

January 2010

Rock River Valley Section

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Event



Sense

The Institute of Electrical and Electronic Engineers, Inc.

IEEE RRVS, IEEE Power Electronics Society Chapter  
and Rock Valley College Meeting

*SERVING IEEE MEMBERS OF NORTH CENTRAL ILLINOIS AND EXTREME SOUTH CENTRAL WISCONSIN*

## Future Electronic Power Distribution Systems – A Contemplative View

**WHEN** Thursday, January 28,  
2010

### WHERE

**Rock Valley College**, Woodward Technology Center, Room 142. I-90 to Riverside Blvd., exit and go west to Mulford Rd. Go south to 2nd light, turn east into RVC. Follow road to left to last building on right.

### AGENDA

6:00 PM Networking  
6:30 PM Dinner  
7:30 PM Presentation

### PROGRAM

Although it has long been argued that electronic power converters can help improve system controllability, reliability, size, and efficiency, their penetration in power systems is still quite low. The often-cited barriers of higher cost and lower reliability of the power converters are quite high if power electronics is used as direct, one-to-one, replacement for the existing electro-mechanical equipment. However, if the whole power distribution system were designed as a system of controllable converters, the overall system cost and reliability could actually improve, as is currently the case at low power levels within computer and telecom equipment.

Future advanced electric power systems will have practically all loads interfaced to energy sources through power electronics equipment. All alternative, sustainable, and distributed

energy sources, as well as energy storage systems, can only be connected to electric grid through power electronics converters. This will require new concepts for electronic control of all power flows in order to improve energy availability, power density, and overall energy and power efficiency in all electrical systems, from portable devices to cars, airplanes, ships, homes, data centers, buildings, and the power grid.

Starting from the example of a computer power system, the talk will contemplate possible future ac and dc electronic power system architectures, which fully decouple the dynamics of sources, distribution system, and loads by using separate source-, load-, and distribution-converters. Several ideas and possible methodologies for modeling, analysis, and system-level design of such systems, including power flow control, protection, stability, and subsystem interactions, will be presented.

### SPEAKER

**Dr. Dushan Boroyevich** received his Dipl. Ing. degree from the University of Belgrade in 1976 and his M.S. degree from the University of Novi Sad in 1982. He received his Ph.D. degree in 1986 from Virginia Tech. He has led the Power and Industrial Electronics Research Program in the Institute for Power and Electronic Engineering, at



the University of Novi Sad. He is now the American Electric Power Professor at the **Department of Electrical and Computer Engineering at Virginia Tech** and co-director of the **NSF Engineering Research Center for Power Electronics Systems (CPES)**. Dr. Boroyevich is Fellow of IEEE and recipient of the IEEE William E. Newell Power Electronics Technical Field Award. Dr. Boroyevich's research interests include power electronics systems modeling and control, and multi-disciplinary design optimization.

### MEAL INFORMATION

Dinner will feature Roast Turkey and Vegetarian Lasagna. The costs are: member: \$5, non-member: \$10, student members: \$2, student non-members: \$5. Please make **dinner reservations online at [http://meetings.vtools.ieee.org/meeting/view/list\\_meeting/1431](http://meetings.vtools.ieee.org/meeting/view/list_meeting/1431)**

or by emailing Ginger at (ginger.spinasant@hs.utc.com) **by Tuesday, January 26, at 5pm**. Please include the following: name, phone number, email address, IEEE member number, choice of entree. Unemployed members may call the treasurer for special arrangements.

### NOTE

The meeting is open to the general public. You need not be an IEEE member to attend. Guests are welcome. Please call Ginger at 815-394-5696 for questions.

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**RRVS Calendar**

- January RRVS Meeting ..... January 28**  
 "Future Electronic Power Distribution Systems – A Contemplative View", Rock Valley College, Rockford, IL
- January RRVS IEEE 125th Anniversary Celebration Dinner ..... January 30**  
 Keynote: "What Congress Has Planned For Us In 2010", Russ Harrison, Chief IEEE Lobbyist in Washington, D.C.
- February RRVS Meeting — Engineering Week ..... February 18**  
 "Aircraft Power System and Power Electronics Technology for the More Electric Airplane", RVC, Rockford, IL
- March RRVS Meeting ..... March 25**  
 TBD, Rock Valley College, Rockford, IL
- April RRVS Meeting ..... April 29**  
 TBD, Rock Valley College, Rockford, IL
- May RRVS 2011 Officer Election and Annual Picnic Meeting ..... May 27**  
 Steak barbeque, Hamilton Sundstrand Park, Belvidere, IL

**Rock River Valley Section Chapters**

Industry Applications Society Chapter  
 Established 1992

Joint Computer/Control Systems Society Chapter  
 Established 1995

Power Electronics Society Chapter  
 Established 1996

Electromagnetic Compatibility Society Chapter  
 Established 2007

Time-Sensitive Material

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