



VIRGINIA MOUNTAIN SECTION NEWSLETTER

IEEE Region 3, Council 9, Section 65

September 2001

Meeting: Thursday, September 20

Spouses' Night Plus Joint Meeting with the ACS*

Fuel Cells:

A Promising Old Energy Conversion Technology for the 21st Century

Dr. Michael R. von Spakovsky

Professor and Director Energy Management Institute Virginia Tech

Abstract

Within the context of mounting pressures on existing resources and the environment, fuel cell systems can and probably will play a major role. Their potential for effectively contributing to solutions, which deal with these pressures, is great. This is true for fuel cells as stand-alone systems and even more so as systems working in concert with more conventional energy conversion processes.

In order to put these systems in perspective, a brief history of fuel cells as well as a summary of existing processes for energy conversion are presented. The principal types of fuel cells, fuel cell systems, and their characteristics are then discussed followed by a brief discussion of some of the technical and economic barriers, which must be overcome, in order to reap the benefits of this new, and exciting technology. Finally, a general outline of some of the activities at Virginia Tech and elsewhere (e.g., in industry) for applying fuel cells to transportation, stationary power/cogeneration, and portable power applications is given.

About the Speaker

Dr. von Spakovsky has over 13 years of teaching and research experience in academia and over 17 years of industry experience in mechanical engineering,

power utility systems, aerospace engineering and software engineering. He was at NASA from 1970-74, in the power utility industry from 1974-89, and at the Swiss Federal Institute of Technology from 1989-96. He is currently Professor of Mechanical Engineering and Director of the Energy Management Institute at Virginia Tech where he teaches courses in thermodynamics, industrial energy systems, fuel cell systems, and energy system design.

His research interests and activities include computational methods for modeling and optimizing complex energy systems, methodological approaches for the integrated synthesis, design, operation and diagnosis of such systems (stationary power as well as high performance aircraft systems), theoretical non-equilibrium and equilibrium thermodynamics, and fuel cell applications for both transportation and distributed power generation. He has

published widely in scholarly journals, conference proceedings, etc. (approximately 100 publications) and has given talks, seminars and short courses worldwide.

*This will be our second joint meeting with the Virginia Blue Ridge Section of the American Chemical Society.

They will be presenting their Chem Teacher of the Year award as a part of the evening's activities.

Reservations

Date: Thursday Sept. 20, 2001
Social: 6:30 PM
Dinner: 7:00 PM
Talk: 8:00 PM

Cost: Member or Guest \$12.00
Student \$ 7.00

Clarion Hotel Roanoke Airport

2727 Ferndale Drive NW
I581 Exit 3 Hershberger Rd West
1st Rt. onto Ordway Drive,
¼ mile, Rt. Into Parking Lot.

Reserve by **5 PM Monday** Sept. 17

Howard Moses (540) 953-5069
MMoses@ieee.org

Please specify number of attendees.

INSIDE

Chair's Comments	2
IEEE Corporate Election!	2
VMS election	2
Correction	2
On-line How-To Guide	3
New Section Members	3
Your Web Site, Take a Look	3
2001-2002 VMS Schedule	4
The Section	4

Chair's Comments

I trust that each of you had a great summer and were able to mentally refresh and prepare for the Fall season. During our break from section meetings, our Program Chair Howard Moses, with help from the rest of the Executive Committee, worked hard to plan for a year full of great speakers and interesting topics. We hope you plan to attend, as section meetings are a great way to network with area engineers and to catch up with the latest trends in many facets of your profession.

We are excited to announce a new initiative to instate a Lasers & Electro-Optics Society (LEOS) chapter within our section. With the recent growth of fiber optic activity in the area, we felt this would be a great way to bring more focused information to the local fiber optic community. In order to instate the new chapter, we will need at least 16 signatures on a petition from current LEOS members. As it turns out, there were exactly 16 LEOS members as of July 31 in our section, so we will need signatures from each LEOS member to get this going! If you are a LEOS member, promote the chapter amongst your peers. The more people you bring into LEOS, the better the potential for attracting good speakers covering the topics you want to hear! Please contact Ira Jacobs at ijacobs@vt.edu if you have any questions or would like to sign the petition.

Speaking of chapters, would you be willing to serve your industry by volunteering as a chapter chair? We are looking to re-organize the Industry Applications and Industrial Electronics chapters in such a way that they are joint chapters, chaired by one person. This is a logical grouping since almost all of the Industrial Electronics chapter members are also Industry Applications chapter members. The duties of a chapter chair can easily fit into a busy schedule, as you are only required to arrange two speakers per year and mail invitations to chapter members. If you are one of the 58 members in these chapters, please consider this opportunity! We are also looking for a volunteer to chair the Power Engineering chapter. There are 40 members in this chapter, however we plan to deactivate it in this section if a volunteer does not step forward by the end of the year. Please feel free to contact anyone on the Executive Committee or myself if you are interested.

I'm looking forward to seeing you at this month's section meeting!

Dave Kingma
dkingma@ieee.org

IEEE Corporate Election!

The IEEE ballot is in the mail as of September 1. Be sure to vote when you get yours. Each vote is important. The URL for the election is <http://www.ieee.org/organizations/corporate/candidates.htm>. Several candidates, particularly those for 2002 IEEE President-Elect and 2002 IEEE-USA President-Elect have individual web sites which you might find of interest in making your choice.

For IEEE President-Elect there are three good candidates:

Mike Adler
<http://home.earthlink.net/~adlerms/president001.htm>,

Paul Kostek
<http://www.ieee-seattle.org/pkostek>,
and Art Winston
<http://www.arthurwinston.com>.

Because of my personal work with two of these candidates I favor Art Winston at this time.

For IEEE-USA President-Elect there are two candidates, both of whom I have worked with. This is a tough choice for me but I am going with Jim Leonard over Joe Lillie for 2002.

For Region 3 Delegate-Elect/Director-Elect both Bill Harrison, Atlanta and Don Hill, Lexington, KY are well qualified and I have worked with both. Right now I tend to favor Don Hill.

The election brochure provides the only information I have on either candidate for Technical Activities Vice President-Elect: Leah Jamieson or Barry Johnson.

For IEEE-USA Member-at-Large I pick Leann Kostek over Gary Johnson because I have known her for several years and have seen her work. I don't know Gary.

There are several other contests but the preceding ones are those we all should be voting on. If you belong to a technical society, you may have Division Delegate/Director and also Standards

candidates listed on your individualized ballot.

BE SURE TO VOTE! YOUR VOTE MAY MAKE THE DIFFERENCE!

Dan Jackson, Past Chair
Former Region 3 Director

Virginia Mountain Section Election

The Virginia Mountain Section will be changing officers on January 1.

Your nominating committee is in the process of recruiting volunteers for Secretary/Treasurer, four positions as Member-at-Large of the Executive Committee, and chairs for the following technical society chapters:

Industry Applications,

joint **Industrial Electronics/Computer/Control Systems**,

joint **Microwave Theory & Techniques/Electron Devices**,

Power Engineering, and

Lasers & Electro-Optics.

You may volunteer your own name or suggest the names of others. The nominating committee will consider all suggestions and contact individuals before putting a name on the ballot.

The Section Bylaws state that the slate shall be announced by September 25. Therefore, we need all suggestions as soon as possible. Send them to Dan Jackson
d.jackson@ieee.org phone 540-774-0484.

Dan Jackson,
Chair Nominating Committee

Correction

The April issue of the Newsletter incorrectly stated that the March meeting of the VMS Computer/Control/IE chapter was reported by Dave Geer. The very fine write-up was actually provided by Joel Donahue.

...*Editor*

Free On-line How-To Guide for Course Design Available

Help is now available for those members who have hesitated to try to turn their specialty content into a course or tutorial for the benefit of their colleagues.

The IEEE Educational Activities Board (EAB) has posted an online tool for course designers, "Reference Guide for Instructional Design and Development." This how-to guide was developed by EAB in partnership with Telcordia Technologies to help individuals design courses and tutorials efficiently and effectively. Based on the Systematic Design of Instruction by Walter Dick and Lou Chaney, the guide outlines six distinct steps to acquire "sound principles of design" when creating courses. These clear steps are displayed on a colorful, friendly webpage. Learn to:

- Assess the needs of the instructional situation
- Analyze the learners
- Write learning objectives
- Select an instructional strategy that fits you assessment
- Develop materials that enhance your strategy
- Evaluate your work

With each step there is a concise concept outline, tools to aid in the application of the step, and online references that can add to the material in the outline. Links to suggestions for further study are on each page. This guide will help designers to add education value to their tutorials, which can qualify them for Continuing Education Unit credits. Access this guide at www.ieee.org/organizations/eab/tutorials/refguide/mms01.htm.

Lynn Murison
Outreach Administrator,
IEEE Educational Activities
ph: 1.732.562.6526
www.ieee.org/organizations/eab/

New Section Members

During our summer "recess" ten IEEE members have joined the VMS.

A warm welcome to:

Dennis Gatens Roanoke
Chris Hicks Penhook
William Horvath Vinton

Michael Hsaio Blacksburg
Thomas Martin Blacksburg
Mat Narayanan Blacksburg
Patrick Rondinelli Roanoke
Rosialee Shelton Roanoke
Robert Trew Blacksburg
Remon Yassa Christiansburg

...*Editor*

Your Web Site Take a Look

The VMS web site,

<http://www.ewh.ieee.org/r3/virginia-mountain/>

has a wealth of information about the Section and the IEEE not generally available through other sources. It is also an easy way to access other IEEE National or Region Sites and services.

Here is a list of current services, files and links. Click the link above to browse and examine them.

Your feedback and input is always welcome. Send it to me: editor

VMS E-Services

Sign up for any of these four new distribution lists:

1. e-mail copy of the Newsletter

2. Section News Alerts

Sporadic urgent announcements, e.g. "Meeting Cancelled"

3. IEEE - IEEE/USA News Items

Receive excerpts from various narrow distribution IEEE bulletins, and news items

4. Section Discussion Group

A vehicle to express your interests and opinions to Section members.

Meeting

Current and future Section meeting announcements

Chapters

Information and events of interest to local Chapter members

Recommend a Meeting Topic

Ever wish the Section would have a talk on your favorite subject? Here is an e-Form to let the Officers and

Chapter Chairs know of your interests.

Newsletter

Current and past issues of the Newsletter are archived here.

Region 3

Pointers to the Region 3 pages.

Central Virginia Section

Links to the ETI Database, Tech Expo, IEEE Sections and Chapters, and the Tech Society home pages as well as many more.

Student Branches

Links to the Student Branch Sites.

PACE Page

Selections of items of long term interest from the PACE Chair.

What Is? (FAQs)

Answers to a number of common member questions about IEEE. For example, do you know what PACE is?

Special Interest

A selection of archived letters and memos from Section members and Officers on topics of general interest to VMS members.

ExComm Minutes

Archived minutes of the meetings of the VMS Executive Committee.

IEEE Leadership Wire Items

Past issues of the Leadership newsletter. A publication directed to IEEE volunteers but containing a great deal of material of wider interest about the day-to-day activities of IEEE.

IEEE USA Items

Excerpts from the IEEE USA news and bulletins.

VMS Calendar

Ever wonder if anything goes on in the Section other than Section and Chapter meetings? Take a look at the official list of annual mileposts, and deadlines.

Meeting Dates

A listing of usual and required annual meetings.

Meet the Officers

Short biographical sketches and phone and e-mail contacts for Section and Chapter officers.

VMS Bylaws

The Section guidelines.

Plus several links to the most commonly used pages of the IEEE National Site.

2001-2002 MEETING SCHEDULE

DATE	SPEAKER/TOPIC	MEETING PLACE
September 20 Spouses' Night, 2001	M. von Spakovsky Fuel Cell Technology	Clarion Hotel Roanoke
October 18 (Joint MTTD)	G. Metze Millimeter Wave Technology for Wireless Interconnection of Multiple CPU Systems	Clarion Hotel Roanoke
November 15	T. Rappaport Trends in Wireless Communications	Clarion Hotel Roanoke
January 17	Student Projects Details: TBD	Clarion Hotel Roanoke
February 21	TBD Six Sigma Design & Production	Clarion Hotel Roanoke
March 21	TBD Fiber Optic Network Development	Clarion Hotel Roanoke
April 18 Spouses' Night, 2002	TBD Technology Future Directions	Clarion Hotel Roanoke
May 16	Plant Tour	TBD

IEEE Virginia Mountain Section

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VMS Chapter Chairs

Industry Applications
Vacant

Industrial Electronics/Computer/Control Systems
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Microwave Theory & Techniques/Electron
Dain Miller
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Power Engineering
Vacant

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e-mail Newsletter Subscription
Go to the VMS Web Site page:
<http://www.ewh.ieee.org/r3/virginia-mountain/misc/SignUpForm.html>

Anyone may submit material for the Newsletter
Deadline:
Monday following each meeting

Submit To: Editor

Change of Address

US Mail: IEEE Service Center
445 Hoes Lane, PO Box 1331
Piscataway, NJ 08855-1331
mailto:address.change@ieee.org
Tel: 800-678-IEEE
Fax: 732-981-9667
IEEE Web:

<http://services1.ieee.org/membersvc/coa/intro.htm>
(Changes are forwarded to the Newsletter)

Visit the VMS WEB page:

<http://www.ewh.ieee.org/r3/virginia-mountain>

- Sign on to our mailing lists.
- Section/Chapter meeting notices, and reports.
- Past issues of the Newsletter,
- PACE Patter, etc.
- Articles, organizations, and activities affecting our profession.
- Suggest Meeting Topics and Speakers.
- Links to IEEE, etc.
- Contributions welcomed - make them on-line.