



The President's Message
Remembering the human side of engineering

The loss of our Treasurer, Dick Bass, in an automobile accident in April was a stunning blow. The Society and the IEEE worked quickly to dedicate one of our major awards in his memory. Dick's loss should remind all of us that dedicated people are behind every action, every new idea, every product, and everything that is useful in power electronics.



Often, we don't get enough opportunity to thank the men and women who make our profession interesting and rewarding. In the next several months, Society leaders will be seeking new ways to recognize personal contributions. We also hope to get involved in some new opportunities for students. Think about your own teachers, colleagues, and mentors. Is there someone who deserves a public award or major recognition? For every award, a dedicated person is needed to prepare a nomination and make a case.

Power electronics in the developing world

In May, I had the opportunity to participate in a power electronics education workshop, sponsored primarily by the U. S. National Science Foundation, in Amman, Jordan. The enthusiasm and interest of the Jordanians made this an incredibly positive experience. Power electronics is considered a key component of the electrical engineering curriculum there, and is even a required course at the major universities.

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Society Dedicates Richard M. Bass Award

Those members who knew Dick Bass were stunned by his recent death. Immediately following the news, the Society Administrative Committee (AdCom) voted unanimously to rename the Outstanding Young Power Electronics Engineer Award to honor his memory.

"Our field is a fast-changing and highly technical endeavor. I believe that one of the most important aspects of our awards is that they help put a human face on the activities and efforts of all who work so hard for progress and improved quality of life.

"Each year, we gain many new friends through meetings like this one. We also lose some. One of my saddest experiences as President this past year has been the tragic loss of Richard M. Bass. Many of you knew Dick Bass well, and I know most of you have met him at one of these conferences and other places.

"Dick was a renowned educator, a respected researcher, and an outstanding engineer. Above all these, he was one of the finest people you could hope to meet. We worked together for many years, and it is a high privilege to claim him as a student, as a colleague, and as a friend. It was a great shock and sadness to all of us when we learned of his untimely death in an accident in April."

(A minute of silence was requested at this point.)

"Dick Bass was a young man, and in his too-brief career, he made a wide range of major contributions to power electronics. His efforts included drives for wheelchairs, the theoretical underpinnings of averaging, electric vehicle charging and interface systems, continuing education programs, nonlinear control approaches, and a host of others. He received the B.S. and M.S. degrees from Georgia Tech, and the Ph.D. degree from the University of Illinois. He was Associate Professor in the School of Electrical Engineering at Georgia Tech, and had won awards for excellence in teaching as well as recognition for his research.

"Dick was an active volunteer in his community and in his church. He was also very

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Thomas M. Jahns 23rd Wm. E. Newell Awardee Thomas G. Wilson, Sr. and Steven B. Leeb Also Honored; Prize Paper Awards Announced

Dr. Thomas M. Jahns (M'78-SM'91-F'93) of the Electrical and Computer Engineering Department, University of Wisconsin-Madison, received the William E. Newell



Power Electronics Award at the Annual Awards Banquet on July 1 at the 1999 Power Electronics Specialists Conference in Charleston, South Carolina. The award has been presented annually since 1977 for outstanding achievement in the field of power electronics.

Professor Jahns received his bachelor's, master's and doctoral degrees, all in electrical engineering, from MIT where he completed his studies in 1978. He joined GE Corporate Research and Development (GE-

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## New Editor Named for the Power Electronics Society Newsletter

Starting with the October 1999 issue of the *Newsletter* of the Power Electronics Society, Dr. Gene Wester will take over as its Editor. Gene is no stranger to the Society, having been an active participant over the years in our conferences, even those existing before the Society was organized.



Gene is a member of the technical staff at NASA's Jet Propulsion Laboratory in Pasadena, California. His address appears below in the masthead.

Please give him your wholehearted cooperation by providing him in a timely fashion with items of interest to our Society membership.

### IEEE Power Electronics Society Officers

**Philip Krein, President**  
**Thomas Habetler, V. P., Operations**  
**Kevin Fellhoelter, V. P., Meetings**  
**Arthur Witulski, Treasurer**

<http://www.pels.org>

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News items should be sent to: Gene Wester, Editor, *PELS Newsletter*, Jet Propulsion Laboratory, M/S 303-300, 4800 Oak Grove Drive, Pasadena, CA 91109-8099 USA; TEL: +1-818-354-3489; FAX: +1-818-393-4272; e-mail: gwester@ieee.org. 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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## A Review of the PELS Newsletter Operation January 1989-July 1999

by Harry Owen, *Outgoing Editor*

(This article was derived from the 1998 annual report of the Newsletter Editor to the Administrative Committee (AdCom) of the Power Electronics Society (PELS)).

For the record, and to sing a kind of swan song, here is a brief history of how the computer editing and composing system for the *Newsletter* has developed over the years. Included are some financial details and descriptions of the hardware/software systems used to produce the newsletter. My editorship of forty-three quarterly issues has been a valuable and enjoyable experience. Following my request to Society President Krein to end my tenure as editor, Gene Wester (see article at left) was recruited to take over the editor's job with the October issue.



Prior to 1989, the *PELS Transactions* was the only publication of the Society. In 1988, some members of the PELS AdCom expressed the view that a nonarchival-type publication was needed that could contain information of timely interest to Society members. In working to establish the post of *Newsletter* Editor, the Society, through PELS President John Kassakian, offered to provide the editor with a computer and necessary peripheral equipment and software for editing and composing the newsletter. In addition, in lieu of any compensation in the form of a salary or fee, reimbursement of travel expenses for the editor to attend AdCom meetings that were held in conjunction with a PELS conference was offered. An initial budget of \$3,580 was used for the equipment and software. Over the years, at times when it became apparent that software upgrades would be helpful in the newsletter production, the editor has requested and has received approval from the AdCom to purchase these upgrades.

The first newsletter, Volume 1, Number 1, January 1989, was produced before the computer system was in place. It was four pages long and was composed with a version of the text formatting program LaTeX, using Duke University resources. Once the computer equipment and software were on hand, the newsletter was edited and com-

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## In Memoriam



The IEEE Power Electronics Society notes with great sadness the loss of Dr. Richard M. Bass, PELS Treasurer and Associate Professor at the Georgia Institute of Technology, in an automobile accident near Valdosta, Georgia on the night of April 13, 1999.

Dr. Bass was born in Jacksonville, Florida in 1959. He received the B.E.E. and M.S.E.E. degrees from the Georgia Institute of Technology in 1982 and 1983, respectively, and the Ph.D. (E.E.) degree from the University of Illinois, Urbana in 1990. From 1981-1983 he was employed by the Georgia Tech Office of Interdisciplinary Programs developing adaptive aids for persons with disabilities.

From 1984 to 1987, he was employed by the Veterans Administration Rehabilitation R&D Unit in Atlanta, where he participated in the development of an improved motor drive for powered wheelchairs. At the University of Illinois, his doctoral studies were in power electronic systems. His Ph.D. thesis was entitled "Large-Signal Tools For Power Electronics: State-Space Analysis and Averaging Theory." In 1994, Dr. Bass was a visiting scholar with the Electricite de France electric vehicle research program.

He is survived by wife Cathy and son Austin who were also in the accident but not seriously injured.

A Memorial Service was held Sunday April 25 at the Oakhurst Presbyterian Church in Decatur, Georgia.

## Educational Trust Fund Set Up for Dick Bass' Son

The following information comes from Dr. Tom Habetler, colleague of Dr. Bass at Georgia Tech.

A trust fund which has been set up for Dick Bass' son, Austin. Many thanks are due to Teddy Puttgen and Susan Fitzgerald of Georgia Tech for setting up the Austin Guillaume Bass Education Trust. The trust has been set up at the Wachovia Bank in

Continued on page 6

## Power Electronics Society Awards Made to Jahns, Wilson and Leeb Prize Paper Awards Announced, from page 1

CRD), Schenectady, NY, in 1983 where he pursued new power electronics and adjustable-speed machine drive technology for fifteen years. His technical efforts at GE included pioneering work in the development of interior permanent magnet (IPM) synchronous machine drives for high-performance applications including machine tools and aerospace surface actuators.

Dr. Jahns served as a senior project manager for several years at GE leading large interdisciplinary R&D projects to develop new machine drive technology for a wide range of commercial and military applications extending from household appliances to aircraft generators. These major development initiatives included a new generation of large industrial ac drives for process lines and low-cost brushless permanent magnet motor drives for commercial/residential applications. Dr. Jahns earned eleven US patents during his industrial career.

During 1997-98, Dr. Jahns was granted a two-year research sabbatical at MIT where

he pursued research activities in the area of advanced automotive electrical systems and accessories. Working closely with Prof. John Kassakian, he served as codirector of an international industrial consortium of auto makers and automotive suppliers focused on investigating the introduction of higher voltages into the next generation of automotive electrical systems. The work of this consortium has been instrumental in establishing 42 Vdc as the unofficial international standard for future high-power automotive electrical accessories.

In October 1998, Dr. Jahns joined the faculty of the University of Wisconsin-Madison as a Grainger Professor of Power Electronics in the Department of Electrical and Computer Engineering. At UW-Madison he is an Associate Director of the Wisconsin Electric Machines and Power Electronics Consortium (WEMPEC), an international consortium of approximately sixty companies and institutions. He is also undertaking an active role in the new Center for Power Elec-

tronics Systems (CPES) funded by the US National Science Foundation (NSF) where he is leading the research thrust focused on development of integrated power electronic modules (IPEMs).

Dr. Jahns has been active in IEEE professional activities throughout his career. His service to PELS includes APEC General Chair (1992), PELS Meetings Committee Chair (1993-94), At-Large AdCom member (1992-94), and PELS President (1995-96). He has also been a member of the Industry Applications Society (IAS) Executive Board for the past seven years, where he is now leading a committee aimed at improving inter-society cooperation within IEEE. Dr. Jahns was elected to IEEE Fellow grade in 1993. He has been recognized as a Distinguished Lecturer by IEEE-IAS for 1994-95, and by IEEE-PELS in 1998-99.

Dr. Jahns presently lives in Madison, Wisconsin, with his wife, Peg, and two children.

## Power Electronics Society Distinguished Service Award

Dr. Thomas G. Wilson (M'50-SM'92-LF'94) has been named as awardee for the 1999 Power Electronics Society's Distinguished Service Award which he received at the Awards Banquet at PESC '99. The award is made annually to honor long and distinguished service to the welfare of the Power Electronics Society at an exceptional level of dedication and achievement.

Dr. Wilson is Professor Emeritus of the Department of Electrical and Computer Engineering at Duke University, Durham, NC and Vice President and cofounder of Wilmore Electronics Company, Hillsborough, NC. He received the A.B. ('47), S.M. ('49), and Sc.D. ('53) from Harvard University, Cambridge, Massachusetts, and the honorary degree

Docteur Honoris Causa from Université Paul Sabatier, Toulouse, France in 1986.

He served in the U. S. Army from 1943



to 1947. From 1949 to 1953 he was employed at the U. S. Naval Research Laboratory in Washington, DC doing research on magnetic amplifiers. From 1953 to 1959 he was with Magnetics Inc., Butler, PA, as Associate Director of Product Development. He joined the Department of Electrical Engineering of Duke University, Durham, NC in 1959 and served as Chairman of the Department from 1964 to 1968. In 1961 he initiated one of the first

university programs in power electronics which continued until his retirement in 1994.

Professor Wilson is the author of more than 100 technical papers in power electronics, magnetics, and nonlinear systems, and the holder of five U. S. patents. He was a member of the Organizing Committee and Vice Chair of the first PESC in 1970. In 1979 he was awarded the IEEE M. Barry Carlton Award and in 1981 the William E. Newell Award. He has been actively involved with and served as a member of the Administrative Committees of the Magnetics Society and the Power Electronics Society. He served a two-year term as President of the Power Electronics Society.

## Richard M. Bass Outstanding Young Power Electronics Engineer Award

Steven B. Leeb (S'89-M'93) received the Richard M. Bass Outstanding Young Power Electronics Engineer Award at PESC '99 at the Annual Awards Banquet. This award was renamed earlier this year to honor the memory of Richard M. Bass, PELS Treasurer, who died tragically in an automobile accident.

Dr. Leeb received his Bachelor of Science and Doctoral degrees from the Massachusetts Institute of Technology in 1987 and 1993, respectively. He has been a member of the MIT faculty in the Department of Electrical Engineering and Computer Science since 1993. He currently serves as an Associate Professor in MIT's Laboratory for Electro-

magnetic and Electronic Systems.

From 1987 - 1991 he was a reservist in the US Air Force. In this capacity he assisted the microelectronics branch of the Wright Research and Development Center at Wright-Patterson AFB with the design of high frequency switching power supplies for advanced avionics applications. At MIT, he is concerned with the design, development, and maintenance processes for all kinds of machinery and



servomechanisms with electrical actuators, sensors, or power electronic drives. Some of his current research interests include advanced lighting ballast design to provide optical wireless communication networks for the disabled, inductively-coupled power transfer systems, adaptive tracking control schemes for power electronic drives, electric utility system monitoring, and the development of actuators and sensors using novel or custom materials including gel polymer. He teaches a broad array of classes at MIT, and is especially concerned with instilling strong technical literacy and a passion to build in engineering students.

Awards story continued on page 6



present

# APEC 2000

## CALL FOR PAPERS AND SEMINARS

FIFTEENTH ANNUAL

### Applied Power Electronics Conference and Exhibition

☆ FEBRUARY 6-10, 2000 • FAIRMONT HOTEL • NEW ORLEANS, LA ☆

The Fifteenth Annual Applied Power Electronics Conference and Exposition (APEC 2000) will address the application of new components and circuits, design-oriented analysis techniques, and current trends in the design and manufacture of power electronic products and systems.

#### CONFERENCE HIGHLIGHTS

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

*Participation is solicited in all areas of power electronics, including those listed below. Suggestions for other related topics are welcomed and encouraged.*

- |                                   |   |                                      |
|-----------------------------------|---|--------------------------------------|
| • DC-DC Converters                | • Aerospace/Defense Systems             | • EMI & EMC Issues                   |
| • AC-DC Power Supplies            | • ICs for Power Electronics             | • Market Analysis & Strategies       |
| • Inverters & Cycloconverters     | • Design & Analysis of Magnetic Devices | • Product & Technology Roadmaps      |
| • Soft Switching Techniques       | • New Developments in Capacitors        | • The Voice of the Customer          |
| • Lamp Ballasts                   | • High Density Packaging                | • Identifying New & Emerging Markets |
| • Adjustable Speed Drives         | • Thermal Management                    | • Benchmarking Results               |
| • Power Factor Correction         | • Distributed Power Systems             | • Quality Programs & Data            |
| • Design For High Efficiency      | • Uninterruptible Power Systems         | • JIT & Material Management          |
| • Modeling & Analysis             | • Battery Systems                       | • Vendor Qualification               |
| • High Frequency Design           | • Electric Traction Systems             | • Manufacturing Processes            |
| • Control of Converters & Systems | • Automotive Applications               | • Design for Manufacturability       |
| • Simulation Tools & Techniques   | • Protection of Converters & Systems    | • Technology Transfer                |
| • CAD/CAE Tools & Techniques      | • Preventing & Controlling EMI          | • Standardizing Specifications       |
| • Power Semiconductors            |   | • Regulatory Requirements            |

#### DEADLINE FOR SUBMISSION OF ABSTRACT AND DIGEST IS JULY 16, 1999

Notification that a paper was accepted or declined will be mailed no later than September 17, 1999

Manuscripts in final camera-ready form will be due at the publishers no later than November 5, 1999

Prospective authors are asked to submit a 50-word Abstract and a three-to-five page Digest of their planned presentation. Both the Abstract and Digest should be typed, double-spaced on 8 1/2"x11" paper. The heading of the Abstract must include: Title of the presentation, Corresponding Author(s), Affiliation(s), Mailing address, and Daytime telephone, Fax number and e-mail address. The heading of the Digest should include the title only. The Digest should clearly state: a) The purpose of the paper; b) The approach used; and c) The specific results. **Eight copies of all materials should be mailed to:**

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

## PESC '99 in Charleston, South Carolina

by Jerry Hudgins, Conference Chair

The 30th Annual Power Electronics Specialists Conference was held in Charleston, South Carolina, USA during the week of June 27. The meeting was attended by



over 370 industry and academic professionals along with over 40 accompanying guests. The week began with three tutorials provided by leading experts in the areas of power quality, modeling, and magnetics design. Over 160 engineers attended one or more tutorial.

Sunday evening the conference opened officially with a reception at the conference hotel. The technical sessions began the following morning in the Plenary with a keynote paper, given by Professors Daan van Wyk and Fred Lee, summarizing the past and looking into the future of power electronics. The remainder of the technical program began Monday after lunch and continued through Thursday with four parallel sessions each morning and afternoon. All told, 192 papers were presented in the 29 technical sessions. Twenty-seven different countries were represented by the authors, with 70 per cent residing outside the USA. This again points to the fact that PESC is truly an international forum for leading-edge power electronics technology.

Tuesday evening included the traditional Rap Sessions along with munchies and beer, followed Wednesday evening with a Southern Banquet. The weather did not cooperate with the event planned to be held outside at a nearby plantation. However, thanks to quick work by the hotel staff, horse-drawn (mule-drawn in some cases) carriage tours through the historic area of Charleston, were arranged. A reception followed by a large banquet dinner was served to the attendees. Live entertainment was provided by a local Dixie-land band, an African-American singing group showcasing a mixture of African, Gospel, and old Southern songs and rhythms, and a group of Civil War re-enactors in detailed period dress. The soldiers went so far as to haul one of their cannon upstairs to guard the guests during the party.

The annual Society Awards Luncheon was held on Thursday, July 1. Significant was the dedication of the renaming of the

Continued on page 10



PESC '99 photos: Top - PELS President Phil Krein congratulates Conference Chair Jerry Hudgins and Technical Program Chair René Spée for a great conference; Civil War re-enactors enliven the banquet. Middle - Society awards are made to Tom Jahns, Tom Wilson and Steven Leeb by Awards Chair Chris Riddleberger and Subcommittee Chair Piero Maranesi. Bottom: President Krein dedicates Richard M. Bass Outstanding Young Power Electronics Engineer Award in memory of Treasurer Dick Bass and presents a commemorative plaque to his wife Cathy.

### Notice of Changes in the Power Electronics Society Constitution

Recent changes in the Constitution of the Power Electronics Society made by the Society Administrative Committee (AdCom) and approved by the IEEE Technical Activities Board (TAB) eliminate the position of Society Secretary. The secretarial function for the Society will be performed by the Society Administrator, Robert Myers of Myers/Smith, Inc. The changes take place 60 days after publishing in the Society *Newsletter* unless at least five per cent of the Society members object in writing within 60 days. The original version of the Constitution is in the left column with the changed version in the right column

#### OLD

Section 4. The Officers of the Society shall be the President, Vice-Presidents, the Secretary and the Treasurer, each having a term of one year as defined in the Bylaws.

Section 6. The incoming President shall appoint a Secretary and Treasurer on or before the first of January in the year in which each takes office. All appointments shall be made with the advice of the members of the new Administrative Committee and subject to ratification at its first meeting. The Secretary and Treasurer appointment need not be made from among members of the Administrative Committee. The Secretary and Treasurer will have voting privileges on the AdCom.

#### NEW

Section 4. The Officers of the Society shall be the President, Vice-Presidents, and the Treasurer, each having a term of one year as defined in the Bylaws.

Section 6. The incoming President shall appoint a Treasurer on or before the first of January in the year in which each takes office. All appointments shall be made with the advice of the members of the new Administrative Committee and subject to ratification at its first meeting. The Treasurer appointment need not be made from among members of the Administrative Committee. The Treasurer will have voting privileges on the AdCom.

## Call for Nominations for AdCom Members

by Jerry Hudgins, Chair  
PELS Nominations Committee



Each year, six of the eighteen elected members-at-large of the Administrative Committee (AdCom) of the IEEE Power Electronics Society are rotated off the AdCom. The Nominations Committee is now accepting nominations for six members-at-large of the AdCom, each to serve a term of three year starting January 1, 2000. A nomination petition signed by a minimum of 25 Society members, including Students and Affiliates, should be submitted no later than August 25, 1999, to the Chair of the Nominations Committee, Dr. Jerry Hudgins, Department of Electrical and Computer Engineering, University of South Carolina, Columbia, SC 29208 USA.

In addition to nominations by petition, the Chair of the Nominations Committee solicits additional nominations from all members of the existing AdCom by letter. From the nominations received, the Nominations Committee will prepare a list of at least three names for every two vacancies among the members-at-large. The election will take place prior to the October 3, 1999, AdCom Meeting in the form of a written ballot by AdCom members.

Nominations by petition from the Society membership provide an opportunity for members of the Power Electronics Society to assist in the identification of talented persons who are willing and able to take an active part in this important volunteer activity of the Society.

### PELS Annual Awards, from page 3 Transactions Prize Paper Awards

Each year a selection committee composed of the PELS *Transactions* Editor and Associate Editors nominate and select three papers from those published in the *Transactions* during the previous year. Each Associate Editor nominates one paper and the three winning papers are selected by a priority-ranking ballot procedure. The prize winning papers from the 1998 *Transactions on Power Electronics* are:

#### “An Active Circuit for Cancellation of Common-Mode Voltage Generated by a PWM Inverter”

The authors are Satoshi Ogasawara (SM), with the Department of Electrical Engineering, Okayama University, Okayama,

## Tricks of the Trade The Missing Impact of Drain-Source Capacitance.

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

Recently, I was checking the design of an FET circuit for a forward converter application. The manufacturer reported a lower efficiency than expected. When the engineers added parallel FETs to try to bring the ON resistance down, the efficiency actually dropped even more. The culprit in the end was related to drain-source capacitance in the parts. I won't try to draw up an FET bridge here. You can draw it out on paper. Keep in mind that each part has internal capacitances between gate and source, drain and source, and drain and gate. In a forward converter, a substantial voltage is present across drain and source when each FET is off. This voltage stores energy in the drain-source capacitance (and also in the drain-gate capacitance, which in effect appears in parallel). When an FET turns on, this energy will discharge inside the device. When the FET turns back off, part of the turn-off dynamics are governed by flow of energy back into these capacitances.

The effects can be substantial. In a forward converter with a PFC (power-factor correction) front end, a bus voltage of 400 V might be typical. A suitable MOSFET might be something like an IRF840, with a 500-V rating. For this part, the relevant capacitance is the “output capacitance,”  $C_{oss}$ , with a typical value of about 300 pF at low voltage.

The capacitance effect is nonlinear in  $V_{ds}$ , and Miller charge from gate to drain has an effect, but the value of  $C_{oss}$  still gives a basic

way to consider the problem and make some comparisons. In this case, the output capacitance stores  $1/2 C_{oss} V^2$ , or about 24  $\mu\text{J}$  each time one of the FETs shuts off. At a switching frequency of 250 kHz, this implies a loss of about 6 W in each device — no matter what the ON-state resistance value might be. Even though this analysis is very much an approximation, we notice that if two parallel parts are used, this loss would be expected to double.



A big challenge with output capacitance loss effects is that they can be hard to measure. The discharge is internal, so the fast discharge current pulse is not picked up with conventional probes. The charge action can be equally fast, but will be hard to see if there are external clamps. The loss effects are important when devices must block high voltages, but they can also be important in lower voltage circuits in which very large FETs (with high values of  $C_{oss}$ ) are common. Many manufacturers are working on ways to reduce capacitance values in power MOSFETs. In the meantime, bigger is not always better when choosing a power MOSFET for a specific circuit.

*Editor's note*

*You are invited to send your own favorite Trick of the Trade for publication in the PELS Newsletter. Just send it in any convenient medium, spelling out symbols such as Greek letters. Also, send along a recent photo, color or b/w of any size, for insertion along with your favorite Trick.*

### Bass Trust Fund from page 2

Atlanta

Contributions may be made by designating the check for:

*Catherine Damm Bass Custodian  
for Austin Guillaum Bass Education Trust  
Acct # 21 829 933*

It is important that all of this information be on the check which should be mailed to:

Wachovia Bank  
c/o Jason Conn  
31 Pharr Road, N.W.  
Atlanta GA 30305

Mr. Conn's telephone number is:  
404 842-2886

Japan; Hideki Ayano, with Hitachi, Ltd, Hitachi, Japan; and Hirofumi Akagi (F), with the Department of Electrical Engineering, Okayama University, Okayama, Japan.

#### “Inductor Commutation Soft-Switched PWM Inverter Driven by Frequency-Modulated PWM Signal”

The authors are Michihiko Nagao (M) and Koosuke Harada (F), both with the Energy Electronics Laboratory, Kumamoto Institute of Technology, Kumamoto, Japan.

#### A Three-Phase Multilevel Converter for High-Power Induction Motors

The authors are Nikolaus P. Schibli, Tung Nguyen and Alfred C. Rufer, all with the Swiss Federal Institute of Technology, Lausanne, Switzerland.

TELESCON® 2000 is a satellite conference to INTELEC® and is an international forum, where experts appreciate the exchange of information on the state of the art of telecommunications power supply systems. State of the art lecture on installation, modernisation and operation of power supply systems for telecommunications networks will be held.

**The motto for TELESCON 2000  
East and West Grow Together**

Therefore the call for papers is taking into account the specific conditions of the fast growing telecommunication networks in Eastern and Western Europe. The presentations given in the conference and poster sessions, or the products and components exhibited in the exhibition area will demonstrate the expertise and know-how in telecom power supply systems including latest developments. Experts from East and West will participate and contribute with lectures and presentations about now strategies, developments, system design and operational problems including their technical solutions. In addition young engineers are invited to give oral presentations or present posters about their projects and studies.

About 100 papers in plenary sessions, oral presentations, poster sessions and discussion/forums will be presented. Up to 500 International, European and National representatives are expected to attend.

**Scope of the Conference**

**1. AC/DC Power Supplies**

- Power systems for telecommunication equipment
- Requirements for power supply systems under observation of local general power supply conditions
- Behaviour of power supply systems in distributed or faulty networks
- Decentralised power supply systems
- Mechanical design and requirements
- Powering cable TV, internet and wireless applications

**2. UPS and Converters**

- Concepts, technology and application of UPS systems
- Classic UPS-systems and Compact UPS-systems
- Equipment technology:
  - thyristor controlled
  - switchmode technology
  - compatibility and ability for extension
- Component groups in scale of power standards. pre-assembled groups

**3. EMC in Telecommunication Equipment**

- Specifications and standards

**4. Batteries and other Energy Storage Systems**

- Battery technology
- Characteristics, advantages and disadvantages of vented and valve regulated lead acid batteries
- Battery management and monitoring
- Small equipment batteries in telecommunication applications
- Alternative energy storage systems
- Safety requirements

**5. Powering Fiber In The Loop**

- Concepts of powering (fiber to the curb, building, home)
- Equipment for powering
- Batteries for backup-powering

**6. Conversion Technology and Design of Power Supplies**

- Components and topologies
- DC/DC conversion

**Announcement  
and  
Call for Papers**

**telesecon® 2000  
Dresden**

The Third International  
Telecommunications Energy  
Special Conference

May 7-10, 2000  
Hotel Westin Bellevue  
Dresden, Germany



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Dresden**

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TECHNOLOGY SOCIETY (ITG) of the  
VDE ASSOCIATION FOR ELECTRICAL,  
ELECTRONIC & INFORMATION TECHNOLOGIES

in co-operation with

TELECOMMUNICATIONS  
SUB-GROUP (INTELEC)  
of the  
IEEE  
POWER ELECTRONICS SOCIETY

a Satellite  
Conference

to  
**intelec®**



- Voltage levels in power supply systems (24V, 48V, 60V ... )
- Redundancy and reliability
- Safety requirements
- Power supplies for mains connected or cordless

**7. Alternative Power Sources for Telecom**

- Technology and design of -photovoltaic systems winddriven generators fuel consuming generators hybrid systems
- Experience with alternative power sources

**8. Thermal Management of indoor or outdoor installation**

- Cooling concepts
- Air conditioning
- Free convection

**9. Operation and Maintenance**

- Power and facility management concepts regarding maintenance and supervision

**Poster Session**

Proposals for posters will be appreciated. Especially students are invited to send their work (e.g. dissertabon, ...) for poster presentation for the following areas of interest:

- DC and AC power supply systems, stand-by generators and related subjects
- Building design, heat dissipation and related

subjects

- Powering Fiber in the Loop

**Call for Papers**

If you plan to submit a paper or poster please note: *Abstracts must accurately reflect the content of the manuscript. Acceptance will be on technical merit or on special aspects like special situation in a country or of organizing the maintenance of power supply and building services.*

The length of the abstract should be limited to but not smaller than one single-spaced typewritten page including data, tables, figures, etc.

Abstracts, manuscripts and oral presentations shall be in English only. Detailed instructions will be mailed to those authors whose abstracts have been accepted. In case of multiple authors, please, indicate to which author mail should be directed. Manuscripts and posters of accepted papers will be included in the Conference Proceedings which will be distributed at the conference. The manuscript is limited to a maximum length of eight single-spaced typewritten pages including figures, charts, tables, etc.

Accepted papers must follow the typing instructions, which can be downloaded from the following internet address: <http://www.vde.de> choosing the button "Typing instructions."

**Important deadlines:**

- September 30, 1999** for abstracts
- November 15, 1999** notification of paper acceptance
- January 31, 2000** for complete manuscripts.

The exhibition program will include the latest in products and technologies on the market today. There will be an extensive social program offered, which will provide an opportunity to enjoy many of the outstanding attractions available in Dresden and the surrounding area.

**Abstracts and enquiries concerning papers or posters should be directed to:**

Mr. Wilfried Schulz  
Deutsche Telekom AG  
Technologiezentrum Darmstadt, EK45-12  
Goslarer Ufer 35  
D-10589 Berlin, Germany  
Phone: +49 30 3497 4164  
Fax: +49 30 3497 4990  
E-mail: [wilfried.schulzd@telekom.de](mailto:wilfried.schulzd@telekom.de)

**Please complete in capital letters**

[ ] I am interested in TELESCON 2000 and require copies of the programme and registration.

[ ] I am interested in exhibiting at TELESCON 2000 and require details.

[ ] I intend to submit a paper/poster.

Provisional title of the paper/poster:

\_\_\_\_\_

Name \_\_\_\_\_

First Name \_\_\_\_\_

Company/Organization \_\_\_\_\_

No. \_\_\_\_\_ Street \_\_\_\_\_

Postal Code and City \_\_\_\_\_

Country \_\_\_\_\_

Phone \_\_\_\_\_

Fax \_\_\_\_\_

E-mail \_\_\_\_\_

**Please send copy of this page to:**

VDE  
Conference Departmen  
Stresemannallee 15  
D-60596 Frankfurt  
Germany  
Fax: +49-69-96 32 52 13

**PESC '00  
Abstract Submission Form**

This form is also available from the PESC '00 web site at <http://pesc00.nuigalway.ie/>. Submit the form from the web site and a completed copy will be returned to you, print out three copies and submit them with your digests. Alternatively, print, type or use a computer-generated reproduction of this form. For proper processing, all information must be included.

**Paper Title:**

\_\_\_\_\_

\_\_\_\_\_

**Topic Number from Reverse Side (please check one box):**

- 1     2     3     4     5     6     7     8     9     10
- Other topic or interdisciplinary paper covering several topics

**Authors:**

Name: _____	Organization: _____
Name: _____	Organization: _____
Name: _____	Organization: _____
Name: _____	Organization: _____

**Name of Principal Contact:**

Title: \_\_\_\_\_ First Name: \_\_\_\_\_ Middle Initial: \_\_\_\_\_ Last Name: \_\_\_\_\_

**Complete Address of Principal Contact:**

Organization: \_\_\_\_\_

Department / Section: \_\_\_\_\_

Street / P.O. Box: \_\_\_\_\_

City: \_\_\_\_\_ Province / State: \_\_\_\_\_

Country: \_\_\_\_\_ Postal Code: \_\_\_\_\_

Telephone: \_\_\_\_\_ Facsimile: \_\_\_\_\_

E-Mail Address: \_\_\_\_\_

**Abstract (please limit to 50 words):**



**Conference Announcement And Call For Papers  
National University of Ireland, Galway**



**18-23 June, 2000**

<http://pesc00.nuigalway.ie/>

**The Power Electronics Specialists Conference 2000 (PESC), sponsored by the IEEE Power Electronics Society, will be held at National University of Ireland, Galway (formerly University College, Galway), from the 18-23 June, 2000.**

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. PESC '00 solicits original work in all areas of power electronics. To facilitate the review process, the following topic categories have been created:

1. Dc-to dc converters and distributed dc power supply systems,
2. Rectifiers, inverters, and other ac-to-dc and dc-to-ac converters for supply and UPS applications,
3. Motor drives and motion control,
4. Automotive, aerospace, transportation, and utility applications of power electronics,
5. Power quality, electromagnetic compatibility (EMC) and electromagnetic interference (EMI) issues,
6. Discrete and integrated power semiconductor devices and modules,
7. Passive components including capacitors and magnetic devices,
8. Computer-aided modeling, analysis, design and synthesis of power systems,
9. Control theory as applied to power electronic systems,
10. Packaging of power electronic systems (including EMI, EMC and manufacturing issues).

To be considered for the technical program, submit the following materials on either 8.5 x 11 inch or size A4 paper:

1. **Three copies of the Abstract Submission Form.** The abstract submission form is reproduced overleaf. This form is available on the PESC '00 web site <http://pesc00.nuigalway.ie/>. Submit the form from the web site and a completed copy will be returned to you, print out three copies and submit them with your digests. Alternatively, print, type or use a computer-generated reproduction of the form overleaf. For proper processing, all information must be included.
2. **Eight copies of a five-page double-spaced digest.** To ensure unbiased evaluation, the digest should be separated from the abstract and show the title but not the authors. The digest should outline the work to be presented, the objectives, and the goals achieved. Inclusion of key equations, figures, tables, and references is encouraged provided they fall within the five-page limit.

**14 September, 1999:**

Deadline for submission of abstracts with digests.

**14 January, 2000:**

Authors notified of acceptance.

**31 March, 2000:**

Deadline for submission of electronic manuscript for CD-ROM proceedings, and camera-ready manuscript for the printed proceedings.

**Submit abstracts with digests to:**

Anne Hindlé,  
PESC '00 Secretariat,  
Power Electronics Research Centre,  
National University of Ireland,  
Galway,  
Ireland.  
Phone +353 91 750 395  
Fax +353 91 750 395  
E-mail [pesc00@nuigalway.ie](mailto:pesc00@nuigalway.ie)

**For program information contact:**

Joe Madden,  
PESC '00 Program Chair,  
PEI Technologies,  
Enterprise Ireland,  
Glasnevin,  
Dublin 9, Ireland.  
Phone +353 1 837 2326  
Fax +353 1 837 2411  
E-mail [maddenj@pei-tech.ie](mailto:maddenj@pei-tech.ie)

**For conference information contact:**

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E-mail [ger.hurley@nuigalway.ie](mailto:ger.hurley@nuigalway.ie)

**Abstracts and digests will be returned to the authors if they arrive after 14 September, 1999 or if they do not adhere to the above guidelines. E-mail and fax submissions will not be accepted. Papers are accepted for PESC '00 contingent on the agreement of at least one author to register and present the paper at the conference.**

**Prospective authors please note:**

**Please use the Abstract Submission form on the opposite page or go to the PESC '00 web site at <http://pesc00.nuigalway.ie/> to download a copy**

## Our Publishing Obligations

*From the PELS Publications Committee, Franco Profumo, Chair*

One of the most important functions of the Power Electronics Society is to promote open exchange of technical information through publications. High-value publications depend on earnest effort on the part of authors, reviewers, and readers. Each of these groups takes on certain obligations, and it might be useful to mention them briefly.

Authors are obligated to present original work in a clear and useful manner, and to consider ways to make the information most helpful to others. The expectations for originality and quality mean that a given paper should not be submitted to multiple conferences or journals. In the Power Electronics Society, conferences are an excellent way to get feedback and discussion, and conference paper authors should address this input in their manuscript before journal submission. Literature review is an important aspect to justify original work. In some topic areas, the relevant work is fifty years old or more; we need to avoid "reinventing" methods and ideas when the work already exists.

This past year, some of our conference committees have been dismayed to encounter papers that were submitted to multiple places (perhaps in hopes that extra submissions mean extra chances for acceptance), papers that were assembled from prior publications, papers that represented small steps beyond the prior knowledge base, or papers in which the literature review seemed to go

back only two or three years. The obligations of authors are for high ethical standards and high quality, and valuable publications ultimately rely on our authors.

Reviewers are obligated to support the concept of peer review, which is the distinguishing feature of our journal publications. Proper peer review requires effort on the part of our volunteers. This "hidden" job is one we appreciate highly, yet one in which the people remain anonymous. Reviewers conducting peer review need to give each paper careful and objective consideration, and make every effort to respond in a timely manner. Our reviewers need to make special effort when papers outside the mainstream are submitted. Often, papers that address unfamiliar concepts and issues will help stretch our thinking and open up new lines of research and engineering practice. Our power electronics technologies of the future will depend in large part on adapting technology from other areas to the unique problems of power conversion. Our ability to address current issues and to publish truly original contributions relies on our reviewers.

Readers are obligated to make the best use of publications. Be sure to make reference to those papers you have found useful when you prepare reports, presentations, and your own future submissions. In addition, we value written discussion of specific papers and constructive feedback about all

our publications. In many cases, our readers are the expert users with the broad experience necessary to establish directions for research. We have also had valuable suggestions on ways to enhance our publications. If you as a reader see something of special merit, or something needing clarification or correction, in our *Transactions*, an appropriate letter to the editor is encouraged. If you know of key pre-1950 references or have literature reviews or tutorial materials to share, these are of potential interest to a wide audience. Ultimately, our publications exist to meet the needs of readers, and we hope to encourage more feedback.

### Publishing Plans

At PESC, issues of publication quality, timeliness, and reader value were discussed in several meetings. During the coming year, you can expect to see better use of electronic tools for paper review and submission. We will be considering a "Letters" section in the *Transactions* for fast publication of brief submissions. Other major publication initiatives are being discussed as well.

In 1999, Dick Hoft, who has been the Editor of our *Transactions* for many years, will be retiring. We are grateful for his long and dedicated service to our publications and to the profession. The new editor for 2000 will be Arthur Kelley of North Carolina State University. He will be managing new paper submissions starting this month.

would be pleased to help form any new IEEE entities, or to help support Sections and Chapters in all parts of the world. At our recent Administrative Committee (AdCom) meeting, the Distinguished Lecturer Program was extended to IEEE Section meetings as well as to our Chapters. This is a great program, as the Society pays travel expenses while the local group picks up just the local accommodation and meal costs. Our Lecturers are selected by the Awards Committee

### President's Message from page 1

as outstanding contributors to the field. The Society also encourages local conferences and workshops. Today, we cooperate with regional meetings in Southeast Asia, Brazil, Mexico, and other places. In the future, there are plans for a biannual international Workshop on Power Electronics Education. Meetings tend to be a lot cheaper when they "come to the participants," instead of asking everyone to travel overseas. If you or a Chapter in your area are interested in orga-

nizing a meeting or regional conference, let us know.

*Philip Krein, PELS President  
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### PESC '99 Hosted in Charleston, South Carolina from page 5

Richard M. Bass Outstanding Young Power Electronics Engineer Award. Professor Bass's widow, Cathy, and his mother were in attendance as honored guests. The top Society award, the William E. Newell Power Electronics Award was given to Professor Thomas Jahns. The Society Distinguished Service Award was given to Professor Thomas G. Wilson, Sr., and this year's Richard M. Bass Outstanding Young Power Electronics

Engineer was selected to be Professor Steve Leeb. Other awards for best 1998 *Transactions* papers were also given.

Friday was the final day of the conference with 31 engineers participating in tours of local industry at the co-generation facility of Westvaco or the adjustable drives manufacturing plant of Square D-Groupe Schneider. During the week, guest tours were also available to local historical venues in-

cluding the original settlement of Charles Towne Landing, and Fort Sumter, site of the opening battle of the American Civil War.

On behalf of all the conference organizers and workers, I would like to thank those of you who attended and participated in PESC '99. I look forward to seeing you again at next year's PESC at the National University of Ireland in Galway, Ireland.

## A Review of the PELS Newsletter Operation January 1989-July 1999 from page 2

posed with this system. The newsletter continued as a quarterly issue of four pages until the April 1993 issue when its length was increased to eight pages. The additional pages permitted the inclusion of calls for papers reduced in size by one-third. The size of the April 1995 and succeeding newsletters was increased to twelve pages, with more space allocated for full-page calls for papers and for photographs.

For those interested in the technical aspects of creating the newsletter, here is a description of the hardware and software systems used over the years. In December 1988, the first system purchased consisted of a Sanyo 80286 computer with 1MB RAM, 5.5-inch diskette drive, 40 MB hard disk drive, 80287 math coprocessor, VGA graphics adapter card and 14-inch analog color monitor, mouse with Windows 286 Presentation Manager, and Aldus (now Adobe) PageMaker 3.0 desktop publishing software. No printer was purchased at this time and a dot-matrix printer owned by the editor was used for printing drafts and a laser printer at Duke University was used to print the camera-ready copy. Photographs were pasted up as mechanicals after being sized and screened by Duke University photographic services.

In 1993, the PELS AdCom authorized the acquisition of a new computer with greater capacity, additional peripherals, and updated software with a purchase budget of \$3,500 as proposed by the editor. The items purchased were a Gateway 2000 computer with 66 MHz 486DX2 Intel processor, 8 MB RAM, 64 KB cache, 3.5-inch and 5.25-inch diskette drives, CD-ROM drive, 340 MB hard disk drive, 15-inch color monitor, MS-DOS 6.0, Windows and mouse, HP ScanJet IIP black-and-white scanner, HP LaserJet 4L printer, and PageMaker 5.0 for Windows desktop publishing software upgrade.

The final cost of the new system was approximately \$1,500 over budget. At my request to the AdCom, I paid the overage from my own funds, pointing out that the computer system was a valuable asset to me

for other activities. Some time later, it became obvious that a printer with Postscript capability was needed to produce the camera-ready hardcopy with the quality needed by IEEE. I then purchased at my expense an HP LaserJet 4ML Postscript printer for approximately \$325 more than the cost of the original HP 4L printer and disposed of the HP4L. I also added 16MB RAM to the computer system to make the larger programs run more smoothly. The addition of the scanner to the editing and composing system permitted me to scan photographs and full-page calls for papers for insertion in the newsletter. The images of line art and text from calls for papers were inserted directly into the PageMaker publication file. Scanned photographs also were inserted directly into the PageMaker publication file. A file on diskette of the newsletter pages containing photographs was given to a local pre-press service bureau for electronic screening at 85 lines per inch of the photographic elements and for printing paper masters of these pages at 1270 dots per inch (dpi) on an image setter device.

Camera-ready copy of the newsletter is sent to the IEEE Magazine and Newsletter Division in New Jersey for printing and mailing to all Society members. The copy consists of those pages containing photographs that are produced from an image setter by a local service bureau, and the remaining pages with only text and line art that are printed at 300 dpi on the laser printer.

In late 1997, while the January 1998 issue was being worked on, the Gateway 2000 computer system purchased in 1993 developed some serious hard disk drive and monitor problems, and I purchased a replacement Gateway 2000 computer system at my expense.

In addition to providing IEEE with the final camera-ready copy for printing, for the last several years, I have provided Hypertext Markup Language (HTWIL) files of the newsletter articles to the Webmaster of the Society web site for publishing on the web. More recently, I started providing the

Webmaster with a Portable Document Format (PDF) replica of the newsletter for posting on the web in that format.

Based on my experience over more than ten years, and considering the advancements in computer technology and in software development, a reasonable system for editing and composing a newsletter of this type on a PC machine would consist of a Windowsbased 300 MHz or faster PC with at least 64 MB RAM, a hard disk drive with at least 6 GB storage, 17-inch color monitor, 3.5-inch diskette drive, CD-ROM drive and internal fax/modem. External peripherals should include a PostScript black-and-white printer of at least 300 dpi resolution, and a scanner with at least 300 dpi resolution. Adobe PageMaker desktop publishing software is recommended, but one should check to see what publication files local pre-press service bureaus can handle. A higher resolution scanner and printer might eliminate the need to use a pre-press service bureau for pages with photographs. Some kind of photographic manipulation software is occasionally helpful. Often there are adequate tools for resizing, cropping and sharpening in the scanner software. Optical character recognition software, sometimes bundled with a scanner, is essential in eliminating typing text items in by hand that are received from correspondents in hard-copy form.

An e-mail account is absolutely essential for maintaining contact with correspondents around the world. Occasionally it is necessary to fax material to a correspondent. Using a fax/modem allows files to be sent directly to the fax/modem driver, or hard copy can be scanned, then sent to the fax/modem.

I leave the office of Newsletter Editor in the capable hands of Gene Wester and I hope that the task of creating the newsletter will be as meaningful and fulfilling for him as it has been for me. I want to thank all of the members of the AdCom who over the years have enthusiastically supported the newsletter operation. I also want to thank all of you loyal contributors who have helped make your publication useful to our Society

## Young Engineer Award named for Dick Bass from page 1

active in our Society as a volunteer, with many years of service on the PESC Organizing Committee. Most recently, he was Treasurer of the Society.

"We believe these contributions are exemplary, and any young person starting in power electronics would do well to consider

Dick Bass as the model for what an engineer should be.

"I would like to announce that the Society is dedicating today the Richard M. Bass Outstanding Young Power Electronics Engineer Award in memory of our good friend. Dick's wife, Cathy, and his mother, Pinky,

were able to join us today for this occasion. His son Austin is also at the conference. On behalf of the Power Electronics Society, I would like to present this plaque, which commemorates the naming of this award, to Cathy and to Dick's family."

*See related articles on page 2.*

## Meetings of Interest to PELS Members

**ISIE '99, 1999 IEEE International Symposium on Industrial Electronics**, will be held in Bled, Slovenia, 12-16 July 1999. The symposium is sponsored by the IEEE Industrial Electronics Society and the Slovenia Ministry of Science and Technology. Paper summary submissions were due by 1 December 1998. Visit web site <http://www.ro.feri.uni-mb.si/ISIE99/> for additional information.

**PEDS '99, Power Electronics and Drive Systems**, is scheduled for July 26-29, 1999 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 IEEE Power Electronics Society.

**EPE '99, 8th European Conference on Power Electronics and Applications**, sponsored by the European Power Electronics and Drives Association, and in cooperation with the IEEE Power Electronics Society, is scheduled for September 7-9, 1999, in Lausanne, Switzerland.

**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. For more information, visit the conference web site at <http://www.sobraep.ufsc.br/cobep99>.

**AFRICON '99, "Electrotechnical Services for Africa,"** sponsored by Region 8 of the IEEE, is scheduled for September 29 to October 1, 1999. Visit the conference web site at <http://www.ieee-sa.sun.ac.za/africon>.

**APEC® '00, 15th Annual IEEE Applied Power**

**Electronics Conference**, sponsored by the IEEE Power Electronics and Industry Applications Societies and the Power Sources Manufacturers Association, is set for February 6-10, 2000 at the Fairmont Hotel, New Orleans, Louisiana USA. Contacts for APEC '00 are TEL: +1-202-973-8664, FAX: +1-202-331-0111, e-mail: [apec@courtesyassoc.com](mailto:apec@courtesyassoc.com), web site: [www.apec-conf.org](http://www.apec-conf.org). Also see page 4 of this newsletter.

**IPEC-Tokyo, International Power Electronics Conference**, will be held April 3-7, 2000 at Keio Plaza Hotel, Tokyo, Japan in cooperation with the IEEE Power Electronics Society. The deadline for prospective authors for five copies of an extended summary is September 15, 1999. Send summaries to Secretariat of IPEC-Tokyo-2000, c/o International Communications Specialists, Inc., Sabo-Kaikan Annex, 2-7-4 Hirakawa-cho, Chiyoda, Tokyo 102-8646, Japan. For more information, visit the conference web site at <http://www.iee.or.jp/fias/ipec/> or contact General Chair Professor Ohnishi, e-mail: [ohnishi@sd.keio.ac.jp](mailto:ohnishi@sd.keio.ac.jp).

**Intermag 2000, International Magnetism Conference**, sponsored by the IEEE Magnetism Society, is set for April 9-13 in Toronto, Canada. Papers are solicited in all areas of applied magnetism, magnetic recording technologies and related fields. For information on submitting a two-digest of a proposed paper, visit [www.intermageonference.com](http://www.intermageonference.com).

**TELESCON 2000, Third International Telecommunications Energy Special Conference**, will be held May 7-10, 2000, at the Hotel Westin Bellevue, Dresden, Germany. The conference is organized by the Information Technology Society of the VDE Association

for Electrical, Electronic and Information Technologies in cooperation with the Telecommunications Sub-Group (INTELEC) of the IEEE Power Electronics Society. See page 7 of this Newsletter for more details.

**PESC® 2000, 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. See pages 8 and 9 of this newsletter for the Call for Papers. For advance information of this conference visit the conference web site at <http://pesc00.nuigalway.ie/>.

**IPEMC 2000, 3rd International Power Electronics and Motion Control Conference**, sponsored by the China Electrotechnical Society and the National Nature Science Foundation of China, in cooperation with the IEEE Power Electronics Society and the IEEE Beijing Section, is set for August 15-18, 2000, at Tsinghua University in Beijing, China.

**35th IEEE Industry Applications Society Annual Meeting**, organized by Associazione Elettrotecnica ed Elettronica Italiana and the IEEE Industry Applications Society, and cosponsored by the IEE, IEEJ and IEEE Power Electronics Society, will be held in Rome, Italy, October 8-12, 2000. For additional details visit [www.aei.it/ias2000.html](http://www.aei.it/ias2000.html). **CIEP, International Power Electronics Congress**, sponsored by CENIDET and the IEEE Section Morelos-Power Electronics Chapter, in cooperation with the IEEE Power Electronics Society, will be held in Acapulco, Mexico, October 15-19, 2000. For details on submitting an abstract, visit <http://www.cenidet.edu.mx/ciep2000/>.

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