



The President's Message

The year of 1998 reaches an end this quarter. It has been a great honor to serve as President these past two years. I wish to thank the Society Officers, AdCom members,



Committee Chairs, and Conference Organizers for their help and support of me and the Power Electronics Society. Without their commitment to our profession, the excellence of the

PELS would not be possible. A final special thanks to Bob and Lee Myers of Myers/Smith, Inc. is in order (Bob serves as the Society Administrator). He and Lee handle so many tasks for the Society that enumeration is not possible. They have helped me almost daily with governance of the PELS and are deserving of everyone's appreciation.

Intersociety Meeting

René Spée, Bob Myers, and I attended an Intersociety meeting on behalf of the PELS this past July. The intent of these discussions continues to be to provide better member services through coordination and cooperation between IEEE entities that have shared technical interests. The meeting was hosted by the IEEE Power Engineering Society. The Presidents and other officers of the Industry Applications Society and the Industrial Electronics Society as well as Bob Voller, Division II Director, were in attendance. Discussions covered ideas such as a general operating agreement for co-sponsored conferences among the four societies, co-housing of future conferences, and joint publications. There was some discussion about more coordinated standards development activity and promotion of the various society awards amongst us all. There were several action items defined and agreement to hold a future intersociety meeting in the winter or spring of 1999.

Technical Activities Board

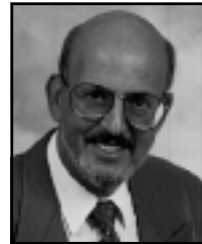
I hope that each of you exercised your opportunity to vote in the IEEE elections. This is the first year that the general membership of the Institute has been allowed to vote for the Vice President and the Vice President Elect for Technical Activities. The Vice

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Great Doings at APEC® '99 Next Year in Dallas

by Larry Gilbert, APEC Publicity Chair

While thousands of Americans watched professional football games or Mark McGuire set yet another record with his 65th home run, 32 members of the APEC '99 Program



Committee met at the conference hotel site on Sunday, September 20, to assist Program Chair Bob White with our annual challenge of creating the Conference Program. In preparation for this final "cut," 226 volunteers signed up to perform a peer review of the 379 digests received for next year's conference. At this point we are truly being challenged. Although we are including a record number of digests in the APEC '99 program, almost 50% of the submitted papers failed to be accepted. The reviewers felt that several of these submissions should be offered to the

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VPI to Lead New Power Electronics Program

Following a \$1.5 million pledge of assistance from Virginia Governor Jim Gilmore and the acknowledged support of more than 100 industrial allies, the National Science Foundation has given its endorsement to create an Engineering Research Center (ERC) in power electronics, to be named the Center for Power



Fred Lee

Electronics Systems (C-PES), centered at Virginia Polytechnic and State University, with an initial funding of \$12.35 million.

Virginia Tech's sixteen-year old Virginia Power Electronics Center, directed by Electrical and Computer Engineering Professor Fred C. Lee, submitted the proposal on behalf of a consortium of five universities, Virginia Tech, the University of Wisconsin - Madison, Rensselaer Polytechnic Institute, North Carolina A&T State University, and

Continued on page 6

Time to Nominate for Society Awards

by Thomas G. Wilson, Sr.

PELS Awards Chair

PELS Awards Committee Chair Thomas G. Wilson, Sr., has announced that nominations for all three of the Society's major awards for 1999 must be received by the Awards Committee Chair by February 9, 1999.

This will be only the third year for PELS's two most recently approved awards—the PELS Distinguished Service Award and the Outstanding Young Power Electronics Engineer Award. It will be the twenty-third year for presentation of the eminent William E. Newell Power Electronics Award.

The nomination and selection procedure for all three awards is similar. For each, there is a Nominating Committee responsible for identifying worthy candidates plus a general solicitation of nominations from all Society members by means of this Newsletter article. On the first ballot, members of a separate Selection Committee rank the nominees in priority order. The three candidates who rank the highest are selected for the second ballot. The recipient is chosen from these three using an arithmetically-averaged process with priority weighting.

The William E. Newell Power Electronics Award is presented for outstanding career achievement in power electronics. It is

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van Wyk Lectures to Hong Kong Chapter

Pictured below is Professor Daan van Wyk, Distinguished Lecturer for the Power Electronics Society as he presented the last lecture in his term. His lecture, entitled "Power Electronics in the 21st Century," was deliv-



ered at the joint chapter of the Power Electronics, Industry Applications and Power Engineering Societies in Hong Kong at the Polytechnic University on May 27, 1998.

The lecture was well attended and followed by a lively, critical discussion. With a range of universities and industries in the field of power electronics, Hong Kong presently represents a vibrant activity in this area.

IEEE Power Electronics Society Officers

Jerry L. Hudgins, President
Philip T. Krein, V. P. for Operations
Kevin Felthoelter, V. P. for Meetings
V. Joseph Thottuvelil, Secretary
Richard Bass, Treasurer

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News items should be sent to: Harry A. Owen, Jr., Editor, PELS Newsletter, 69 Forest at Duke Drive, Durham, NC 27705, USA; TEL: +1-919-489-2934; FAX: +1-919-660-5293; e-mail: hao@ee.duke.edu. Deadlines for copy are March 15, June 15, September 15 and December 15. Submission of items by e-mail in plain-text format is preferred. Plain-text (straight ASCII) submissions on diskettes of either size are welcome. A backup printout should be mailed with a diskette. Fax submissions are acceptable, but are least desirable. Full-page calls for papers and announcements of PELS-sponsored conferences are welcome and should be sent as high-quality hard copy.

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Tricks of the Trade

Measuring Power with Hall Effect Sensors

*Contributed by P. T. Krein
University of Illinois
at Urbana-Champaign*

Most of us know that a Hall effect sensor measures current by sensing the magnetic field around a conductor. Industrial sensors that make use of the Hall effect require an analog source voltage, then produce an output based on this voltage that has a linear relationship to the current. For a typical device with input source V_{cc} , the output is related to the current as

$$V_{out} = (k_i I + 1/2)V_{cc}$$

That is, when the output is half the source voltage, the flow is zero. Provided the output is not saturated (the typical range for V_{out} is 20% to 80% of V_{cc}), this linear relationship is a good description of device operation.

In many applications, it would be helpful to have a sensor that gives a direct measurement of instantaneous power, $p(t)$. Consider a single port in an electric circuit. The instantaneous power is the port input current times the port input voltage. If a Hall effect sensor is used with a source voltage proportional to the port input voltage, power is measured directly.

To see how this can be done, let's sense a dc port voltage V_p with a divider or op-amp circuit, to produce a proportional voltage $k_v V_p$. A Hall effect device detects the port current I_p . The sensed voltage $k_v V_p$ is used as the Hall effect source. The Hall sensor output is

$$\begin{aligned} V_{out} &= (k_i I_p + 1/2)(k_v V_p) \\ &= k_i k_v I_p V_p + 1/2 k_v V_p \end{aligned}$$

Therefore, if an op-amp circuit subtracts a voltage $1/2 k_v V_p$ from the Hall sensor output, the result is proportional to the instantaneous power. This process will work if the voltage $k_v V_p$ can be placed within the allowed operating range of the sensor. Battery systems are good candidates for this sensing approach, since the voltage usually has a relatively narrow range. Clever biasing will allow the technique to work in single-phase ac systems as well.



Earlier PELS Conference Records Available

The IEEE Book Broker Program purchases IEEE conference proceedings for post-conference sales and promotion. Individual titles may be purchased via single sales, typically for a period of five years after the conference, while supply lasts. Part of the purchase price is returned to the Power Electronics Society.

Titles may be purchased by calling IEEE at 1-800-678-IEEE. An on-line WWW catalog is planned for 1998.

APEC '96	\$191
APEC '97	\$188
APEC '98	\$208
INTELEC '96	\$168
INTELEC '97	\$168
INTELEC '98	\$182
PESC '96	\$285
PESC '97	\$244
PESC '98	\$294

PELT '96 (Workshop on Power Electronics in Transportation)	\$117
PELT '98	\$120
COMPEL '98 (Workshop on Computers in Power Electronics)	\$122
IWIPP '98 (Workshop on Integrated Power Packaging)	\$138
BCAA '97 (Battery Conference on Applications and Advances)	\$116
BCAA '98	\$128
IPEC '96 (International Power Electronics Conference)	\$136
PEDES '96 (Power Electronics Drives and Energy Systems)	\$205
PEDES '98	\$216

Information above provided by courtesy of Richard Bass, Treasurer, PELS

Handbook Author Needs Contributors

Professor Muhammad H. Rashid reports that he is developing a power electronics handbook and needs some contributors. If you are interesting in making a contribution of 20 to 30 pages, contact him at mrashid@ieee.org. Provide your full name, e-mail address, mailing address, telephone and fax numbers and specialist topics in order of preference.

**Make your plans now
for**

APEC

**Hyatt Regency Hotel
Dallas, Texas USA
March 14-18, 1999**

PELS Chapter Activities

Bill Dunford, Chair

Chapter Development Committee

I am happy to report that a new set of Distinguished Lecturers has been selected and is available to visit Chapters. My thanks to the Awards Committee for their work on this. Since they have only just been appointed I do not yet have full details of possible lecture topics. However, the five names and general areas are:

- Hirofumi Akagi - Utility Applications
- Antoine Capel - Space Power Systems
- Phil Hower - Device Performance Specifications
- Tom Jahns - Drive Applications
- Piero Maranesi - Power Converters for Space Applications

I do have some detailed titles already, but I hope to give a full list in the next issue. Just a reminder that the budget for this program is limited and I try to make sure gets a fair share. We encourage a number of chapters to arrange tours to make best use of resources. Inviting someone geographically close is desirable but not essential. PELS pays for travel only and the local Chapter is responsible for all local expenses such as accommodation. Since I am responsible for the budget nothing should be confirmed until I have given the go ahead (I am best reached via e-mail at wgd@ee.ubc.ca). Initial contact can be made directly with the lecturer but I can also help to match lecturers and chapters. The chapters web page (linked from the main PELS page at <http://www.pels.org>) is still very out of date and I know some of the information relates to chapters that the IEEE is closing due to lack of activity. There is also information about chapters under development.

In the end, chapters are for the benefit of the local membership but someone local has to take on the responsibility of looking after the organization. I am proposing to add further information to this page, but in future it will be the responsibility of the local chapters to make sure their information is up to date. This can easily be done via e-mail to the webmaster (at present Arthur Kelley, kelly@eos.ncsu.edu). The information will be displayed in a standard form with address details of the principal contact and a link to the individual chapter website if one exists. A date of the last update will be added for

Continued on page 6

Power-Oriented Videos and Booklet Available

by Dean Patterson, Chair, PELS Educational Activities

You may remember that the Power Electronics Society "invested" as a 20% shareholder in an IEEE educational video product "Power Electronics & Motor Drives." As of September 1998, 41 copies have been sold, so in eleven months not only are we well on the way to recouping our investment, but it seems that we have been part of providing a very useful service for our members. I remind you that PELS has copies (in both PAL and SECAM formats) for loan to chapters. Get in touch with Bill Dunford, Chair of Chapter Development (e-mail: wgd@ee.ubc.ca) for more information on this.

The IEEE Education Activities Department continues to develop products which I believe are of interest to PELS members, and I would like to let you know about two new products, firstly a video tutorial which is designed to assist a candidate prepare for the "power electrical engineering" related questions within the Professional Engineer (PE) licensure examination. This is available now. There are two videos and a book under the collective title "PE Review: Transmission & Distribution". The presenter is Randy Collins from Clemson University. The item details are:

- P.E. Review: Transmission & Distribution 1998 / 2 Hrs. 30 Min. / 2 Video Tapes / Presentation Notes, List \$159.00, IEEE Member \$99.00, NTSC Order No. HV7026-QIA, NTSC ISBN 0-7803-4587-8
- P.E. Review: Machinery & Applications 1998 / 2 Hrs. 30 Min. / 2 Video Tapes / Presentation Notes, List \$159.00, IEEE Member \$99.00, NTSC Order No. HV7028, NTSC ISBN

0-7803-4589-4

- Principles and Practice of Engineering (PE): Sample Problems and Solutions in Electrical Engineering (NCEES booklet) List Price \$30.00, Order No. HV7034-QIA, ISBN 0-7803-4596-7

The second product of special interest is due for release in February, a CD-ROM called "Modeling and Simulation of Power Systems Harmonics", and is being prepared by the folks at Virginia Polytechnic Institute. It is based on tutorials presented at 1998 PES meetings. I'll give you more details next quarter.

Watch for its release. Check <http://www.ieee.org/eab/> for the whole range of IEEE Educational Activities products.

(Editor's note: A recent release from the IEEE Press announced publication in July 1998 of a reference text "Practical Design of Power Supplies" by Ron Lenk of the Fairchild Semiconductor Power IC Division. It is stated that the text contains many handy "Practical Notes" and real-world examples. The publication, No. 0-7803-3458-2, has a list price is \$69.95. Contact Barbara Soifer, IEEE Press marketing Manager, TEL: +1-732-562-6854 for more information.)

Dean Patterson, Chair

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On the Eve of INTELEC 98

By Sharon Sugarek, INTELEC Publicity

As this PELS Newsletter goes to press, the Management Committee of INTELEC '98 (International Telecommunications Energy Conference) is eagerly awaiting the arrival of conference attendees at the Hyatt Embarcadero in San Francisco, Sunday through Thursday, October 4-8. Early registration is running well ahead of previous years and INTELEC 98 looks to be the biggest conference ever.

The theme for INTELEC 98 is "Powering the Integrated Global Communications Networks of the Twenty-First Century." The conference will offer attendees the opportunity to participate in the 32 technical sessions, held Monday through Thursday, with 116 papers scheduled to be presented. In addition, two workshops on batteries and

power disconnects, are scheduled during the conference. Over sixty companies will exhibit the latest in power electronics, batteries and other technologies for telecommunications energy systems. Specialty tutorials will be held on Sunday and the conference will open officially at 6 pm Sunday with a reception in the Exhibition area. Attendees will be offered the opportunity to visit Sausalito and the Muir Woods on Tuesday and attend the gala banquet on Wednesday evening.

A full range of cultural events is offered to guests and spouses of conference attendees. Options include a city tour with a trip to Alcatraz or the California Culinary Institute, San Francisco Bay Cruise and NAPA Valley Wine Country Tour.



Call for Papers PEDS '99



Hong Kong 26-29 July, 1999

The Third IEEE International Conference on Power Electronics and Drive Systems

Organizers

IEEE Hong Kong Section, Joint Chapter of Power Engineering,
Industry Applications and Power Electronics Societies

The Hong Kong Polytechnic University

In Technical Cooperation With

IEEE Industry Applications Society

IEEE Power Electronics Society

Sponsors

IEEE Singapore Section (PEDS Central Committee)

The University of Hong Kong

City University of Hong

Hong Kong Technical College (Tsing Yi)

The PEDS '99 aims to provide a forum for academic and industrial researchers in the area of power electronics and drives for exchange of ideas and for interactions. The four days of technical program consists of one day of short courses and three days of technical paper presentations. The Technical Program Committee is soliciting papers in the area that include but not necessarily limited to:

CONVERTER TOPOLOGIES AND CONTROL: Advanced DC/DC, AC/DC, DC/AC, AC/AC power converters, including soft-switched and resonant converters; matrix converters; theoretical and computer based modeling and analysis; PWM and other control techniques; methods and analysis; analog and digital hardware implementation.

ELECTRIC DRIVES AND CONTROL: Drives involving DC motors; AC motors; switched reluctance motors; synchronous reluctance motors; stepping motors; advanced control techniques applied to electric drives; analysis and modeling in motion control; intelligent motion control.

POWER DEVICES AND ICS: Power switching devices and modules; integrated power and signal electronic modules; smart power devices; semiconductor technology; control and protection of semiconductor modules.

MECHATRONICS: Actuator design, modeling, analysis and control; power electronics related aspects of mechatronics.

UTILITY INTERFACE: Harmonic effects; power factor corrections in converters; RFI, EMI and EMC problems and solutions.

COMPUTER APPLICATIONS: Computer aided design, modeling simulation, analysis and diagnosis of power converters and drive systems.

PACKAGING TECHNOLOGY: Packaging aspects of magnetic, capacitive and other power electronic components; cooling of power devices; protection techniques in converters and drives; special PCB design.

APPLICATIONS: DC power supplies; UPS systems; battery chargers; static var compensators; HVDC transmissions; FACTS; photovoltaic applications; induction heating; electrical vehicles; robotics; industrial electric drives; traction; renewable energy; environment friendly systems.

Tutorials: Tutorials in the area of power converters and electric drives will be provided during the conference.

Submission Guidelines: Authors are invited to submit three copies of abstract and extended summary (not more than 5 pages including figures). The first page should include the title, the name of author(s), affiliation, mailing address, fax number, e-mail address, preferred topic area, and an abstract of 100 words. The second and subsequent pages should include the title and extended summary. The submission should be sent to the Technical Program Chairman, address below, for reviewing.

Author's Schedule

Deadline for extended summary: 31 January 1999

Notification of acceptance: 31 March 1999

Deadline for final paper submission: 15 May 1999

Conference Chairman

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ABOUT HONG KONG

(Hong Kong Tourist Association: <http://www.hkta.org/home.html>)

At the stroke of midnight on 30 June, 1997, Hong Kong returned to China after 150 years of colonial rule, and exciting historical event. Hong Kong is now a Special Administrative Region of China with a high degree of autonomy and operates under the arrangement of "One Country, Two Systems." It retains its own legal, social and economic systems which means not change in life-style for residents and visitors alike. More than one year after the handover, Hong Kong is as vibrant as ever, bursting with life and dynamism. The calendar is overflowing with shows, events and festivals. Who new areas of restaurants are spilling onto the streets and people are out in force lapping up an almost hypnotic carnival atmosphere. Never has Hong Kong been so entertaining.

Basic Facts for Hong Visitors

HK\$: Remains as a separate, internationally-recognised currency linked to the US\$.

Visa: Same requirements as under British sovereignty.

Laws and the judicial system: Same as practised before July 1997.

Security: Same local police force that has made Hong Kong one of the safest cities in the world.

Note: There is still boundary and immigration control from the rest of China and English is still an official language.



CONFERENCE ANNOUNCEMENT

14th Annual

Applied Power Electronics Conference and Exposition

March 14-18, 1999 at the Hyatt Regency Dallas

Dallas, Texas, USA

Conference Highlights

- Full technical program of presented papers.
- Professional Education Seminars on important topics for power electronics professionals including any one involved in marketing, quality and manufacturing.
- Exposition featuring component, equipment and service leaders in the power electronics industry.

For additional information, contact:

APEC '99

2000 L Street, N.W., Suite 710, Washington, DC 20036 USA

TEL: +1-202-973-8664, FAX: +1-202-331-0111

e-mail: apec@courtesyassoc.com

Web site: www.apec-conf.org

APEC is sponsored by the IEEE Power Electronics and Industry Applications Societies
and the Power Sources Manufacturers Association



CONFERENCE ANNOUNCEMENT

30th Annual

Power Electronics Specialists Conference

June 27-July 1, 1999 at the Charleston Place Orient-Express Hotel

Charleston, South Carolina, USA

PESC is one of the major annual conferences of the IEEE Power Electronics Society. It provides a forum for international specialists in power electronics to present and discuss papers on forward-looking topics in this fast-evolving field.

For additional information, contact

Jerry Hudgins

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e-mail: hudgins@enr.sc.edu

Web site: www.ece.sc.edu/pesc99/

COBEP '99 CALL FOR PAPERS

The 5th Brazilian Power Electronics Conference (COBEP '99) is being organized by the Brazilian Power Electronics Society (SOBRAEP) and by the Federal University of Paraná and Federal University of Santa Maria, Brazil. The congress will take place September 19-23, 1999, in Foz do Iguaçu, state of Paraná, southern Brazil. The aim of this conference is to provide a forum for the discussion for Brazilian and foreign experts in the Power Electronics area, featuring strong participation of industry and academia.

A list of relevant topics includes, but is not limited to the following

(1) Power semiconductor devices, components and magnetics; (2) DC/DC converters and DC power supply systems; (3) DC/AC and AC/DC converters for power supply and UPS applications; (4) Motor drives and motion control; (5) Electric machines; (6). Control theory applied to power electronics systems; (7) Computer-aided modeling, analysis, design and synthesis of power electronics systems; (8) Harmonics and reactive power compensation and high power factor AC/DC converters; (9) Power quality, electromagnetic compatibility (EMC) and electromagnetic interference (EMI) issues; (10) Power electronics in generation, transmission and distribution and renewable energy systems; (11) Automotive, aerospace, transportation and utility applications of power electronics; (12) Electronic ballast for lighting; (13) Education in power electronics.

Information for authors

Authors are invited to submit (4) four copies of an extended digest in English of no less than four pages and no more than six pages. A cover page must contain the title of the paper, name and affiliation of the author(s), mailing address, telephone and FAX number, e-mail address and the topic of the paper. The heading of the extended digest must contain only the title of the paper. The accepted papers can be presented at the Conference in English, Portuguese or Spanish. The overhead transparencies or slides, however, must be prepared in English. **Deadline for submission of digest: March 12, 1999; Notification of acceptance: May 14, 1999; Final version of the paper: July 9, 1999.** Please submit paper digests to COBEP '99 Program Chair, Prof. José Renes Pinheiro, Universidade Federal de Santa Maria, UFSM-CT-DELC, 97105-970-Santa Maria-RS, Brasil, e-mail renes@pequim.ctlab.ufsm.br. For more information, visit the conference web site <http://www.sobraep.ufsm.br/cobep99>.

New Power Electronics Program from page 1

the University of Puerto Rico at Mayaguez. The successful proposal provides the Commonwealth with its first ERC.

Power electronic equipment sales currently exceed \$60 billion annually. This includes motor drives for heat pumps, air conditioners, and other industrial and residential applications. Microelectronics has been integrated with power electronics for smart and efficient control of robotic motor drives used in factory automation. The C-PES strategy will be to focus its efforts on the higher-volume power electronics for domestic and industrial applications, such as packaged drives for heating, ventilation, air-conditioning, and refrigeration; hybrid electric vehicles, and high performance adjustable speed drives for industrial automation, distributed power supply systems for computer and telecommunication equipment; as well as ultra-low-voltage and high-speed very-large-scale integrated circuits, and future generations of processors.

The NSF commitment to the power electronics consortium is for five years with a renewal possible for another five years. NSF expects the ERC to be self-sufficient through industrial support after a decade.

For more information on the new Center, contact:

Fred C. Lee, Director
Virginia Power Electronics Center
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Report from Chapter Development Chair from page 3

each chapter, which should normally be within the last year. We will probably create special sections for inactive chapters and chapters under development. I am open to suggestions as to what else should go on this page to promote inter-Chapter communication. Needless to say, when the Best Chapter Award gets under way the maintenance of this page will be one of the principal indications of chapter activity.

As a final note I would like to remind those interested in chapter formation that Student Chapters in PELS are eligible for the same benefits as full chapters. In areas where they may be a university but little industry and this can be one way of promoting interest in power electronics at a modest cost. The main requirement is that at least 12 student PELS members must sign the petition form (membership applications can accompany the petition). Copies of the form can be obtained electronically from <http://www.ieee.org/ra/scs/>. This is the Regional Activities page, which also contains other useful information.

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First Power Packaging Workshop Held in Chicago

Report by Bob Myers
PELS Administrator

The First International Workshop on Integrated Power Packaging took place September 17-19 in Chicago, Illinois, USA, with papers presented by packaging specialists from around the world and individual discussions involving an equally cosmopolitan audience.



The two-day workshop features an opening morning short course on "Power Packaging - a Systems Perspective" led by Workshop Chair Krishna Shenai of the University of Illinois at Chicago and Technical Program Chair Douglas Hopkins of the State University of New York at Buffalo. The session delved into developing power electronics technologies using various subsystems and components in power packaging. The instructors emphasized electrical, mechanical and thermal attributes of materials, components, circuits and interconnects into a fully integrated unit.

Three technical sessions occupied the next day and one-half, beginning with a plenary session featuring space power, high and low power and technology highlights. One second day session were concerned with electrothermal interactions involving modeling and CAD tools as they relate to packaging designs. The final program was devoted to applications and the challenge of high density thermal management.

Between sessions and at an opening reception and lunches and dinner, spirited dialog took place among attendees and presenters.

At the final lunch, Shenai and Hopkins were presented plaques saluting their roles in founding and organizing the first workshop sponsored by the three IEEE Societies - Components, Packaging and Manufacturing Technology, Industry Applications and Power Electronics - and by the University of Illinois at Chicago, with technical sponsorship by the IEEE Electron Devices Society and the Power Sources Manufacturers Association. Plans are being formulated for a second power packaging workshop for late 1999 or early in the year 2000.

AFRICON '99**FIRST ANNOUNCEMENT and CALL FOR PAPERS
"ELECTROTECHNICAL SERVICES FOR AFRICA"****Wednesday 29 September 1999 to 1 October 1999
Tutorials on 28 September 1999****Hosted by Cape Technikon, Cape Town, SOUTH AFRICA, and co-sponsored by the IEEE Region 8, IEEE South Africa Section,
SAIEE and FRD****BACKGROUND**

AFRICON is one of the major international conferences sponsored by Region 8 of the Institute of Electrical and Electronics Engineers (IEEE). Previous AFRICONs were held in Nairobi (1983), Abidjan (1987), Mbabane (1992) and Stellenbosch (1996). AFRICON '99 is organized by the Cape Technikon, in association with the IEEE, SAIEE and the FRD.

ENQUIRIES

AFRICON '99 Chair: Prof. Nico Beute
 AFRICON '99 Secretariat: Heidi Neves
 Cape Technikon, P O Box 652, 8000 Cape Town, SOUTH AFRICA
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 e-mail: Africon@norton.ctech.ac.za

For complete information on the conference, including call for papers and digest submission visit the conference web site <http://www.ieee-sa.sun.ac.za/africon>

NORPIE/98 — A Great Success in Finland*by Seppo Ovaska, General Chairman*

The 1998 IEEE Nordic Workshop on Power and Industrial Electronics (NORPIE/98) was held at the Helsinki University of Technology, Finland, on August 26-27. It was organized by the Institute of Intelligent Power Electronics (IPE). The NORPIE/98 Workshop was a direct continuation to the highly successful FINPIE/97. This year, the status of our second PIE event was considerably higher — the NORPIE/98 was sponsored by the IEEE Power Electronics Society, and we had papers from four continents: Asia, Australia, Europe, and North America. We also had two single-track Workshop days instead of one.

Approximately 90 registrants from more than 10 countries took part in the intensive Workshop. About 40 % of papers came outside Finland and one-fifth of them

were from industry. We received remarkable financial support from five industrial companies; ABB Industry, Efore, Exide Electronics, KCI-Konecranes, and Kempower. The Workshop program contained 40 papers that were selected through a strict and careful review process. It included two invited tutorials, 24 oral presentations, and 14 posters. The number of excellent papers that were presented clearly demonstrated the liveliness, intensity and importance of advanced research and development in many diverse areas of power and industrial electronics.

In addition to these presentations, we

had an active and stimulating panel discussion of "Future Trends in Electric Drives." The recognized Scandinavian panelists were representing both the applying industry and academia. The NORPIE/98 had two world-class Plenary Speakers; Professor Bimal K.

Bose from the University of Tennessee, USA ("Recent Advances and Trends in Power Electronics and Drives") and Professor Yasuhiko Dote from the Muroran Institute of Technology, Japan ("Intelligent Control of AC Motor Drives and Uninterruptible Power Supplies"). Professor Dote was also the Honorary Chairman of the Workshop.

As the technical program offered so many high-quality papers and presentations, the Technical Committee had a difficult task to select the winner of the Best Paper

Prize, an award plaque and the best-seller book of B. K. Bose, "Power Electronics and Variable Frequency Drives," donated by the IEEE Finland Section. The prize was awarded in the NORPIE/98 Banquet to Dr. Tetsuzo Sakamoto, from the Kyushu Institute of Technology. The title of his winner paper was "PI Control of Web Tension Control System Based on Overlapping Decomposition." In the future, the NORPIE Workshops will be organized in every second year.

The NORPIE/2000 Workshop will be in Aalborg, Denmark, and it will be chaired by Prof. Frede Blaabjerg.



Best paper award ceremony (left to right) Bismal Bose, Tetsuzo Sakamoto, Conference Chairman Seppo Ovaska

President's Message from page 1

President for Technical Activities sits on the IEEE Board of Directors and the IEEE Executive Committee, and serves as Chair of the IEEE Technical Activities Board (TAB). As a reminder, TAB is one of six major Boards of the IEEE and is responsible for technical programs and facilitating the activities of the 37 IEEE Societies and Technical Council.

Highlighted actions at the last TAB meeting included final approval for creation of the Intelligent Transportation Systems Council. The PELS has at least two Technical Committees, Computers in Power Electronics and Automotive Power Electronics, that have an interest in this new council. TAB also approved the convening of a panel of webmasters to share best practices and help set WEB guidelines.

Good luck to the new Society Officers and AdCom members during 1999. I know that the Power Electronics Society will continue its excellent work for our profession.

*Jerry L. Hudgins, President, PELS
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 Columbia, SC 29208 USA
 TEL: +1-803-777-5174
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Start planning now to attend**PELS '99****Charleston, South Carolina,
USA****Charleston Place
Orient-Express Hotel
June 27-July 1, 1999**

APEC '99 Plans in Place for Next March, from page 1

PESC Conference while others received very low scores. We are planning to share the reviewer's comments with the authors of those rejected papers.

APEC '99, the 14th annual Applied Power Electronics Conference and Exposition, will be held March 14-18, 1999 at the Hyatt Regency Hotel in Dallas, Texas, USA. The Conference is sponsored by the IEEE Power Electronics and Industry Applications Societies and the Power Sources Manufacturers Associations.

In keeping with the APEC mission to serve the educational needs of practicing professionals in the power electronics industry, the Program Committee has formulated a dynamic program to provide "practical" information on the latest components and circuits, design-oriented analysis techniques, and current trends in the design and manufacture of power electronics products and systems.

A record number of abstracts (379) were received from 36 different nations (another record). Processing and scoring these abstracts was a difficult task, with the technical program including a record 191 technical papers for APEC '99. These presentations will be arranged into 26 sessions that have been arranged into five parallel tracks.

Including papers from 27 nations (another record) APEC '99 continues to maintain its worldwide recognition as the foremost conference to present technical papers addressing all aspects of "applied" power electronics. Although a large number of abstracts were received from Asian nations, we also received proposals from as far away as Australia and New Zealand. Representing almost 25% of our technical session papers, authors from China, Japan and Korea are demonstrating that Asian industry and academia are very active in practical technology advancements as we approach the new millennium.

With the media focus on political unrest around the world, it is refreshing to see proposals from Israel and Palestine, as well

as Macedonia, Poland, Romania, Russia, Slovenia and Yugoslavia. Politics will not interfere with our open-door policy to consider all potential authors/speakers..

APEC '99 will include 26 technical sessions, 15 outstanding professional education seminars, three audience participation rap sessions, vendor application seminars, twelve vendor application seminars, the 13th annual "micromouse" competition, and a "sold out" exhibition hall containing 119 booths, another APEC record.

The Professional Education Seminars will start on Sunday morning with five parallel tracks that will include in-depth information on:

- An introduction to power electronics for the nonspecialist
- Power converter design using power semiconductors
- Using computer-aided algebra for

- DSP control of advanced motor drives
- Physical understanding of vector-control for induction motor drives
- Practical overview of MOSFET gate drives techniques in high speed switch mode applications

• Patents, prior art searching, and intellectual property for power electronics engineers

- Power electronics packaging.

The plenary session will include five outstanding presentations:

- The evolution of power electronics.
- Power conversion, the prosperity machine---Part II---the semiconductor roadmap;
- STATPEP-current status of power electronic packaging
- SSI—building compliant elements for servers (the Intel Initiative)

- AC drives: Y2K and beyond.

This year's audience participation rap sessions will focus on

- Profit margins in power (a subject close to every suppliers heart)

• Where is the technology going?

• APEC—are we serving the needs of the community.

I expect to see some lively debate in each of these sessions.

The Exhibit Hall will contain the latest product offerings

from power electronics components to power supplies and DC/DC converters.

The Conference social events will include a reception with the exhibitors with wine, beer, soft drinks, and hors d'oeuvres Monday evening and light refreshments in the Exhibit Hall on Tuesday evening. The highlight of our social program will be a banquet at Union Station, adjacent to the hotel.

For additional conference or exhibition information, please contact APEC '99, TEL 202-973-8664, FAX 202-331-0111 or click on our web site at www.APEC-conf.org.

PS: We are working on having a "special" guest/speaker at the plenary session—stay tuned.



APEC Program Committee works on final program

power supply analysis and design

- Electronic environments
- Avoiding the EMI "accident"-how to paper train your power supply
- Passive lossless snubbers for high-frequency PWM converters
- High-efficiency rectification techniques for both low and high output voltage applications
- Cross regulation mechanisms in multiple-output forward and flyback converters
- The ABCs of planar magnetics design
- How to select and apply an adjustable speed AC drive

EPE '99, 8th European Conference on POWER ELECTRONICS AND APPLICATIONS

7 - 9 September 1999, Lausanne, Switzerland

Synopsis deadline 9 October 1998

Sponsored by: European Power Electronics and Drives Association

Hosted by: Swiss Federal Institute of Technology Lausanne

Organisation and Venue

The EPE '99 Conference is sponsored by the EPE Association and will be held in Lausanne, on 7 - 9 September 1999. It is hosted by the Swiss Federal Institute of Technology Lausanne.

Aims of the Conference

EPE is an opportunity for European specialists in power electronics, systems and components, to present papers and attend sessions on state-of-the-art technology in this challenging and evolutionary sector of

technology. The conference aims to be a meeting forum for researchers, developers and specialists from the industry. Papers are encouraged on all topics described hereunder for interdisciplinary discussions of new ideas, research, development, applications and the latest advances in the field of power electronics.

Topics

Power Electronics has become the enabling technology for the majority of power processing throughout electronic and electrical engineering. It is used in all areas of electrical power conversion and control, from switched and resonant mode power supplies, through industrial and traction drives. Recent innovations in robotics and sensors will be addressed with additional special conference topics that include devices, power electronics converter circuits, power supplies, control, electrical machines and adjustable speed drives, motion control and robotics, measurements and sensors, electric and hybrid vehicles, power electronics in generation, transmission and distribution, systems engineering, emerging technologies, and education.

Presentation of Papers

Contributions to EPE '99 must be presented either as a lecture presentation or as a dialogue presentation. A manuscript must be submitted in English in both cases for inclusion in the Conference Proceedings (CD-ROM). Papers for lecture sessions will be strictly limited and selected on the basis of wide audience appeal, ease of understanding and potential stimulation of broad ranging discussion. Dialogue presentation will take place in the afternoon. The stands will be grouped by topic, and dialogue session programmes indicating topics and locations will be handed out at the end of the morning sessions. No lecture session will be organised during the dialogue sessions.

Tutorials - Call for Proposal

Several tutorials will be held prior to the Conference. Authors willing to propose a tutorial at EPE '99 are invited to send a proposal to the secretariat (same address as for the synopses). The proposal will consist of a three-page summary including tutorial title, name and affiliation of the lecturer(s), tutorial objectives and audience, topical outline and provisional schedule of the tutorial.

Social Programme

Special care will be devoted to the organisation of interesting social events.

Content of Synopses

The synopses should consist of: a 2 to 3 pages summary, including an abstract with no more than 50 words; topic number and indication of the preference for dialogue or lecture presentation must be clearly mentioned; key diagrams; a references list. Seven copies of the synopses must be submitted. Two copies of the synopses must be headed with the following information: paper title, author(s), affiliation(s), mail addresses, telephone and fax numbers. Authors of papers provisionally selected for presentation will receive an author's kit which includes instructions for preparing the dialogue papers and/or the lecture papers (as appropriate). Final selection will be based on the full paper. The paper will only be included in the conference proceedings after receipt of one full registration fee in due terms. Synopses should be sent to:

EPE '99 Conference Secretariat, EPE Association

c/o VUB-TW-ETEC

Pleinlaan 2

B-1050 Brussels, Belgium

SYNOPSIS SENT BY FAX AND E-MAIL ARE NOT TAKEN INTO CONSIDERATION

Deadlines

Intending authors should note the following deadlines: Receipt of Synopses--9 October 1998; Notification of provisional acceptance--25 February 1999; Receipt of full typescript for final review--1 May 1999.

Working Language

The working language of the Conference is English which will be used for all printed material, presentations and discussion.

Programme and Registration

A provisional programme and registration form will be published a few months before the Conference, and sent to all who complete and return the attached form.

Exhibition

There will be an exhibition associated with the Conference. Please contact the Secretariat for more information.

Conference Chairman

M. Jufer, Swiss Federal Institute of Technology Lausanne

Program Chairman

Ph. Lataire, Vrije Universiteit Brussel, Brussels

Program Co-chairman

Y. Perriard, Swiss Federal Institute of Technology Lausanne

Time to Nominate for PELS Awards from page 1

dedicated to the memory of Dr. William E. Newell of the Westinghouse Research and Development Center in Pittsburgh, Pennsylvania. The awardee is judged to be outstanding in the multidisciplinary field of power electronics that crosses the technical boundaries of a number of Societies of the IEEE. The award consists of a suitably inscribed plaque and a cash award of \$1,750. Over the last two decades this award has come to represent one's crowning achievement as a contributor to the field of power electronics. The Nominating Committee for this award consists of the PELS Award Committee. The Selection Committee is made up of past recipients of the Newell Award.

The Power Electronics Society Distinguished Service Award is presented to a member of the Society in recognition of exceptional dedication and service to the Power Electronics Society over a substantial period of time. The award consists of a suitably inscribed plaque and a cash award of

\$1200. The Nominating Committee for this award consists of all elected and *ad hoc* members of the PELS AdCom. The PELS Awards Committee serves as the Selection Committee.

The Outstanding Young Power Electronics Engineer Award (OYPEE) is presented for outstanding achievement in the field of power electronics by an IEEE member of any grade who is less than 35 years of age as of January 1, 1999. The awardee is judged to have made an outstanding contribution to the field of power electronics. The award consists of a suitably inscribed plaque, a cash award of \$500, and reasonable reimbursement for transportation expenses up to \$500 to attend the Annual PELS Awards Banquet. The Nominating Committee consists of the Chair of the OYPEE Award Subcommittee Chair, Harry A. Owen, Jr., plus six individuals appoint by the Subcommittee Chair. The Selection Committee for the Award consists of six past recipients of the Newell

Award appointed by the Chair of the Award Committee.

Although each award has a nomination committee, every member of PELS has the opportunity to nominate candidates for the Society's three major awards and is encouraged to do so. You may use the nomination-form headers on pages 10 and 11 of this newsletter and attach to each a separate sheet summarizing the nominee's qualifications and achievements in the field of power electronics. Or you may request from the Awards Committee Chair nominations forms along with a sheet detailing the selection criteria and the nomination and selection procedures.

In addition to the three awards requiring nomination, the Society also will present at the Awards Banquet PELS Transactions Prize paper Awards to the authors of the three papers judges by the Associate Editors to be the best papers published in the PELS *Transactions* in 1998.

IEEE POWER ELECTRONICS SOCIETY

NOMINATION FORM

The William E. Newell Power Electronics Award

Award Year 1999

All parts of the form must be completed and received by February 9, 1999

Nominated by _____ Nominator's IEEE Member Number _____

Nominee's Name _____ Nominee's Business Telephone _____

Nominee's Business Address _____

Nominee's Educational Background _____

On a separate sheet, in no more than 600 words including any attachments, summarize the Nominee's qualifications and contributions to the field of power electronics. Since all members of the Selection Committee may not know the Nominee, please describe his/her most pertinent achievements and provide specific examples of outstanding accomplishments. For example, with respect to patents and papers published, their particular significance and value should be pointed out.

This award is to recognize outstanding career achievement in power electronics, a multidisciplinary field that crosses the technical boundaries of a number of IEEE Societies. The award consists of a suitably inscribed plaque and a cash award of \$1,750 presented at the PELS Awards Banquet customarily held at the annual Power Electronics Specialists Conference. All practitioners in the field of power electronics are eligible. Achievements by which an individual is judged to have made outstanding contributions encompass a broad range of activities and include teaching, innovative research, consulting endeavors, professional seminars, major project or program management, and the general communication and advocacy of power electronics technology to the technical community as a whole. The technical disciplines which encompass the field of power electronics include the analysis, design, development, simulation and application of electronic devices, magnetics, controls and power circuits for inverters, converters and motor drives ranging in power level from fractions of a watt to megawatts.

The nomination form and accompanying sheet summarizing the nominee's qualifications and contributions should be sent to Thomas G. Wilson, Sr., PELS Award Chair, Wilmore Electronics, Inc., P.O. Box 1329, Hillsborough, NC 27278, USA, FAX +1-919-489-6647

IEEE POWER ELECTRONICS SOCIETY

NOMINATION FORM

Outstanding Young Power Electronics Engineer Award

Award Year 1999

All parts of the form must be completed and received by February 9, 1999

Nominated by _____ Nominator's IEEE Member Number _____

Nominee's Name _____ Nominee's Date of Birth _____

Nominee's Business Address and Telephone _____

Nominee's Educational Background _____

On a separate sheet, in no more than 600 words including any attachments, summarize the Nominee's qualifications and contributions to the field of power electronics. Since all members of the Selection Committee may not know the Nominee, please describe his/her most pertinent achievements and provide specific examples of outstanding accomplishments. For example, with respect to patents and papers published, their particular significance and value should be pointed out.

This award is to recognize outstanding career achievement in power electronics by an engineer of less than 35 years of age. The prize consists of a cash award of \$500, a certificate, and reimbursement for transportation expenses up to \$500 to attend the annual PELS Awards Banquet. All IEEE members of any grade, active in the field of power electronics and less than 35 years of age as of January 1 of the year of the award, are eligible. The basis for judging candidates for the award includes outstanding contributions in the multidisciplinary field of power electronics. Outstanding contributions encompass a broad range of activities, including research, innovative product design, teaching and project management. The technical disciplines which encompass the field of power electronics include the analysis, design, development, simulation and application of electronic devices, magnetics, controls and power circuits for inverters, converters and motor drives ranging in power level from fractions of a watt to megawatts.

The nomination form and accompanying sheet summarizing the nominee's qualifications and contributions should be sent to Harry A. Owen, Jr., 69 Forest at Duke Drive, Durham, NC 27705, USA, FAX +1-919-489-6647

IEEE POWER ELECTRONICS SOCIETY

NOMINATION FORM

Distinguished Service Award

Award Year 1999

All parts of the form must be completed and received by February 9, 1999

Nominated by _____ Nominator's IEEE Member Number _____

Nominee's Name _____ Nominee's Business Telephone _____

Nominee's Business Address _____

Nominee's Educational Background _____

On a separate sheet, in no more than 600 words including any attachments, summarize the Nominee's qualifications and contributions to the field of power electronics. Since all members of the Selection Committee may not know the Nominee, please describe his/her most pertinent achievements of leadership and accomplishments in introducing successful new programs, nurturing growth of individual Society members, and enhancing the reputation and stature of the Society. Provide specific examples of outstanding contributions and point out their particular significance.

This award is to recognize long and distinguished service to the welfare of the Power Electronics Society at an exceptional level of dedication and achievement. The prize consists of a cash award of \$1,200 and an engraved plaque to be presented at the PELS Award Banquet customarily held at the annual Power Electronics Specialists Conference. All members of the Power Electronics Society are eligible. The basis for judging candidates for the award includes outstanding contributions over a substantial time period encompassing creative and invigorating leadership of the Society, exceptional administrative and managerial accomplishments on behalf of the Society, identification of new technologies within the scope of the Society and nurturing activities to support these emerging technologies, initiation of innovative programs to encourage wider participation in the full spectrum of Society activities, and the general communication and advocacy of power electronics technology to the technical community as a whole.

The nomination form and accompanying sheet summarizing the nominee's qualifications and contributions should be sent to Thomas G. Wilson, Sr., PELS Award Chair, Wilmore Electronics, P.O. Box 1329, Hillsborough, NC 27278, USA, FAX +1-919-489-6647.

Meetings of Interest to PELS Members

INTELEC® '98, International Telecommunications Energy Conference, sponsored by the IEEE Power Electronics Society, will be held October 4-8, 1998, in San Francisco, CA, USA. See page 3 of this *Newsletter*.

CIEP '98, VI International Power Electronics Congress, will be held October 12-15, 1998, in Morelia, Mexico. For additional information, contact Dr. Rodolfo González, Instituto Tecnológico de Morelia, Av. Tecnológico 1500, Morelia, Michoacán, 58120, Mexico, Web site: www.tecmor.mx/eventos/ciep.htm.

The 32nd Annual Meeting of the IEEE Industry Applications Society will take place October 12-16, 1998, at the Adams Mark Hotel, St. Louis, Missouri 32102, USA. For additional information, contact Bob Myers, 3685 Motor Avenue, Suite 240, Los Angeles, California 90034, USA, TEL: +1-310-287-1463, FAX: +1-310-287-1851, e-mail: bob.myers@ieee.org.

WPET '98, 1998 IEEE Workshop on Power Electronics in Transportation, Sponsored by the IEEE Power Electronics Society and the IEEE Southeastern Michigan Section, in cooperation with the Society of Automotive Engineers, will be held October 22-23, 1998, in Dearborn, Michigan, USA. For additional details see page 12 of this *Newsletter*.

ICPE '98, 1998 International Conference on Power Electronics, is set for October 26-31, in Seoul, Korea. The conference is sponsored by the Korean Institute of Power Electronics.

IEEE PEDES '98, 2nd IEEE International

Conference on Power Electronics, Drives and Energy Systems for Industrial Growth, sponsored by the Centre for Renewable Energy Systems Technology Australia (CRESTA), School of Electrical and Computer Engineering, Curtin University of Technology, IEEE Western Australian Section, Perth Convention Bureau, and QANTAS, The Australian Airline, and in cooperation with the IEEE Power Electronics and Industry Applications Societies, is set for November 30-December 3, 1998, in Perth, Western Australia. Prospective paper digests were due by April 10, 1998. For further details, visit <http://www.at.net.au/pedes98/>, or inquire by email to Pedes98@at.net.au or cresta@cc.curtin.edu.au.

APEC® '99, 14th Annual IEEE Applied Power Electronics Conference, sponsored by the IEEE Power Electronics Society, the IEEE Industry Applications Society, and the Power Sources Manufacturers Association, will be held at The Hyatt Regency Hotel, Dallas, Texas, USA, March 14-18, 1999. See page 4 of this *Newsletter* for announcement and call for papers.

PESC® '99, IEEE Power Electronics Specialists Conference, will be held June 27-July 1, 1999, at the Charleston Place Orient-Express Hotel, Charleston, South Carolina, USA. PESC '99 is sponsored by the IEEE Power Electronics Society. See page 5 of this *Newsletter* for announcement and call for papers.

ISIE '99, 1999 IEEE International Symposium on Industrial Electronics, will be held in Bled, Slovenia, 12-16 July 1999. The sym-

posium is sponsored by the IEEE Industrial Electronics Society and the Slovenia Ministry of Science and Technology. paper summary submissions are due by 1 December 1998. Visit web site <http://www.ro.feri.uni-mb.si/ISIE99/> for complete call for papers.

COBEP '99, 5th Brazilian Power Electronics Conference will take place September 19-23, 1999, in Foz do Iguaçu, state of Paraná, southern Brazil. It is organized by the Brazilian Power Electronics Society (SOBRAEP) and by the Federal University of Paraná and Federal University of Santa Maria, Brazil. See page 6 of this *Newsletter* for more information.

PEDS '99, Power Electronics and Drive systems, is scheduled for July 26-29 in Hong Kong. It is organized by the IEEE Hong Kong Section and the Joint Chapter of the IEEE Power Engineering, Industry Applications and Power Electronics Societies, in cooperation with the IEEE Singapore Section and the Power Electronics Society. See page 4 of this *Newsletter* for more details.

EPE '99, 8th European Conference on Power Electronics and Applications, sponsored by the European Power Electronics and Drives Association, is scheduled for September 7-9, 1999, in Lausanne, Switzerland. See page 9 of this *Newsletter* for the Call for Papers.

PESC® '2000, the 31st IEEE Power Electronics Specialists Conference, sponsored by the Power Electronics Society, will be held June 18-23, 2000, at the National University of Ireland, Galway, Ireland. For advance information of this conference visit <http://pesc00.ucg.ie/pesc00/>.

The INSTITUTE OF ELECTRICAL & ELECTRONICS ENGINEERS, Inc.

445 Hoes Lane, P.O. Box 1331 • Piscataway, NJ 08855-1331, USA

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