



President's Message

As I was thinking about topics for this column, I was sitting in an airport waiting for a possible upgrade for my flight from Milwaukee to Atlanta. It led me to think about ways in which we can all upgrade the value of our membership in IEEE and PEELS. One important way, that I strongly encourage, is the upgrading of membership level. Student membership in IEEE has continued to grow at a faster rate than total membership. Our efforts need to focus on the retention of recent graduates, which is far lower (25%) than the average retention rate (85%). Student members and recent grads should consider involvement in the GOLD (Graduates of the Last Decade) program that seeks to network engineers at a similar stage in their career. The reduced membership fee structure for recent grads is also an incentive to retain these very important members of our Society.



Those of you who are eligible should consider your own elevation to Senior Member. Senior Membership enhances the image of IEEE members as professionals to industry and the public, and it rewards the member with peer recognition for accomplishment and service. The IEEE now estimates that only half of those eligible are Senior Members. As was pointed out at a recent membership development retreat, there are many misconceptions concerning higher-grade membership. You do NOT have to be a Nobel Prize winner to qualify. You do NOT have to be published and often. It's NOT only for academics. It's NOT only for old fossils. NOT only apple polishers need apply, and NOT only active volunteers are elected. Anyone with 10 years in the profession (not 10 years of IEEE membership) and who has shown 5 years of significant performance is eligible. You must have three IEEE Senior Member or Fellow references, OR be nominated by a Senior Member or Fellow and then only two additional reference forms are needed - none by the nominator. You can get all the forms and information you need at www.ieee.org/organizations/rab/md/smforms.htm.

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Call for Papers for Special Transactions Issue

A special issue of the IEEE *Transactions on Power Electronics* has been authorized by the Publications Committee of the Power Electronics Society. It is hosted by the Technical Committee on Simulation, Modeling, and Control, and will be devoted to the general area of digital control in power electronic circuits and drives.

The scope of the issue 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

Continued on page 9

INTELEC® 2001 Coming in Scotland

For those of you already familiar with INTELEC — welcome again, and for those of you intending to attend this years event, I am pleased to invite you to take part in the 23rd INTELEC Conference, to be held October 14 at the International Conference Centre in Edinburgh, Scotland.

It was as long ago as 1991 that we agreed to host the event in the UK, and as if by magic the event is almost upon us as we rapidly move towards October 14. The traditional choice for a venue in the UK for such an event is London, but this time we have chosen the historic castle city of Edinburgh, capital of Scotland. Judging by the response so far, it appears to be an extremely popular choice.



Edinburgh skyline

Continued on page 11

Society Awards Presented at PESC® 2001 Newell Award to Hirofumi Akagi

Dr. Hirofumi Akagi (F), Professor at Tokyo Institute of Technology, received the William E. Newell Power Electronics Award at the annual Awards Banquet on June 21 at the 2001 Power Electronics Specialists Conference in Vancouver, Canada. Each year



since 1977 the Power Electronics Society has presented the Newell Award to a recipient judged to be outstanding in the multidisciplinary field of power electronics. The recipient receives a suitably inscribed

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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. 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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Transactions Editor Address Change

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

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 Fax: +1 919 677 9814
 Email: peleditor@ieee.org

Call for Articles in IEEE Student Magazine

The IEEE *Potentials* magazine is soliciting manuscripts for all aspects of electrical/electronic/computer engineering and computer science. This magazine publishes six issues a year which go to all student members of the IEEE in USA and Canada (presently about 45,000).

The level of the article is addressed to the undergraduate student and has several objectives :

- Interesting the student in a topic for further study
- Explaining technological advances in an area
- A forum for technical ideas
- Articles of technical interest

The article should not try to mystify the student but to enable the student to learn more about technical material that he/she may/may not become acquainted with in their formal course work.

Length of article can be no more than 10 manuscript pages (8 1/2-11) reduced by number of figures - shorter papers are also acceptable.

The manuscripts are reviewed by students, faculty, and researchers in the area, then a decision is made as to whether or not to publish.

Further information can be found at <http://www.cs.umn.edu/potentials> or contact:

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What Makes a Good Power Electronics Engineer?

Power Electronics is a most challenging area of electrical engineering. People working in the area need to know about circuit principles, semiconductor devices, microprocessors, low and high frequency design, control systems, communications, ... the list goes on and on. Knowledge at the surface is not enough – at any time you have to be ready to dive right down to resolve a noise glitch tripping up your software, memory timing problems, etc. Breadth and depth of knowledge is the requirement for a successful power electronics designer!

So how do we get this knowledge? Simply taking courses at a university is not really adequate – ask any power electronics company how useful they find new graduates.



And somehow taking more and more post-graduate courses doesn't quite do the job either. In the end hard-won experience seems to be the only answer, but this can be a very inefficient way to learn.

For some time now I have been intrigued by the process of gaining expertise and experience. How is it that we can come to the point of managing to solve almost any power electronics problem imaginable without getting stumped? I watch myself show my students how to solve problems again and again, and some of them just never seem to "get it." Others catch on almost immediately, and race off under their own initiative. Both are bright students, but only one develops the "knack" of power electronics.

At PESC 2002 in Cairns, Australia I would like to hear other people's views on this very important issue. How did you go about getting your experience? How do you train new engineers in your company? What is the value of formal training compared to "on the job experience"? Is there a better way to learn about power electronics? I invite anyone with an interest in this topic to submit papers describing educational and current industrial training initiatives in power electronics for PESC 2002.

The call for papers for the conference can be accessed at www.pesc02.com or within this newsletter.

Grahame Holmes
 Program Chair, PESC 2002
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Society Awards *from page 1*
plaque and a cash award of \$1,750.

Professor Hirofumi Akagi was born in Okayama, Japan in 1951. He received his B.S. degree from Nagoya Institute of Technology in 1974, and his M.S. and Ph. D. degrees from Tokyo Institute of Technology in 1976 and 1979, in all electrical engineering. In the same year, Dr. Akagi joined Nagaoka University of Technology as an Assistant and then Associate Professor. In 1987, he was a Visiting Scientist at Massachusetts Institute of Technology for ten months. From 1991 to 1999, he was a Professor at Okayama University. From March to August of 1996, he was a Visiting Professor at the University of Wisconsin-Madison, and then Massachusetts Institute of Technology. Since January 2000, he has been a Professor at Tokyo Institute of Technology.

Over the past twenty years, Dr. Akagi has conducted comprehensive research on static power converters, ac motor drives, high-frequency resonant inverters for induction heating and corona discharge treatment processes, and utility applications of power electronics such as active filters for power conditioning and FACTS (Flexible AC Transmission Systems) devices.

Most importantly, Dr. Akagi initiated the instantaneous power theory in three-phase circuits in 1983. His paper entitled "Instantaneous reactive power compensators comprising switching devices without energy storage components" was presented at the IEEE IAS Annual Meeting in 1983, and then it was published in the IEEE *Transactions* on IAS in 1984. The *Transactions* paper has been referred to very often in the international literature, and it has been followed with many papers including and/or expanding the basic concept created in the original paper.

Dr. Akagi has applied the theory to power electronics equipment, in particular to active filters for power conditioning. Moreover he has invented a practical hybrid active-passive filter, winning the best prize paper award for the IEEE IAS *Transactions* in 1991. A hybrid filter for power conditioning, based on the results of this prize paper, has been installed at the Yamanashi test line for high-speed magnet-levitation trains in Japan. The hybrid filter consisting of a 5-MVA series active filter and a 25-MVA shunt passive filter has been operating according to expectations since 1997.

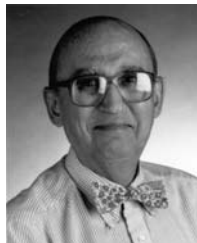
Dr. Akagi has published over 120 peer-reviewed journal papers, including 47 IEEE *Transactions* papers in the field of power

electronics. He is a recipient of the IEEE IAS *Transactions* prize paper award for 1991, and the IEEE PELS *Transactions* prize paper award for 1998, along with seven IEEE IAS committee prize paper awards from the industrial power converter committee and the industrial drive committee.

He was elected as a Fellow of the IEEE in 1996, and a Distinguished Lecturer of both IEEE IAS and PELS societies for 1998-1999. He has been serving as an At-Large Member of the IEEE PELS Administrative Committee since 1999.

William Portnoy Honored for Distinguished Service

Dr. William M. Portnoy (LF), Professor Emeritus of Electrical Engineering at Texas Tech University, was recognized as recipient of the Power Electronics Society Distinguished Service Award at the annual Awards Banquet on June 21 at the 2001 Power Electronics Specialists Conference in Vancouver, Canada. The award has been



presented annually since 1997 to honor long and distinguished service to the welfare of the Power Electronics Society at an exceptional level of dedication and achievement.

The award consists of an engraved plaque and a cash award of \$1,200. Dr. Portnoy was unable to attend the Awards Banquet, so the plaque will be presented later at an occasion of his choice.

Dr. Portnoy received his Ph.D. in Physics at the University of Illinois and was employed at the Semiconductor Division of the Hughes Aircraft Company and at Texas Instruments before coming to the University. Dr. Portnoy has been active in the study of the use of power semiconductors for pulsed power for many years and has published extensively on the subject.

He was until recently an Associate Editor of the IEEE *Transactions on Power Electronics*, Chairman of the Conference Papers Subcommittee of the Power Semiconductor Committee of the IEEE Industry Applications Society and a member of the Program Committee for the IEEE Power Electronics Specialists Conference; he is also a former Treasurer of the IEEE Power Electronics Society. Dr. Portnoy is a member of the American Society for Engineering Education, the American Physical Society, and he is a Life Fellow of the IEEE. He recently received the IEEE Third Millennium Medal.

David J. Perreault Receives Richard M. Bass Award

Dr. David J. Perreault received the Richard M. Bass Outstanding Young Power Electronics Engineer Award at the annual Awards Banquet on June 21 at the 2001 Power Electronics Specialists Conference in Vancouver, Canada. The award consists of a certificate, a cash award of \$500, and reimbursement for transportation expenses up to \$500 to attend the annual PELS Awards Ceremony. The award, renamed in 1999 in honor of Professor Bass, has been presented annually since 1997 to recognize outstanding achievement in the field of power electronics by an engineer less than 35 years of age.



Dr. Perreault received the B.S. degree from Boston University, Boston, MA, in 1989, and the S.M. and Ph.D. degrees from the Massachusetts Institute of Technology, Cambridge, MA, in 1991 and 1997, respectively. In 1997 he joined the MIT Laboratory for Electromagnetic and Electronic Systems as a Postdoctoral Associate, and became a Research Scientist in the laboratory in 1999.

At present, his research interests are in new design and control techniques for power electronic systems, and in their use in industrial, commercial, transportation, and medical applications. He teaches a graduate-level course in power electronics at MIT, and is a consultant to industry in the field. He is a member of Tau Beta Pi and Sigma Xi.

Transactions Prize Paper Awards

Each year the Editor and Associate Editors of the IEEE *Transactions on Power Electronics* select for recognition the three papers deemed best among those that were published in the *Transactions* during the preceding calendar year. The following papers from the 2000 *Transactions on Power Electronics* were recognized at the annual Awards Banquet on June 21 at the 2001 Power Electronics Specialists Conference in Vancouver, Canada.

"Sensorless Torque Control of SyncRel Motor Drives"

The authors are A. Consoli, C. Cavallaro, G. Scarcella, and A. Testa, all at the University of Catania, Catania, Italy.

Continued on page 4

Society Awards

from pg 3

“Optimizing the AC Resistance of Multilayer Transformer Windings with Arbitrary Current Waveforms”

The authors are W.G. Hurley, and J.G. Breslin, both at the National University of Ireland, Galway, Ireland; and E. Gath, University of Limerick, Limerick, Ireland.

“Transformerless Capacitive Coupling of Gate Signals for Series Operation of Power MOS Devices”

The authors are H.L. Hess, University of Idaho, Moscow, Idaho; and R.J. Baker, Boise State University, Boise, Idaho.

PELS Best Chapter Award

The 2001 PELS Best Chapter Award was presented to the Russian IEEE Joint PELS/IES/PES Chapter for its activities during 2000. This award was established in 2000 to recognize excellent service by a PELS Chapter to its members and to the power electronics community. The award was accepted by Yuriy Rosanov on behalf of the Russian Chapter at the annual Awards Banquet on June 21 at the 2001 Power Electronics Specialists Conference in Vancouver,

Canada.

The 15 regular PELS members have achieved a high level of activities, successfully using the benefits of PELS and IEEE membership. They organized more than six conferences, seminars, and meetings in areas of power electronics and its applications. The proceedings and publications of these conferences and seminars enjoy wide popularity among specialists in the electronics community.

An important goal of the Russian PELS Chapter was the spread of information about the achievements of modern power electronics and its place in developing industries. In pursuing this goal, the Chapter used Distinguished Lecturers from leading firms (Siemens, ABB, International Rectifier, etc.) in fields of power electronics. In 2000, lectures covered COOL-MOS transistors and other devices.

The Chapter devotes much attention to education issues in power electronics. Chapter members organize student seminars, assist electronics departments of Russian universities in developing courses on modern

power electronics, and supply new information to lecturers. The Chapter maintains a library with proceedings of conferences and publications of IEEE that can be used by students, teachers, engineers, and others. In collaboration with the Russian Power Electronics Association, the PELS Chapter publishes quarterly bulletins with some materials about activities of IEEE.

PELS Members Elected to IEEE Fellow Grade

The nine PELS members elected to IEEE Fellow Grade effective 1 January 2001 were listed with their citations in the January 2001 issue of the IEEE PELS *Newsletter*. Muhammad H. Rashid, University of West Florida, USA, and Tamotsu Ninomiya, Kyushu University, Japan, elected to receive their Fellow Grade Certificates at the annual Awards Banquet on June 21 at the 2001 Power Electronics Specialists Conference in Vancouver, Canada.

Christopher O. Riddleberger
Awards Chair
c.riddleberger@ieee.org



Award winners (from left): **TOP** Hirofumi Akagi (Newell Award, outstanding achievement); David Perreault (Bass Award, outstanding young engineer); Chris Riddleberger (Awards Chair) congratulates authors Ger Hurley and John Breslin (Prize Paper Awards); **BOTTOM** Riddleberger presents Prize Paper Awards to Herb Hess (left photo) and Alfio Consoli (middle photo); Yuriy Rosanov accepted Best Chapter Award) on behalf of the joint Russian Chapter from Jaime Arau (Chapter Development Chair).

Tricks of the Trade: The Automatic Resonant Switch[®]

Resonant conversion remains a hot topic throughout industry and the research community. Resonant methods are intended to reduce switching loss by keeping voltages, currents, and perhaps even their derivatives, near zero during a switch transition. Zero-voltage switching (ZVS) methods are the rage in high-end dc-dc converters, and zero-current switching (ZCS) is common in many high-power converters. A challenge is how to control the switches to meet the timing requirements of resonant switching. Each year there are many papers on how to select circuit parameters and how to move through various topology modes to achieve the desired low-loss switch operation. This column uses a “trick” based on the



principles in the July 2000 column to create an “automatic resonant switch.” The interesting thing is that this device will perform either ZVS or ZCS or both, depending on whether the component choices and circuit parameters support any of these. It will even perform non-resonant switching if no ZVS or ZCS opportunities are present.

How does this work? Consider the SCR. This device enforces ZCS action, since it won’t switch until the anode current falls below a small holding current value. The fundamental ZCS action of SCRs and thyristors is the basis for many of the oldest resonant conversion approaches [1]. But the SCR is too slow for high-performance dc-dc converters, and a dual device is needed for zero-voltage turn-on. The device we seek would combine the current turn-off properties of an SCR with the dual properties of a zero-voltage turn-on switch. We need to track current and voltage zero crossings and force a switch to respond accordingly. Actually, it is not very difficult to set up a MOSFET, combined with a “sensing gate drive,” to perform a combined function called a zero-voltage zero-current (ZVZC) automatic switch [2]. A circuit that can do this with an ideal switch is shown in Fig. 1.

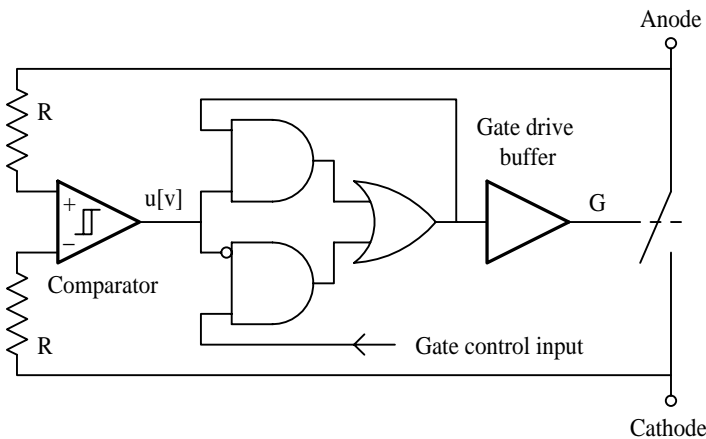


Figure 1. Automatic resonant switch for ZVZC action.

The trouble with Fig. 1 is that it only works when both ZVS and ZCS opportunities have been built into the power converter – a difficult task that works only for very special choices of parameters. Fig. 2 shows a much more practical ZVZC circuit. In this case, a square wave gate signal is applied to the gate terminal. If the switch can turn on with ZVS during the high part of the gate signal, it will do so. If no voltage zero occurs, however, the MOSFET will perform a hard turn-on when the gate signal falls. During the low part of the gate signal, if the switch can turn off

with ZCS, it will do so. If not current zero occurs within the time window, however, the switch will enforce a hard turn-off at the rising edge of the gate pulse. This is a potent combination that will support resonant switching within a timing limit window. The automatic resonant switch in Fig. 2 is part of a family of switch types in which control and logic are embedded in the gate drive. As power electronic modules and intelligent switches continue to develop, it is likely that “active gate drive” switching devices will grow in importance.

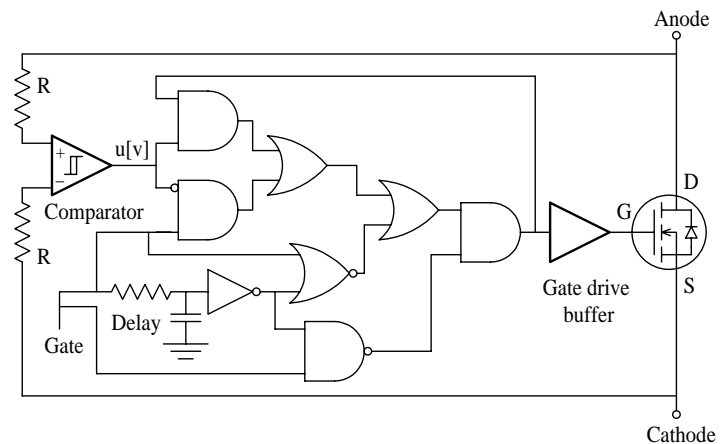


Figure 2. Automatic resonant switch with hard-switch default action.

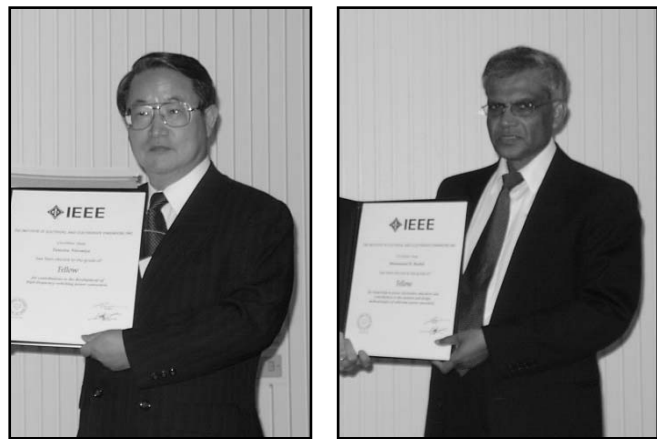
[1] R. Severns, “Circuit reinvention in power electronics and identification of prior work,” *IEEE Trans. Power Electronics*, vol. 16, no. 1, pp. 1-7, January 2001.

[2] P. T. Krein and R. M. Bass, “Autonomous control technique for high-performance switches,” *IEEE Trans. Industrial Electronics*, vol. 39, no. 3, pp. 215-222, June 1992.

Contributed by

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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.



Tamotsu Ninomiya, and Muhammad Rashid (new IEEE Fellows) received certificates at the annual Awards Banquet.



CALL FOR PAPERS AND SEMINARS

SEVENTEENTH ANNUAL

Applied Power Electronics Conference and Exhibition

☆ MARCH 10-14, 2002 • THE ADAMS MARK HOTEL • DALLAS, TEXAS ☆

The Seventeenth Annual Applied Power Electronics Conference and Exposition (APEC 2002) 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 |
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| • Design For High Efficiency | • Uninterruptible Power Systems | • JIT & Material Management |
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| • High Frequency Design | • Electric Traction Systems | • Manufacturing Processes |
| • Control of Converters & Systems | • Automotive Applications | • Design for Manufacturability |
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| • Power Semiconductors | | • Regulatory Requirements |

DEADLINE FOR SUBMISSION OF ABSTRACT AND DIGEST IS AUGUST 3, 2001

Notification that a paper was accepted or declined will be **mailed no later than October 5, 2001**

Manuscripts in final camera-ready form will be due at the publishers **no later than December 7, 2001**

Please note that papers presented at APEC must be original material and not have been presented at previous conferences or published before.

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:**

APEC 2002

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For more information on exhibiting at the Exposition, call: (202) 973-8664 or FAX (202) 331-0111

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

Photos from APEC 2001, Disneyland Hotel, Anaheim, CA (See April Newsletter for related text)

RIGHT: APEC Leadership All-Stars (all have served as APEC Conference Chair): Tom Wilson Jr, Dong Tan, Doug McIlvoy, Chuck Mullett, Tom Jahns, Dave Torrey, Mark Nelms, and Bob White.



PESC® 2002 Call for Tutorial Proposals

The 2002 IEEE 33rd Annual Power Electronics Specialists Conference to be held at the Cairns Convention Centre, Cairns, Queensland, Australia from 23-27 June 2002 seeks tutorial proposals and suggestions.

A tutorial proposal should clearly indicate the topic and the provisional title, objectives, a summary outlining the specific areas to be covered, background knowledge expected of the participants, and the qualifications of the instructor(s) including full mail address, telephone, facsimile, and email for correspondence. Ideas and suggestions for topics are also welcome.

The above information should be submitted by **31 October 2001** to:

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APEC 2001 Photos. **ROW 2** Plenary session; Bob Corbett and David Middlebrook receive IEEE Third Millennium Medals from Awards Chair Chris Riddleberger; Intersil booth was voted by exhibition visitors as Best Giveaway and Happiest Sales Team; **ROW 3** Vendor Exhibition; part of the Conference Committee (Dave Torrey, Cecile Phillips, Jim Kokernak, Tonya Freeland, Marc Plante, Pam Wagner, and Chuck Mullett); **ROW 4** Tonya Freeland presents top raffle prize to Doug McIlvoy; Plenary speaker luncheon (speaker Ian Clelland, Conference Chair Mark Nelms, speaker Dong Tan, Program Chair Joseph Thottuvellil, and Assistant Program Chair Bruce Miller); **BOTTOM ROW** (PELS President Tom Habetler, IAS President Bob Lorenz, Division Director Tom Jahns, previous PELS President Phil Krein); appetizers await Vendor Exhibition visitors. *Photos courtesy of Larry Gilbert.*

CONFERENCE ANNOUNCEMENT AND CALL FOR PAPERS*for the 33rd Annual***Power Electronics Specialists Conference**

June 23–27, 2002
Cairns Convention Centre
Cairns, Queensland, AUSTRALIA



<http://www.pesc02.com/>

Email: info@pesc02.com

Topics of Interest

Bold topics are a particular focus for this conference

DC Power Supplies
 Rectifiers and Inverters
 Motion Drives and Motion Control Systems
 Power Devices and Packaging
 Passive Components
 Automotive, Transportation
 EMI and Power Quality Issues

Utility Connection Applications
Alternative Energy and Renewable Generation
 Telecommunications
 Computers in Power Electronics
 Education and Training Initiatives
Industrial Practice and Experience

Deadlines

| | |
|-----------------------------------|--------------------------|
| Submission of Abstracts & Digests | 28 September 2001 |
| Authors notified of acceptance | 11 January 2002 |
| Submission of Final Manuscripts | 29 March 2002 |

To be considered for the conference program, authors should submit:

1. 300 word abstract, including Title, Author name(s), Affiliation(s), Contact Author, Mailing address, Telephone and Fax numbers and email address. A one page limit will be strictly enforced for the abstract.
2. 5 page digest, 1½ spaced on standard Letter/A4 paper size, outlining the work to be presented, the objectives of the paper and the goals achieved. Key equations, figures, tables and references should be included, all within the page limit. Digests exceeding the 5 page limit will be evaluated using only the first 5 pages — all additional pages will be discarded.

Paper submissions will be accepted electronically through the web site. Instructions to submit abstracts and digests will be posted on the web site by 1 August 2001.

PESC '02 General Chair

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PESC 2002 Conference Secretariat

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PESC '02 is sponsored exclusively by the IEEE Power Electronics Society

Special Issue*from page 1*

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

Steven Leeb, Editor
 Alex Stankovic, Associate Editor
 Werner Leonhard, Associate Editor
 Yasuaki Kuroe, Associate Editor
 Miguel Velez-Reyes, Associate Editor
 Antonello Monti, Associate Editor
 Romeo Ortega, Associate Editor

The Guest Editorial Review Board, under the supervision of the *Transactions* Editor in Chief, will handle the review process for papers submitted for the special issue. All papers must be sent to Dr. 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*.

The deadline for submission of the full papers for the special issue is **February 1, 2002**. The special issue will appear in March 2003. Please contact the Guest Editor of the Special Issue for further information:

Dr. Steven Leeb
 Editor, Special Issue
 Massachusetts Institute of Technology
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 Cambridge, MA 02139 USA
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No Job Recruiting at PELS Sponsored Conferences

As your Vice President for Meetings, I repeatedly received enquiries from conference chairs on our policy on job recruiting. This brief article is a summary of our policy.

Our policy is based on the one stipulated in IEEE Policies & Procedures, Section 10.1.24 (see the latest policy on the web, <http://www.ieee.org/about/whatis/policies/p10-1.html>). The IEEE policy reads, in part:

“10.1.24. - JOB RECRUITING AT CONFERENCES

Job recruiting at IEEE conferences is inappropriate and is actively discouraged.”

PELS AdCom Meeting Highlights

The Administrative Committee (AdCom) of the Power Electronics Society met June 17, 2001 in an all-day session in Vancouver, British Columbia. Chaired by PELS President Tom Habetler, the AdCom approved a number of programs and projects, including a survey of the Society membership to gain insights into member interests and direction for future activities. Here are actions and motions taken at the meeting:

ACTIONS

- Enrico Santi will organize a committee to encourage Society members to seek elevation to Senior Member grade.
- The Society will conduct a survey of its membership's needs and interests and Tom Habetler will provide an introductory letter for the survey.
- Santi will organize a committee and develop a concept for a publicity video on power electronics.
- Jaime Arau will determine if funds are available from the Russian Chapter to help support a student chapter in Russia.

There are limited provisions for possible exceptions in times of severe recession, to be determined by the operating Society. Accordingly, the Power Electronics Society Administrative Committee has set policy on recruiters, simply “No job recruiting at PELS-sponsored conferences.” Recruiting potentially conflicts with open exchange of technical information, and is not an appropriate activity at our conferences.

It is the responsibility of each conference steering committee and each conference committee to ensure this policy is adhered to.

One practice is to post this policy clearly in each conference Advance Program. For instance, the APEC Advance Program always carries a paragraph that reads:

IEEE Policy #10.1.24 (was #10.18) prohibits recruiting at IEEE sponsored conferences and expositions. Consequently, recruiters and recruitment advertisements will not be permitted in the APEC hotel space, meeting facilities, or exposition hall.

We appreciate everyone's understanding of the importance of this policy. Our conferences are intended for the educational and scientific benefit of members and attendees.

F. Dong “Don” Tan
 VP-Meetings Committee

- Phil Krein will continue his developmental planning for power electronics letters to be available on-line.

MOTIONS

- Approved a plan where, upon request, Life Members of the Society may receive complimentary printed copies of the PELS *Transactions*.
- Created three new technical committees and authorized committee chairs as members of the AdCom.
- Authorized \$5,000 in seed money for the 2002 Computers in Power Electronics Workshop in Puerto Rico.
- Approved a plan whereby Bob Myers will develop a proposal for electronic handling of papers for Society conferences.
- Reduced the *Transactions* page count for 2002 to 1,150 pages and asked Treasurer Steve Leeb to so advise IEEE.
- Authorized the editor of the *Transactions* to link publication of papers to active participation in the review process.

Submitted by Bob Myers
 PELS Administrator

President's Message *from page 1*

It is an important function for PELS to see that our most accomplished Senior Members are nominated for the Fellow grade. This award is a prestigious recognition of accomplishment. Many of us have colleagues deserving of Fellow. We all need to make the effort to see that they are nominated. Fellow nominations can be submitted by any Senior Member; not just other Fellows. Again, the internet makes obtaining information and forms very simple. Forms are available at www.ieee.org/about/awards/fellows/fellows.htm.

Most of you are aware of the specific achievement awards given by PELS, including the Newell Award for outstanding achievement in Power Electronics, the Distinguished Service Award and the Richard Bass Outstanding Young PE Engineer Award. Any PELS member can nominate someone for these awards. Information can be obtained on the PELS website or by contacting Chris Riddleberger, the PELS Awards Chair, at c.riddleberger@ieee.org. Get involved and do it!

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CALL FOR PAPERS AND TUTORIAL PROPOSALS
for the 8th
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:

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 Chair, COMPEL 2002
 UPRM Electrical and Computer Eng. Dept
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 Mayagüez, PR 00681-9042 USA
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Conference Email and Internet Addresses

Compel@ece.uprm.edu
<http://ece.uprm.edu/~compel>

Education Conference Report: E=TeM2

A conference called *E=TeM2* took place March 14-16, 2001, in Liège, Belgium. The motto was "Tomorrow's Education in Electrical Technologies: revisited Methods and Tools for renewed Motivation." In *E=TeM2*, E is for Education, Te for Technologies of Electrical Engineering, and M2 for Methods and Motivation.

The event was organized in a rather unusual way: the main part of the day consisted of 3 panel discussions on various aspects of the main topic of the conference. A keynote speech introduced each day. Dialogue sessions were organized in the afternoon, followed by demonstrations.

Renewed Motivation was at the core of the discussions. How to increase the number of students in Electrical Engineering? Methods were questioned: how to use Information Technologies to attract students? How to be more effective in teaching? How to fulfill new educational needs? Worldwide experiences were shared as the 55 participants had a world coverage, coming from all continents except Africa.



The organizers had tried to bring together teachers in electrical engineering, pedagogues and industrialists. The industry was to explain its needs and give the audience some hints about the number of engineers to be hired in the future and their requested knowledge: field, abilities, etc. Pedagogues were to present new methods made possible using Information Technologies and teachers and professors showed their accomplishments, explained their successes, their problems and exchanged ideas at large. The industry almost did not show up. The time has not come where industry engineers will be allowed to go to a conference on education to help recruiting the future engineer to be hired. The discussion with pedagogues was difficult to engage as the vocabulary is different and the handled concepts are difficult to share.

Actually, the main benefit of this event has been to bring together teachers and professors from different nation, different universities, with sometimes very different experiences and accomplishment, on but one topic: teaching electrical engineering.

This great small conference was high-spirited and participants agreed that the ex-

perience should be renewed within 2 or 3 years. Further more, IEEE-PELS served as a technical co-sponsor of this event by inviting prominent lecturers whose input was highly appreciated: Parviz Doulai of University of Wollongong, Australia, and Bill Robbins of University of Minnesota. The EPE organizers were thankful for this support.

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INTELEC 2001

from pg 1

This year we have chosen the theme 'No Power, No Service, No Revenue;' a statement particularly relevant with some of the failures that have recently occurred around the world and the shortages of power being reported in certain geographic areas.

Over 120 technical papers have been accepted to be delivered during the Conference. These will cover a wide range of subjects including AC and DC power systems, Batteries, UPS systems, Cooling systems, and modern Energy Systems; all of which will be related to usage in the telecommunications and communication industries.

On the exhibition side, over 90 stands have been taken up by manufacturers keen to show their latest developments, and visitors will be able to see a large cross-section of products from key players in the industry.

A spectacular social programme has been put together including visits to the Royal Yacht 'Britannia,' Stirling Castle, a Tartan-weaving factory, and a whisky distillery, with the Conference Banquet taking place in the beautiful Royal Museum of Scotland. Those wishing to stay on will also have an opportunity to play golf at a famous course. A Companions' Programme has also been put together, for those attending with partners.

To cover accommodation needs, a wide range of different priced hotels have been reserved and bookings can be made on line. In the next few weeks, Registration Programmes for the event will be sent out to over 6500 people world-wide, with the web page correspondingly being updated with online registration and additional information about the Conference.

The number of people attending INTELEC has been increasing in recent years. With 1600 people taking part last year,

it is well recognised as being a unique and premier event for people in our industry. I am sure that the technical contents and exhibits this year will sustain the previously set high standards, and the Management Committee and I look forward to seeing you all in Edinburgh.

For more information see <http://www.conferences.iee.org/INTELEC2001/>.

*John Parsons
Chairman, INTELEC 2001*

Energy Challenge Update

The DOE 2001 Future Energy Challenge for the low-cost inverter design competition is in the final stage of report judging and prototype testing. The reports were submitted on June 15 and distributed to judges who participated PESC-01 in Vancouver, BC. Among 14 teams participating the competition, 5 teams will be selected for final prototype testing, which will be held in DOE National Energy Technology Laboratory (NETL), Morgantown, West Virginia. The selected teams will be asked to give presentation before testing. Each prototype will be tested under a 24-hour load profile, which consists of linear and nonlinear, balanced and unbalanced between two split 120-V outlets, and non-unity power factor loads. A test protocol is being developed by NETL and EPRI Power Electronics Applications Center (PEAC). All committee members and judges are invited to observe the testing. Interested parties who would like to participate and observe the prototype testing can contact Jason Lai (laijs@vt.edu) or Phil Krein (krein@ece.uiuc.edu).

The design achieving the lowest cost will win the Grand Prize of \$50,000. There will be five more awards in different categories. Each "Category Award" will receive \$5,000. The major objective of this program is to reduce the 10 kW fuel cell inverter manufacturing cost to less than \$500. The Award Ceremony will be held in Chicago at the site of IEEE IAS Annual Conference. All participating teams and government officials are invited to participate the Award Ceremony. The following website <http://www.energychallenge.org> has the latest news about this program.

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Meetings of Interest to PELS Members

EPE 2001, the 9th European Power Electronics Conference, will be held at Grazer Congress Center in Graz, Austria on August 27–29, 2001. PELS is a technical co-sponsor. For complete information, see <http://epe2001.unileoben.ac.at>.

INTELEC[®] 2001, the 23rd International Telecommunications Energy Conference, is set for October 14–18, 2001 in Edinburgh, Scotland. PELS is a technical co-sponsor. Visit <http://www.intelec.org> for additional information.

PEDS'01, the International Conference on Power Electronics and Drives Systems, is planned for October 22–25, 2001 in Bali, Indonesia. PEDS '01 is held in technical cooperation with the IEEE Industry Applications and Power Electronics Societies. For further information see <http://www.ieeepeds.org> or contact Yanuarsyah Haroen at yanuar@elga.net.id.

The 11th 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 or send e-mail to 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 6th 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.

APEC[®] 2002, the 17th 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. Digests are due August 3. See <http://www.apec-conf.org> and the related call for papers in this *Newsletter* for details.

PCC-Osaka 2002, the IEEEJ/IEEE Joint IAS Power Conversion Conference, is planned for April 2–5, 2002 at Osaka in 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/>.

COMPEL 2002, the 8th 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>.

PESC[®] 2002, the 33rd 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. Digests are due September 28. For additional information see the related articles and the call for papers in this *Newsletter* and visit <http://www/pesc2002.com/>.

EPE-PEMC 2002, the 10th 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>.

CIEP 2002, the 8th 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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