



VIRGINIA MOUNTAIN SECTION NEWSLETTER

IEEE Region 3, Council 09, Section 65

January 2004

Thursday January 29, Clarion Hotel Roanoke Airport

FACTS Devices and Their Applications in Power Transmission and Distribution

Dr. Alex Huang
Professor, Electrical and Computer Engineering
Virginia Tech

ABSTRACT

Preliminary investigations on the recent blackout in northeastern USA indicate that it may be caused by inadequate reactive power support at the critical time when it is needed. This finding highlights the importance of providing reactive power compensation in electric power system in order to maintain voltage support and to increase the power flow capability. Traditional methods of achieving reactive power compensation include the use of slow mechanical switch and static capacitor or inductor banks. However, increasingly the need for reactive power is so dynamic that faster reactive power controllers are needed. Flexible AC Transmission System (FACTS) are power electronics based controllers that have high power ratings and faster speed, hence is and will be a key development in the future. This talk will discuss the advances in high power semiconductor technology, high power converter technology and digital control technology that are needed to develop next generation of FACTS devices.

SPEAKER

Dr. Alex Huang received his B.Sc. and M.Sc. degrees in Electronic Engineering in 1983 and 1986, respectively, from Zhejiang Univ. and Chengdu Institute of Radio Engineering in China. He received his Ph.D. from Cambridge University, UK in 1992. He has been at Virginia Tech since 1992. Since 1983, he has been involved in the development of modern power semiconductor devices and power integrated circuits. He fabricated the first IGBT power device in China in 1985. While at Cambridge, he developed a high voltage power IC process to integrate power devices and advanced CMOS devices using conventional CMOS technology. His current research interests are novel power devices and power ICs, monolithically integrated power management, high power solid-state devices and their applications in electric power regulation and motor drives. He has published more than 80 papers in the international conferences and journals, and has eight U.S. patents. Dr. Huang is the recipient of an NSF CAREER award and the prestigious R & D 100 Award.

Date: Thursday January 29, 2004

Time:

Social: 6:30 PM

Dinner: 7:00 PM

Talk: 8:00 PM

Cost: Member or guest \$ 15.00
Student \$ 8.00

Reserve by **5 PM**

Monday January 26

Shawn Addington

<mailto:AddingtonJS@mail.vmi.edu>

464-3961

Please indicate number of attendees.

**Directions to Clarion Hotel
Roanoke Airport**

2727 Ferndale Drive NW
1581 Exit 3 Hershberger Rd West
1st Rt. onto Ordway Drive,
¼ mile, Rt. into Parking Lot.

Please note that January meeting is on the 5th (last) Thursday of the month. In February, we will return to our normal schedule of meeting on the third Thursday (February 19), at which time our annual Undergraduate student Paper Contest will be held.

Election Results: 2004 VMS Officers

Chair J. Shawn Addington
Vice-Chair Cy Harbourt
Secretary/Treasurer Jim Squire

Executive Committee Members

Jan Helge Bohn
Chris Bonadeo
Dave Geer
Gail Gray

Computer, Control Systems and
Industrial Electronics Chair

Dave Livingston

Industrial Applications Society

Chair Dave Stocker

Microwave Theory & Techniques and
Electron Devices Chair

Dain Miller

We are particularly pleased to welcome Jan Helge Bohn, Chris Bonadeo, and Gail Gray as new Members of the Executive Committee. (Ira Jacobs declined election since as Newsletter Editor he is an ex-officio representative.)

VMS Membership 12/31/03

Associate Members	31
Life Associate Members	1
Members	275
Life Members	20
Senior Members	61
Life Senior Members	31
Fellows	18
Life Fellows	6

Senior Member Drive

If you are a member, and it is 10 or more years since you received your undergraduate degree, you may qualify for senior membership. The IEEE has a special program each year to promote Senior Member upgrades. There is a \$10 rebate to VMS for each Senior Member that is approved. Information on this program can be found at <http://www.ieee.org/organizations/rab/md/smprogram.html>

Please consider applying for senior membership. The application is simple, and we will be pleased to help you obtain the necessary references.

IEEE XPLORE(R) LINKS NOW APPEAR IN GOOGLE SEARCHES

The Google search engine now displays content from IEEE scholarly journals and other publications in relevant keyword search results. Following an agreement made earlier this year between Google and the IEEE, Google is currently indexing the abstract records for online IEEE technical documents and standards available through the IEEE Xplore(R) online delivery platform.

DAN JACKSON AWARD FUND

As indicated previously, the IEEE VMS has established the Dan Jackson Memorial Award Fund to provide an annual cash award in Dan's name to a student participant in the Southwestern Virginia Regional Science Fair. Contributions to this fund are still being accepted and should be mailed to:

Dr. James Squire, IEEE VMS Treasurer

403 Nichols Engineering Hall
Virginia Military Institute
Lexington, VA 24450

Mrs. Jackson sent the following note:
"Thank you very much for sending me a copy of the write up about Dan that was in the VA Mountain Section newsletter in Sept., also for notifying me of the award to be given in Dan's name at the annual Western VA Regional Science Fair for area high school and middle school students. Dan would be very pleased and proud to know of these. Please convey my appreciation to the VA Mountain Section for their thoughtfulness and generosity in setting this up."

One sidelight on Dan unknown to most of us was that his father was an IEEE Fellow, and that his grandfather in the early 1900's worked with Edison, Steinmetz and others to develop an EE curriculum. His grandfather was also at one time the Department Head of Electrical Engineering at MIT.

Forthcoming Meetings

February Meeting

Thursday February 19
Undergraduate Student Paper Contest

March Meeting

Thursday, March 18
Spouses Night
Tentative Program: Digital Art

April Meeting

Thursday, April 15
Tentative Program: Alternative Energy

May Meeting

Thursday, May 20: Picnic

Section Leadership Development

Workshop, Dominion Innsbrook
Technical Center, Glen Allen, VA
Saturday February 28

Electron Devices Chapter Meeting

Prof. Louis Guido will speak on
Semiconductor Light Bulbs: The Future
of General Purpose Lighting, on
Friday, February 6, at
100 Hancock Hall, Virginia Tech

VMS Officers

Chairman: J. Shawn Addington
<mailto:AddingtonJS@mail.vmi.edu>
464-3961

Vice Chairman: Cy Harbourt
<mailto:cdharbourt@ieee.org> 387-8941

Sec./Treasurer: Jim Squire
<mailto:squirejc@mail.vmi.edu> 464-7548

VMS EXECUTIVE COMMITTEE

Jan Helge Bohn bohn@vt.edu
Chris Bonadeo cbonadeo@vt.edu
David Geer dgeer@ieee.org
F. Gail Gray fggray@vt.edu
Junior Past Chairman
Mark Shepard Mshepard@ieee.org

Newsletter Editor: Ira Jacobs
<mailto:ijacobs@vt.edu> 231-5620

VMS Chapter Chairs

**Computer, Control Systems, & Industrial
Electronics:** David Livingston
<mailto:d.livingston@ieee.org> 464-7545

Industrial Applications
David Stocker
[mail to:David.Stocker@indsys.ge.com](mailto:David.Stocker@indsys.ge.com)

MTT and Electron Devices
mailto:dain_miller@ieee.org