3rd Quarter 2009 Volume 23, Number 3 ISSN 1054-7231

POWER ELECTRONICS SOCIETY NEWSLETTER

ECCE2009 Student Travel and Travel Grants

PELs Strengthens Ties with Chinese Engineers

Special Issue Transactions on Sustainable Energy

In Memorium Prof. van der Broeck

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of Engineering the Future

SWITCHING POWER SUPPLIES

- Outputs to 135V; AC-DC & DC-DC
- Constant voltage/constant current
- Universal Input (90-265 VAC) & PFC
- Parallelable for higher current or N+1

HIGH PERFORMANCE LINEAR POWER SUPPLIES

- 1V to 200V Outputs
- Less than 250 microvolts rms ripple
- 100 mw to 784 watts; AC-DC
- Rack, Wall, DIN Rail Mountable

REDUNDANT POWER SYSTEMS

- Linear & Switching
- 3.3V to 125V Outputs (shipped within 9 days)
- 13 watts to 1200 watts; AC-DC
- Pluggable, Rack, Wall & DIN Rail Mountable

PROGRAMMABLE POWER SUPPLIES

- Output ranges from 0-5V to 0-135V
- 7 watts to 1200 watts; AC-DC & DC-DC
- Constant voltage/constant current
- 0-10V or 0-5V control voltage input

MINI POWER SUPPLIES

- Outputs from 1V-75V, up to 50 watts
- AC-DC & DC-DC
- Screw terminals or solder pins
- Rugged encapsulated construction

HIGH VOLTAGE POWER SUPPLIES

- Output ranges from 0-1kV to 0-30kV
- AC-DC & DC-DC; Modular and Rack Mounting
- Constant voltage/constant current
- 0-5V control voltage input

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- Outputs from 3.3V to 135V
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News Items should be sent to: Dr John M. Miller, PELS Newsletter, Editor-in-Chief, 4022 W. Creedance Blvd., Glendale, AZ USA; TEL:+1 623 518 4438; EMAIL: pelsnews@ieee.org. Deadlines for copy are March 15, June 15, September 15 and December 15. Email submission of items in MS-Word or plain-text format are preferred. Include caption with all photos identifying event and individuals in a back-row, left to right, front-row, left to right, etc method. Full-page call for papers and announcements of PELS-supported conferences are welcome and should be sent as MS-Word files. Please indicate all trademarked items, such as INTELEC®, APEC® with the registered trademark symbol, "®".

Technical items should be sent to associate technical editors: Prof Babak Fahimi, University of Texas at Arlington, 416 S. College St., Arlington, TX 76019, USA; TEL: +1 817 272 2667; EMAIL: fahimi@uta.edu. Or, to Prof. Chris S. Edrington, Florida State University, 2000 Levy Avenue, Suite 140, Tallahassee, FL 32310, USA; TEL: +1 850 645 7213; EMAIL: edrinch@eng.fsu.edu.

Advertising queries should be sent to: Tom Flynn (West and Central USA & International) TEL: +1 770 645 2944; FAX: +1 770 993 4423; EMAIL: flynntomga@yahoo.com
Or
Chalupa Associates (Eastern USA), TEL: +1 973 835 7015; EMAIL: wchalupa@aol.com

Newsletter in PDF format is posted at the PELS website approximately three weeks prior to paper copies deliveries. To receive email notification when the internet version is available, go to http://www.pels.org/Mailing/MailForm.html and provide your email address. Additionally, the email notification sometimes includes timely announcements that are not in the printed newsletter.

Periodicals Postage paid at New York, NY, and at additional mailing offices.

PRINTED IN THE U.S.A.

From The Editor

John M. Miller

This issue marks the transition in editor-in-chief as Dr. Arthur Kelley assumes this role full time for future issues. As I noted in this column in the April issue it has been a rewarding and educational experience as editor for PELs newsletter and I trust that Arthur will find this challenge to be rewarding and fulfilling.

Some changes to note as well starting with this issue and continuing going forward from our associate technical editors. Prof. Babak Fahimi continues in his role to solicit short technical articles of timely interest. Prof. Chris Edrington solicits articles from our society technical committee chairs and from the three VP's of PELS. In this issue Chris has worked with Prof. John Shen, VP Products, Dr. Ralph Kennel, VP Meetings and with Dr. F. Dong Tan, VP Operations for articles describing recent events, IEEE conferences and the workings of our technical committees. We also include this news release, courtesy of Prof. John Shen on strengthening of ties between IEEE and Chinese Engineers in Power Electronics for Sustainable Energy Technologies and increasing collaboration.

It has indeed been my pleasure to have served as EIC for PELs and I look forward to seeing the newsletter grow and evolve under the leadership of Dr. Arthur Kelley.

John M. Miller, EIC
pelsnews@ieee.org

Courtesy IEEE PELs

For IEEE Division Delegate-Elect/Director-Elect, 2008 Delegate/Director, 2009–2010 – Division II

CAIO A. FERREIRA
(Nominated by Division II)

Director of Science & Technology
Parker Aerospace Group
Parker Hannifin Corporation
Irvine, California, USA

Mr. Caio A. Ferreira is an industry leader, entrepreneur, and inventor. He is Director of Science & Technology, Parker Aerospace Group, Parker Hannifin Corporation (US Fortune 200 Company). Parker Aerospace Group consists of nine business divisions and annual revenue of nearly US$2 billion dollars.

He was the Founder and CEO of Mechatronic Systems from 1998 to 2005. Mechatronic Systems specialized in the research and development of electrical technologies for the aerospace market. Parker Hannifin acquired Mechatronic Systems on April 2005.

He has over 28 years of experience in the aerospace industry, with technical and management roles at General Electric, Sundstrand, and Northrop Grumman.

He is the inventor and co-inventor for six U.S. Patents. He has authored and co-authored a number of peer reviewed technical papers. He has a M.S. in Systems Engineering from Case Western Reserve University, Cleveland, and a B.S. in Electrical Engineering from the University of Missouri, Columbia.

IEEE Activities – (S'78-M'79-S'82-M'82-SM'90-F'00) **COMMITTEES/BOARD:** Technical Activities Board, Member, 2000; Conferences Committee, Member, 2000. **SECTION:** Rock River Valley Section: Chairman, 1989–94; Executive Board Member, 1989–96. **CHAPTERS:** Industry Applications Society Rock River Valley Section Chapter, Founding Chapter Chair, 1992–94; Power Electronics Society Rock River Valley Section, Founding Chapter Chair, 1996. **STUDENT BRANCH:** University of Missouri – Columbia Student Branch, Member, 1978. **SOCIETY:** Industry Applications Society: President, 2000; Vice President, 1999; President-Elect, 1999; Secretary, 1998; Chapters & Membership Department Chair, 1995–97; Nominations & Appointments Committee Chair, 2001; Constitution & Bylaws Committee Chair, 2002; Distinguished Lecturer, 2001–02. **CONFERENCES:** Industry Applications Society Conference & Annual Meeting, Conference Technical Program Chair, 1999; Applied Power Electronics Conference, Professional & Technical Tutorials Chair, 1995; Applied Power Electronics Conference, Rap Program Chair, 1996; Applied Power Electronics Conference Steering Committee Member, 1995–96. **AWARDS:** IEEE Industry Applications Society Outstanding Achievement Award, 2007; IEEE IA/PE/IE Societies German Chapter Certificate of Honor for Best Distinguished Lecturer, 2002; IEEE Industry Applications Society Outstanding Small Chapter Award, 1993.

IEEE Accomplishments – I sincerely thank all IEEE colleagues whom provided me with the opportunity to lead and worked so hard with me to make our vision and goals a reality. I look forward to working with all Societies in Division II.

Industry Applications Society – Accomplishments focused on chapters and membership growth yielding significant increase in membership and chapters worldwide:

- Development of Society Membership brochure featuring products, services and benefits
- Established national and international Society Membership drives
- Establishment of Society Chapters and Membership website
- Development of Society Membership Video
- Development of strategic plan (5 years) for Society Chapters worldwide
- Development of Society Chapters Department leadership organization/structure
- Development of Society Chapters Orientation Package
- Development of IEEE inter-Societies (IAS/PES/PELS) Chapters & Membership Regional Workshops worldwide.

Rock River Valley Section – Accomplishments focused on leadership development and membership growth yielding significant revitalization and strength to an IEEE Section in a challenging state:

- Establishment of IAS and PELS Chapters within Section
- Established Society Chapter Chairs participation in Section Executive Board
- Establishment of Society Distinguished Lecturer Series
- Fostered strategic and leadership planning for Section
- Cultivated support and collaboration with IEEE Student Branch at Northern Illinois University.

Statement – As Division II Delegate/Director and member of the IEEE Board of Directors, I will provide leadership and collaborate with our colleagues to fulfill the Institute's vision, strategy, objectives, and effectively communicate them to worldwide members and customers in industry, academia and entrepreneurs.

Products & Services: A strong balance sheet and net worth is vital to the Institute's future and provides a solid foundation for investing on new products and services. These are vital for membership growth worldwide.

Societies & Chapters Membership Growth and Development: Focus on the delivery of superior products and services for all Chapters worldwide. Nurture and expand our offerings on conferences, tutorials, distinguished lecturers, and workshops. Invest on membership growth and development tools, and leadership training for our Society and Chapters volunteers.

Cooperation: Strengthen our cooperation with IEEE Societies and Technical Activities Board (TAB), including Inter-Society Cooperation Agreements. Foster cooperation with the IEEE Sections and Regional Activities Board (RAB), including assured representation of Chapters' interests within the Sections and RAB. Encourage cooperation with other national and international professional and technical institutions worldwide.

ECCE 2009 Student Travel

The IEEE Power Electronics Society has a travel reimbursement program for student members who present a paper at the Energy Conversion Congress & Expo (ECCE) in San Jose, CA, USA Sept 20–24, 2009. This program will reimburse up to $800 of travel expenses associated with the conference for up to 75 students. To be eligible for this program, students must:

- Have a paper accepted at ECCE 2008 and present the paper.
- Be an IEEE student member and a PELS member.

Interested students should complete the application found online at the PELS new web site at http://www.pels.org/. This form is to be completed and sent by e-mail to the chair of the Education Activities Committee. Reimbursement of costs will be done after the conference has concluded and students have sent in the necessary reimbursement forms and receipts. The application deadline is May 30, 2009. Students will be notified if they have been approved for travel reimbursement on June 15, 2009.

In case there are more than 75 applicants for travel reimbursement, preference will be given to the best papers according to the review rating and to students who have not previously been part of this travel program.

Dr. Hui Li
Chair, IEEE PELS Education Activities Committee
Electrical and Computer Engineering Department
FAMU-FSU College of Engineering
2525 Pottsdamer St.
Tallahassee, FL 32310
Phone: (850) 410-6590
Fax: (850) 410-6479
Email:li@eng.fsu.edu

PELS Awards Two Student Travel Grants for ISPSD2009

PELS's Education Committee has recently awarded two student travel grants to King-Yuen Wong from Hongkong University of Science and Technology and Wesley Hsu from Cambridge University in UK to present their work in GaN power IC and new IGBT devices at the 21st IEEE International Symposium on Power Semiconductor Devices and ICs (ISPSD) to be held in Barcelona, Spain, June 13–17. Each grants covers travel expense up to $1000 (US). ISPSD is the world's primary forum for the latest advances in power semiconductor devices, power IC, and their applications. PELS has been a technical co-sponsor for this annual conference since 2007.

Call for Papers for a Special Issue of the IEEE Transactions on Power Electronics

A special issue of the IEEE Transactions on Power Electronics is being planned for 2011 in the emerging area of **Power Electronics in Sustainable Energy**. The scope of the issue includes:

- Architecture of sustainable energy systems showing role of power electronics
- Large solar plant design: integration, grid connection and fault management
- Large offshore wind farms: turbine design, dc or ac collection, transmission, grid connect
- Smart Grid: Solutions for grid power flow control, FACTS, renewable energy penetration issues
- Energy Smart Home: Integration of solar power, PHEVs, smart loads at the home level
- Power electronics systems in sustainable energy applications
- Topology, control and protection for power conversion systems in sustainable energy
- Power electronics systems for energy conservation and storage
- Power quality impacts of increased penetration of energy efficient lighting and loads
- Modeling and characteristics of power electronics systems in sustainable energy
- Design of bidirectional power flow systems for EVs and PHEVs
- Control of distributed storage resources at a grid level
- Carbon footprint reduction in industrial, commercial and residential applications through power electronics
- Control of distributed generation, including steady state and dynamic power sharing
- System performance issues such as stability in power electronics systems including sustainable energy
- Power electronics systems related to the so-called “Smart Grid” and “Micro-Grid”
- Design of power conversion systems for full sustainability

Surveys and papers with a tutorial flavor are also welcome. All papers will be evaluated through the normal Transactions review process. The Guest Editorial Review Board consists of the following people:

Hiro Akagi, Guest Editor
Vassilios Agelidis, University of Sydney, Australia, Associate Editor
Deepak Divan, Georgia Institute of Technology, USA, Associate Editor
Rik De Doncker, Aachen University of Technology, Germany, Associate Editor
Johann Kolar, Swiss Federal Institute of Technology, Switzerland, Associate Editor
John Miller, Maxwell Technologies, USA, Associate Editor
Dean Patterson, University of Nebraska, USA, Associate Editor
Fang Z. Peng, Michigan State University, USA, Associate Editor

The Guest Editorial Review Board, under the supervision of the Transactions Editor-in-Chief, will handle the review process for papers submitted for the special issue. All papers must be sent to Dr. Frede Blaabjerg, Editor-in-Chief, IEEE Transactions on Power Electronics, as per the instructions printed in each issue of the Transactions or as found on the www at

http://www.pels.org/Comm/Publications/Transactions/Transactions.html

Authors must specify that their manuscripts are intended for the 2011 Special Issue on Power Electronics in Sustainable Energy. The deadline for submission of the full papers for the special issue is **July 15, 2010**. The special issue will appear in **September 2011**. Please contact the Guest Editor of the Special Issue for further information:

Dr. Hirofumi Akagi
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Tokyo, 152-8552, JAPAN
Phone/Fax: +81-3-5734-3549,
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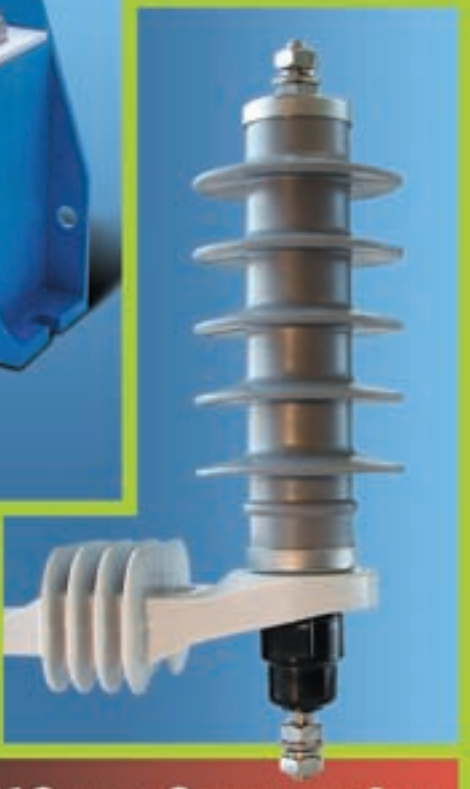

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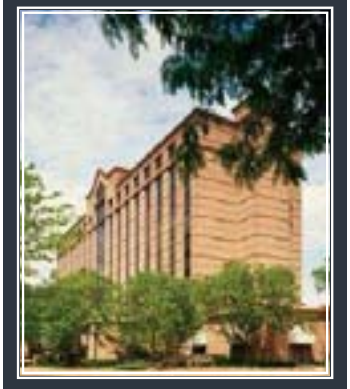

The 5th International IEEE Vehicle Power and Propulsion Conference

Sustainability: Hybrid, Plug-in, Fuel-Cell, and Battery Technology

In the Heartland of the Automotive Industry

September 7 - 11, 2009

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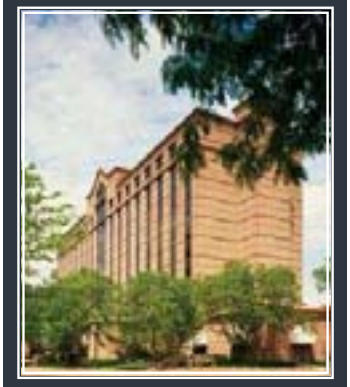

Some of the Keynote Speakers

Gus Khalil
Team Leader,
US Army TARDEC,
Hybrid Electric Program

Peter Cho
Program Manager,
All-Electric Ship Program,
Office of Naval Research

Robert Lee
Vice President
Powertrain Product
Engineering, Chrysler, LLC

Larry Burns
Vice President,
Engineering,
General Motors

Frank Barnes
Fellow of National
Academy of Engineering,
Distinguished Professor,
University of Colorado at
Boulder

Ann Marie Sastry
Arthur F. Thurnau Professor
of Mechanical, Biomedical
and Materials Science and
Engineering, University of
Michigan

Additional Keynotes from Academia, Government and Industry:

- Haukur Asgeirsson, P.E. Manager, Detroit Edison, Power Systems Technologies, DTE Energy
- Professor CC. Chan, University of Hong Kong
- Larry Dickerman, Director of Distribution Engineering Services, American Electric Power
- Professor Mark Ehsani, Texas A&M University
- Nancy Gioia, Director, Sustainable Mobility Technology and Hybrid Vehicle Program, Ford Motor Company
- Patricia Hoffman, Principal Deputy Assistant Secretary, DOE, Office of Electricity Delivery and Energy Reliability
- Alex Q. Huang, Professor, Director of NSF FREEDM Systems Center, NC State University
- Jay Iyengar, Director, Hybrid Powertrain Systems, Chrysler, LLC
- Jason Lai, Professor, Virginia Tech
- John Miller, Vice President, Maxwell Technologies

REGISTRATION

Registration Fee

Classification	Early	On-site
IEEE Member	$650	$750
Non-IEEE Member	$850	$950
Student	$250	$300
IEEE Life Member	$250	$300
IEEE Member (1 day)	$250	$300
Non-IEEE Member (1 day)	$300	$350
Exhibit Only	$50	$50
Accompany Person	$200	$250

Registration Fee Includes

- **IEEE Member and Non-IEEE Member**
  : Technical Sessions, Conference Kit, Lunches, Welcome Party, Gala Dinner, Excursion, Coffee Breaks, Exhibits
- **Student and IEEE Life Member**
  : Technical Sessions, Conference Kit, Lunches, Welcome Party, Coffee Breaks, Exhibits
- **IEEE Member (1 Day) and Non-IEEE Member (1 Day)**
  : Technical Sessions, Conference Kit, Lunch, Coffee Breaks, Exhibits
- **Exhibit Only**
  : Entrance into the Exhibits, Coffee Breaks
- **Accompany Person**
  : Welcome Party, Gala Dinner, Excursion

EXHIBITION

The organizing committee of 2009 International Telecommunications Energy Conference invites your company to be an exhibitor of INTELEC2009. The exhibition of the INTELEC2009 will be the perfect international showcase for your organization to present your latest technological developments and product innovations.

Application for Exhibition

- Application Deadline is on June 30, 2009.
- Please refer the detailed information regarding exhibition and download the application form in the website.

Participation Fee

- USD 2,500 (4m width x 3m depth)
- USD 4,000 (8m width x 3m depth)
- USD 6,000 (12m width x 3m depth)

CONFERENCE SECRETARIAT

KIEE (The Korean Institute of Electrical Engineers)
Room 901, Science & Technology Building, 635-4,
Yucksam-Dong, Kangnam-Ku, Seoul 135-703 KOREA
For inquires: INTELEC 2009 Secretariat (Mrs. Min Jung Kim)
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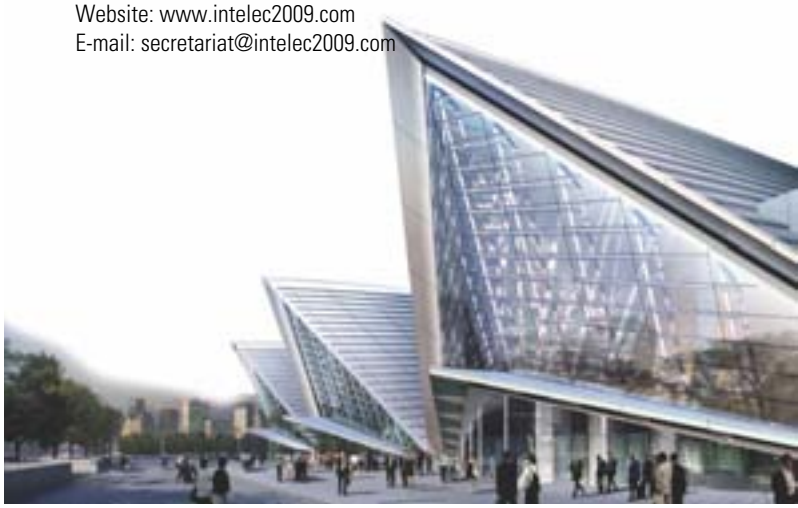

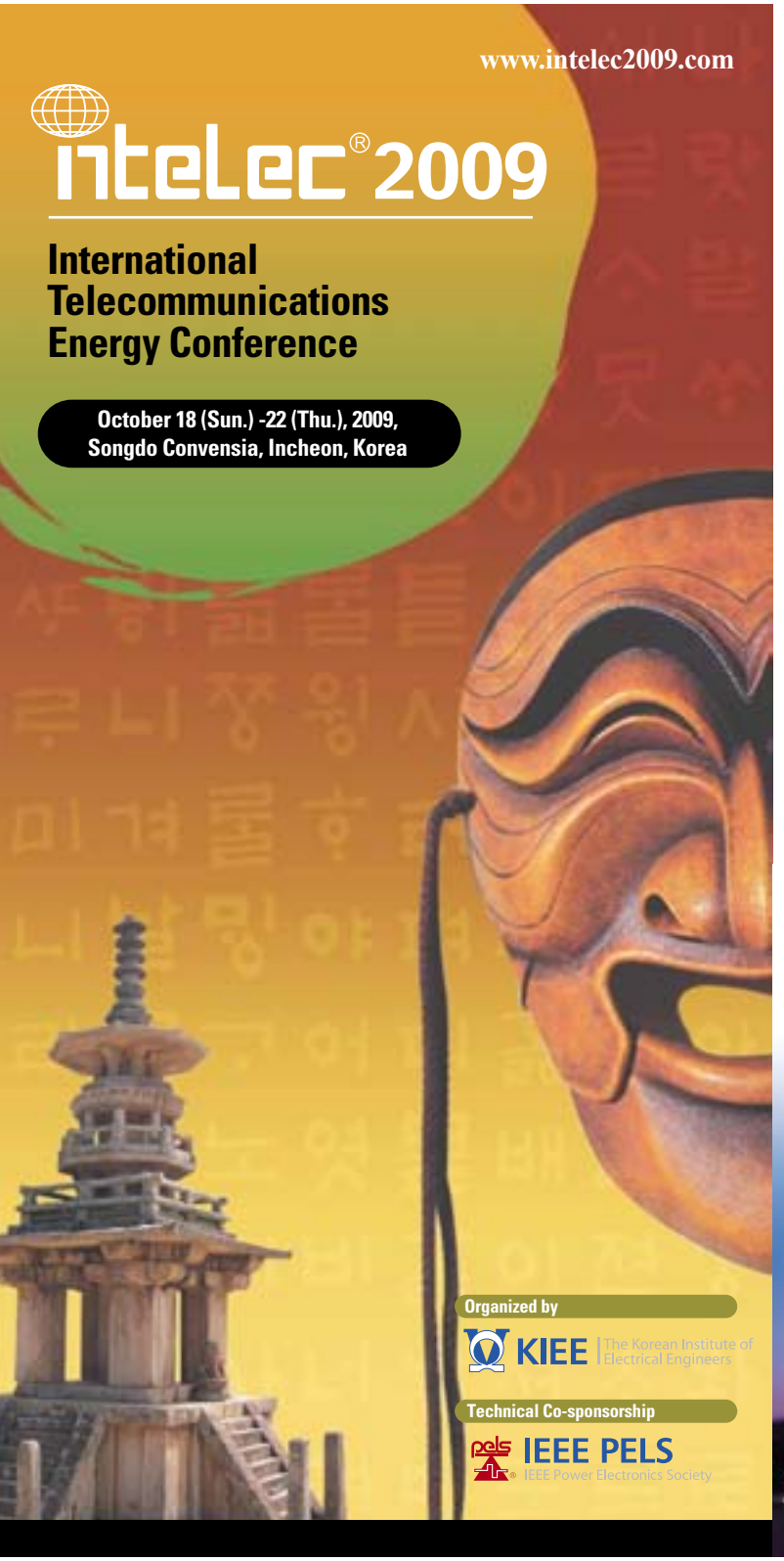

INVITATION

On behalf of the Organizing Committee, it is indeed a great honor and pleasure for me to invite all of you to 31st International Telecommunications Energy Conference, to be held from October 18 to 22, 2009 in Incheon, Korea. Under the theme "Global Convergence for Smart Energy-Telecommunication", the conference aims at enhancing your knowledge and competences and keeping you up to date on the key issue in telecommunication.

It is also expected that stimulating lectures and presentations by distinguished speakers from all over the world will be planned for INTELEC2009. In addition to the professional exchange of ideas, it will be a meeting place for friends inseparable due to common research objectives and the possibility is given for further co-work resulting in mutual achievements.

Incheon, the host city of INTELEC2009 has an abundant historic heritage and many tourist attractions, which are sure to create an excellent atmosphere for INTELEC2009. As the Chairman of INTELEC2009, I am certain that this conference will prove to be a memorable experience for you both on personal and professional grounds.

I look forward to welcoming you to Incheon, Korea in October 2009!

Prof. Hee Jun Kim
Chairman of INTELEC2009

COMMITTEE

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CONFERENCE SCOPES

"Global Convergence for Smart Energy-Telecommunication"

Recent trends in telecommunications energy systems and related power processing devices and circuits are rapidly progressing into a new era of the fusion and intelligence. New environment-friendly energy is ushering in the new era to realize the smart energy-telecommunication. INTELEC2009 will be the place of discussion to focus on achieving this era through global convergence for exchanging the professional ideas.

Regular Session

1. Power Conversion (AC, DC, UPS)
2. Energy Management & Storage
3. Power System Architecture
4. Disaster Recovery & Safety
5. Renewable Energy & System
6. Distributed & Micro-Grid System
7. Physical & Thermal Design
8. Earthing, Grounding & Bonding
9. Electromagnetic Compatibility (EMI & EMC)
10. Code & Standards
11. Cable System Operation, Administration & Maintenance
12. Electric Machine & Drives
13. Diagnostic & Monitoring System

Special Session

1. You are cordially invited to propose suitable topics for Special Session under the two subjects as following;
① IT Related Power System
② Special Power Applications

2. Special Session Proposal Form is provided and required to submit by March 31, 2009 to Secretariat of INTELEC2009 via e-mail.

CALL FOR PAPERS

Submission of One Page Digest

1. Prospective authors are required to submit one page digest (in MS Word or PDF) by January 31, 2009.
2. Two files, Digest Template and Instruction Details are provided for the preparation of your one page digest for INTELEC2009.
3. Digest should include all information considered necessary by the authors to demonstrate the technical merit of the paper.
4. Digests are to be submitted electronically on the website.
5. Acceptance notification will be informed by April 30, 2009.

Submission of Full Paper

1. Author(s) with accepted digest will be requested to submit the full paper by June 30, 2009.
2. Detailed instructions regarding full papers formatting will be announced in the website.
3. The papers presented at INTELEC2009 will be included in the Conference Proceeding CD, posted on IEEE Xplore and be cited in EI (Engineering Index).

IMPORTANT DATES

Submission of One Page Digest	January 31, 2009
Acceptance Notification	April 30, 2009
Submission of Final Manuscript	June 30, 2009
Early Registration	July 15, 2009
Conference Dates	October 18-22, 2009

CALL FOR PAPERS

IEEE-SDEMPED'09

Cargèse (France), August 31 - September 3, 2009

7th IEEE International Symposium on Diagnostics for Electrical Machines, Power Electronics & Drives

Sponsor: IEEE Power Electronics Society
Technical co-sponsors: IEEE Industry Applications Society, IEEE Industrial Electronics Society, IEEE France Section

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A.J. Marques Cardoso
G. Pascoli
E. Wiedenbrug

The purpose of this symposium is to provide a forum for presentation and discussion of the state-of-the-art of diagnostics and monitoring for electrical machines, power electronics, adjustable speed drives and related areas. Topics within the scope of the symposium are:

I. ELECTRICAL MACHINES: Failure detection and location in electrical machines using vibration, audible noise, electrical or mechanical variables, sensors, insulation failures, electrical, mechanical and thermal models

II. POWER ELECTRONICS: Diagnostics in power converters using input-output monitoring, thermal and/or electrical measurements on power semiconductors, control supervision, signal processing

III. ADJUSTABLE SPEED DRIVES: Monitoring and diagnostics for ASDs using electrical machines, power converters and control systems supervision, computer-based signal processing and data analysis

IV. TOOLS FOR DIAGNOSTICS: Neural networks, fuzzy logic, artificial intelligence, genetic algorithms, expert systems, identification, signal processing techniques, observers

V. MATERIALS FOR ELECTRICAL MACHINES: Insulating and magnetic materials, remaining life models, ageing tests

VI. TESTS FOR PREDICTIVE MAINTENANCE: Partial discharge analysis, tests, new instruments for diagnostics

Regular Papers: Submit provisional versions of full papers in English as follows. Limitation to **6 full pages**, including paper title, authors and affiliations, figures and references (maximum size 2MB). Authors are requested to prepare the manuscripts in the IEEE two-column format, using the template available in the SDEMPED Website and to translate it in PDF using the IEEE PDF eXpress™ facility.

Special Sessions: A special session is a group of 6 papers which are solicited by a session organizer on the basis of a special topic. All the papers are collected in the same way as regular ones and they pass in the same review process.

Industrial Forum: This forum is organized during the first day of the conference to present the actual industry preoccupations in front of engineers and researchers coming from academia. The aim is to set strong exchanges in between what is done in research labs and what is really needed by companies to improve the industrial acceptance of diagnostic techniques.

All submissions should be in electronic form. Instructions will be posted in due course on the web at: www.sdemped09.iut-amiens.fr. The best presented papers (up to 3) will receive the SDEMPED Best Paper Award.

Venue: IESC Menasina – Cargèse – France (www.iesc.univ-corse.fr)

Deadlines for paper digest and special session proposals	
Submission:	**March 2, 2009**
Notification of acceptance:	**April 27, 2009**
Final manuscript due:	**June 22, 2009**

Further Steps on the PELS Foot Path in the Conference Jungle

Increasing benefits for its members is one of the main goals of PELS. Sometimes, however, it is difficult to define what a benefit is and what is not. One aspect, of course, is the number of conferences sponsored and co-sponsored by PELS – it is impossible for our members to participate in all of them. No doubt, high quality conferences are one of our (i. e. PELS) main "products" – the purpose is to keep our members up to date and to support collaboration. The question is, how can we keep ourselves up to date without spending too much time visiting a tremendous number of conferences?

The demands/requirements/intentions with respect to conferences are different between industry and academics. Of course, both want to be updated with respect to latest developments in their respective subjects. Industrial colleagues, however, usually have the possibility to attend only a very limited number of conferences per year (usually only a single one), whereas academics often have the means – and maybe even the obligation – to attend several ones, because they want to (or even have to) publish many papers.

Fairly and frankly speaking, the main problem for colleagues from industry is not the travel cost or the participation fees – it is the time they are not available for their company. With respect to that situation a lot of well-known conferences supported significantly from industry are limited in duration to 3 days or even less. Furthermore it is hard for many industrial colleagues to attend conferences outside their own continent or even their own country – again the travelling time, not travelling cost, leads to a decision not to attend the conference in many cases, even if it is highly recommended. Another aspect is the location of a conference – it is definitely harder for industrial colleagues to get the permission for attending a conference, when the conference takes place in a holiday resort or a comparable region instead of an area with strong industrial character or without any doubt, that the main reason for doing this trip is really the conference – and not entertainment.

With respect to academics the situation is a different one. Of course, academics appreciate the links to colleagues from other parts of the world for exchanging experiences and keeping up to date with respect to their teaching activities. In many countries academics are ranked according the number of their publications – conference contributions are usually a first step to a journal paper which is essential for the ranking. (In some countries – like Germany – academics are not (yet) ranked as described above. PELS – however – is aware that the developments even in these countries will also lead to the situation that the number of highly ranked publications gets more important). Therefore, some academics feel there should be even more possibilities for publishing than today. A reduction of the number of conferences does not seem to meet their interests.

PELS has started a development, which is intended to be a long-term solution, because it takes care of both aspects. The idea is to perform only one main conference in each field of interest – but in each of the main regions of the world.

Industrial people are encouraged to attend the conference in their own region. For the most industrial companies it should be possible to send their specialist(s) to that important conference in their neighbourhood. Academics, who need the possibility to publish more papers than a single conference per year can provide, may attend the conferences in other parts of the world as well. This gives them the opportunity to publish more papers and to present their research results to more addressees all over the globe.

To realize that new specific conference structure PELS has started to perform a single main conference on Power Electronics in each of the main regions of the world. As Power Electronics is a highly interesting topic not only for PELS, but for different societies or associations as well, PELS wants to avoid unnecessary competitions with our partner associations; therefore we are going to install these main conferences under the label ECCE (Energy Conversion Conference and Exposition) in collaboration with our partners in the respective area. Consequently our former 'flagship' conference PESC will not take place any more.

The first of the ECCE conferences at all has taken place in May 2009 in Wuhan, China. This was IPEMC 2009, which was announced as ECCE Asia. CEC (China), IEEJ-IAS (Japan) and KIPE (Korea) have signed already an agreement with ECCE Asia circulating this conference between their countries on an annual basis. The next ECCE Asia will be the IPEC 2010 in Sapporo, Japan in June 2010, followed by the ICPE 2011 in Korea.

In America PELS and four IAS committees have installed ECCE, which will take place the first time in September 2009 at San José, California, USA. ECCE 2010 will be in Atlanta, Georgia, USA, ECCE 2011 is planned to be in Phoenix, Arizona, USA. The intention of PELS and IAS is to organize ECCE annually in America.

In Europe (Region 8) there are negotiations between PELS and EPE (European Power Electronics Association) to perform a main conference on Power Electronics and Applications annually as well. Both parties are going to sign a respective contract during the EPE 2009 conference in Barcelona, Spain in early next September.

PELS is going to start ECCE conferences with the global areas mentioned above, but that does not mean that others are excluded. Depending on the success within the first year PELS will start discussions with respect to other areas.

Of course, there are a couple of international, but more regionally oriented conferences all over the world – there is no intention from PELS to impact these conferences. Even after installing the concept of main conferences in the main regions, PELS will collaborate with other conferences and sponsor or co-sponsor them.

As mentioned above, the PELS activities want to increase their member benefits. We hope the idea of concentrating and restructuring the "conference jungle" will at the end be a benefit. Maybe it is useful to start further discussions amongst our members, what is a member benefit in their case.

Ralph Kennel
PELS Vice President of Meetings
Kennel@IEEE.org

PELS Strengthens Ties with Chinese Engineers in Power Electronics and Sustainable Energy Technologies

Dr. John Shen, VP of Products, PELS

PELS AdCom has held two milestone meetings with leaders from the Chinese academic and industrial community to discuss how to enhance collaboration in the fields of power electronics and sustainable energy during the IEEE's International Power Electronics and Motion Control conference (IPEMC 2009) held May 17–20 in Wuhan, China.

China is already the world's largest power electronics manufacturer, and is quickly becoming a major R&D force with important contributions from Chinese engineers. It is PELS' long term strategy to reach out to and build strong ties with the Chinese colleagues in this important technical field. With this consideration, PELS has held its first time ever AdCom meeting in mainland China on May 17, 2009 during IPEMC2009. Attending AdCom members include Deepak Divan, Hiro Akagi, Dong Tan, Ralph Kennel, John Shen, Dushan Boroyevich, Leo Lorenz, Fang Peng, Leon Tolbert, Hui Li, Jian Sun, Richard Zhang, Johann Kolar, Jinjun Liu, Mark Xu, and Donna Florek. A group of senior Chinese researchers also attended the AdCom meeting as special guests: Profs. Wang Zhaoan from Xian Jiaotong University, Zhao Zhengming and Li yongdong from Tsinghua University, Qian Zhaoming from Zhejiang Univeristy, Luo An from Hunan University, Kang Yong and Ruan Xinbo from Huazhong University of Science and Technology, and Zhang Chenghui from Shandong University. The meeting was arranged by Prof. Mark Xu from Zhejiang University and Jinjun Liu from Xian Jiaotong University, two PELS AdCom members. Attendees discussed how PELS can help sponsor technical conferences and promote professional development in China. Plans on increasing the number of local IEEE chapters in China and having IEEE Distinguished Lecturers to speak at two major national power electronics conferences in China were suggested and supported by the attendees unanimously.

please provide caption

On May 19, the PELS Executive Committee has held yet another important meeting with the leadership team from the Chinese Electrotechnology Society (CES) and China Power Supply Society (CPSS), discussed how to strengthen the ties between IEEE and the Chinese professional communities to achieve a more sustainable future. A memorandum of understanding will be issued between IEEE and CES, and IEEE and CPSS shortly. Representing PELS are Deepak Divan, Hiro Akagi, Dong Tan, Ralph Kennel, John Shen, Braham Ferreira, and Donna Florek. Representing CES and CPSS are Prof. Zhou Sigang, Prof. Qian Zhaoming, Mr. Wang Zhihua, and Prof. Zhao Zhengming. PELS Region 10 Liaison Prof. Jinjun Liu facilitated the meeting.

IEEE Strengthens Ties with Chinese Engineers in Power Electronics and Sustainable Energy Technologies

(Wuhan, China – May 18, 2009) – IEEE, the world's largest technical professional society, today discussed how to enhance collaboration with Chinese engineers on improving energy utilization efficiency and sustainable energy technologies during IEEE's Power Electronics Society's (PELS) International Power Electronics and Motion Control conference (IPEMC 2009) held May 17–20 in Wuhan, China.

Power electronics converts electricity into usable forms that impact every aspect of our daily life, and plays a critical role in conserving energy and environments. In concurrence with IPEMC2009, IEEE-PELS held its first time ever AdCom meeting in mainland China with a group of senior Chinese researchers as special guests. Attendees, representing PELS, Chinese Electrotechnology Society (CES), and China Power Supply Society (CPSS), discussed how to strengthen the ties between IEEE and the Chinese professional communities to achieve a more sustainable future. Plans on increasing the number of local IEEE chapters in China and having IEEE Distinguished Lecturers to speak at two major national power electronics conferences in China were suggested and supported by the attendees unanimously. A memorandum of understanding will be issued between IEEE and CES, and IEEE and CPSS shortly.

"China is already the world's largest power electronics manufacturer, and is quickly becoming a major R&D force with incredible

contributions from the Chinese engineers in the field." said Dr. Deepak Divan, President of IEEE Power Electronics Society and a professor at Georgia Institute of Technology, "It is very important for IEEE to reach out to and build strong ties with our Chinese colleagues in this important technical field."

Prof. Xu Derhong, Vice President of CPSS, PELS AdCom member, and a professor at Zhejiang University, said, "IEEE and PELS have been very supportive in sponsoring technical conferences and promoting professional development in China, including this IPEMC conference. The special AdCom meeting has certainly moved the dialogue and discussion to a new level."

IEEE in its role as a technology association whose mission is to foster technological innovation and excellence for the benefit of humanity has been keen on encouraging discussion amongst its distinguished members and industry to address some of China's pressing needs in improving energy consumption efficiency and applying renewable energy technologies.

About IEEE

IEEE, the world's largest technical professional association, is commemorating its 125th anniversary in 2009 by "Celebrating 125 Years of Engineering the Future" around the globe. Through its more than 375,000 members in 160 countries, IEEE is a leading authority on a wide variety of areas ranging from aerospace systems, computers and telecommunications to biomedical engineering, electric power and consumer electronics. Dedicated to the advancement of technology, IEEE publishes 30 percent of the world's literature in the electrical and electronics engineering and computer science fields, and has developed nearly 900 active industry standards. The organization annually sponsors more than 850 conferences worldwide. Additional information about IEEE can be found at http://www.ieee.org.

About IEEE PELS

The IEEE Power Electronics Society (PELS) is a worldwide, nonprofit association of more than 6,000 members in the field of power electronics. PELS members are involved in the research, development, and manufacture of power conversion systems for efficient use of electric energy. PELS provides the world's largest forum for sharing the latest in technological developments in the power electronics industry, and for educating members of the industry and the general public. Members of PES are leaders in this field, and they – and their employers – derive substantial benefits from involvement with this unique and outstanding association.

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Understanding the Operation of PELS Technical Committees

F. Dong Tan, VP Operations

Summary

The IEEE Power Electronics Society (IEEE PELS) organizes technical activities through its technical committees. The operation of the technical committees is governed by Section 10 of the Society Bylaws. This document intends to provide you, the members of the society, with the next-level operational details so you can be more actively and efficiently engaged in this important activity.

1. Introduction

The IEEE Power Electronics Society (IEEE PELS) organizes various technical activities as a means to provide direct values to you, the society members. As a professional organization by volunteers, the society encourages active participation by its members. Direct involvement with society activities gives you the insight into our society's operations and provides you with an opportunity to broaden your professional reach and to enhance your career growth potential.

One of the important activities that PELS organizes is the operation of various technical committees and subcommittees. You can find the operating principles of technical committees in the society bylaws maintained by the society's Constitution and Bylaws Committee. They include appointment, functions and operations. This document intends to provide you, our society members, with the next-level operational details to facilitate the participation of our members and to enhance the operation effectiveness of our technical committees.

We will also try to address many issues associated with the way a technical committee (TC) should operate. As we are all volunteers, we share a common vision and we strive to achieve a higher level of internal operation with higher efficiency.

2. Structure of PELS Technical Committees

The current society technical committees (TCs) are being reviewed. One proposal is to organize into large application specific areas with the exceptions for the core and the emerging technologies. There are several considerations factored into the structure. The first, this structure parallels the trend that power electronics technologies (products) are becoming commodities.

A second consideration is to maintain a stable structure over the coming years to improve its organizational effectiveness. Stability of the structure can help bringing focused efforts by their members for long-term operation and development.

A third consideration is to maintain a relatively small number of technical committees so they can be more efficient and bring more values to our members. For instance, each TC can have its own awards to encourage participation. Awards administered by a large TC can ensure a steady pool of candidates as well as volunteers.

A final consideration is the synergy of our technical committee structure with that of our sister societies so joint meetings can be proposed to minimize the burden on committee members and

Table 1 PELS Technical Committee Structure Proposal

1 Power & Control Core Technologies
- 1.1 Modeling, Control and Simulation
- 1.2 Power Devices
- 1.3 Electronics Transformers
- 1.4 Electronics Packaging
- 1.5 Diagnostics/Prognostics
- 1.6 Others: Computational intelligence, etc.

2 Power Conversion Systems
- 2.1 DC/DC Power
- 2.2 AC/DC and DC/AC Power
- 2.3 Others: Sever power, telecom, DC microgrids, etc.

3 Motor Drives and Actuators
- 3.1 Industrial Drives
- 3.2 Micro- and Cardinal Stepper Drives
- 3.3 Sensorless control, integrated drive systems, etc.
- 3.4 Others:

4 Aerospace, Vehicle and Mass Transit Systems
- 4.1 Automotive, PHEV, energy storage, ships, railway, etc.
- 4.2 Radiation Effects, Survivability, etc.
- 4.3 Others:

5 **Sustainable Energy Systems**
- 5.1 Distributed Generation and Microgrids
- 5.2 Wind, solar, grid code & interface, smart grid, FACTS, energy storage, low carbon power, etc.

6 **Industrial, Appliance and Consumer Electronics**
- 6.1 High Reliability
- 6.2 White Goods
- 6.3 Lighting
- 6.4 Others:

7 **Emerging Technologies & Standards**
- 7.1 Energy Harvesting
- 7.2 Converter on a Chip
- 7.3 Wireless sensor nodes
- 7.4 Standards
- 7.5 Others:

maximize their productivity. One good opportunity in this regard is the meetings at the ECCE where members from both the PELS and IAS get together.

To balance all the requirements, our technical committees are broadly structured as illustrated in Table 1. They include core technologies, power conversion, motor drives and actuators, vehicle and mass transit, sustainable energy, aerospace, industry, and consumer electronics, and emerging technologies and standards.

Core technologies and emerging technologies and standards are the only committees that are not organized by application since they both cut through all areas and are the driving forces behind applications. Also, concerted efforts are needed from the society to take the lead in any emerging fields.

Various subcommittees can be formed under each technical committee to accommodate the diverse and evolving nature of each technical area. This also provides a stable environment to enable each TC to operate more effectively and efficiently with a small and dedicated pool of volunteers.

3. Organization of a Technical Committee

3.1 Formation of a Technical Committee or Subcommittee

A technical committee or subcommittee (TC or SubTC is hereafter used inter-changeably) can be formed if eight or more members of the society request it through a submission to the AdCom endorsed by society VP for Operations. A form to collect the names is attached at the end of this document to facilitate the process.

The group of founding members will suggest a name for the TC. An individual will serve as the organizer of the TC until proper elections are held and the key positions are filled. All members of a TC must maintain the IEEE grade of member, senior member or fellow and must also be a member of PELS.

A TC or SubTC can also be formed by the President and the VP for Operations with the advice of the AdCom.

3.2 Officers of a Technical Committee

Each TC shall have at least three officers: Chair, Co-Chair, and Secretary. All the three can be elected by a simple majority of the TC for a term of one year, from January 1 to December 31. The chairperson of each TC shall be appointed by the president with the advice of the AdCom.

TC Chairs are all members of the Operation Committee (OpsCom), reporting directly to the VP-Operations who in turn reports all technical activities to the AdCom.

You can invite or nominate other members to join the TC. Student members are not permitted to serve as elected TC officers.

If a TC officer position becomes vacant before the normal conclusion of his/her term, you can elect a new officer through a special election. The VP–Operations, in consultation with the President, can also appoint someone to serve the remaining term.

3.3 Nomination and Election

Each TC may have an *ad hoc* nominations committee, made up by selected members of the TC. The committee shall be appointed by the chair of the TC or by the consensus of the TC officers. The nomination shall come into existence at the TC meeting preceding the actual election and shall be dissolved after the election and installation of officers.

4. Activities of a Technical Committee

4.1 Activities

Once you establish a TC or a SubTC, you shall be actively engaged by conducting at least one or two major activities per year in order to maintain its status as being "active." Inactive committees can be dissolved by the President or the VP Operation with the advice of the AdCom.

Major activities that a TC can organize in its area of technical interests include:

- Special seminars or workshops
- Awards for best paper or/and for technical achievement
- Rap sessions at major conference sponsored by PELS
- Sessions at major conferences sponsored by PELS
- Reviews of technical papers for PELS Transactions and Letters
- Special editions for PELS Transactions
- Technical articles to PELS Newsletter
- News articles and activity reports to PELS Newsletter
- Initiatives on emerging technologies and standards
- Special topics for the Distinguished Lectures

Note that activities in organizing technical sessions will be coordinated with the conference committee of that conference. Special

edition needs to be coordinate with the editor in chief of the transactions and the publication committee. Any technical committee awards need to be coordinated with the society awards committee to ensure uniformity across the society. The honorarium for each award shall not exceed that of a society award.

4.2 Logistics for a Technical Committee

Membership List: Each TC should maintain a membership list. The list shall be updated annually and provided to PELS administrator.

Meetings: TCs shall meet at places deemed convenient for its members and will typically be chosen from among the major IEEE PELS sponsored conferences.

Budgets & Expenses: The VP Operations will inform each TC of its budget which is approved by the AdCom on an annual basis. You can facilitate this process by developing a simple budget for your operations. Upon approval, you can use it in accordance with the society's procedures and IEEE policies. The Secretary of the TC will maintain a record of expenses. Invoices are sent to the VP Operations for approval and copy to the President, Treasurer, PELS Administrator, and then to IEEE headquarters for payment or reimbursement.

References

[1] IEEE Power Electronics Society Bylaws, Rev. 13, February 24, 2008.
[2] IEEE Power Electronics Society Constitution, Rev. 4, June 25, 2004.

PETITION TO FORM A PELS TECHNICAL COMMITTEE

Proposed Name: _____

We, the undersigned, who are Members of the Power Electronics Society above Student Grade, hereby petition for approval to form a Technical Committee with the proposed name listed above.

****8 PETITIONERS ARE REQUIRED FOR A TECHNICAL COMMITTEE FORMATION****

The following individual is serving as the Organizer of the TC until proper elections are held and the various officer positions are filled (The Organizer of the TC must hold grade of Member, Senior Member or Fellow and also be a Member of the Society).

Name:	
IEEE Member #:	
Organisation:	
Address:	
City:	
State/Province:	
Postal Code:	
Country:	
Phone:	
Fax:	
Email:	
Date Submitted:	

The Eighth International Conference on Power Electronics and Drive Systems

November 2-5, 2009, Taipei, Taiwan, R.O.C.

Website: http://www.peds09.ntust.edu.tw

Call for Papers

Organizers:

National Taiwan University of Science and Technology
Singapore Section IAS/PEL Joint Chapter

Technical Co-Sponsors:

***IEEE** Power Electronics Society - PELS*
IEEE Industry Applications Society - IAS
IEEE Industrial Electronics Society -IES
Taipei Section IE/PEL Joint Chapter
National Science Council - NSC
Ministry of Education
Taiwan Power Electronics Association

The 8th International Conference on Power Electronics and Drive Systems (PEDS'09) will be held in Taipei, Taiwan, from 2 to 5 November 2009. The conference is a biennial event and is recognized as one of the major series of conferences in power electronics and drive systems. PEDS'09 continues to retain its tradition of high quality conference and will open up an opportunity for academics and industrial professionals worldwide to exchange their knowledge of the state-of-the-art power electronics and drive technologies and applications. The conference site, Taiwan, has not only a long-standing history but also an outstanding modern community, where past, present and future live harmoniously together. The 4-day program will feature tutorials, technical paper presentations and an exhibition. Papers presented in conference will be included in IEEE Xplore Digital Library and indexed by EI Compendex. The Technical Program Committee would be selecting the top 10% of the papers to be forwarded to the IEEE Trans. on IAS, and the next 10% to the IJPElec for consideration for publication.

Technical Papers - the range of topics includes, but not limited to:

- Power semiconductors, passive components and packaging technologies
- Motor drives and motion control
- Analysis and design of electrical machines
- Hard-switching and soft-switching static power converters
- Switch-mode power supplies and UPS
- Applications of power electronics in power system and generation/FACTS
- Power quality issues, harmonic problems and solutions
- EMI/EMC
- Power electronics in traction and automotive
- Bearingless drive technologies
- Applications of power electronics in home appliance, industry and aerospace
- Renewable energy technologies
- Modeling and simulation in power electronics
- Power electronics education/professional development
- Bio-medical power electronics
- Telecommunications power supplies
- Micro-electromechanical systems (MEMS)
- Power integrated circuits (PIC)
- Power engineering related technologies

Prospective authors are invited to submit a digest of no more than 5 pages including figures. In addition, the following information include the title, the names of author(s), affiliation, mailing address, fax number, e-mail address, preferred topic area, and an abstract of less than 200 words are suggested to be well prepared for the digest submission process. A peer review process will be used to evaluate all papers submitted for consideration. The submission is web-based at http://www.peds09.ntust.edu.tw. For more information please contact the PEDS'09 Secretariat

Author's Schedule

Prospective authors should note the following deadlines:

Digest submission deadline	**MAY 17, 2009**
Notification of paper acceptance	**July 19, 2009**
Final paper submission deadline	**August 14, 2009**
Authors' registration deadline	**August 14, 2009**

Tutorials

Several tutorials will be held prior to the technical presentations.

Exhibition

A comprehensive exhibition will be held during the conference. Exhibitors will include participants from commercial firms and organizations involved in the manufacturing, sales or distribution of power electronics equipment and professional or technical services. If interested in exhibiting, please contact PEDS'09 Secretariat.

For further information, please contact

PEDS'09 Secretariat.
Prof. Chung-Hsien Kuo
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Fax: +886-2-2737-6699

Email: peds09@mail.ntust.edu.tw / Web site: http://www.peds09.ntust.edu.tw

25th Annual IEEE Applied Power Electronics Conference and Exposition
February 21st–February 25th, 2010 at the Palm Springs Convention Center, Palm Springs, CA

Announcement and Call for Papers

APEC 2010 continues the long-standing tradition of addressing issues of immediate and long-term interest to the practicing power electronic engineer. Outstanding technical content is provided at one of the lowest registration costs of any IEEE conference. APEC 2010 will provide a) the best power electronics exposition, b) professional development courses taught by world-class experts, c) presentations of peer-reviewed technical papers covering a wide range of topics, and d) time to network and enjoy the company of fellow power electronics professionals in a beautiful setting. Activities for guests, spouses, and families are abundant in the Washington area.

Papers of value to the practicing engineer are solicited in the following topic areas:

AC-DC and DC-DC Converters
Single- and Multi-Phase AC-DC Power Supplies, DC-DC Converters (Hard- and Soft-Switched)

Power Electronics for Utility Interface
Power Factor Correction, Power Quality, Electronics and Controls for Distributed Energy Systems

Motor Drives and Inverters
AC and DC Motor Drives, Single- and Multi-Phase Inverters, PWM Techniques, sensor integration, Fault tolerant operation

Devices and Components
Semiconductor Devices, Magnetic Components, Capacitors, Batteries, Sensors, Interconnects, Device Integration

System Integration
Packaging, Thermal Management, EMI and EMC

Modeling, Simulation, and Control
Device, Component, Parasitics, Circuit and System, CAD /CAE Tools, Sensor and Sensor-less Control, Digital Control

Manufacturing and Business Issues
Production Processes, Quality, Design for Manufacturability, Material Procurement, Supplier Qualification

Power Electronics Applications
Automotive and Transportation, Aerospace, renewable energy harvesting, Lighting (incl. LED), UPS, Power Generation and Transmission, Telecommunications, Military, Portable Power

Please note the following dates:

July 17, 2009	**Deadline for submission of digests**
October 2, 2009	**Notification that a paper was accepted or declined**
November 27, 2009	**Final papers and author registrations are due**

Digest Preparation: Prospective authors are asked to submit a digest explaining the problem that will be addressed by the paper, the major results, and how this is different from the closest existing literature. Papers presented at APEC must be original material and not have been previously presented or published. The principal criteria in selecting digests will be the usefulness of the work to the practicing power electronic professional. Reviewers value evidence of completed experimental work. Authors should obtain any necessary company and governmental clearance prior to submission of digests. Please visit www.apec-conf.org for all details on digest and final manuscript format.

If a digest is accepted, authors must submit a final manuscript before the deadline or the manuscript cannot be published in the Proceedings or presented at the conference. Final manuscripts may be subject to charges if their papers are over the page or file-size limit. At least one of the authors listed on a paper must be registered for either a Full Registration or for the Technical Sessions Only registration. A person registered at the Student rate may claim registration credit for only one paper. Authors registering at any non-Student rate, including the IEEE Life Member Rate, may claim registration credit for as many papers they wish.

Reviews: APEC relies upon a peer review process to ensure the quality of the technical content. To help maintain the high quality of the program, please contribute a few hours to review digests in your area of expertise by registering at www.apec-conf.org (under "Participating in APEC").

Calls for Special Presentations, Professional Education Seminars, and Exhibitor Seminars will be posted at www.apec-conf.org.

Website: www.apec-conf.org
Email: apec@courtesyassoc.com
Phone: +1-202-973-8664
Facsimile: +1-202-331-0111

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APEC Sponsors
Power Sources Manufacturers Association
IEEE Industry Applications Society
IEEE Power Electronics Society

Section: KERALA, Type: CHAPTER, Geocode: R00145
Rec ID: 71, Sub Name: IE13/IA34/PEL35, Sub Code: 10074

Report on

"Short-term course on Thermal Design & Engineering"

PeCool

Jointly organized by
IE/IA/PEL Joint Chapter, IEEE Kerala
National Mission on Power Electronics Technology (NaMPET)
&
Degree Controls Inc.
Venue: Hotel SP Grand Days Thiruvananthapuram
Date: 20–21 April, 2009

The Short-Term Course on Thermal Design and Engineering for Power Electronics Systems – PeCool was jointly organized by CDAC, Thiruvananthapuram Degree Controls, Inc.USA and IEEE Kerala Section. on 20–21st April 2009 at Hotel S P Grand Days, Thiruvananthapuram. 61 participants (Industries-35, Institutions-5, CDAC-21,) from various industries and institutions attended this course. The course mainly addressed the issues related to thermal design and engineering of PE systems and products, research trends, and advanced solutions.

The following topics were presented:

Day 1

Dr. Pradip Dutta, IISc Bangalore: Heat Transfer Basics,
CFD Techniques in Thermal Management

G. Dhanushkodi:
Heat Transfer Concepts and application to Heat Sink design:

Mr.Thomas Albertin, Atherm France:
Cooling Technologies for Power Electronics Devices,

A case study and discussion session moderated by Mr. Rajesh Nair, founder and CTO of DegreeC, was held after the presentations.

Day 2

Mr. Rajesh Nair, Degree Controls InC.:
Thermal Design of High Availability Electronic Products

Mr. Shubash Joshi of CDAC, Trivandrum:
Power loss calculation and thermal design concepts

Mr. Thomas Albertin,of Atherm France:
Theoretical presentation on Heat Pipes

A case study was presented by Shri B Krishna Kumar, Scientist-H of IGCAR, Kalpakkam.

The day concluded with a discussion session moderated by Mr. Rajesh Nair, founder and CTO of Degree Controls.

Some of the photographs:






Dear Dr. John M. Miller,

Greetings from Kerala, India!
I am pleased to send the reports of two programmes conducted by IE/IA/PEL Joint Chapter, IEEE Kerala. I will be obliged if you could consider including the reports in the PEL Newsletter.
Thanking you for the cooperation.

warm regards
Unnikrishnan A Keloth

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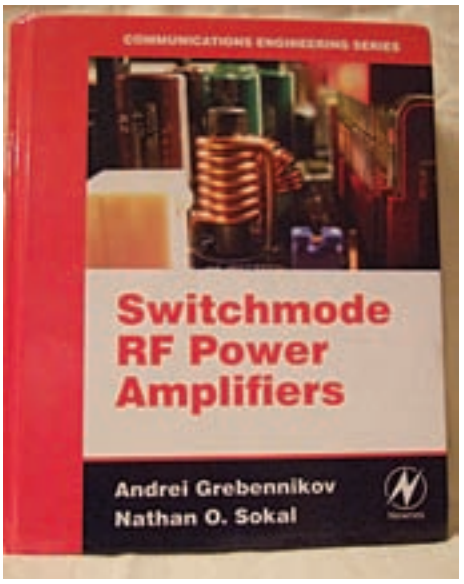
Book Review: Switchmode RF Power Amplifiers

Andrei Grebennikov, Nathan O. Sokal

In my undergraduate days, many years ago (more than forty to be somewhat precise), the Class designations for electronic amplifier circuits were limited to the letter designations A, B, AB and C. We were taught that the active devices in these circuits, tubes or transistors, were "active" and actually amplified in their linear region of operation only during a portion of a full cycle of a sine wave input signal. The portion of the full cycle wherein the devices were active, with output current, was referred to as the device conduction angle. The lower the conduction angle the more efficient the circuit was, but also the more distortion in the output signal. Things were simple.

But time and technology moved on. And, just as in voltage regulator circuits, where switching regulators supplanted linear regulators for reasons of improved efficiency; in amplifiers, switchmode circuits with new Class designations D, E and F were developed, again for reasons of improved efficiency. The active devices in switchmode amplifiers only switch on and off. They operate only in their fully on state (with very low on-state voltage drops) or in their fully off state (with very low off-state conduction currents). Operation in the active or linear region, with simultaneous on-state voltages and currents and therefore potential high loss, is avoided by design. In my case, and I assume in others, what was needed was a text to explain these circuits, how they worked and how to practically design them using modern devices.

"Switchmode RF Power Amplifiers" by Andrei Grebennikov and Nathan Sokal is the book I needed. It is an excellent introduction to the theory of Class D, E and F circuits and a practical guide to implementation of working switchmode amplifier systems. In many ways this book is "from the horses mouth," as Nathan Sokal (along with his son Alan Sokal) invented the Class E amplifier (and named it), circa 1975, US Patent 3,919,656. The Sokal team also received the IEEE Microwave Theory and Techniques Society Microwave Pioneer Award in 2007 "For development of the Class-E power amplifier." The text primarily concerns radio frequency applications and therefore PWM amplifier, Class D circuits, used mainly in audio frequency applications, are given but a single chapter. The meat of the book, six of nine chapters, is focussed on Class F and E circuits. Class F circuits are considered first, in Chapter 3. The idealized circuit is proposed, with a single ideal on/off switching device and an infinite series connection of odd harmonic trapping circuits in the load circuit. This ideal circuit has an operating efficiency of 100%. Real world constraints, real switching devices with parasitic elements and limited performance harmonic filters, are then considered and performance predictions are modified. Practical example circuits designs are then discussed. This pattern of presentation, starting with ideal circuitry and working to the practical, is followed throughout the book. Chapter 4 concerns inverse Class F circuits, similar to the standard Class F implementations but with the series of harmonic trap filters at even harmonics. Chapter 5 introduces the basic, ideal lumped element Class E switching circuit, and extends it to practical implementation. Chapters 6 and 7 subjects are Class E circuits with non-ideal dc bias chokes and distributed transmission line elements, respectively. Mixed mode D/E, E/F, harmonic filtered E and inverse E circuits are analyzed in Chapter 8. The final chapter, Chapter 9, contains information on and examples of various CAD programs available for help in design and analysis of the various circuits presented throughout the book.



I believe this book would help any engineer in any stage of work or knowledge on switchmode high frequency amplifiers, and I highly recommend it. Besides, Nathan Sokal is a Ham, and so am I. We stick together.

Reviewed by Dr. Patrick J. McCleer, McCleer Power, Inc. 2421 Research, Dr. Jackson, MI 49203, Phone: 1-517-787-1701

Dr. Patrick J. McCleer is owner and VP Engineering of McCleer Power Inc., an independent company having primary business in research & development of electric machines, power electronics and electronic controls.

Book Review:

Fundamentals of Power Semiconductor Devices

B. Jayant Baliga
Springer, 2008
ISBN 978-0-387-47313-0

This most recent publication by the well-known power semiconductor device engineer, Dr. B.J. Baliga, is a thorough tome on the subject. The book is appropriate for someone interested in device behavior and associated important descriptive terminal and material relationships. It should be noted that the background and derivation from fundamental physical principles is not provided and cannot be easily extracted by the reader. The author begins with a short description of the major types of power devices and their terminal behavior, but could not resist including some esoteric device structures that may be confusing for the novice. The next chapter provides an overview of material properties and physical behavior of charge carrier flow in semiconductors. Very few derivations are provided, though a relatively complete presentation of both physically and empirically derived results are provided, such that an appropriate descriptive behavior of power devices can be achieved. The physical description continues into the next chapter with a focused description of breakdown limits and mechanisms due to high electric fields. The material provided in these early chapters draws on the extensive experience of the author in the semiconductor industry.

As is typical in device texts, the author discusses simple structures first (Schottky and p-i-n diodes) before more complicated devices are introduced. The power MOSFET is then covered extensively by chapter 6. Included is a discussion of one of the most recent design improvements in all MOS-gate devices, the trench-gate structure. Manufacturing complications and ruggedness issues with the trench-gate are also discussed as part of the descriptions throughout the book. A large exposition of bipolar power device structures is incorporated in a later chapter. Many previous texts in the past decade either dropped any bipolar transistor discussion, or limited the content. This was due to the limitations of silicon power bipolar transistors and their discontinued use in converter circuits. However, with the continuing development of silicon-carbide power devices, bipolar transistors may yet make resurgence into power converter designs. At the least, a thorough description of their behavior, as provided by Baliga, supports the understanding of the operation of other bipolar structures such as IGBTs and thyristors. It will be no surprise that the largest number of pages is devoted exclusively to the IGBT. This reflects the trend of the IGBT in becoming the dominant power device in medium-power applications and continuing to move into more high-power applications, replacing GTOs. References are provided at the end of each chapter, which is very helpful to the reader and is necessary if the reader wishes to review derivations, other models, and device operational data.

Reviewed by Prof. Jerry Hudgins

Jerry Hudgins received a Ph.D. degree in electrical engineering in 1985 from Texas Tech University, Lubbock, TX. Dr. Hudgins is a Fellow of the IEEE, and a Past-President of both the IEEE Power Electronics Society and the IEEE Industry Applications Society. He has published over 100 technical papers concerning high-power semiconductor materials and devices, and is currently a professor and the Chair of the Electrical Engineering Department at the University of Nebraska-Lincoln.

RWTH Aachen University • Institute for Power Electronics and Electrical Drives
Professor Dr. ir. Rik W. De Doncker

In Memoriam
Heinz van der Broeck
(1952-2009)

With great sadness, we learned that Heinz van der Broeck, Professor at the Cologne University of Applied Science and Honorary Professor at RWTH Aachen University, passed away on May 8, 2009 after a short but aggressive illness. Heinz was an active member of both the IEEE Power Electronics and IEEE Industry Applications Societies. From 2007 till 2008 he served as Chair of the IEEE German Joint IAS-PELS-IES Chapter. In 2004, he served as Treasurer of the IEEE PESC'04 conference in Aachen, Germany.

Heinz van der Broeck studies followed what has been called in Germany "the long route". He started by obtaining a degree as technician in 1971. He followed this by earning an engineering degree from the Cologne University of Applied Science. After having obtained that engineering degree with high distinction in 1975, he began studying at RWTH Aachen University for the Dipl.-Ing. (M.Sc.) degree in electrical engineering. He received his Dipl.-Ing. (M.Sc.) degree in electrical power engineering from RWTH Aachen University, in 1980 with highest distinction, for which he was honored with the Springorum Medal and the Henri Ford M.Sc. Award. His thesis was in the area of converter modulation techniques. Having been recognized for his excellent work, Heinz was offered a PhD Research Assistant position at the Institute for Power Electronics and Electrical Drives (ISEA) of the RWTH Aachen University. His Ph.D. thesis on "Comparison of Voltage Source Inverters with Two or Three Inverter Legs for Induction Machines using Pulse-Width Modulation at High Switching Frequency" was completed with highest distinction in 1985. From 1987 till 1999, he worked at the Philips Research Center in Aachen. In 1994, he began lecturing as Adjunct Lecturer at the ISEA. After the unexpected death of the ISEA Director that year, he voluntarily agreed to teach all courses offered by ISEA, which he did for 2 years. No doubt, Heinz's support during this critical phase in the history of ISEA guaranteed continuation of all teaching tasks in the area of power electronics at RWTH Aachen University, a fact for which we are all greatly indebted to him. In 1999 he was appointed Honorary Professor at RWTH Aachen University. Shortly thereafter, in the same year, he was appointed Professor at the Cologne University of Applied Science.

Heinz's work and main interest was the continued development of converter controls, electronic ballasts and switched mode power supplies. He was extremely creative in finding simple but reliable solutions. As a teacher, he taught several courses on switched mode power supplies. He developed a unique laboratory with project-based learning, on which he reported at several conferences. Over the years, the students have valued his lecturing for its quality and clarity, his direct involvement in their work, and his strong mentoring skills. Twice, with great success, he led the Aachen-Cologne student team in the PELS International Future Energy Challenge.

In the 1987 Proc. of the IEEE IAS Conf. and later in the 1988 IEEE Trans. on IA, Heinz was co-author of the first IEEE paper on "space vector modulation". This paper was a milestone on how to control three-phase converters with PWM modulation whilst providing highest possible utilization of the converter. This paper on PWM modulation techniques for converters has been cited by many researchers ever since. Despite many significant contributions to the field of power electronics, Heinz remained humble and had a great sense of perspective. He worked with great integrity and motivated many to explore better solutions to make power supplies more efficient and more cost effective.

With sadness we say adieu to Heinz, who left us all too early. Heinz was also a personal friend to many of us. We wish his wife Brigitte and their children, Christoph, Franziska, Thomas and Stephan the strength to bear this heavy loss. The Faculty of Electrical Engineering at RWTH Aachen University, in particular, the Institute for Power Electronics and Electrical Drives (ISEA), and the University of Applied Science in Cologne, we will miss Heinz van der Broeck dearly.

Rik De Doncker

Meetings of Interest

IEEE 7th International Symposium on Diagnostics for Electrical Machines, Power Electronics & Drives, SDEMPED2009, 31 August to 3 September 2009 in Cargese, France. For more information visit the website: www.sdemped09.iut-amiens.fr

The 10th Brazilian Power Electronics Conference, COBEP2009 will be held in BONITO MS – Brazil from 27 September to 1 October 2009. Visit http://www.sobraep.org.br/cobep2009 for more details.

IEEE Vehicle Power and Propulsion Conference, VPPC2009, will be held 7–10 September 2009 at the University of Michigan-Dearborn, Dearborn, MI. For more information visit www.vppc09.org or contact the General Chair, Prof. Chris Mi at mi@ieee.org

European Power Electronics, EPE2009, is planned for 8–10 September 2009 in Barcelona, Spain. Call for papers to be released in May 2008 with deadline for receipt of synopses Nov. 2008. For more information visit: http://www.epe2009.com

1st Annual Energy Conversion Congress and Exposition (ECCE2009) is announced for 20–24 September 2009 at the Double Tree Hotel at 2050 Gateway Place in San Jose, CA. For more information on ECCE2009 visit the conference website: www.ecce2009.org

44th Industry Applications Society annual meeting is announced for 4–9 October 2009 in Houston, Texas. This will be a new meeting format following the transition of IAS committees to ECCE2009 with more emphasis on tutorials and workshops. For more information visit the website at: www.ieee.org/ias2009

31st INTELLEC® International Telecommunications Energy Conference, to be held from October 18 to 22, 2009 in Incheon, Korea at KIEE (The Korean Institute of Electrical Engineers) Yucksam-Dong, Kangnam-Ku, Seoul, under the theme "Global Convergence for Smart Energy-Telecommunication". For more information contact INTELEC 2009 Secretariat (Mrs. Min Jung Kim) Tel: +82-2-3412-6045 / Fax: +82-2-3412-8723 Website: www.intelec2009.com or by E-mail: secretariat@intelec2009.com

The 8th International Conference on Power Electronics and Drives Systems, PEDS2009, will be held 2–5 November 2009 in Taipei, Taiwan ROC. PELS is technical co-sponsor for PEDS'09. For more information visit http://www.peds09.ntust.edu.tw

25th Annual IEEE Applied Power Electronics Conference and Exposition, APEC'10, will be held 21–25 Feb. 2010 at the Palm Springs Convention Center, Palm Springs, CA. For further details please visit www.apec-conf.org

12th International Conference on Optimization of Electrical and Electronic Equipment OPTIM 2010 to be held 20–22 May 2010, Brasov, Romania, http://www.info-optim.ro/conforg

2nd Annual Energy Conversion Congress and Exposition (ECCE2010) is announced for 12–16 September 2010 at the Hilton Atlanta hotel, 255 Courtland St. NE, Atlanta, GA. For more information on ECCE2009 visit the conference website: www.ecce2010.org

Special Section of the IEEE Transactions on Vehicular Technology on Vehicle Power and Propulsion

Advanced electric and hybrid electric vehicles improve overall drive train efficiency over a standard drive cycle by supplying electric energy from various energy storage systems to assist the main power source and reusing braking energy that would otherwise be wasted. In order to further promote excellence of research in Vehicle Power and Propulsion, in conjunction with the fifth annual IEEE Vehicle Power and Propulsion Conference (VPPC09), a special section in the *IEEE Transactions on Vehicular Technology* will be published to focus on state-of-the-art research and development as well as future trends in the modeling, design, control, and optimization of advanced power and propulsion systems for electric vehicles (EV), hybrid electric vehicles (HEV), fuel cell vehicles (FCV), and plug-in hybrid electric vehicles (PHEV). Potential authors are invited to submit an original paper for consideration to publish in the special section. A thorough peer review will be conducted to select the top notch papers to be included in the special section of the Transaction. Papers presented at the VPPC 2009 are eligible for consideration to be included in this special section. Please note that IEEE requires that a journal submission offers substantive novel contributions beyond the previous work in a conference paper.

Topics of interest include, but are not limited, to the following.
Vehicular Electric Power Systems and Loads
Vehicular Power Electronics and Motor Drives
Advanced Vehicles
Energy Storage Components/Systems
Modeling, Simulation, Dynamics, and Control
Thermal management
Power management and control
Optimization

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Time Line:

Paper Submission Deadline:	November 1, 2009
First Reviews:	January 31, 2010
Revised Paper Deadline:	March 1, 2010
Second and Final Reviews:	May 1, 2010
Final Manuscripts:	June 1, 2010
Publication:	August 2010

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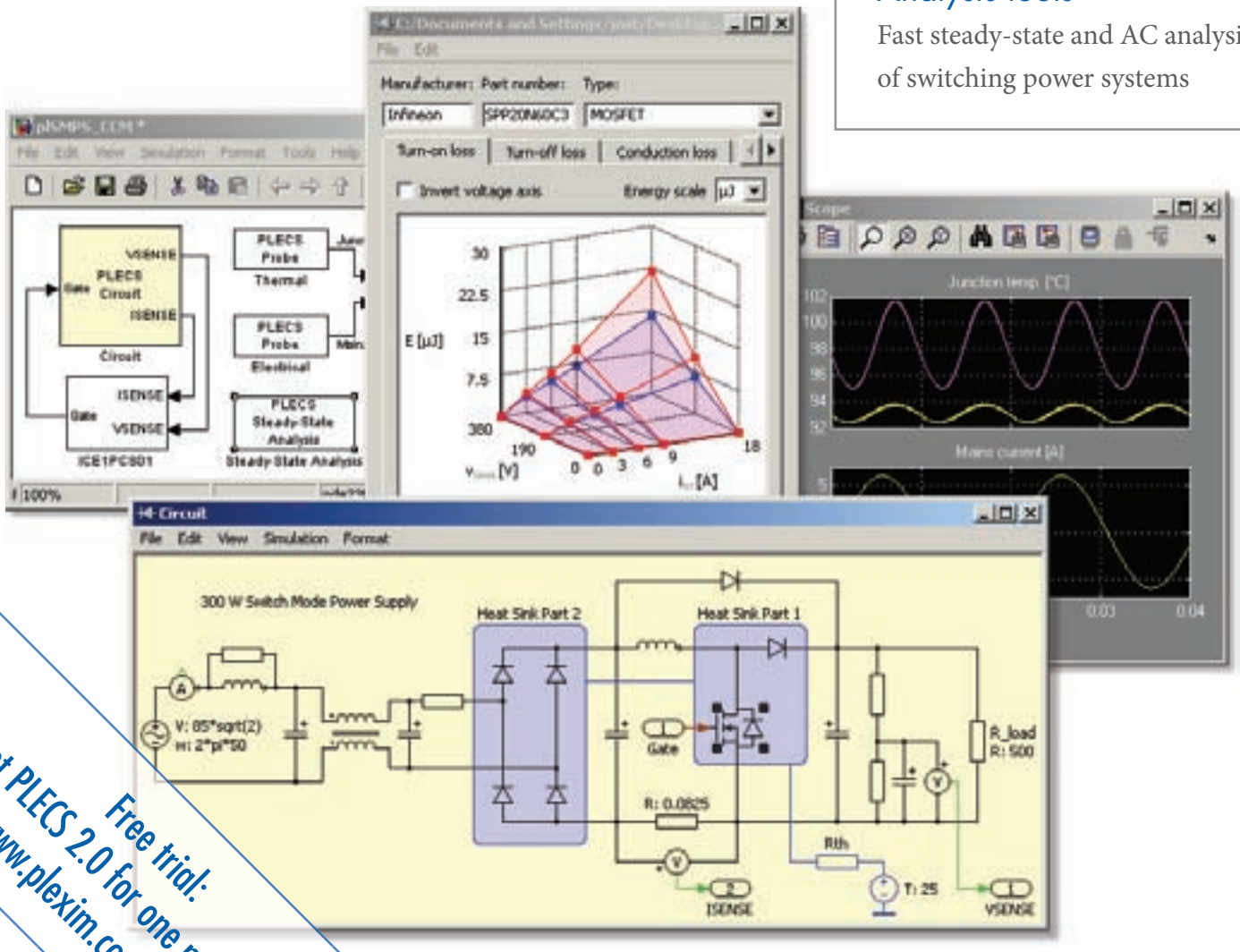

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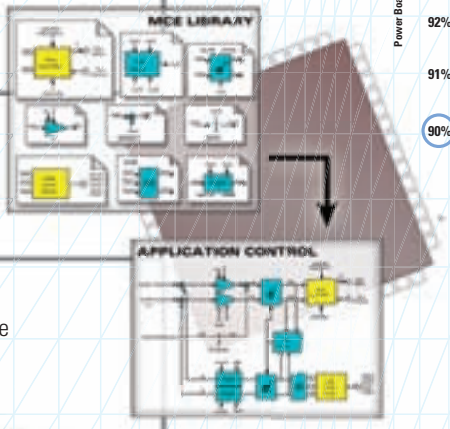

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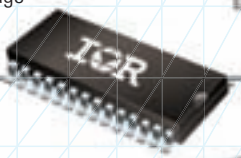

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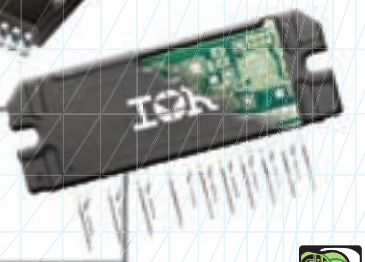

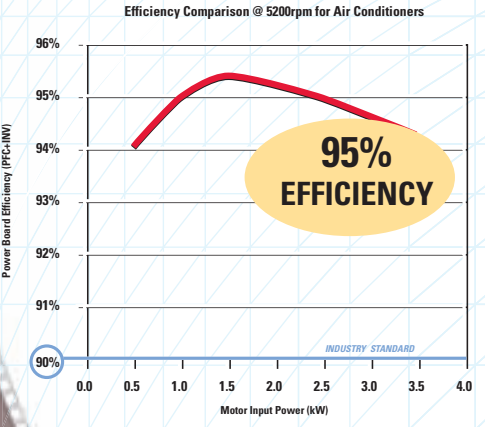

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