentation 3. Practical Considerations for the Efficient Application of Harmonic Filters.</td>
<td>IASS52p3 Numerical Models for AC Electro-Osmotic Micropumps</td>
<td>Michael Pribyl, Institute of Chemical Technology, Czech Republic; Kazimierz Adamik, The University of Western Ontario, Canada</td>
</tr>
<tr>
<td>3:30 PM</td>
<td>Break</td>
<td>Break</td>
<td>Break</td>
</tr>
<tr>
<td>4:00 PM</td>
<td>Presentation 4. Improved Power Factor Performance of Harmonic Mitigation Filters.</td>
<td>IASS52p4 Innovative Electrode Arrangement for Electrohydrodynamic Pumping</td>
<td>Ichiro Kano, Yamagata University, Japan; Yoshio Kano, ENEX Co. Ltd., Japan; Tatsuhiro Nishina, Yamagata University, Japan</td>
</tr>
<tr>
<td>4:30 PM</td>
<td>Presentation 5. Innovation in EMC Filter - Sineformer™ Filter Solves Motor Bearing Current Problems.</td>
<td>IASS52p5 Verifying Solution Component Concentration by Measuring Frequency-Dependent Conduction of Electrically Charged Species</td>
<td>Suresh Chandran,EPCOS,USA</td>
</tr>
<tr>
<td>5:00 PM</td>
<td>Presentation 6. Power Line Filter Product Technology Present and Future</td>
<td>IASS52p6 Analysis of the Effects of Solution Conductivity on Electro-Spinning Process and Fiber Morphology</td>
<td>Ken Ogden,Radius Power USA,Tim Opalewski,LLW Power</td>
</tr>
<tr>
<td>5:30 PM</td>
<td>Presentation 7. Operational Tolerance Study of Electromagnetic Component Using Local and Global Deterministic Algorithms</td>
<td>IASS52p7 Distributed Energy Resources and Renewable Energy in Distribution Systems: Protection Considerations and Penetration Levels</td>
<td>Jean-Luc Scharen, Grenoble Electrical Engineering Laboratory (G2Elab), France; B. Cognie, Microsyst, France; F. Wurtz, L. Gerbaud, Grenoble Electrical Engineering Laboratory (G2Elab), France</td>
</tr>
</tbody>
</table>

---

**Technical Program**

---

**Session Chair and Organizer:** Galina M. Mirzaneva, University of Newcastle, Australia

**Session Organizer:** Adam Konopka, Baldor Electric Company
## Wednesday, October 8, Afternoon Sessions

<table>
<thead>
<tr>
<th>Session</th>
<th>Title</th>
<th>Location</th>
<th>Chair</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>56 - SVM and Control Techniques</td>
<td>Session 56 - SVM and Control Techniques</td>
<td>Session 56 - SVM and Control Techniques</td>
<td>Session 56 - SVM and Control Techniques</td>
<td>Session 56 - SVM and Control Techniques</td>
</tr>
<tr>
<td>57 - PM Machines II</td>
<td>Session 57 - PM Machines II</td>
<td>Session 57 - PM Machines II</td>
<td>Session 57 - PM Machines II</td>
<td>Session 57 - PM Machines II</td>
</tr>
<tr>
<td>60 - Advanced Controls</td>
<td>Session 60 - Advanced Controls</td>
<td>Session 60 - Advanced Controls</td>
<td>Session 60 - Advanced Controls</td>
<td>Session 60 - Advanced Controls</td>
</tr>
</tbody>
</table>

**Strathcona**

**Chancellor**
- Electric Machines
- Industrial Machines
- Power Systems Engineering
- Industrial Automation and Control

**British Columbia**
- Industrial Drives
- Power Systems Engineering
- Industrial Automation and Control

**Turner Valley**
- Industrial Machines
- Industrial Automation and Control

**Yukon**
- Industrial Machines
- Power Systems Engineering
- Industrial Automation and Control

---

**Conference Schedule**

- **Morning Session**
  - **Strathcona**
  - **Chancellor**
  - **British Columbia**
  - **Turner Valley**
  - **Yukon**

- **Afternoon Session**
  - **Session 56 - SVM and Control Techniques**
  - **Session 57 - PM Machines II**
  - **Session 58 - Induction Machine Drives**
  - **Session 59 - Power System Analysis**
  - **Session 60 - Advanced Controls**

---

**Conference Venue**

- **Location**
- **Chair**
- **Description**

---

**Conference Logistics**

- **Venue Address**
- **Time Frame**
- **Contact Information**

---

**Conference Partners**

- **Sponsors**
- **Exhibitors**
- **Supporters**

---

**Conference Agenda**

- **Morning Session**
- **Afternoon Session**

---

**Conference Contact**

- **Email**
- **Phone**
- **Website**

---

**Conference FAQs**

- **Registration**
- **Accommodation**
- **Food and Drink**

---

**Conference Schedule**

- **Session**
- **Title**
- **Location**
- **Chair**
- **Description**

---

**Conference Venue**

- **Location**
- **Chair**
- **Description**

---

**Conference Logistics**

- **Venue Address**
- **Time Frame**
- **Contact Information**

---

**Conference Partners**

- **Sponsors**
- **Exhibitors**
- **Supporters**

---

**Conference Agenda**

- **Morning Session**
- **Afternoon Session**

---

**Conference Contact**

- **Email**
- **Phone**
- **Website**

---

**Conference FAQs**

- **Registration**
- **Accommodation**
- **Food and Drink**
<table>
<thead>
<tr>
<th>Room</th>
<th>Chairman</th>
<th>Saskatchewan</th>
<th>Alberta</th>
<th>Manitoba</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Electrotechnical Processes</td>
<td>Electric Machines</td>
<td>Electric Machines</td>
<td>Industrial Power Converter</td>
</tr>
<tr>
<td>Session 61 - Particles, Aerosols and Droplets</td>
<td>Session 62 - Linear Machines</td>
<td>Session 63 - Induction Machines</td>
<td>Session 64 - Alternative Energy</td>
<td></td>
</tr>
<tr>
<td>Session Chair: Wamadalwa Balachandran, Brunel University, UK</td>
<td>Session Chair: Keith Klintz, Advanced MotorTech, USA</td>
<td>Session Chair: Longya Xu, The Ohio State University, USA</td>
<td>Session Chair: Leon Tolbert, University of Tennessee, USA</td>
<td></td>
</tr>
<tr>
<td>Session Organizer: Kaz Adamiak, University of Western Ontario, Canada</td>
<td>Session Organizer: Wen Xuhui, China Academy of Sciences, China</td>
<td>Session Organizer: Emmanuel Agamloh, Advanced Energy, USA</td>
<td>Session Organizer: Burak Ozpineci, Oak Ridge National Laboratory, USA</td>
<td></td>
</tr>
<tr>
<td>8:00 AM</td>
<td>IAS61p1 Electromagnetic and Gravitational Transport of Lunar Dust in the Airless Atmosphere of the Moon</td>
<td>IAS62p1 Analytical Study of Special Linear Motor Transformer for Permanent Magnet</td>
<td>IAS63p1 Investigation and Comparison of Inverter-Fed Induction Machine Loss</td>
<td>IAS64p1 Fuel Cell Based Battery-Less UPS System</td>
</tr>
<tr>
<td>M. K. Mazumder, R. Sharma, A. S. Birn, University of Arkansas at Little Rock, USA; M. N. Horenstein, Boston University, USA; Y. S. Pan, ATRC Aerospace, USA; M. M. Abbas, NASA Marshall Space Flight Center, USA</td>
<td>Nobuo Fujii, Kyushu University, Japan; and Takeshi Mizumoto, National Traffic Safety &amp; Environment Laboratory, Japan</td>
<td>Y. Zhan, University of Alberta, Canada; A. M. Knight, University of Alberta, Canada; Y. Wu, University of Cambridge, UK; and R. A. McMahon, University of Cambridge, UK</td>
<td>Mininalghi V. Chellappan, Texas A&amp;M University, USA; Maja Harman Todorovic, Texas A&amp;M University, USA; Prasad N. Enjeti, Texas A&amp;M University, USA</td>
<td></td>
</tr>
<tr>
<td>8:30 AM</td>
<td>IAS62p2 Development and Test of a High Force Tubular Linear Drive Concept with Discrete Wound Coils for Industrial Applications</td>
<td>IAS62p3 Synchronous Torques in Split Phase Induction Motors</td>
<td>IAS63p2 Transformer-Less Converter Concept for a Grid-Connection of Thin-Film Photovoltaic Modules</td>
<td></td>
</tr>
<tr>
<td>Takashi Sato, Hokkaido Institute of Technology, Japan</td>
<td>Peter Scavenius Andersen, Danfoss Compressors GmbH, Germany; David G. Donnell, University of Glasgow, UK; Niels Christian Weinrich, Danfoss Compressors GmbH, Germany; Poul Erik Hansen, Danfoss Compressors GmbH, Germany</td>
<td>Ulrich Boeke, Philips Technologie GmbH, Germany; Heiko van der Broeck, University of Applied Sciences, Germany</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9:00 AM</td>
<td>IAS63p3 Linear Motor Electrostatic Change Exploring Using Bipolar Electrical Mobility Profiles</td>
<td>IAS63p3 Comparison of Induction Machine Performance with Distributed and Fractional-Slot Concentrated Windings</td>
<td>IAS64p3 Hybrid Modulation for Dual Active Bridge Bi-Directional Converter With Extended Power Range For Ultracapacitor Application</td>
<td></td>
</tr>
<tr>
<td>M. O’Leary, Brunel University, UK; W. Balachandran, Brunel University, UK; F. Chambers, ActinZenera, UK</td>
<td>A. Cassat, B. Kawakami, Y. Perraid, J.-J. Simond, École Polytechnique Fédérale de Lausanne, Switzerland</td>
<td>Ayman M. El-Refai, GE Global Research Center, USA; Manjir R. Shah, GE Global Research Center, USA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9:30 AM</td>
<td>IAS64p4 Standards for Industrial Electromagnetic Processes</td>
<td>IAS63p4 A Modeling Approach for Gearbox Monitoring Using Stator Current Signature in Induction Machines</td>
<td>IAS64p4 Control and Protection of a DFIG Based Wind Turbine under Unbalanced Grid Voltage Dips</td>
<td></td>
</tr>
<tr>
<td>Charles G. Noll, XiPro Technologies LLC, USA</td>
<td>Ho-Jin Ahn, Changwon National University, Korea; Seung-Hoon Lee, Changwon National University, Korea; Dong-Yeop Lee, Changwon National University, Korea; Ky-Bong Jang, Changwon National University, Korea; Gyu-Tak Kim, Changwon National University, Korea</td>
<td>Shahin Hedayati Kia, University of Picardie “Jules Verne”, France; Gérard-André Capolino, Université de Picardie “Jules Verne”, France</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10:00 AM</td>
<td>IAS64p5 Dynamic Induction Charging of Particles with Finite Conductivity</td>
<td>IAS64p5 Power Supply of Long Stator Linear Motors - Application to Multi Mobile System</td>
<td>IAS64p5 Power Converters and Controllers for UPS Applications with Backup PEM Fuel Cell</td>
<td></td>
</tr>
<tr>
<td>Deying Yu, The University of Western Ontario, Canada; G. S. Peter Castle, The University of Western Ontario, Canada; Kazimierz Adamiak, The University of Western Ontario, Canada</td>
<td>Ralf Wegener, Technical University Dortmund, Germany; Sebastian Gruber, University of Wuppertal, Germany; Kilian Nitzoldt, University of Wuppertal, Germany; Florian Servan, LTI DRIVE GmbH, Germany; Christian Jurge, Retorotronic GmbH, Germany; Stefan Soto, Technical University Dortmund, Germany</td>
<td>Yuedong Zhan, Kunming University of Science and Technology, China; Youguang Guo, University of Technology–Sydney, Australia; Heinz van der Broeck, University of Applied Sciences, Germany</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11:00 AM</td>
<td>IAS65p7 Change of Mechanical Natural Frequencies of Induction Motor</td>
<td>IAS66p7 A Novel Reactive Power Control Scheme for CSC Based PMSG Wind Energy System</td>
<td></td>
<td></td>
</tr>
<tr>
<td>L. Calin, Technical University of Cluj, Romania; A. Iuga, Technical University of Cluj, Romania; A. Samula, Technical University of Cluj, Romania; C. Dragas, University of Poitiers, France; L. Dascalău, University of Poitiers, France</td>
<td>Fumigoro Ishibashi, Shibaura Institute of Technology, Japan; Makoto Matsushita, Toshiba Corporation, Japan; Kenzo Tonoki, Toshiba Corporation, Japan; Shinichi Noda, Toshiba Corporation, Japan</td>
<td>Yonggang Lang, Ryerson University, Canada; Bin Wu, Ryerson University, Canada; Navid Zargar, Rockwell Automation, Canada</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Thursday, October 9, Morning Sessions

<table>
<thead>
<tr>
<th>Centennial</th>
<th>British Columbia</th>
<th>Chairman</th>
<th>Yukon</th>
</tr>
</thead>
<tbody>
<tr>
<td>Industrial Power Converter</td>
<td>Industrial Drives</td>
<td>Power System Engineering</td>
<td>Industrial Automation &amp; Controls</td>
</tr>
<tr>
<td>Session 65 - DC/DC Converters</td>
<td>Session 66 - Automotive</td>
<td>Session 67 - Power System Reliability/ Power System Analysis</td>
<td>Session 68 - Monitoring and Sensors</td>
</tr>
<tr>
<td>Session Chair: Faisal Khan, Electric Power Research Institute, USA</td>
<td>Session Chair: Bill Braun, Owens Corning, USA</td>
<td>Session Chair and Organizer: Jung-Wook Park, Yonsei University, Korea</td>
<td></td>
</tr>
<tr>
<td>Session Organizer: William Peterson, E &amp; M Power, USA</td>
<td>Session Organizer: Peter Sutherland, GE, USA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IAS66p1 A Three-Phase Bidirectional DC-DC Converter for Automotive Applications</td>
<td>IAS67p1 Stability Requirements for Implementation of Grid Separation Scheme in a Steel Mill with Internal Generation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IAS66p2 A New Soft-Switching PWM High Frequency Half-Bridge Inverter Linked DC-DC Converter with Diode-Capacitor Active Edge Resonant Snubbers</td>
<td>IAS68p1 Current Sharing and Sensing in N-Paralleled Converters Using Single Current Sensor</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IAS66p4 Analysis and Control of Chaos in SEPIC DC-DC Converter Using Sliding Mode Control</td>
<td>IAS68p3 Position Acquisition for Long Primary Linear Drives with Passive Vehicles</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A. K. Rathore, University of Victoria, Canada; A. K. S. Bhat, University of Victoria, Canada; S. Nand, University of Victoria, Canada; Ramsehl Oughton, National University of Singapore, Singapore</td>
<td>M. Alihala, Darmstadt University of Technology, Germany; and P. Mutschler, Darmstadt University of Technology, Germany</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IAS66p5 Design and Optimization of a Hybrid-Electric Vehicle for Advanced Urban Mobility</td>
<td>IAS70p1 Evaluation of the Prospective Joule Integral to Assess the Limit Short Circuit Capability of Cables and Busways</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A. Kavitha, Anna University, India; G. Indira, Anna University, India; G. Uma, Anna University, India</td>
<td>IAS70p2 Design Aspects of an Active Electromagnetic Suspension System for Automotive Applications</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IAS66p6 Monolithic Microsystems Using Standard Three-Leg Inverter Supplying Independently Two Motors</td>
<td>IAS70p3 Dynamic Simulator for Thyristor Controlled Series Capacitor</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A. K. Rathore, University of Victoria, Canada; A. K. S. Bhat, University of Victoria, Canada; S. Nand, University of Victoria, Canada; Ramsehl Oughton, National University of Singapore, Singapore</td>
<td>IAS70p4 Real Time Predictive Maintenance System of Aluminum Electrolytic Capacitors Used in Uninterrupted Power Supplies</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A. Kavitha, Anna University, India; G. Indira, Anna University, India; G. Uma, Anna University, India</td>
<td>Karin Abendnader, Schneider Electric, France; Pascal Venet, Université Lyon 1, France; Gerard Rojat, Université Lyon 1, France; Jean-Marie Retif, INSA de Lyon, France; and Christophe Rosset, Schneider Electric, France</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IAS66p7 Implementation and Performance for Wide Speed Range at Unity Power Factor Operation</td>
<td>IAS70p5 Automated Monitoring of High-Resistance Connections in the Electrical Distribution System of Industrial Facilities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A. K. Rathore, University of Victoria, Canada; A. K. S. Bhat, University of Victoria, Canada; S. Nand, University of Victoria, Canada; Ramsehl Oughton, National University of Singapore, Singapore</td>
<td>Jangho Yoon, Jangho Yun, Sang Bin Lee, Korea University, Korea; and Emesto J. Wiedenbrug, Baker Instrument Company, USA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IAS66p8 Paralleled Converters Using Single Current Sensor</td>
<td>IAS70p6 Bearing Fault Diagnostics Based on Reconstructed Features</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A. K. Rathore, University of Victoria, Canada; A. K. S. Bhat, University of Victoria, Canada; S. Nand, University of Victoria, Canada; Ramsehl Oughton, National University of Singapore, Singapore</td>
<td>IAS70p7 Monitoring of High-Risk Process Equipment Using Artificial Neural Networks</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

43rd Annual Meeting - October 5-9, 2008  www.ewh.ieee.org/soc/ias/  25

---

08 IAS Program2.indd 25  9/22/08 2:06:39 PM
## 2008 Conferences & Workshops

<table>
<thead>
<tr>
<th>Date and Location</th>
<th>Conference Name</th>
<th>Sponsors</th>
</tr>
</thead>
<tbody>
<tr>
<td>October 12-15 New Delhi, India</td>
<td>POWERCON IEEE Power India Conference</td>
<td>IAS Technical Co-Sponsor</td>
</tr>
<tr>
<td>October 17-20 Wuhan, China</td>
<td>ICEMS 11th International Conference on Electrical Machines and Systems</td>
<td>IAS Technical Co-Sponsor</td>
</tr>
<tr>
<td>November 18-20 Edmonton, Alberta Canada</td>
<td>ESTMP IEEE-IAS Electrical Safety, Technical &amp; MegProject Workshop</td>
<td>IAS Co-Sponsor</td>
</tr>
<tr>
<td>November 18-21 Hyderabad, India</td>
<td>TENCON Region 10 Conference</td>
<td>IAS Technical Co-Sponsor</td>
</tr>
<tr>
<td>November 24-27 Singapore</td>
<td>ICSET IEEE International Conference on Sustainable Energy Technologies</td>
<td>IAS Technical Co-Sponsor</td>
</tr>
</tbody>
</table>

## 2009 Conferences & Workshops

<table>
<thead>
<tr>
<th>Date and Location</th>
<th>Conference Name</th>
<th>Sponsors</th>
</tr>
</thead>
<tbody>
<tr>
<td>February 2-6 St. Louis, MO USA</td>
<td>ESW Electrical Safety Workshop</td>
<td>IAS Co-sponsor</td>
</tr>
<tr>
<td>April 26-28 Fort Collins, CO USA</td>
<td>REPC Rural Electric Power Conference</td>
<td>IAS</td>
</tr>
<tr>
<td>May 3-7 Calgary, Alberta Canada</td>
<td>I&amp;CPS Industrial &amp; Commercial Power Systems Technical Conference</td>
<td>IAS Co-Sponsor</td>
</tr>
<tr>
<td>May 29 - June 5 Palm Springs, CA USA</td>
<td>CIC Cement Industry Conference</td>
<td>IAS Co-Sponsor</td>
</tr>
<tr>
<td>June 21-26 Birmingham, AL USA</td>
<td>PPIC IEEE Pulp and Paper Industry Conference</td>
<td>IAS</td>
</tr>
<tr>
<td>September 14-16 Anaheim, CA USA</td>
<td>PCIC Petroleum and Chemical Industry Technical Conference</td>
<td>IAS Co-Sponsor</td>
</tr>
<tr>
<td>September 20-24 San Jose, CA USA</td>
<td>ECCE IEEE Energy Conversion Congress and Exposition</td>
<td>IAS Co-Sponsor</td>
</tr>
<tr>
<td>October 4-8 Houston, TX, USA</td>
<td>IAS Industry Applications Society Annual Meeting</td>
<td>IAS</td>
</tr>
</tbody>
</table>