
March 1998

Rock River Valley Section
www.ieee.org/regional/section/rock_river/

Event

Sense

The Institute of Electrical and Electronic Engineers, Inc.

Joint PELS, IAS & Control Systems Chapter Meeting

An Overview of Soft-Switching Techniques for PWM Converters/Inverters

When March 30, 1998

Note this is a Monday

Where Rock Valley College, Technology Center, Room 117. I-90 to Riverside Blvd., exit and go west to Mulford Rd. Go south to first light, turn east into RVC. Follow road to left to last building.

Agenda

6:00 PM	Social Time
6:30 PM	Dinner
7:30 PM	Program

Program Recently, a number of soft-switching pulse-width-modulated (PWM) converter techniques have been proposed, aimed at combining the desirable features of both the conventional PWM and resonant converters while avoiding their respective limitations. Two classes of soft-switching PWM converters suitable for high power converter/inverter applications, namely, zero-voltage-transition PWM converters and zero-current-transition PWM converters, are reviewed, and their merits and limitations are assessed.

The ZVT operation is achieved by the use of simple low-power auxiliary circuits, which are actuated only for a short period prior to active switch turn-on to reduce the switch voltage. The turn-on loss of main switches is reduced significantly, while their turn-off events, conduc-

tion loss, and voltage stress are basically the same as in conventional PWM converters. Technology to reduce the voltage rating of the auxiliary switches is also presented.

Likewise Zero-Current-Transition (ZCT) converters solve the turn-off problems but do not solve main switch turn-on problems and require auxiliary switches to be turned off with high current. Improved ZCT schemes enable all main switches and auxiliary switches to be turned on and off under zero-current conditions. The zero-current switching at both turn-on and turn-off not only reduces switching losses significantly, but also eliminates the necessity of passive snubbers due to the much reduced switch stress.

Speaker Dr. Fred C. Lee is an IEEE Power Electronics Society Distinguished Speaker.

Dr. Lee received the B.S. degree in electrical engineering from National Cheng King University in Taiwan in 1968, and the M.S. and Ph.D. degree from Duke University, Durham, NC, in 1971 and 1974, respectively. He is the Founder and Director of the Virginia Power Electronics Center (VPEC). Under his leadership, VPEC has become

one of the largest university-based power electronics research centers in the country. During his career, he has published over 100 referred journal papers, more than 200 technical papers in national and international conferences, and more than 150 industry and government reports. He currently holds 14 U.S. patents. Dr. Lee is a Past President of the IEEE Power Electronics Society.

Door Prizes Sponsored by RRVs and Best Buy

Meal Dinner will be buffet style (with a min. of 15) and will consist of chicken, veggie's, salad, dessert. Please make your **dinner reservations** by calling **Gloria at 815-226-5247 by Thursday, March 26, (please include your e-mail address in the information you provide Gloria - thanks)**. The cost of the **dinner** is **\$5** for IEEE members and **\$14** for non-members. Unemployed members may call one of the officers for special arrangements.

Note The meeting is open to the general public. You need not be an IEEE member. Spouses and guests are welcome. However, please call to enable us to make proper arrangements.

RRVS Section Officer Nominations

In accordance with the RRVS' bylaws, the Nominations Committee has submitted the names of the following individuals (also pictured at left) as nominees for the four elected positions on the RRVS Executive Committee for the 1998/1999 season. The election will be held at the May 28 section meeting.

- Chair** **Bob Parro**
- Vice Chair** **vacant**
- Treasurer** **Larry Wachowiak**
- Secretary** **Matt Zimmer**

Additional nominees can be submitted by petition from the section membership. A potential nominee must be an IEEE member in good standing and a member of the RRVS. A petition must be signed by at least 20 RRVS members. Deadline for petitions is April 15. Please submit petitions to Roger Caruana (see contact info on page 3)

Rockford/Chicago Consultants Network

Meetings take place the last Monday of odd months at the Palatine public library from 7:30-9pm. The next two meetings are:

- Mon March 30, 1998
- Mon May 18, 1998

Palatine Public Library
700 North Court
Palatine, IL
(847) 358-1216

For more information please call Harvey Brodsky at (847) 222-1747.

Chair



Bob Parro

Vice Chair

vacant

Treasurer



Larry Wachowiak

Secretary



Matt Zimmer



February Meeting Recap

Dr. William Beckman (above) gave a thought provoking talk on the economies of solar energy in our 2nd annual joint IEEE/ASME RRV sections meeting. On a straight comparison basis of costs of solar energy vs conventional energy, solar energy loses. However, with the present tax incentives it is not only economically attractive for residential housing to lease solar hot water heaters from the utility industry, but it also cuts down significantly on carbon dioxide pollution to the tune of about 15 tons per year per hot water heater.

Submissions to Event Sense

Send articles and job ads to the *Event Sense* editor, Bob Parro, via e-mail (preferred), or fax. Job ads will run for two consecutive months. Contact the *Event Sense* editor if the ad needs to run longer. Please make submissions by the twenty-fifth of the month. All submissions are subject to editing for style, clarity, and space considerations.

April Meeting/Tour Preview

The April meeting will be a tour to the UPS facility at the Rockford Airport. This tour will begin at 6:00pm and last for about two hours. The reason for the Saturday date is that the tour would have to be conducted between 11pm and 1am during the week. This is the time when lines and planes operate.

e-mail: b.parro@ieee.org
fax: (815) 394-2497



RRVS Executive Committee

(l-r) **standing:** Larry Wachowiak, Treasurer; Hassan Mansir, IAS Chapter Chair; Don Zinger, NIU Student Branch Counselor; Matt Zimmer, Secretary and IAS Chapter Vice Chair; Roger Caruana, Education and Technical Activities Chair; **seated:** Caio Ferreira, Past Section Chair and current IAS Chapters' Department Chair, Bob Parro, Section Chair; Bill Barber, Section Vice Chair and Membership Chair; Jim Buerosse, PELS Chapter Chair; Paul Peterson, Joint Computer/Control Systems Chapter Chair and Awards Chair

The Rock River Valley Section would like to give recognition to the following area companies and university for supporting Section Officers:

Sundstrand Corporation • 3C Computer Systems • William Barber & Associates • Northern Illinois University

Rock River Valley Section of the IEEE 1997-1998

[WWW: www.ieee.org/regional/section/rock_river/]

Elected Executive Committee

Chair	Bob Parro	b.parro@ieee.org	(815) 394-2947
Vice-Chair	Bill Barber	b.barber@ieee.org	(815) 235-4110
Secretary	Matt Zimmer	m.zimmer@ieee.org	(815) 394-3456
Treasurer	Larry Wachowiak	l.wachowiak@ieee.org	(815) 394-5676

Appointed Executive Committee Chairs

IAS Chapter Chair	Hasan Mansir	h.manisr@ieee.org	(815) 226-6875
IAS Chptr. Vice Chair	Matt Zimmer	m.zimmer@ieee.org	(815) 394-3456
Comp/CS Chapter Chair	Paul Peterson	paul.peterson@ieee.org	(815) 226-2584
PELS Chapter Chair	Jim Buerosse	j.buerosse@ieee.org	(815) 226-6078
Educational Activities	Roger Caruana	r.caruana@ieee.org	(815) 227-1850
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Membership	Bill Barber	b.barber@ieee.org	(815) 235-4110
Awards	Paul Peterson	paul.peterson@ieee.org	(815) 226-2584
Publicity, Newsletter Editor	Bob Parro	b.parro@ieee.org	(815) 394-2947
Nominations	Roger Caruana	r.caruana@ieee.org	(815) 227-1850

Northern Illinois University - Student Branch Officers

St Br Counselor	Prof. Don Zinger	d.zinger@ieee.org	(815) 753-0540
St Br Chair	Jamie Phillips		
St Br Vice-Chair	Michelle Marotta		
St Br Secretary	Rob Reeder		
St Br Treasurer	Ryan McMillin		

*Messages for student officers can be left at the NIU Dept of Electrical Engineering,
(815) 753-9974 or e-mail at sb.niu@ieee.org*



Rock River Valley Section
Established 1947

New - Electronic IEEE Membership Application

An electronic on-line application has been an instant hit with new member applicants. To access the application, visit www.ieee.org/join.html

Calendar

- March Section Meeting** **Monday, Mar 30**
Dr. Fred Lee - An Overview of Soft-Switching Techniques for PWM Converters/Inverters
- April Section Meeting/Tour** **Saturday, Apr 18**
UPS Tour, Rockford Airport
- May Section Elections/Picnic** **May 28**
Sundstrand Park



Joint Computer/Control
Systems Society Chapter
Established 1995



Industry Applications
Society Chapter
Established 1992



Power
Electronics
Society
Chapter
Established 1996

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