

## President's Message

On behalf of the PEELS family around the world, I would like to offer condolences to those of you who may have suffered the loss of family, friends or colleagues during the tragedies of September 11. PEELS, like IEEE, will continue to be a truly global organization.

If we can turn our attention to positive, technical issues, I would like to report to you on an important step that has been taken to



improve the organizational structure of PEELS. Our society had consisted of 6 technical committees, each of them have specific functions that include organizing conferences

and workshops, standards, special Transactions issues, other publications, etc. These committees (and their chairs) are:

- Devices, Components, Packaging (Doug Hopkins)
- Transportation (Randy Frank)
- Telecommunications (Bob Jurewicz)
- Electronic Transformers (John DeCramer)
- Simulation, Modeling and Control [previously named "Computers in PE"] (Antonello Monti)

- Education (Marcelo Simoes)

Committees have emerged during the brief history of PEELS out of grass-roots efforts by volunteers interested in creating and organizing the committee activities. Clearly, this set of committees does not span the entire scope of power electronics. The administrative committee (AdCom) of PEELS and, in particular, the long-range planning committee had been discussing for several years the addition of technical committees to cover broad range of PE technologies. Under the leadership of Tom Jahns and Jerry Hudgins, who served successively as Long-Range Planning Chairs, and Dean Patterson, VP of Operations, the formation of three new technical committees was approved at the June AdCom meeting. These committees (and their chairs) are:

- DC Systems (Juan Cobos)
- Rectifiers and Inverters (Fang Peng)
- Motor Drives (Alfio Consoli.)

*Continued on page 11*

## William M. Portnoy (1930 – 2001)

Dr. William M. Portnoy passed away on September 23. Will had been an Associate Editor for the IEEE Transactions on Power Electronics for 13 years starting with Volume 2. He was a regular fixture at Power Electronics Specialists Conferences (PESC), where he not only contributed technically and was involved in many administrative

*Continued on page 2*

## Nominations Sought for Society Awards

The Power Electronics Society is earnestly seeking nominations for all three of the PEELS major awards for 2002. All nominations must be received by the Awards Committee Chair by January 15, 2002.

The year 2002 will mark the sixth year of our two newest awards—the PEELS Distinguished Service Award and the Richard M. Bass Outstanding Young Power Electronics Engineer Award. The William E. Newell Power Electronics Award will be presented for the twenty-sixth year.

The nomination and selection procedures for the three awards are similar. For each award, a Nominating Committee is responsible for identifying worthy candidates. Additionally, a general solicitation of nominations is made through this article. A separate Selection Committee then ranks all the nominees in priority order. If there are more than three candidates, a second ballot is prepared with the top three candidates from the first ballot. Both ballots are tallied using an arithmetically averaged process with priority weighting.



The William E. Newell Power Electronics Award is given for outstanding career achievement in power electronics. It is dedicated to the memory of Dr. William E. Newell of the Westinghouse Research and Development Center in Pittsburgh, Pennsylvania USA. The recipient is judged to have made outstanding contributions to the multidisciplinary field of power electronics that crosses the technical boundaries of a

*Continued on page 8*

## Texas A&M Wins 2001 Future Energy Challenge

Texas A&M was announced as the winner of the 2001 Future Energy Challenge at a student luncheon on October 1, 2001. The school will receive a prize of \$50,000 from the U. S. Department of Energy. The competitors were to design and build prototype inverters for fuel cell power, that could demonstrate a cost less than \$500 for a 10 kW system. Competition events took place during August at the U. S. National Energy Technology Laboratory in Morgantown, West Virginia. At the events, five Finalist Teams tested scale prototype 1.5 kW hardware intended to demonstrate their 10 kW design concept.

The 2001 Future Energy Challenge began in September 2000, when a team of volunteer reviewers examined proposals from many schools. Of these, 14 entries were accepted for participation. An engineering report evaluation in June 2001 narrowed the field to 11 semi-finalists, and then a volunteer judging team selected 5 Finalists to have their hardware tested. The prototype inverter submitted by Texas A&M University met all the operating requirements. This prototype and design were further analyzed for cost by industry volunteers, who concluded that the design can be manufactured in quantity at a cost of less than \$500.

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## Quicker News Delivery

The *Power Electronics Society Newsletter* is available on the internet in electronic PDF format much sooner than hardcopies can be printed, labeled, and delivered by postal mail. To receive email notification when the newsletter is posted on the PELS server, go to <http://www.pels.org/Mailing/MailForm.html> and add your name to the notification service list.

## Book Reviews

This issue has no book review because none were submitted. Please send the editor a short prioritized list of outstanding technical books that you would be willing to review and share with your colleagues.

### IEEE Power Electronics Society Officers

**Thomas Habetler, President**  
**Dean Patterson, V. P., Operations**  
**F. Dong Tan, V. P., Meetings**  
**Steven B. Leeb, 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; EMAIL: [gwester@jpl.nasa.gov](mailto:gwester@jpl.nasa.gov). Deadlines for copy are March 15, June 15, September 15 and December 15. Submission of items by email in plain-text format is preferred. Plain-text (straight ASCII) submissions on 3.5" diskettes are welcome, and should be accompanied by a backup printout. 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 both high-quality hard copy and RTF format file.

The editor gratefully acknowledges the Jet Propulsion Laboratory for significant support of his editorial activities.

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## Portnoy

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and planning roles for the annual meeting, but also set fashion trends through his usually-flamboyant neckwear. His conference activities included serving as finance chair, rap session organizer, and general conference chair. Will also served the Power Electronics Society (or pre-Society) as the first and only Treasurer of the newly-formed IEEE Power Electronics Council during the decade of the 1980's. He was chosen to receive the prestigious IEEE/PELS Distinguished Service Award this year at PESC in Vancouver, BC, in recognition of his long and dedicated service to the Society.



Will was a Fellow of the IEEE and a Professor at Texas Tech University in Lubbock, Texas, USA for many years. He earned a Ph.D. from the University of Illinois-UC, under the direction of John Bardeen, on the study of silicon and germanium. After graduation Dr. Portnoy worked for Hughes Aircraft Corp., then briefly at Texas Instruments in Dallas, before finally moving to a faculty position at Texas Tech.

He worked with electronic component designs and testing during his research career. Eventually he migrated into power electronics during the late 1970's and early 1980's. Will always had a very international group of graduate students in his laboratory and enjoyed being a part of any experimental project.

Of particular note is the fact that he was tireless in his recruitment of new, young engineers into service for the IEEE through involvement in the IEEE Power Electronics Society and Industry Applications Society. He was always on the lookout for new engineers at conferences and was relentless in pursuing them for committee and conference work, as well as being potential contributors and reviewers for technical papers. Many of the now-middle-aged engineers who are active in the society had some influential contact with Will early in their careers. His impact on the positive growth of the Power Electronics Society and the nurturing of young engineers in the field is a great legacy. We will miss him.

Dr. Portnoy is survived by his wife Alice, a daughter, son, and grandson.

Contributed by Jerry Hudgins  
 PELS Senior Past President

## Robert Balog Receives INTELEC® Fellowship

Robert Balog, a graduate student in the University of Illinois at Urbana-Champaign Department of Electrical and Computer Engineering, was awarded the first International Telecommunications Energy Conference (INTELEC) Fellowship for his research on auto-tuning integrated magnetic power supply filters for telecommunications power systems. INTELEC representative Robert Jurewicz presented Balog with the \$10,000 award September 10 during a seminar in Urbana. The INTELEC Fellowship is for graduate students who are involved in areas of power electronics applicable to communications.



Mr. Balog received a BSEE from Rutgers University in 1996. He has previously worked for Lutron Electronics as a design engineer and holds one U.S. patent. His research interests are in the areas of power electronics and analog circuits.

## EPE 2001 Recap

The European Power Electronics and Drives Conference (EPE 2001) was held August 27 – 29 in Graz, Austria. This conference received technical co-sponsorship from our society, and many PELS members attended.

The local organizing committee was led by Prof. Helmut Weiss, University of Leoben, Austria. Together with his staff, he did a fantastic job of organizing this event. Graz not only blessed us with fantastic weather, but also gave us excellent food, which we enjoyed in its cosy historic surroundings. EPE 2001 drew about 780 participants.

Typical for EPE are the large, well-organized dialog sessions (poster sessions) which are held each afternoon of this three-

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## Call for Papers for Special Transactions Issue

A special issue of the IEEE *Transactions on Power Electronics* will appear in March 2003 on the topic of digital control in power electronic circuits and drives. The scope includes:

- Digital control strategies for power electronics
- Microprocessor implementations
- Adaptive control
- Learning and intelligent control
- Modeling techniques for digital and microprocessor control
- Practical implementation issues for digital controllers

Surveys and papers with a tutorial flavor are also welcome.

All papers must be sent to Dr. Arthur Kelley, Editor in Chief, IEEE *Transactions on Power Electronics*, as per the instructions printed in each issue of the *Transactions* or as found at <http://www.pels.org/Comm/Publications/Transactions/Transactions.html>.

**Authors must specify that their manuscripts are intended for the Special Issue of the Transactions.** Papers submitted for the special issue will be reviewed by a Guest Editorial Review Board, under the supervision of the *Transactions* Editor in Chief.

The deadline for submission of the full papers for the special issue is **February 1, 2002**. Please contact the Guest Editor of the Special Issue for further information:

Dr. Steven Leeb  
 Editor, Special Issue  
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 Cambridge, MA 02139 USA  
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 FAX: +1 617 258 6774

## EPE 2001 Recap

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day conference. In the evening, technical workshops were offered on power devices, decentralized energy systems, etc. The session on engineering education turned out to be very interesting. Many university colleagues are working hard to bring power electronics into the engineering studies at an early time (first and second semester). Practical laboratory projects with hands-on experience on SMPS, as well as system-level projects with plug-and-play simulation and experiments seem to make a larger number of students interested in our field. On the technical side, the invited speakers (one each

## PESC 2001: Vancouver Revisited

Some people will remember PESC 1986, which was held in Vancouver at the same time as EXPO. That event had followed a memorable PESC/European Space Power Conference held in Toulouse the previous year. A major goal for PESC 2001 in Vancouver was to at least match—and hopefully extend—the experiences enjoyed and remembered by those who had attended PESC '86. Since I still have a dusty box of PESC '86 material on top of my bookcase I had a good starting point, but I still also needed to account for the way PESC had changed in the interim period.

We are lucky that the University of British Columbia maintains a strong organization for running conferences. My job as General Chair was greatly simplified by having the professional assistance of Rowena

Tate and her staff. My wishes were magically transformed into reality. I was also extremely fortunate that Annette von Jouanne at the University of Oregon was prepared to put in long hours sorting out the technical program.

The final attendance was 440 delegates and 44 guests, with 36 countries represented. This continues a steadily rising interest in PESC, even as it moves between continents. We processed 598 paper submissions, of which 342 were published in the conference proceedings. These covered subjects from aerospace power systems and alternative energy, through power quality and packaging, to the traditional areas of converters and drives. We also offered five optional tutorials on subjects from high-frequency mea-

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**INTELEC**<sup>®</sup>



## INTELEC<sup>®</sup> Fellowship Announcement

The Advisory and Conference Executive Committees of the International Telecommunications Energy Conference (INTELEC) have established an annual \$10,000 Fellowship targeted for electrical engineering graduate students who are specifically involved in areas of power electronics applicable to communications. The applicable systems include wireline, optical, wireless, or any combination of systems including the internet and older imbedded telecommunications systems. Alternative energy systems for the communications network are also applicable.

This Fellowship is international and is open to individuals from all countries. The recipient must be an electrical engineering graduate student. Only one INTELEC fellowship grant can be received by an individual. It is a one-time grant for the recipient.

Interested electrical engineering graduate students should submit:

- A short essay (no more than one page) explaining how their proposed project can be applied to the powering of communications systems.
- A transcript of their grades
- A letter of support from their academic graduate advisor

These materials should be submitted by **31 January 2002** to the Chair of the IEEE Power Electronics Society Educational Activities Committee:

Associate Professor Marcelo Godoy Simoes  
 Chair, IEEE/PELS Educational Activities Committee  
 Colorado School of Mines  
 Golden, CO 80401-1887 USA

The INTELEC Fellowship recipient will be notified by 29 March 2002.

morning) gave informative overviews on decentralized energy systems (ABB), automotive applications (Bosch) and silicon carbide devices (Infineon). These applications and technologies will define the next generation of power electronic products.

More information can be found on the EPE association website; [www.epe-association.org](http://www.epe-association.org) which has a link to the EPE2001 conference website.

Rik De Doncker  
 European Liason



## ANNOUNCEMENT AND CALL FOR PAPERS

Montréal is proud to host the 24th International Telecommunications Energy Conference. This important event will take place from September 29 through October 3, 2002 at the Palais des Congrès de Montréal. INTELEC is an international forum for the exchange of ideas and information on powering communications systems both today and in the future. The conference provides a unique opportunity for network operators and designers to interact directly with the designers, manufacturers, and distributors of power equipment and to discuss a wide variety of topics related to power systems, components, and energy storage. Over 1500 representatives from more than 50 countries are expected to attend.

### Reliable Energy: The Driving Force Behind Dependable Communications

The theme for INTELEC 2002 will be addressed in depth by both the keynote and the plenary speakers, who will explore factors currently affecting the reliability and availability of energy on the utility grid. Also addressed will be strategies that wireline, wireless, cable and broadband operators can deploy to meet increasing expectations of its customers for uninterrupted and dependable communications. Over 120 technical papers, covering virtually all aspects of telecommunications power will be presented. Several workshops, tutorials and an exhibition of power equipment used in communications networks are also scheduled at the conference.

**SCOPE OF CONFERENCE:** Topics for the technical papers to be presented include, but are not limited to, the following:

- Integrating the diverse power requirements of cable, wireless and the Internet
- Batteries - energy storage systems and devices
- Power for cellular and personal communications systems (PCS)
- Cable system operation, administration and maintenance
- Challenges of powering large multimedia networks
- Power for cable TV
- New technology power generation and energy storage systems
- DC power plants - rectifiers, distribution, computer supervision, remote monitoring and control
- Power system architectures
- Flywheel energy storage systems
- DC/DC converters - topologies, design and simulation
- AC power supplies - inverters, UPS, power supplies for computer systems and terminals
- Primary power systems - engine-alternators, fuel cells, solar and wind systems
- Building and environmental system design - energy conservation techniques
- Physical and thermal design - energy-efficient design
- Electromagnetic compatibility - EMI, ESD, EMP
- Grounding and bonding of equipment, systems and buildings
- Standards and specifications

**ABSTRACTS AND MANUSCRIPTS:** An abstract that accurately reflects the content of each proposed technical paper must be received by the Program Committee **not later than January 18, 2002**. The abstract should not be shorter than 250 words and not longer than 500 words. It must include all information considered necessary by the authors to demonstrate the technical merit of the paper. **Papers will not be accepted if they include commercial advertising or product endorsements.** Abstracts can be sent via fax, email or regular mail. Please direct all abstracts to:

**INTELEC 2002 – PCMI, 7916 Convoy Court, San Diego, CA 92111 USA**  
**Phone: +1 858 565 9921 Fax: +1 858 565 9954**  
**Email: INTELEC@pcmisandiego.com**

Manuscripts of accepted papers will be included in the Conference Proceedings that will be distributed at the conference. The length of each manuscript must not exceed eight single-spaced typewritten pages, tables and figures included. Abstracts, manuscripts, and oral presentations will be in English. Detailed instructions on format will be mailed to those authors whose abstracts have been accepted. Where multiple authors are involved, please indicate to which author the mail should be addressed. Acceptance letters will be mailed to authors by April 1, 2002. The accepted manuscripts are **due no later than May 30, 2002**.

## Tricks of the Trade: An Overview of Dynamic Braking Systems<sup>©</sup>

Contributed by Juan C. A. Floriani  
Computer Department, FICH - UNL  
Santa Fe, Argentina  
fjojca@fich1.unl.edu.ar

Electronic drives provide functions such as speed control, torque control, current control, etc. In addition, a drive should carry out the function of *motor braking*. This could involve stopping the motor within a certain number of revolutions or simply slowing it down to a new speed, according to a reference signal. For braking, an electric motor can be employed to work reversibly as a generator. During the braking process, a *braking torque* (often nearly constant) is imposed on the motor to reduce speed linearly with time,

$$\omega(t) = \omega_0 - \frac{K_T I}{J} t \quad (1)$$

where  $\omega_0$  is the initial motor speed,  $K_T$  is the torque constant,  $I$  is the braking current, and  $J$  is the moment of inertia of the system. The kinetic energy that is extracted is injected into the dc bus with a power that (neglecting the losses) is approximately

$$P(t) = P_0 - k t \quad (2)$$

where  $P_0$  is the initial power at the instant of braking. For dc motors or field-oriented ac motors, the constants in (2) are

$P_0 = E_0 I$  and  $k = (K_V K_T I^2) / J$ , with  $E_0$  as the initial e.m.f. of the motor and  $K_V$  as the speed constant of the motor.

In a drive with an input rectifier-capacitor stage (see Fig. 1), the energy injected into the dc bus during braking must be stored in the filter capacitor, and increases the bus voltage, since the rectifier blocks reverse current flow. This increase requires a method to maintain the bus voltage within acceptable limits.

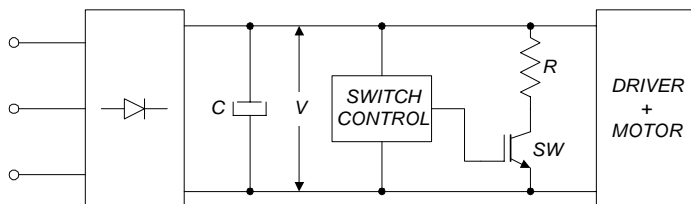


Fig. 1. Dynamic braking system.

One common approach is a *dynamic braking system* that dissipates the excess bus energy in a resistance, as shown in Fig. 1. Resistance  $R$  is controlled by switch  $SW$  (IGBT, MOSFET, etc.). The "Switch Control" block in Fig. 1 is usually a hysteresis voltage controller, like that shown in Fig. 2.

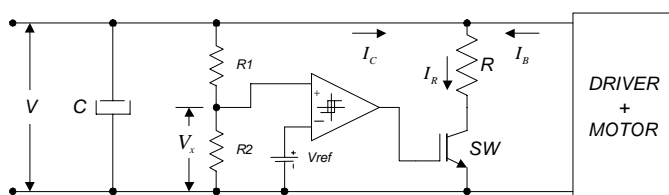


Fig. 2. Hysteresis control circuit.

When the bus is delivering energy to the motor, the voltage  $V$  and divider resistors  $R1$  and  $R2$  should have values such that  $V_x < V_{ref}$ , and the switch is open. When braking begins, the motor kinetic energy increases  $V$  until  $V_x > V_{ref}$ . Then the comparator closes switch  $SW$ , and energy begins to dissipate in  $R$ . The resistance  $R$  should be selected such that  $I_R > I_B$  during the braking process. Thus  $R$  both absorbs the braking current  $I_B$ , and reduces the capacitor voltage through discharge. The capacitor discharge continues until  $V_x < V_{ref}$ , then the comparator switches OFF again. When the switch opens, a new cycle begins if braking continues. The process is similar to a hysteresis-controlled buck dc-dc converter, and the average bus voltage is held constant as switch action continues. The hysteresis action generates variable switching frequency for  $SW$ , following a nonlinear law. The maximum switching frequency occurs near the center of the braking time interval [1]. The value of the ripple  $\Delta V$  during braking depends on the comparator hysteresis. One advantage of a dynamic braking system in most applications is that the resistor acts only for a short time interval, so it can be sized based on short-term thermal ratings. Fig. 3 shows three typical waveforms of a dynamic braking system, including the bus voltage ripple and the pulsating current during the braking process.

A dynamic braking system is simple, reliable, and inexpensive. However, it is inefficient since the braking energy is dissipated. In applications in which braking energy is high, such as transportation systems, it can be cost-effective to recover it. For this, the energy can be injected back into the three-phase input line with an inverter in parallel with the input rectifier. This inverter only works during the braking, and can be controlled to return braking energy with sinusoidal currents, in-phase with the corresponding input voltages to give unity power factor. For a more detailed description of this mono-directional regenerative braking system, see reference [2].

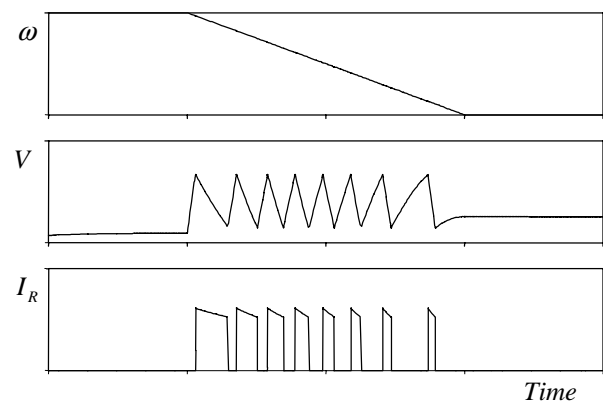


Fig. 3. Waveforms of a dynamic braking system.

- [1] Floriani J. C. A. "Characteristics of the Dynamic Braking System in the Electric Motors", *Nueva telegráfica Electrónica Review*, N° 38, pp. 356-362, Argentina, 1999 (in Spanish).
- [2] Floriani J. C. A., "Problems of the Regenerative Braking System and Study of a Modified Mono-Directional Solution", Doctor Thesis, Polytechnic of Milan, Milan, Italy, 1997 (Italian).

*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.*

## Photos from PESC 2001, Vancouver, BC



See related  
article in this  
*Newsletter*



**TOP ROW** Conference Chair Bill Dunford; Learning occurs both during presentations (middle photo—Tom Wilson, Manny Landsman, Dean Patterson) ... and during animated discussions between sessions (far right—Albert Chow, David Perreault); **MIDDLE ROW** Phil Krein explains a poster display to delegates; the Modeling, Simulation, & Control Technical Committee (one of the many PELS committees that meet at PESC); **BOTTOM ROW** Salmon for the Conference Banquet; an Opera Breve entertainer serenades Charlotte Dunford (daughter of Bill) at the Awards Banquet; PESC Chairs Ger Hurley (2000) and Dean Patterson (2002). "Learning" photos in top row courtesy of John Kassakian.

## PESC 2001

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surements to power-factor correction. The attendance at these was a little disappointing, but this may have been our fault for offering a train/boat tour at the same time. I am pleased that we managed to maintain a good level of interest in the face of competition from at least two related conferences in the same time slot. I am also pleased that many delegates attended the sessions on the final afternoon and the Awards Banquet that evening. This may be due in part to our all-inclusive pricing, and in part to a bus strike which made it difficult to leave the campus.

The conference was designed to keep delegates continuously occupied. On Monday evening a concert by the Pacific Winds Ensemble in the state-of-the-art UBC Chan Centre concert hall was accompanied by re-

freshments in the elegant semi-circular lobby. One of the main social events was the salmon barbecue on Wednesday evening at the UBC Museum of Anthropology, a spectacular award-winning building designed to showcase the artistic achievements of the Northwest Coast Indians. The barbecue was held in a beautiful setting overlooking English Bay with the Coastal Mountain Range in the background. Before and after the barbecue, attendees had exclusive access to the museum. At the delicious Awards Banquet we recognized and celebrated numerous award winners (see related article in July Newsletter), and were entertained by a prize-winning bagpiper and Opera Breve.

Some technical innovations at PESC 2001 included the use of electronic submissions throughout and extensive use of elec-

tronic presentation methods during the sessions. We also had two poster sessions combined with industrial displays. We made an effort to ensure that the acceptance criteria were uniform between all sessions. The inclusion of poster sessions at a conference leads to extremes of opinion about their value. I think the general feeling was positive, and I would recommend posters again as a standard PESC feature. One of the traditional features of PESC which I hope we do preserve is to give the General Chair the discretion to try new ways of managing the conference.

I hope we will all meet again next year as PESC shifts to yet another continent in Cairns, Australia.

*Bill Dunford*  
PESC '01 General Chair

## Simulation of Power-Electronics Systems

In the last few years the increasing computational power of personal computers—along with advances in power electronics and drives technology—have made system simulations a feasible step in the design process. Computational tools integrate multiple disciplines in diverse fields such as devices, converters, control theory, and motor drives. Educators and practicing engineers now have several options to simulate power electronics systems, depending on their preferences and background.

I am starting to organize information about such tools to see what is available and what types of problems they can solve. If you want to contribute to these efforts, please send me your comments and suggestions about simulation tools for power electronics. Depending on how the information is provided, I will try to organize and post it at our website, including some links and indications of features.



Some feedback from our members is summarized below. These comments by no means endorse one platform or any specific simulation environment. Although reviewed products inevitably receive a certain degree of publicity, our purpose here is to provide unbiased user-oriented information of general educational nature.

Prof. Ned Mohan is putting a lot of efforts towards PSpice and Simulink/Matlab. Based on a survey and some workshops, he is using PSpice to integrate basic concepts and design of converters and feedback controllers. However for controlling dynamic performance of electric drives, it seems that Simulink is very good software, because Matlab integrates easily with students' background from previous control courses. With the drive system modeled in Simulink, it is very easy to download the code into a DSP (for example, using a rapid prototyping tool available from DSPACE) for real-time control of electric drives for student experiments in a hardware laboratory. An easy hardware confirmation of simulation results is extremely satisfying to students and prepares them well for industry. Such a hardware laboratory will be demonstrated at an NSF-sponsored workshop organized by the University of Minnesota in January 2002 ([www.ece.umn.edu/groups/workshop2002](http://www.ece.umn.edu/groups/workshop2002)).

## PELS AdCom Meeting Highlights

The Administrative Committee (AdCom) of the IEEE Power Electronics Society held its fall meeting on Sunday 30 September at the Hyatt Regency Hotel in Chicago, on the opening day of the IAS Annual Meeting. Here are highlights of that meeting, summarized in action items and motions:

### Action Items

- Bob Myers will review SAMIEEE lists to identify qualified members for elevation to Senior Member and will develop a letter to PELS chapters promoting Senior Membership. The Senior Membership program will be managed by Enrico Santi.
- Jerry Hudgins will assume responsibility for developing cost estimates for a video on introduction to power electronics.
- Tom Habetler will encourage Awards Chair Chris Riddleberger to form a subcommittee to handle the Distinguished Lecture Program.
- Jaime Arau will study the appointment of area chairs, based on IEEE regions, to oversee chapters and will have a plan in place by the end of 2000.
- Phil Krein, Ron Harley and Ira Pitel will meet during the IAS Annual Meeting to pursue development of a joint magazine on power electronics.
- Myers will file a copy of the approved Bylaw addition with TAB.
- Marcelo Simoes will contact Mark Halpin of IAS about participation in a CD tutorial on power electronics.
- Myers will ask AdCom members to

Prof. Johann W. Kolar and Uwe Drofenik are launching a new web-based software tool (iPES) for teaching a power electronics basic course developed at the Power Electronic Systems Laboratory, Swiss Federal Institute of Technology (ETH), Zurich, Switzerland. iPES is freely available on the Internet at <http://www.ipes.ethz.ch>. The tool consists of Java-applets (small programs) with related text in HTML. Therefore, installations are not required and a standard web-browser with Java enabled is all one needs. Since there is no server-side processing iPES can also be used offline on a CD ROM.

While there are other projects using Java-applets in power electronics education with emphasis on simulation, in this new approach the focus is on animation. The user can work with a very intuitive self-explaining graphical user interface, click and drag

submit any budget inputs for 2003 to his office by the end of the year.

### Motions

- Accepted final reports for closed conferences CIEP'00 and INTELEC'00 and the 2000 Workshop on Transportation.
- Approved technical sponsorship of 2002 IEEE Symposium on Diagnostics in Electric Machines, IASTED on renewable energy and IPOEMC'03.
- Authorized the Meetings Committee to approve sponsorship of SPEEDAM'03 in Atlanta.
- Specified that participation in the Book Broker program for technically co-sponsored conference be approved by the Meetings Committee and the AdCom.
- Endorsed a priority program for publication of conference ads in the PELS Newsletter.
- Approved changes in the Society's 2002 budget to show a net surplus of \$216,000.
- Asked the Publications Committee to take the lead in developing a plan – to be submitted for TAB approval - for on-line power electronics letters.
- Adopted a Bylaws addition directing technical committees to participate in the technical programs of PELS-sponsored conferences.
- Authorized investing \$10,000 in a joint project with IAS and the Educational Activities Board to produce a CD-ROM tutorial on an introduction to power electronics.

*Bob Myers  
PELS Administrator*

key parameters of basic circuits, and immediately study the results of the parameter changes. The examples are kept simple in order to focus on main principles of the power electronics circuits.

While iPES is about basic power electronics, an advanced course in the same style is planned for 2002 including FEM-based applets on the operating principle of three-phase AC machines and field-oriented control. iPES is currently available in English, German and Japanese. Korean will be available soon, and more translations, e.g. in French and Spanish are planned for the near future.

*Marcelo G. Simoes  
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Tel: +1 303 384 2350  
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**Nominations Sought** *from page 1*  
number of societies of the IEEE. The award consists of an inscribed plaque and a cash award of \$1,750. Over a span approaching three decades, this award has come to represent the recipient's crowning achievement as a contributor to the field of power electronics. The Nominating Committee for this award is the PELS Awards Committee. The Selection Committee comprises the past winners of the 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. This award consists of an inscribed plaque and a cash award of \$1,200. The Nominating Committee for this award consists of all elected and ad hoc members of the PELS Administrative Committee. The PELS Awards Committee serves as the Selection Committee.

The Richard M. Bass Outstanding Young Power Electronics Engineer Award is given for outstanding achievement in the field of power electronics by an IEEE member of any grade who is less than 35 years of age on January 1, 2002. It is dedicated to the memory of Professor Richard Bass, a

former treasurer of the Society. The recipient is judged to have made an outstanding contribution to the field of power electronics. This award consists of an inscribed plaque, a cash award of \$500, and reasonable reimbursement for transportation expenses up to \$500 to attend the Annual PELS Awards Banquet. This banquet is typically held during the Power Electronics Specialists Conference. The Nominating Committee consists of the Chair of this Awards Subcommittee and six individuals appointed by this Chair. The Selection Committee comprises six past recipients of the Newell Award appointed by this Chair.

Although each of these three awards has a Nominating Committee, every member of PELS has the opportunity, and is encouraged, to nominate candidates for these awards. You may use the forms printed in this *Newsletter*, attaching a separate sheet summarizing the nominee's qualifications and achievements. These forms are also available at the PELS web site at [www.pels.org](http://www.pels.org). Alternatively, you may request nomination forms and a sheet giving the details of the selection criteria and the nomination and selection procedures from the Awards Committee Chair. Please note the strict limits on the length of each nomina-

tion. Nominations that exceed the limits will be truncated before they are submitted to the selection committees.

At the Awards Banquet, the Society will also present the PELS Transactions Prize Paper Awards to the authors of the three papers judged by the Associate Editors to be the best papers published in the PELS Transactions in 2001. A Best Chapter Award, inaugurated in 2000, will be presented to a PELS chapter. For further information regarding the latter award, please contact Professor Jaime Arau at [jarau@cenidet.edu.mx](mailto:jarau@cenidet.edu.mx).

The Institute (IEEE) also has an awards program comprising IEEE Medals, IEEE Technical Field Awards, Service Awards and Prize Paper Awards. For additional information, see the IEEE web site at [www.ieee.org](http://www.ieee.org) or send a fax to the IEEE Awards Board, Piscataway, NJ USA, +1 732 981 9019. If you would like assistance, please contact the PELS Awards Committee Chair.

*Chris Riddleberger*  
Chair, PELS Awards Committee  
497 Old Mine Brook Road  
Far Hills, NJ 07931-2550 USA  
Tel: +1 908 221 0013  
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INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS, INC.

## IEEE POWER ELECTRONICS SOCIETY

### NOMINATION FORM

### The William E. Newell Power Electronics Award

Award Year 2002

Nominated by: \_\_\_\_\_ Nominator's IEEE Member Number: \_\_\_\_\_

Nominator's FAX Number: \_\_\_\_\_ Nominator's E-mail Address: \_\_\_\_\_

Nominee's Name: \_\_\_\_\_ Nominee's E-mail Address: \_\_\_\_\_

Nominee's Business Address: \_\_\_\_\_

Nominee's Educational Background: \_\_\_\_\_

On a separate sheet or sheets of A4 or 8½"×11" paper, summarize the Nominee's qualifications and contributions to the field of power electronics. Since not all members of the Selection Committee may 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.

A strict limit of 750 words must be observed for the attached document. Nominations longer than this limit will be truncated at 750 words before they are submitted to the Selection Committee.

Please send this form and the attached sheet(s) to Christopher O. Riddleberger, PELS Awards Chair, 497 Old Mine Brook Road, Far Hills, NJ 07931-2550 USA; FAX: +1 908 221 1014; E-mail: [c.riddleberger@ieee.org](mailto:c.riddleberger@ieee.org)

**This form, fully completed, and accompanying page(s) must be received by 15 January 2002.**



INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS, INC.

**IEEE POWER ELECTRONICS SOCIETY**

NOMINATION FORM

**Distinguished Service Award**

Award Year 2002

Nominated by: \_\_\_\_\_ Nominator's IEEE Member Number: \_\_\_\_\_

Nominator's FAX Number: \_\_\_\_\_ Nominator's E-mail Address: \_\_\_\_\_

Nominee's Name: \_\_\_\_\_ Nominee's E-mail Address: \_\_\_\_\_

Nominee's Business Address: \_\_\_\_\_

Nominee's Educational Background: \_\_\_\_\_

On a separate sheet or sheets of A4 or 8½"×11" paper, summarize the Nominee's qualifications and contributions to the Power Electronics society. Since not all members of the Selection Committee may know the Nominee, please describe his/her most pertinent achievements and accomplishments in introducing new programs, nurturing growth of individual Society members, and enhancing the reputation and stature of the Society. Provide specific examples and explain their significance.

A strict limit of 600 words must be observed for the attached document. Nominations longer than this limit will be truncated at 600 words before they are submitted to the Selection Committee.

Please send this form and the attached sheet(s) to Christopher O. Riddleberger, PELS Awards Chair, 497 Old Mine Brook Road, Far Hills, NJ 07931-2550 USA; FAX: +1 908 221 1014; E-mail: c.riddleberger@ieee.org

**This form, fully completed, and accompanying page(s) must be received by 15 January 2002.**

INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS, INC.

**IEEE POWER ELECTRONICS SOCIETY**

NOMINATION FORM

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

Award Year 2002

Nominated by: \_\_\_\_\_ Nominator's IEEE Member Number: \_\_\_\_\_

Nominator's FAX Number: \_\_\_\_\_ Nominator's E-mail Address: \_\_\_\_\_

Nominee's Name: \_\_\_\_\_ Nominee's E-mail Address: \_\_\_\_\_

Nominee's Business Address: \_\_\_\_\_

Nominee's Educational Background: \_\_\_\_\_

On a separate sheet or sheets of A4 or 8½"×11" paper, summarize the Nominee's qualifications and contributions to the field of power electronics. Since not all members of the Selection Committee may 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.

A strict limit of 600 words must be observed for the attached document. Nominations longer than this limit will be truncated at 600 words before they are submitted to the Selection Committee.

Please send this form and the attached sheet(s) to Christopher O. Riddleberger, PELS Awards Chair, 497 Old Mine Brook Road, Far Hills, NJ 07931-2550 USA; FAX: +1 908 221 1014; E-mail: c.riddleberger@ieee.org

**This form, fully completed, and accompanying page(s) must be received by 15 January 2002.**

# CALL FOR PAPERS AND TUTORIAL PROPOSALS

for the 8<sup>th</sup>

## Workshop on Computers in Power Electronics



# COMPEL 2002



June 3–6, 2002

University of Puerto Rico at Mayagüez  
Mayagüez, Puerto Rico

The Eighth IEEE Power Electronics Society Workshop on **Computers in Power Electronics (COMPEL 2002)** will focus on computational science and engineering applications to the design, analysis, simulation, control, and operation of power electronic circuits and systems. An additional interest of COMPEL 2002 is the use of information technology to enhance and deliver power electronics courses and curricula.

Computation is now regarded as an equal and indispensable partner, along with theory and experiment, in the development of future generations of power electronic systems where cost and reliability constraints will impose higher demands on the capability of power electronic systems simulation, design, and development tools to accurately predict system behavior before implementation. The goal of this workshop is to provide a lively venue for the discussion of these issues.

### Areas of Interests

- Simulation tools
- Computer control
- Numerical methods
- Device, Circuit, and System Modeling
- Multi-disciplinary modeling of power electronic systems
- Virtual prototyping
- Reliability modeling and prediction
- Cost modeling
- Physics of failure modeling
- Integration of software platforms
- Standards for data exchange across software platforms
- Multimedia delivery of power electronic courses
- Use of web to deliver or to assist in power electronic courses

### Workshop Format

Sunday, June 3	Half-day tutorials
Monday–Wednesday	Workshop technical sessions

### Social Events

Sunday night reception  
Tuesday dinner social

### Spouses' Program

Tour of the Camuy Caves or the Parguera Phosphorescent Bay. Check website for final details.

### Deadlines

Submission of abstracts and digests: **January 15, 2002**  
Notification of acceptance: **March 15, 2002**  
Final camera-ready manuscripts: **June 3, 2002**

### Preparation of Abstracts and Digests

Prospective authors of papers and tutorial proponents are asked to submit a 50-word abstract and a three- to four-page digest (including figures, tables and references) of their planned presentation. Both abstract and digest should be doubled-spaced on 8 1/2" x 11" or A4 size paper. All authors should obtain company and governmental clearance prior to submission of abstract and digest.

The abstract heading must include the title of the presentation, names and affiliations of all author(s) and the corresponding author's mailing address, telephone and fax numbers, and e-mail address. If there are multiple authors the corresponding author must be clearly identified. The heading of the digest should include only the title with no mention of the authors or their affiliations. Electronic submission of the abstract, digest, and final manuscript is highly encouraged, but only on PDF or PS format (<2MB files). Both abstract and digest should be submitted to:

Miguel Vélez-Reyes  
Chair, COMPEL 2002  
UPRM Electrical and Computer Eng. Dept  
PO Box 9042  
Mayagüez, PR 00681-9042 USA  
Tel: +1 787 832 4040, ext. 2888  
FAX: +1 787 831 3244  
Email: [m.velez@ieee.org](mailto:m.velez@ieee.org)

### Conference Email and Internet Addresses

[Compel@ece.uprm.edu](mailto:Compel@ece.uprm.edu)  
<http://ece.uprm.edu/~compel>

## Chapter News

It is a pleasure to announce and welcome the recently created Rio de Janeiro (Brazil), Yugoslavia, and Venezuela joint chapters in which PELS and other sister societies are involved. I would like to express my deepest wishes for the success of these new chapters. I also want to remind all chapters—including existing ones—that you count on my support to develop any kind of project or technical idea in benefit of our members.



Contact information for every chapter, along with information on the Regional Lecturers' program, has been posted on the PELS website ([www.pels.org/Comm/Chapters/chapters.html](http://www.pels.org/Comm/Chapters/chapters.html)). I would ask for your cooperation to keep the contact information updated for our members. I encourage each chapter to review their contact information and send me any missing information.

Finally I would like to announce that the 2001 Best Chapter Award application form will be published in the next edition of this Newsletter. I encourage all active chapters to participate in this event. I have had the opportunity of learning about some of the activities that take place in your chapters, and I am sure that chapter activities of great importance are being conducted in many more cases than the ones that have been reported in past years. Those activities can give chapters a good chance of winning this important and increasingly traditional award.

**Jaime Arau**  
Chapters Coordinator  
CENIDET  
Cuernavaca, MEXICO  
Tel/Fax: +52 73 18-77-41 or 12-24-34  
[j.arau@ieee.org](mailto:j.arau@ieee.org)

## Transactions Editor Address Change

Effective immediately please use the following new address for all correspondence to the PELS *Transactions* Editor-in-Chief:

*Editor in Chief - PELS Transactions*  
Linear Technology Corporation,  
Raleigh Design Center  
15100 Weston Parkway, Suite 202  
Cary, NC 27513 USA  
Voice: +1 919 677 0968  
Fax: +1 919 677 9814  
Email: [peleditor@ieee.org](mailto:peleditor@ieee.org)

## Society Bylaws Amended

The Power Electronics Society AdCom, at a meeting September 30 in Chicago, approved a new Society bylaw pertaining to expanded involvement of technical committees in the technical programs of PELS-sponsored conferences (e.g., APEC, PESC, and INTELEC).

The new bylaw reads:

"Section 10.2.6 - The technical committees shall promote, organize, and conduct peer reviews of digests submitted for PELS-sponsored conferences in cooperation with the conference technical program chair."

*Keyue Smedley*  
Constitution/Bylaws Chair

## Energy Challenge from page 1

The U.S. Department of Defense provided five additional category awards for Finalist and semi-finalist teams. Virginia Tech received a \$9,000 Performance Award. The University of Central Florida received a \$5,000 Engineering Award. The University of Wisconsin – Madison received a \$5,000 Report Award. Drexel University received a \$3,000 Presentation Award, and the University of Illinois at Urbana-Champaign received a \$3,000 Innovation Award.

Further information can be found at <http://www.energychallenge.org>.

## President's Message from page 1

While these new committees cover very wide technical areas at this time, we were able to form a minimum number of new committees while still spanning the scope of power electronics. It is also very important to understand that these "boundaries" of power electronics roughly match those that have been used for some time in the technical organization of our flagship conference, PESC. In the past, PESC had technical "tracks," each with a chair responsible for organizing paper reviews. The technical committees will now appoint these track chairs, and it is hoped that the committee members will serve as members of the program committee. All the chairs of the technical committees are members of the AdCom of PELS.

I hope that each of you, as PELS members, would consider getting involved with one or more of these committees. If you have any questions or comments please feel free to contact Dean Patterson at [patterson@ieee.org](mailto:patterson@ieee.org).

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## Show Off Your Membership In the Power Electronics Society



Order your PELS shirt today. The polo shirt is maroon with the PELS logo on the left breast and the IEEE logo on the right sleeve. The shirt is available in sizes ranging from small to XX large.

To order send full payment (checks only, please) and the coupon below to:

PELS Administrator Bob Myers  
799 North Beverly Glen  
Los Angeles, CA 90077 USA



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Total Number \_\_\_\_\_ Total Price (@\$27 USD each) \_\_\_\_\_

*Only checks will be accepted (sorry, no cash or credit cards). Make checks payable to "IEEE PELS." Price per shirt includes shipping and handling.*

## Meetings of Interest to PELS Members

**The 11<sup>th</sup> International Symposium on Power Electronics**, will be held October 31–November 2, 2001 in Novi Sad, Yugoslavia. The Symposium is sponsored by IEEE Yugoslavia Section, Ministry of Science and Technology of Republic of Serbia, and Serbian Academy of Science and Art. For more information visit [www.ns.ac.yu/prez](http://www.ns.ac.yu/prez) or send e-mail to [dee@uns.ns.ac.yu](mailto:dee@uns.ns.ac.yu).

**ELECO 2001, the International Conference on Electrical & Electronics Engineering**, will be held November 7–11 in Bursa, Turkey. PELS is a technical co-sponsor. Visit <http://www.elk.itu.edu.tr/eleco2001> for additional information.

**COBEP 2001, the 6<sup>th</sup> Brazilian Power Electronics Conference**, is scheduled for November 11–14 in Florianópolis, SC - Brazil. PELS is a technical co-sponsor. For additional information, visit [www.sobraep.ufsc.br/cobep2001](http://www.sobraep.ufsc.br/cobep2001).

**The IEEE Transactions on Power Electronics** will devote a Special Issue to digital control in power electronic circuits and drives. Papers must be submitted by February 1, 2002. See the call for papers in this *Newsletter* for details.

**APEC<sup>®</sup> 2002, the 17<sup>th</sup> 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 Adams Mark Hotel, Dallas, TX, USA, March 10–14, 2002. See <http://www.apec-conf.org> for details.

**PCC-Osaka 2002, the IEEEJ/IEEE Joint IAS Power Conversion Conference**, is planned for April 2–5, 2002 in Osaka, Japan. PEDS '01 is held in technical cooperation with the IEEE Power Electronics Society and numerous other organizations. For further information see <http://www2.convention.co.jp/pcc/>.

**PES'02, the 6<sup>th</sup> International Conference on Power and Energy Systems**, will be held in Marina del Rey, CA, USA on May 13–15, 2002. PES 02 is comprised of 4 symposia, and PELS is a technical co-sponsor. Papers are due January 15, 2002. For complete information, see <http://www.iasted.com/conferences/2002/marina/pes.htm>.

**COMPEL 2002, the 8<sup>th</sup> IEEE Power Electronics Society Workshop on Computers in Power Electronics**, will be held June 3–6, 2002 at the University of Puerto Rico in Mayagüez, Puerto Rico. Digests are due January 15, 2002. For details see the call for papers in this *Newsletter* or visit <http://ece.uprm.edu/~compel>.

**SPEEDAM 2002, a Symposium on Power Electronics, Electrical Drives, Automation & Motion**, will be held

June 11–14 in Ravello, Italy. PELS is a technical co-sponsor. See <http://www.speedam.unina.it/> for details.

**PESC<sup>®</sup> 2002, the 33<sup>rd</sup> Annual IEEE Power Electronics Specialists Conference**, will be held June 23–27, 2002 in Cairns, Australia. PESC is sponsored exclusively by the IEEE Power Electronics Society. For additional information visit <http://www/pesc2002.com/>.

**EPE-PEMC 2002, the 10<sup>th</sup> International Power Electronics and Motion Control Conference**, will be held September 9–11, 2002 in Cavtat and Dubrovnik, CROATIA. Digests are due November 20. For additional information visit <http://www.fer.hr/epe-pemc2002>.

**INTELEC<sup>®</sup> 2002, the 24<sup>th</sup> International Telecommunications Energy Conference**, will be September 29 – October 3, 2002 in Montréal, Canada. PELS is a technical co-sponsor. Digests are due January 18. Visit <http://www.intelec.org> for additional information.

**CIEP 2002, the 8<sup>th</sup> IEEE International Power Electronics Congress**, will be held October 20–24 in Guadalajara, Mexico. PELS is a technical co-sponsor. Digests are due January 7, 2002. Visit <http://ciep2002.iteso.mx> for details.

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March 10–14, 2002**