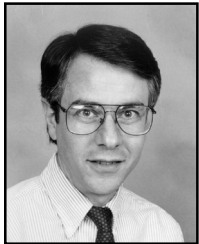




President's Column Promise and Uncertainty

What will 2000 bring? Already, pulse-width modulated inverters are becoming commodity consumer items for backup power. Hybrid electric vehicles are entering worldwide production and markets. Dramatic improvements, and perhaps even standards, in packages for large power electronic devices can be expected. Technical information will continue its revolutionary transformation through the World Wide Web. What a challenge to keep up with accelerating change! I hope you noticed the major change in your membership arrangements for this year. We decided to split our membership and electronic subscription from our traditional printed Transactions subscription. While the total cost to you is no different, we look forward to having some flexibility to offer a wider variety of publications—possibly even within the next few months. We intend that all our members will always have access to the key publications of the Power Electronics Society. If you elected not to subscribe to the printed Transactions, as a member you have access to the same material in electronic format through <http://www.ieee.org>. This year, we will be supporting most of our publication process through a new electronic system, which should help make the Transactions more timely. We will be leading the publication of several new specialty books and monographs in power electronics. Later, there will be reciprocal products with a few other societies. Look for more news in the next issue.



This year will be one of expanded activities in several areas. Standards is one example. The Electronic Transformers Technical Committee (ETTC) hosts a number of standards. There is a new standard on power supply terminology definitions in the balloting process right now. With respect to conferences, both APEC and PESC will probably set new attendance records this year, and the committees involved continue to strive for better value to members. We are becoming more involved in smaller conferences at a variety of international sites as well. Many members are not able to attend

Continued on page 9

Awards Nominations Due

Nominations for the Power Electronics Society's three major awards for 2000 are due now. The William E. Newell Power Electronics Award, the Richard M. Bass Outstanding Young Power Electronics Engineer Award, and the Distinguished Service Award recognize outstanding contributions to the field of power electronics or to the Society. These three awards and the PELS Transactions Prize Paper Awards will be presented at the awards banquet at PESC 2000 in Galway, Ireland in June 2000.

PELS members are urged to nominate worthy candidates to supplement the

Continued on page 2

Welcome to APEC

APEC 2000, the fifteenth annual meeting of the Applied Power Electronics Conference and Exposition, returns February 6-10 to the site of the first APEC, the Fairmont Hotel in New Orleans, LA. From its modest beginning, I doubt that the founders of APEC envisioned it growing to be the premier conference in the world for the practicing power electronics professional. This year, APEC received over 400 digests from authors in 40 countries wishing to present their latest results and over thirty seminar proposals for the fifteen available seminar sessions. The Exposition, with 106 booths, has been sold out since the last APEC. Truly, there is no other power electronics conference like APEC.

APEC is planned and managed by the APEC Conference Committee. This committee consists of volunteers from industry and academia who work together with superb professional conference managers. I would like to thank the committee, volunteers and professional managers alike, for their incredible devotion and countless hours of hard work spent making sure that every detail of the conference will be the best it can be.

On behalf of the sponsors of APEC and the Conference Committee, I invite you to join us in New Orleans for what promises to be the best APEC ever.

*Robert V. White
APEC 2000 General Chair*

See APEC on page 3

Distinguished Lecturer Visits PELS Chapters

Three PELS chapters utilized the Distinguished Lecturers Program recently to provide exceptional meetings for their members. These chapters (Los Angeles, CA, USA; San Jose, CA, USA; and Vancouver, B.C., Canada) scheduled meetings on October 6, 7, and 8, respectively, to hear Antoine Capel (pictured below) from ALCATEL-Space in Toulouse, France, present lectures on "Power Systems in Space Applications." Meeting arrangements were coordinated by chapter representatives Steve Freeland, Ron Berthiaume, and Djordje Garabandic. The following article is excerpted from Mr. Capel's report of his lecture tour.



"The objective of the presentations was to introduce power engineers to space power system designs. The topics at the three presentations were practically identical, with some items receiving more discussion emphasis in response to specific interests of the audience. The main topics were:

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Awards Nominations from page 1

recommendations of the nominating committees for the awards. The nominator plays a crucial role in the activities leading to the selection of a recipient, and can take pleasure second only to that of the winner when the award is announced.

Make your nomination today, and fax it to the PELS Awards Chair. Nomination forms were printed in the October 1999 issue of the Newsletter of the IEEE Power Electronics Society. The forms are also available for downloading at the PELS web site "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.

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New Editor of Transactions on Power Electronics

I'm Dr. Arthur W. Kelley and it's been my great honor to be selected as the new Editor of the Transactions on Power Electronics for the years 2000-2002. My predecessor, Dr. Richard Hoft, served in this position for almost the entire decade of the 1990s. The founding Editor, Dr. Tom Lipo, served from January 1986 until mid-1990, and was the only editor prior to Dr. Hoft. I should also highlight the dedication of Dr. William Portnoy who, as Associate Editor since January 1987, is the only Associate Editor to outlast Dr. Hoft. I'll do my best to do justice to the standards set by these pioneers.



At the same time, PELS publications must move forward into the age of the internet. The initial goal is electronic processing of manuscripts. To smooth the transition, I began processing all manuscripts submitted after 1 July 1999, while Dr. Hoft continued to assemble the remaining issues for 1999 and the first issue of 2000. All manuscripts have been scanned and distributed electronically to the Associate Editors and to many of the reviewers. The Associate Editors and reviewers live all over the globe and now, for the first time, all are on an even footing with regard to timely distribution (not to mention saving a small fortune in postage.)

I am keeping track of all manuscripts through a relational database that I first used when I was the Program Chair of PESC '97. It will now be very easy for me to identify manuscripts that have fallen behind the desired timeline and to conveniently issue timely reminders. The review results will be distributed to authors electronically.

The next step is electronic submission of manuscripts. Sometime later this year, the "Information for Authors" printed at the back of every issue will be revised to reflect this change. This should further streamline the review process by removing the need for me to scan manuscripts. I will, of course, continue to accept paper manuscripts when requested by the authors. All these changes, including future improvements that we can only now imagine, should speed up the review process. That is a goal of all the Editors and authors alike.

In the same spirit, during 2000 we are formulating plans to introduce a "Letters" section in the Transactions. In concept a Letter is no more than two pages and is re-

Continued on page 9

Record-Setting Interest in PESC 2000

A record number of 596 digests were received for PESC 2000. The Program Committee met on December 4, 1999 at Bunratty in Ireland to select 264 papers from 37 countries for presentation at the conference. The large number of papers prompted an additional parallel session in the program to cater to the demand. The plenary session has 4 papers on such diverse topics as power electronics road map, automotive electronics, devices, and packaging. Four tutorials cover DSP techniques in motor drives, low-voltage power conversion, building blocks for power electronics, and three-phase PWM rectifier systems.



Three rap sessions are scheduled on the topics of power quality, computer-aided design, and packaging. A special effort will be made this year to make the rap sessions unforgettable!

Each digest received 4 reviews from an army of 183 reviewers. I would like to thank the topic chairs and all the reviewers for their invaluable assistance in this huge task.

A very active social program has been put together for the conference. The Welcome Reception takes place Sunday evening on the banks of the River Corrib. On Wednesday, all the delegates are invited to join tours of Connemara or take a boat trip on Lough Corrib. On Wednesday night the conference banquet promises to be a night to remember. The best of Celtic music, song and dance will be on the show including Riverdance. A concert will be held on Thursday night at St. Nicholas' Collegiate Church by the renowned Galway Choral group Cois Cladaigh. The church was founded in 1320 and was visited by Christopher Columbus on one of his voyages to the New World. The awards lunch on Friday features the Newell Award, the Richard M. Bass Award, and the Distinguished Service Award. The guest tours include the Aran Islands, the Cliffs of Moher, and a visit to Galway Crystal.

Full details of accommodation and registration are on the conference web site <http://pesc00.nuigalway.ie/>. The deadline for advance registration and accommodation is earlier than usual, April 14, 2000. You are advised to make travel arrangements early.

Ger Hurlley
PESC 2000 General Chair
National University of Ireland

See PESC on page 5



CONFERENCE ANNOUNCEMENT

Fifteenth Annual

Applied Power Electronics Conference and Exposition

February 6-10, 2000 at the Fairmont Hotel

New Orleans, Louisiana USA

www.apec-conf.org

Considered by many to be the premier conference in the world for the practicing power electronics professional

- Full technical program of presented papers
- Professional Education Seminars on important topics for power electronics professionals including any one involved in marketing, quality and manufacturing
- Exposition featuring component, equipment and service leaders in the power electronics industry
- Host of the ever-popular Micromouse contest, drawing contestants from all over the world

For the latest information on APEC, please consult the APEC website at www.apec-conf.org. The website has the latest news and information, access to online registration, and downloadable registration forms.

For additional information, contact:

APEC 2000

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

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Email: apec@courtesyassoc.com

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

INTELEC® 99 Report

The 21st INTELEC (International Telecommunications Energy Conference) was held from Sunday June 6, 1999 through



Wednesday June 9, 1999 at the Radisson SAS Falconer Center in the heart of Copenhagen, Denmark. It is the first time INTELEC was held in Denmark and the second time in

Scandinavia—the first time being INTELEC 87 in Stockholm, Sweden. Wonderful Copenhagen is the capital of Denmark, and is the location of the official residence of Queen Margrethe and the Danish Royal Family.

The theme of INTELEC '99 was: **Utility and Telecommunications-**

Environmental Management in Energy Systems. It was a 3-day conference, where 96 papers, split into 33 sessions, were presented. Furthermore there was a Poster session with 42 posters. The number of attendees to the conference was 1230 from 45 countries, and the total number including accompanying persons was 1326.

A very interesting exhibition covering more than 1000 square metres of space took place at the conference hotel. Fifty-seven world-leading manufacturers displayed state-of-the-art telecommunications power and energy products and services.

The INTELEC conferences are normally held in September or October, but this year we chose to take a chance and make INTELEC a summer conference. It was our hope that participants could get a taste of our Danish summer at its best. Unfortu-

nately, the weather during the conference was not always fine, especially not in the Banquet evening. The forecast for the banquet evening predicted a lot of rain. The organization committee only had few hours to arrange bus transportation and umbrellas for more than 1000 persons! But in spite of a lot of rain that evening I am sure that all got a very nice evening in Tivoli, Copenhagen. The conference also played host to a number of interesting social arrangements such as city tours, visit to Copenhagen City Hall, and much more.

Finally I appreciate much support from the companies, universities and volunteers. Special thanks are expressed to the Organizing Committee members and to PELS Advisory and Executive Committee members for their support.

Bent Mortensen
INTELEC '99 General Chair

INTELEC® 2000 in Phoenix

It's not too early to start planning your attendance at INTELEC 2000, which will be held in Phoenix, Arizona (USA), September 10-14, 2000. The INTELEC 2000 Management Committee met recently in Chicago to finalize plans for the overall conference which includes an extensive technical program, various workshops and tutorials and a varied social program for attendees and guests. The Program Committee anticipates a technical program of about 120 papers, which it will select from abstracts received by the February 1, 2000 deadline. The Call for Papers can be seen on the conference website: www.intelec.org

INTELEC is an annual conference covering the latest developments in telecommunications energy systems and related power processing devices and circuits. Technical papers present research and new developments in power electronics and telecommunications power systems, including DC power plants, powering architectures, AC systems, DC-DC converters, batteries, prime power systems, grounding, physical and thermal design, alternative power (engines, fuel cells, etc) and building and equipment cooling systems. There are also tutorials and a technical exhibition of products and equipment. PELS is the sole sponsor of INTELEC when it is held in North America in even-numbered years, and is a technical supporter when the conference is held outside North America.

Attendees will also have an opportunity to attend the opening plenary session which will offer several papers addressing topics pertinent to the conference theme of "Powering Network Convergence in the New Millennium." The configuration of the communications network changes very rapidly, and impacts the power solutions required to support that network today and tomorrow. This conference promises to be quite exciting, reflecting the dynamics of the networks we power.

Several optional tutorials will be offered on Sunday, September 10, prior to the official opening of the conference. These tutorials address key technical topics of special interest to conference attendees. Please check the website to get the latest information on the tutorials.

Attendees will also have an opportunity to see the latest products and services offered by the leading manufacturers and service companies in the power industry. The website will provide a current list of exhibitors. Exhibitor Registration Packages will

be available in early February, 2000.

Last, but certainly not least, the conference offers attendees and guests the opportunity to get a flavor of the American Southwestern culture and food. Phoenix offers visitors a great diversity of experiences, including the beauty of the desert Southwest, a diverse cultural heritage, some of the best golf courses in the world, and excellent shopping. So polish your boots, brush your hat, and get ready for Phoenix!

For further information contact:

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New "Best Chapter" Award

To promote technical activities within PELS chapters, the Power Electronics Society is launching a Best Chapter Award. Effective immediately the award will be given annually to the chapter that makes the best use of the PELS supporting capabilities (Distinguished Lecture Program, Annual Financial Support) and conducts activities such as organizing conferences and technical talks, operating a web site, and promoting Power Electronics technology.

The Best Chapter Award consists of a plaque including the names of the chapter chair, secretary, and treasurer. PELS will provide complementary conference registration and will reimburse expenses up to a predetermined amount to allow the Best Chapter chair or nominee to attend PESC to receive the award. The award application form is printed in this issue of the newsletter, and it is also available at the PELS web site (<http://www.pels.org/Comm/Chapters/chapters.html>). Application forms must be received by March 1 to be considered for the award presented at PESC 2000.

Jaime Arau
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Distinguished Lecturer, from page 1

- Power System Topologies for Constellations
- Power Unit Parts and Modeling
- Stability Analysis
- Power System Evaluation Tools

"The duration of the lectures was around 2.5 hours. The audiences varied from 20 to 40 persons, always very motivated as was reflected by the number and the sharpness of the questions. I have found a lot of engineers already working for space companies and familiar with the space constraints. They were very interested in the comparison of the different approaches existing between European and American (including Canadian) engineers for designing power systems. The questions covered system aspects, like bus voltage regulation, as well as power cell concepts, like sequential switching shunt units and sophisticated zero-ripple power cells for battery regulators. The protection approach was also discussed in depth, as European concepts are based generally on limited-current branches with active devices and current-mode power cells, whereas American designs commonly use mechanical relays and fuses for cost reasons.

"This was my first presentations to PELS chapters. I was very impressed by the perfection of the organization and the warmth of the people. It was a delightful experience as well for the technical and the social points of view. It allowed me to meet people with different approaches in different places, and always in an environment of kindness and respect. I would like to express congratulations and acknowledgements to all organizers. I would also like to thank PELS for their support that allowed me to make these presentations."

The Distinguished Lecturers Program is provided by the IEEE Power Electronics Society. It consists of world-recognized experts selected by PELS who can visit your chapter/section and give talks to help you promote Power Electronics in your country. PELS offers to cover the travel expenses and the local chapters would cover the local expenses. If you are interested in this program, just contact the Chapter Development Chair or visit <http://www.pels.org/Comm/Chapters/lecture.html>.

Jaime Arau
Chapter Development Chair

Corrections

"W" should be " Ω " (3 places) in the first paragraph of "Tricks of the Trade..." on page 2 of the October 1999 issue.



CONFERENCE ANNOUNCEMENT

31st Annual

Power Electronics Specialists Conference

June 18-23, 2000

Galway, Ireland

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

PESC provides an international forum for specialists in power electronics to present and discuss papers on forward-looking topics in this fast-evolving field.

PESC promotes interdisciplinary discussions of new ideas and the latest advances in the fields of power electronics.

- Technical program consists of 264 papers from 37 countries
- Four professional education tutorials
- Active social program for participants and guests, featuring regional tours, music, and food
- Presentations of the Newell, Richard M. Bass, and Distinguished Service Awards

For the latest information on PESC, please consult the website above. The PESC website has the latest news and information, including downloadable forms for conference and lodging registration. Also, see related article in this issue. The cutoff date for preregistration and lodging is April 14.

For additional information, contact:

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PESC is sponsored exclusively by the IEEE Power Electronics Society

EPE'99 Report

EPE'99 took place in Lausanne at the Ecole Polytechnique Federale from 7 to 9 September and welcomed more than 1000 attendees. It was the Event of this last decade in the field of Power Electronics. Lausanne was great, in every sense. Participants enjoyed themselves, attending the crowded sessions, lecture or dialogue. Not even tired in the late afternoon as many of them attended the overcrowded discussion sessions/workshops. Some photographs of EPE 99 can be found at <http://dewwww.epfl.ch/epe99>.

The EPE Journal already published the first available summaries of these discussion

sessions/workshops. More will be published in the next issues. I am also planning to offer a digest of the contents of the conference, as a series, based on the comments and conclusions of the topic chairpersons and members of the ISC.

The venue was totally different than what had been used in the past and the success was strongly relying on the use of state-of-the-art communication technology. It was a challenge to decide to hold such a large event at the university, using academic lecture rooms and corridors. The result was astonishing. The atmosphere was so warm, relaxed, and convivial that continuous discussion could take place.

The next EPE event will be the 9th Power Electronics and Motion Control Conference, EPE-PEMC '2000 Kozice to be held 5 - 7 September 2000. National electrical engineering societies will support the conference. Mentioned in the first row there should be the IEEE Industrial Electronics Society and the Slovak Electrotechnical Society. Detailed conference information can be found at <http://tuke.sk/pemc>.

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The 7th Workshop on Computers in Power Electronics

COMPEL 2000



CALL FOR PAPERS

July 16–18, 2000

Donaldson Brown Hotel and Conference Center · Virginia Tech · Blacksburg, Virginia

The Seventh IEEE Power Electronics Society Workshop on **Computers in Power Electronics (COMPEL 2000)** will focus on areas of electronic computing with regard to design, analysis, control, and operation of power electronic circuits. One focus for COMPEL 2000 will be on “reliable” computer applications in power electronics. After appearing more than three decades ago, the computer has become an essential tool for power electronics engineer. We have all witnessed the exponential improvement in computer performance, but what tangible benefits have been gained? What new control technologies have been enabled? Are simulators of practical value for power electronic circuits? Do device models match experimental results? How about for passive component model? How can we accelerate the process of the system level simulation? The goal of this workshop is to provide a lively venue for discussing these and other issues.

Areas of Interests

- Simulation tools
- Numerical methods
- Benchmarking results
- Simulator integration
- DSP applications
- Averaging techniques
- System modeling
- Circuit modeling
- Device modeling
- Thermal modeling
- Parasitic modeling
- Reliability modeling
- Passive component modeling

Workshop Format

Sunday, July 16, PM:	Technical sessions
Monday, July 17, AM:	Technical sessions
Monday, July 17, PM:	Technical sessions
Tuesday, July 18, AM:	Technical sessions
Tuesday, July 18, PM:	Computer demos

Technical Sessions

- Tutorials
- Paper presentations
- Panel discussions
- Poster sessions

Social Event

Monday evening dinner party

Spouses' Program

- Tour of Natural Bridge
- Tour of Château Morrisette Winery, Blue Ridge Parkway

Deadlines

Submission of abstracts and digests:

February 15, 2000

Notification of acceptance:

March 31, 2000

Manuscripts in final camera ready:

July 15, 2000

Preparation of Abstracts and Digests

Prospective authors are asked to submit an Abstract and a separate Digest of no more than 5 pages including figures, tables, and references. Both Abstract and Digest should be typed and doubled-spaced on 8 1/2" × 11" or A4 size paper.

The heading of the Abstract should include title of the paper, names and affiliations of all authors, and the corresponding author's mailing address, telephone number, fax number, and email address. The Digest heading should include only the paper title. Electronic submission of the Abstract, Digest, and final Manuscript is highly encouraged, but only in postscript or PDF format. Both Abstract and Digest should be submitted to

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Conference Email and Internet addresses

COMPEL2000@vt.edu

<http://www.conted.vt.edu/compel.htm>

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Tricks of the Trade: The Method of Ideal Action®

Contributed by Phil Krein
University of Illinois at Urbana-Champaign

Any power electronics design is expected to actually perform its intended function when it is implemented. We can take advantage of this “expected function” for analysis and design. In other words, assume the design works, then use this assumption to help create the design. Although this is a case of reverse thinking, it is entirely valid, and provides tremendous simplification of many converter analysis and design problems. The concept will be termed the “method of ideal action” here. In certain types of power electronics circuit analysis problems, we invoke a “low ripple assumption” or similar technique to achieve a solution. Ideal action is a way to generalize, not limited to low ripple cases. However, I have yet to see a systematic discussion, so a summary will be attempted here, along with an example.

Dc-dc converters, rectifiers, inverters, and so on in general have target output ripple requirements. In hard-switching dc-dc converters, we can treat current waveforms as triangular. In rectifiers, a fundamental harmonic approximation might be used. In inverters, we know the output should be a sinusoid, and can look for unwanted harmonics. Alternatively, the circuit differential equations can be solved to determine ripple levels. In the method of ideal action, since we assume the results will be as intended, filter outputs are known.

Consider a smoothing filter design example show in Fig. 1. This is a 6-pulse rectifier with a basic R-L load model. For a target 200V output, what value of L should be used to keep the

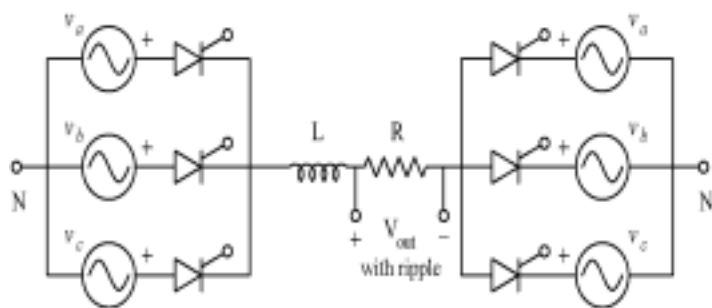


Fig. 1. Full-bridge three-phase rectifier.

ripple below 10% peak to peak? If the design works, then during the interval when voltage v_{ab} is connected, the circuit reduces to the simple equivalent shown in Fig. 2. When the inductor voltage $v_L >$

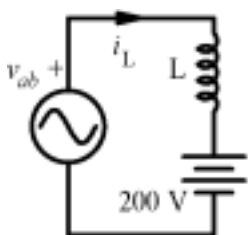


Fig. 2. Equivalent circuit, ideal action, during the a-b interval.

0, the current is rising. When $v_L < 0$, it is falling. To find the peak-to-peak change Δi_L , we only need a simple integration

$$\Delta i_L = \int_{v_L > 0} \frac{v_L}{L} dt = - \int_{v_L < 0} \frac{v_L}{L} dt = \int_{v_L > 0} \frac{V_0 \cos(\omega t) - 200}{L} dt$$

where V_0 is the peak line-to-line voltage. Look at the waveform in Fig. 3, in which $V_0 = 400$ V, and with $R = 5 \Omega$. The integral over the positive portion of v_L yields the nearly triangular area shown

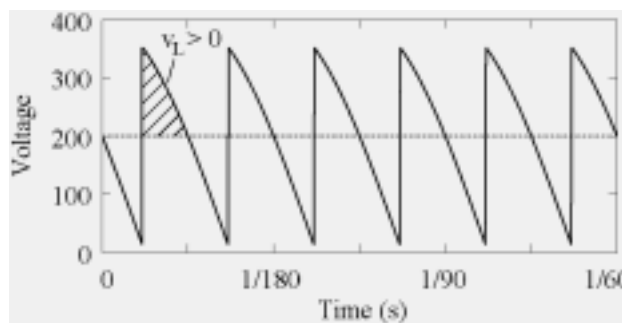


Fig. 3. Rectifier waveform and average, showing area when inductor voltage is positive.

in cross hatch. Now the result is almost trivial. The inductor voltage peaks at 152 V above the average output. To get Δi_L (10% of nominal), we need $(4 \text{ A}) L > (1/2)(1/720 \text{ s})(152 \text{ V})$, or $L > 26 \text{ mH}$. The exact answer is 30 mH, obtained after exhaustive solution of the differential equations. (The negative portion of v_L is more nearly triangular, and that part of the waveform yields $L > 31 \text{ mH}$.) We could have obtained a result within less than 1% of the exact answer by formally integrating rather than using a triangle approximation, even though the ripple is 10%.

As a second example, consider a dc-dc buck converter (not shown), with output LC filter. The method of ideal action supports a very simple procedure for ripple determination: If the action is ideal, the output load voltage and current will be fixed, and the inductor current will be triangular. The change in output voltage is determined by the capacitor, and the capacitor current is the inductor current less its average value. Given a peak to peak inductor current ripple Δi_L and a switching period T we have

$$\Delta v_C = \int_{i_C > 0} \frac{i_C}{C} dt = \frac{1}{2} \frac{T}{2} \frac{\Delta i_L}{2} \frac{1}{C} = \frac{T}{8C} \Delta i_L$$

This result is independent of load, provided only that the ripple is not large.

In the method of ideal action, the process is simple and direct: Assume that the components perform the expected function in an ideal fashion thus outputs intended to be dc with low ripple ideally are fixed dc values. Outputs (or inputs) intended to be sinusoidal ideally give perfect waveforms. Then make use of this ideal action to solve circuit analysis and design problems. The approach yields simple expressions, yet is almost perfectly accurate in realistic converter problems. We use it for multi-stage filter design, rectifier smoothing, active PFC component selection, PWM inverter filter design, inverter bus capacitor selection, and a host of other problems. Perhaps you have used it before in other forms.

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.

CALL FOR PAPERS

INTERNATIONAL WORKSHOP ON INTEGRATED POWER PACKAGING (IWIPP)

www.cpmc.org/conf/iwipp

Participate, Vacation and Learn

Westin Hotel, Waltham, MA USA

July 14 – 15, 2000

(Friday and Saturday)

The Workshop provides a forum for technical communications focused on the needs and interests of power electronics components and systems engineers. Original papers covering the design, analysis, fabrication, testing and application of advanced power electronics components and systems packaging technologies are solicited.

WORKSHOP HIGHLIGHTS

- Short courses
- Evening panel discussions on future challenges and controversial issues
- Invited papers session on emerging technologies
- Distinguished luncheon speaker
- Spouse and family program

PAPERS IN THE FOLLOWING AREAS ARE SOLICITED

TECHNOLOGIES: Areas include, but not limited to: 3-D power packaging, CAD tools, EMI effects, fabrication techniques and material systems, imbedded components, reliability, systems integration and thermal management.

APPLICATIONS: Areas include, but not limited to: appliances, automotive, computers, drives, lighting, portable electronics, power supplies, RF and telecom.

PREPARATION OF ABSTRACT AND SUMMARY

Authors should submit **5 paper copies each** of a 35 word **Abstract** and a three- to four-page **Summary** describing their twenty-minute presentation. Mail to: Bob Alongi, Boston Section-IEEE, 240 Bear Hill Road #202B, Waltham, MA 02451-1017. Text must be in English. Direct questions to: sec.boston@ieee.org or +1 781 890-5290.

DEADLINES:	March 03, 2000	Receipt of abstract and summary
	March 24, 2000	Notification of acceptance and mailing of author's kit
	May 05, 2000	Receipt of final paper manuscript (full paper proceedings, IEEE copyright permission will be required)

Abstract and Summary must include: (1) Title of presentation, (2) Authors' names, affiliations, complete addresses, telephone and fax numbers, and e-mail address, (3) Identification of corresponding author, and (4) Suggested area (Technologies or Applications). The **summary** should clearly state (1) Purpose of the work, (2) Specific results that were obtained and (3) Manner and degree to which it advances the art.

IWIPP is sponsored by the IEEE-CPMT, -PELS, and -EDS Societies, IMAPS, the PSMA, the Energy Systems Institute-SUNYAB, Center for Power Electronic Systems – NSF ERC and IEEE Boston Section CPMT Chapter.

The Workshop General Chairman is Douglas C. Hopkins, SUNYAB (D.Hopkins@IEEE.Org).

The Technical Program Chairmen are Prabjit J. Singh, IBM (pjsingh@us.ibm.com) and Guo-Quan Lu, VPI&SU (gqlu@vt.edu).



New Society Bylaw

A recent vote of the Power Electronics Society AdCom authorized a new bylaw in the PELS Bylaws. The new bylaw is published in the Society Newsletter to inform PELS members of the change. The new bylaw goes into effect 30 days after being published and a copy has been filed with the IEEE Technical Activities Board. The complete Society Constitution and Bylaws can be found on the PELS website (www.pels.org). Here is the new bylaw:

4.7 IEEE Division II Director

The Society policy regarding nomination for the IEEE Division II Director of the Power Electronics Society shall be in compliance with IEEE Bylaws. The policy shall allow for the submission of a single Division Director candidate to be placed on the Annual Election Ballot in compliance with the requirements stated in IEEE Bylaw T-902.3.

Keyue Smedley
PELS Constitution/Bylaws Chair
smedley@uci.edu

President's Message *from page 1*
our large annual events regularly, and these smaller meetings offer a more accessible forum in many places. For even smaller events, the Distinguished Lecturer program allows both Chapters and IEEE Sections to invite some of our best-known members to visit and speak, at very modest cost. One particularly exciting, but somewhat uncertain, development is in the final stages of negotiation at this writing. We are working with a group of sponsors on a possible new type of student competition with significant funding and deep engineering challenges.

News from IEEE

The fast pace of change has been affecting IEEE as a whole in a range of ways. Look this year for a completely new, very professional, and very powerful Web interface to IEEE publications. The beta test version was extremely impressive, and perhaps you have tried the new system already. The IEEE has invested heavily to make jump-step improvements to electronic publishing. While it remains to be seen what members and customers value most from electronic access, I am confident that the IEEE will be proactive in offering innovative electronic services. With technical information as its largest "product," IEEE must change quickly to lead the pace in electronic publishing. In a recent issue of the Institute, and also in the preceding issue of this Newsletter, there were articles about IEEE "Branding" studies and activities. The IEEE is at the very beginning stages of a

substantial project in organization renewal, brought on originally by pressure from the publication side. The renewal project is needed because of publishing changes, the increasing pace of change throughout electrical and electronics engineering, and legitimate needs of our members for the best possible value. One unfortunate aspect is that the renewal issues have been mixed with a more conventional branding issue—the logos and looks we portray to members and other subscribers and customers. Several members have expressed concern that an expensive and unpopular move to change our looks was getting started. At a recent set of IEEE Board of Directors meetings, action was taken to split the priorities of renewal and change from those of logos and brands. The familiar IEEE logo—Franklin's kite and Wheatstone's bridge behind the right-hand rule—will remain as the primary IEEE trademark. My personal opinion is that we are reaching a consensus that the IEEE must offer the best possible member services, along with the best possible products and services to the international science and engineering community. I believe it is quality and value of service, rather than label and image, that must be addressed to keep IEEE the leading technical organization in our field. I hope to have the Power Electronics Society serve as a leader in renewal and improvement in the coming year.

Philip T. Krein
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Transactions Editor, *from page 2*
viewed only by the Editor and Associate Editors prior to publication. The Letters are intended to permit publication of recent important developments without the delay of an in-depth peer review.

Each year the final issue of the PELS Transactions lists the reviewers for that year. I would like to thank them for their efforts, and I hope they will continue to perform this valuable service for the PELS Transactions. I would also like to solicit those of you who have never reviewed, to consider volunteering to help with this important aspect of PELS. To volunteer simply send a brief resumé, to me at kelly@ncsu.edu.

I look forward to serving you, and I welcome your suggestions on how we can improve our Transactions.

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Society Election Results

The annual election of officers and new members at large of the Administrative Committee (AdCom) takes place in the fall each year through a balloting of members of the Society AdCom. The AdCom consists of 18 elected members of the Power Electronics Society plus members "ex-officio with vote" as specified in the Bylaws. There may also be members "ex-officio without vote."

Philip T. Krein has been elected to a second one-year term as President of the Power Electronics Society and will lead PELS through the year 2000. Krein, of the University of Illinois, is one of three officers re-elected for 2000, with Thomas Habetler of Georgia Tech returning as Vice President, Operations and Kevin Fellhoelter of Lucent Technologies as Vice President, Meetings.

Arthur Witulski of the University of Arizona was appointed as PELS Treasurer. He took over as Treasurer in mid-1999 from Rene Spee, who stepped in when Richard Bass was killed in a traffic accident in Georgia.

Elected to three-year terms on the Society AdCom were Jan A. (Braham) Ferreira of Delft University of Technology, Donald Grahame Holmes of Monash University, Jose Antenor Pomilio of the University of Campinas, Seth R. Sanders of the University of California, Berkeley, F. Dong Tan of TRW and Tore M. Undeland of the Norwegian University of Science.

Sanders and Undeland were elected to second terms and Pomilio has been on the AdCom as Region 9 Liaison. Ferreira, Holmes and Tan have been active in Society programs but 2000 is their first year on the AdCom.

Retiring from AdCom at-large positions at the end of 1999 were Habetler, William Gerard Hurley of the National University of Ireland, Dean Patterson of Northern Territories University and Robert V. White of Artesyn Corporation. Hurley, Patterson and White completed their second consecutive terms on the AdCom, the statutory limit for at large positions.

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Society Administrator
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Call for Papers ISIE'2000

Universidad de las Américas-Puebla, México 4 – 8 December, 2000
The 2000 IEEE International Symposium on Industrial Electronics

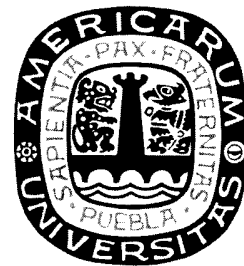
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Technical Co-sponsors: Society of Instrument & Control Engineers–Japan

IEEE Power Electronics Society, Morelos Chapter

CENTIA, Universidad de las Américas-Puebla



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Luis E. Sucar, ITESM-Morelos, México.

TPC-2 Power Electronics

Bimal K. Bose, University of Tennessee, USA.
María Cotorogea, CENIDET, México.

TPC-3 Mechatronics

Peter Kopacek, T.U. Vienna, Austria.
Carlo Cecati, University of L'Aquila, Italy.

TPC-4 Signal Processing and System Control

Carlos Couto, University of Minho, Portugal.
Jesús Leyva, Univ. Autónoma de SLP, México.

TPC-5 Factory Automation

Franz Pichler, Linz University, Austria.
L.Gerardo Vela, CENIDET, México.

TPC-6 Emerging Technologies

Alfred C. Weaver, University of Virginia, USA.
Juan R. Pimentel, Kettering University, USA.
Mo-Yuen Chow, North Carolina State Univ., USA.

Special Session and Tutorial Co-Chairmen

Gerardo Espinosa, Univ. Nat. Autónoma de México.
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International Advisory Board

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Mo-Yuen Chow, North Carolina State University, USA.
Gerardo Ayala, CENTIA, México.

Publication

Alfred C. Weaver, University of Virginia, USA.
Rubén Alejos, Univ. de las Américas-P, México.

Local Arrangement

Juan M. Ramírez, Univ. de las Américas-P, México.
David Báez, Univ. de las Américas-P, México.
Juan R. Pimentel, Kettering University, USA.

Finance

J. Antonio Navarro, Univ. de las Américas-P, México.
C.J.Chen, Auctor Corporation, USA.

Registration Committee

Eduardo López, Univ. de las Américas-P, México.
Hubert Wo, Lucent Technologies, USA.

The purpose of this symposium is to provide a forum for presentation and discussion of the state-of-art of Industrial Electronics and related areas. Topics within the scope of the symposium will include:

COMPUTATIONAL INTELLIGENCE: Industrial applications of neural networks, industrial applications of fuzzy systems, industrial applications of evolutionary computing, industrial applications of intelligent systems.

POWER ELECTRONICS: Power devices and components, energy systems (HVDC, FACTS, SVC's, Electrical Traction), high frequency converters and SMPS, power converters, motors and drives, high performance controls.

MECHATRONICS: Robotics, sensors and sensor fusion, industrial vision, motion control, micro electro-mechanical systems, integrated design and systems.

SIGNAL PROCESSING AND SYSTEM CONTROL: Signal, image and data processing, modeling and simulation, control, estimation and identification algorithms, advanced and processor-based control, instrumentation and transportation electronics.

FACTORY AUTOMATION: Discrete and continuous process automation, factory communication, manufacturing information system, software systems for industrial applications, advances in manufacturing technologies.

EMERGING TECHNOLOGIES: Electric vehicles and intelligent transportation, industrial applications of internet technologies, industrial applications of multimedia, application specific IC's, portable electronics, integrated systems and processes, wireless communication.

Special sessions and tutorials: The conference will feature several special sessions, tutorials and invited sessions. If you are interested in organizing a special session, please contact one of the Special Session and Tutorial Co-chairmen.

Submission Format: Prospective authors are invited to submit four copies of an abstract and summary in English, formatted as follows. *First page:* title, authors, mailing address of each author, telephone and fax numbers, e-mail addresses. *Second page:* title, authors, 200 word abstract and the submission area. *Third and succeeding pages:* title, 2000 word summary, figures and references. It should include a clearly defined problem statement supported by the relevant references. It should state why the work was undertaken and what are its outcomes. The development description should be comprehensive enough to allow the assessment of the work's originality and contribution to the technical area. The summary should also provide conclusions and recommendations for further work.

Paper Acceptance: Each accepted paper must be presented at the conference within a 25 minutes period and the manuscript (in letter-sheet-format) must be accompanied by a paid registration. All conference participants, including authors and session chairpersons, must pay the conference registration fee and their own travel expenses.

Submission Address:

Paper from Europe, Middle East

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Paper from Asia and Pacific

(IEEE Region 10):
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Papers from North and South

America (IEEE Region 1-7, 9):
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e-mail: aguilar@cenidet.edu.mx

Deadlines:	Summary submission:	February 15, 2000
	Notification of acceptance:	May 20, 2000
	Final manuscript due:	August 15, 2000

ISIE'2000 Website: <http://www.udlap.mx/~centia/isie2000/>



IEEE POWER ELECTRONICS SOCIETY

**Best Chapter Award Form**

Section / Council Affiliation _____

Chapter Chairman _____

Please complete the following information about your chapter, which will be evaluated by the Best Chapter Award Evaluation Committee.

1) Number of: Regular members _____ Student members _____

2) Do you have a Web site? YES () Address: _____ NO ()**TECHNICAL ACTIVITIES:**

3) Local & Regional Lectures (Please attach a list of the lecturers and speakers and any additional information.)

4) Conferences & Seminars organized (Please attach all related information.)

5) Use of the Distinguished Lecturer Program (Please attach all the important information about the lecturers invited and the results of the events.)

6) Plan of activities (Describe the plan of activities for the following year.)

7) Other related activities (Describe any other technical activity related to the promotion of Power Electronics in the chapter's zone of influence.)

Date: _____ Chair's Signature _____

INSTRUCTIONS: Complete this application form adding up to three additional pages if necessary to answer the questions completely and send it to Jaime Arau (PELS Chapters Development Chair) by email (j.arau@ieee.org), by fax (+52 73 12-23-14) or by regular mail to Interior Internado Palmira s/n, Col. Palmira, Cuernavaca 62490, Mor., Mexico, before March 1.

Meetings of Interest to PELS Members

APEC® 2000, the 15th 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 Fairmont Hotel, New Orleans, Louisiana, USA, February 6-10, 2000. See pages 1 and 3 of this *Newsletter* for details.

SSMSD'2000, the 2000 Southwest Symposium on Mixed-Signal Design, will be held February 28-29, 2000 in San Diego, California. It is sponsored by the University of Arizona Mixed-Signal Design Consortium, in cooperation with the IEEE. See <http://www.ece.arizona.edu/conferences/ssmsd/> for further information.

ISPSD'2000, the 12th International Symposium on Power Semiconductor Devices & ICs, takes place May 22-25 in Toulouse, France. Sponsored by IEEE/ED, IEE Japan, and EPE. Location rotates annually between N. America, Japan, and Europe. See <http://www.laas.fr/ISPSD2000/> for further information.

PESC® 2000, 31st Annual IEEE Power Electronics Specialists Conference, will be held June 18-23 at the National University of Ireland, Galway. PESC is sponsored by the IEEE Power Electronics Society. See pages 2 and 5 of this *Newsletter* for additional information.

COMPEL® 2000, the 7th IEEE Workshop on Computers in Power Electronics, is scheduled for July 16-18 at Virginia Tech in Blacksburg, Virginia. It is sponsored by the IEEE PELS. See page 6 of this *Newsletter* for more details.

IECEC, 35th Intersociety Energy Conversion Engineering Conference, will be held July 24-28 in Las Vegas, NV. Sponsored by AIAA, ASME, IEEE, AIChE, ANS, and SAE, the 2000 theme is "Energy and Power in Transition." Visit <http://www.aiaa.org/calendar/iecec00cfp.html> for information.

INTELEC® 2000, the 22nd International Telecommunications Energy Conference, is set for September 10-14, 2000 at the Hyatt Regency, Phoenix, Arizona. See page 4 of this *Newsletter* for additional information.

IAS 2000, the 35th Annual Meeting of the IEEE Industry Applications Society, will be held in Rome, Italy, October 8-12, 2000. This world conference is organized by AEI and IEEE/IAS, and co-sponsored by IEE, IEEE/IAS, and IEEE/PELS, in cooperation with EPE. See <http://www.aei.it/ias2000.html> for details.

CIEP 2000, the 7th IEEE International Power Electronics Congress, will be held October 15-19, 2000 in Acapulco, Mexico. For additional information visit <http://www.cenidet.edu.mx/ciep2000/>.

ISIE 2000, the IEEE International Symposium on Industrial Electronics, will take place December 4-8, 2000 in Puebla, Mexico. See the call for papers on page 10 of this *Newsletter* for further information.

POWERCON 2000 International Conference on Power System Technology, is set for December 4-7, 2000 in Perth, Western Australia. Organized by IEEE Power Engineering Society, Western Australia Chapter. See <http://www.ee.uwa.edu.au/~aips/powercon/> for further information.

The INSTITUTE OF ELECTRICAL & ELECTRONICS ENGINEERS, Inc.

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for

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New Orleans, LA, USA

February 6-10, 2000