

The Current Source

Newsletter of the Schenectady Section of the IEEE

Chairperson's Message

The year 2010 has been very exciting and productive to our Section. Our Section has been enriched with a new affinity group and new society. Dr. Haleh Najafzadeh finalized her efforts in formation of Woman Engineering (WiE) affinity group and David Doria; a PhD candidate at RPI has officially formed the Signal Processing Society of the Schenectady Section. Both Haleh and David are looking for your support and I encourage all of our members to join and promote these groups.

Schenectady Section has been very active in planning Engineering Week where one of our members serves on the planning committee. I am pleased to report that Louie Powell has agreed to serve as our Section liaison. I would also like to thank Jose Daconti who has served in this capacity for several years.

I congratulate our Section's new senior members. Weijun Yin, Leila Parsa, Kangguo Heng, Sungjae Lee, Joseph Song Manguelle, Mohammed Zaki, John Glaser, Michael Schutten and John Spinelli have been elevated to senior member grade in recognition of their outstanding contribution to the field of electrical engineering. Our Section is happy to support your applications for fellow and senior membership grades.

Our Section professional societies have been quite busy organizing membership meetings where professionals gather for networking and sharing their ideas. We have had over 10 meetings with over 400 members and 42 guests in attendance. Topics ranged from Computerized Disease Diagnosis

sponsored by Engineering in Medicine & Biology Society (EMBS), to a wind farm field trip arranged by the Industry Applications Society. A Smart Grid seminar drew wide interest indicating its significance in shaping the future of energy distribution and consumption.

In keeping with our Section tradition, we sponsored Future City Regional Competition at HVCC in January. Future City provides local middle school students an opportunity for the best use of alternative and sustainable energy sources to solve "real-life" engineering problems.

Darrion Chan and his team at the student chapter at RPI have been very active by organizing bi-weekly meetings on campus with guest speakers and workshops including a trip to the EPRI Research Laboratory in April as well as two recreational trips, bowling and laser tag. These events prove to be very beneficial in professional development of young engineers and in recruiting new members. On October 7th, Wei Ren (PES) and Irene Benny (RPI-IEEE) organized our first joint technical membership meeting at RPI campus where Dr. Ahmad Elasser of GE presented status and future prospects of Photovoltaic Systems. <http://www.ecse.rpi.edu/homepages/ieee/index.php>

The Region One summer meeting provided a valuable networking and leadership training opportunity for members of the executive committee who utilize lessons learned in planning, organizing and executing various programs for our members.

For the last quarter of the year chapter officers and volunteers have planned more events and I hope you

will be able to participate. The 71st Steinmetz Memorial Lecture on October 18th will feature Dr. Leonard Kleinrock who will present the history and future of the Internet <<http://ewh.ieee.org/r1/schenectady/>>. Region one director Dr. Charles Rubenstein will also be on hand during the event. For November an exciting professional development event is being planned jointly by PACE chair Jingjia Chen, Student Activity chair Marc Happes, RPI student chapter and Career Development Center at RPI.

There are many IEEE awards that recognize contributions of individuals and companies. Our Section Awards Chair Dr. Kiruba Sivasubramaniam Haran has been working with Ralph DeSorbo to match these awards with members of our Section. If you would like to know more about these awards or nominate somebody, please contact Kiruba (contact info on following page).

While IEEE members worldwide make the world a better place for humanity with breakthrough innovations, IEEE Schenectady Section takes pride in the contributions of its volunteers. This newsletter includes list of volunteers who were nominated and agreed to serve during 2011. I urge you to actively participate and consider becoming a volunteer, see page 2 for opportunities to serve.

In closing, if you have any comments or suggestions in making our Section more productive please contact me or any of the executive committee officers.

All the best,
Sabir Azizi-Ghannad

2011 Section & Chapter Officer Nominations

Please see <http://www.ewh.ieee.org/r1/schenectady/whoweare.html> for current 2010 officers

Executive Committee

Jovan Bebic, Chair
jbebic (at) ieee.org

Kristin Short, Vice Chair - Treasurer
W: 395-5117 Fax W: 346-2777
k.short (at) ieee.org

Lokendra Bam, Vice Chair - Secretary
W: 452-7718 ext. 115
Lokenbam (at) ieee.org

Maja Harfman Todorovic, Vice Chair –
Membership. Maja.harfman (at) ge.com
(W) 387-7408

Appointed Positions

Saber Azizi, Past Section Chair
W: 385-3820
saber.azizi (at) ge.com

Haleh Najafzadeh, WIE Coordinator
najafzha (at) ieee.org

Marc Happes, Student Activities Chair
W: 449-7213
Happes (at) audiovideocorp.com

Louie Powell, Section Liaison to Prof. Eng.
Society W:
louie.powell (at) ieee.org

Kiruba Sivasubramanian Awards Chair
W: 387-7602
E-mail: sivasubr (at) ge.com

David Doria, Webmaster
david.doria@ieee.org

Shadrack Orero, Nominating Committee Chair
W: 395-5068
shadrack.orero @ieee.org

Chandra Reis, Section Historian
H: 428-1777
creis @ ieee.org

Lou Tomaino, Membership Chair, Meeting
Coordinator
l.tomaino @ ieee.org

Peter Sutherland, Industry Liaison Chair

Siavash Sadeghi, GOLD chair
sadeghi_siavash (at) yahoo.com

VACANT, Life Member Chapter Chair

VACANT, PACE Chair

Rebecca Nold - Newsletter Editor

W: 385-3883
rebecca.nold (at) ge.com

Steinmetz Committee

Cherrice Traver, Chair
W: 388-6326
traver@union.edu

Darrion Chan,
RPI IEEE | Chairman
chand3 (at) rpi.edu

Power and Energy Chapter

James Barrett, Vice Chair - Programs
W: 452-7718 Ext. 1128
jbarrett (at) msepower.com

Ross Altman, Vice Chair - Secretary
W: 395-5066
ross.altman (at) siemens.com

Neal Taylor, Vice Chair – Membership
W: 452-7718 x1052
ntaylor (at) cgpowersolutions.com

Holden Tseeng, Vice Chair - Programs
W: 452-7718 x1180
htseeng (at) cgpowersolutions.com

Computer Chapter

Howard Halstead, Chair
W: 356-7664
halstead (at) ieee.org

Frank Wickham, Vice-Chair
Fwickham (at) sun.com

Industrial Application Society

Peter Sutherland, Chair
W: 385-2673
peter.sutherland (at) ieee.org

Brent Vild - Vice Chair - Secretary
BrentVild (at) eaton.com
518-348-1752

Siavash Sadeghi - Vice-Chair - Programs
sadeghi_siavash (at) ieee.org
518-276-5726.

Jeremy Thomas - Vice-Chair - Membership
jeremy.Thomas (at) ge.com

Computational Intelligence Society

Xue Ya, Chair
Dongrui Wu, Vice Chair

Electron Device Society (EDS)

Behrooz Nakhkoob, Chair
W:

Engineering in Medicine and Biology Society

Judy Kilday, Co-Chair
C: 271-9856
jkday (at) ieee.org

Milos Todorovic, Co-Chair
W: 387-5548
Milos.todorovic (at) ge.com

Signal Processing Society Chapter

David Doria, Chair
david.doria (at) ieee.org
615-504-6904

Fred Wheeler, Vice-Chair
fred.wheeler (at) gmail.com

Why do we publish nominations?

After years of mailing paper ballots for elections, using Section funds and volunteer time, the Section adopted "election by acclimation" and added it to the bylaws. In election by acclimation, nominations are made and published in advance of the election. The membership has time to see and comment on the nominations. Election is completed by acclimation, or announcement, at the December meeting for the following calendar year. Please talk to Shadrack Orero or Saber Azizi with comments on the nominations.

Election by acclimation concerns all officers listed except appointed positions, which are printed for information only.

Open Positions

Responsibilities include attending Executive Committee meetings (held monthly) and, ideally, setting up a program or event of special interest to your member group. Contact Shadrack Orero (contact info left) to volunteer.

Life Member Chapter Chair – Represent the interests of the Life Members in the Section.

PACE Chair – Plan professional development support for members in the

PLAN TO ATTEND THE STEINMETZ LECTURE – IT’S NOT TOO LATE!



A Brief History of the Internet
Presented by
Schenectady Section of IEEE and Union College

Leonard Kleinrock
 Distinguished Professor of Computer Science
 University of California at Los Angeles

Monday, October 18, 2010
 at 7:30 PM in the Nott Memorial
 on the Union College campus,
 Schenectady, New York

The lecture is free and open to the public.

Abstract:

In this presentation we discuss the history and future of the Internet. The early work on packet switching is traced and then a brief description of the critical events in the growth of the Internet is given. We then present a vision of where the Internet is heading with a focus on the edge where user participation, flexible applications and services, and innovation are appearing. We foresee a network with extreme mobility, ubiquity, personalization, adaptivity, video addiction and surprising applications as yet unimagined

Speaker

Professor Leonard Kleinrock is Distinguished Professor of Computer Science at UCLA. Known as a "Father of the Internet", he developed the mathematical theory of packet networks, the technology underpinning the Internet, while a graduate student at MIT. This was in the period 1960-1962, nearly a decade before the birth of the Internet, which occurred in his laboratory when his host computer

at UCLA became the first node of the Internet in September 1969. He wrote the first paper and published the first book on the subject; he also directed the transmission of the first message ever to pass over the Internet. Leonard Kleinrock received his Ph.D. from MIT in 1963. He has served as a Professor of Computer Science at UCLA since then, serving as Chairman of the department from 1991-1995. He is also the recipient of numerous Honorary Doctorates across the world. He has published over 250 papers and authored six books on a wide array of subjects, including packet switching networks, packet radio networks, local area networks, broadband networks, gigabit networks, nomadic computing, performance evaluation, and peer-to-peer networks. Dr. Kleinrock has supervised the research for 47 Ph.D. students and numerous M.S. students. Among many other honors, Kleinrock received the 2007 National Medal of Science, the highest honor for achievement in science bestowed by the President of the United States.

Banquet Reservation Form

Banquet (Hale House):

5:15pm Social hour (cash bar)

6:00pm Banquet (sponsored by Steinmetz Trust Fund)

Lecture:

7:30pm Nott Memorial, Union College

Dinner cost is \$10 per person, \$6 for students

Entrees are served with appetizer, salad & dessert

Make checks payable to IEEE Schenectady Section
 Return form & payment **by Wednesday, October 6th**
 to:

Cherrice Traver
 Dean of Engineering
 Steinmetz Hall, Union College
 Schenectady, NY 12308

Please provide contact information so we may confirm your reservation:

Name: _____

E-mail: _____

Phone: _____

Payment needed in advance

Please enter number of people for each entree, & calculate total costs

Buffet Entrées are:	# of Non-students	# of Students	Total cost
Lemon Herb Chicken and Pasta Prima Vera			
Grand Total:			\$

2nd Annual IEEE Schenectady Section Tour of GE Energy Munnsville Wind Park

by Peter Sutherland Industry Applications Society, Schenectady Chapter Chair, photos by Peter Sutherland



Tour attendees gather in front of a wind turbine.

On Friday, June 25, 2010, the Schenectady Industry Applications Society (IAS) Chapter sponsored a tour of the GE Energy Munnsville Wind Park, which is located about 2 hours west of Schenectady in the town of Bouckville, New York. The Munnsville project features 27 turbines, rated 1.5 MW each, totaling over 40 MW.

This year's tour group was smaller than last, numbering 11. There were 6 IEEE members and 5 non-members. Attendees were from several places. There was a group of wind farm designers from AWS Truepower in Latham, a professor from Siena College and a student from Haiti finishing up his studies in the US after the earthquake destroyed the university he was attending. We made up for the quantity with quality, and had an excellent discussion with many good questions and answers.

As usual, Kevin Wigell, Site Manager, was an engaging and informative host. There was a talk about wind turbine design and operation, followed by a Q&A Session He demonstrated the harness used when climbing up the inside of the tower to service the turbines. He stopped and started the turbine, and we were able to observe the feathering of the blades from zero to 90 degrees as the turbine was brought to a halt. We saw the local farmers working the fields around the wind turbines. A nearby turbine was out for service, but the rest of the wind farm was in operation, making an impressive sight on a beautiful summer day.

The drive to the site was beautiful through the hills and farmland and small towns on Route 20. There were some good places where different groups stopped for lunch near Bouckville, including Quack's and the Route 20 Diner. The tour was a great success, and it is planned to hold another wind farm tour next year.



A group from AWS TruePower:



Kevin Wigell shown demonstrating the harness used when climbing the wind turbine for maintenance.

How to Maximize the Impact of Your Charitable Giving

IEEE Foundation—the philanthropic arm of IEEE—has the exclusive role of supporting the scientific and technical innovations of IEEE. The generosity of donors is greatly enhanced by companies that match the gifts of their employees to IEEE Foundation. Through a Matching Gift Program individual donors are able to double or triple their contributions.

By taking advantage of your company's matching gift program you can significantly increase the impact of your donation. Your matched donation will go a long way in providing essential resources that support the engineering profession. The IEEE Foundation distributes donated funds to initiatives that promote worldwide technical literacy for the benefit of humanity.

To determine if you are eligible and learn more about how to participate, please visit the [IEEE Foundation](http://www.ieeefoundation.org) website (<http://www.ieeefoundation.org>). Your gift can make a big difference to engineering and pre-engineering students, and educators alike. With the Matching Gift Program, a little of your money goes a long way. Please contact Elianna Goldman with any questions at e.goldman@ieee.org or + 1 732 562 5550.

2010 IEEE Region 1 Training Workshop and Annual Meeting 13-15 August 2010

In August six of the Section officers attended the Region 1 meeting in Binghamton, NY. This was an interesting opportunity to meet IEEE members in neighboring Sections, and learn about how to bring more value to IEEE local members. The attendees were given seminars on membership development and web tools, in addition to attending the Region1 annual meeting. The six attending officers were Saber Azizi, Jovan Bebic, Loken Bam, Shadrack Orero, Howard Halstead, & Marc Happes



An IEEE Foundation Grant brings electricity through solar energy and technology training to the Rugerero Survivors' village, a home to families surviving the Rwanda genocide

Imagine a community hopeful for the future

Every innovative, life-changing idea comes from someone's imagination—rainwater can be made pure for drinking, solar power can help people in need, and training programs can empower a community to take control of its future.

The IEEE Foundation provides resources to advance education, innovation and preservation. Together we can support projects that provide technological solutions to humanitarian issues. Make a gift to the IEEE Humanitarian Technology Fund and show your commitment to a better world.

Imagine the difference you can make.
Donate today at www.ieeefoundation.org

◆ **IEEE FOUNDATION**

WE HAVE A NEW SIGNAL PROCESSING SOCIETY CHAPTER!

We are pleased to announce the formation of the Signal Processing Society chapter in our Schenectady Section! David Doria (chair-elect) and Fred Wheeler (vice-chair-elect) will be working to provide speakers for the monthly lunch meetings in the areas of signal processing and computer vision. We are looking forward to some strong events! Information about the society can be found at <http://www.signalprocessingsociety.org/>. If you have any questions or suggestions please contact David at [daviddoria \(at\) ieee.org](mailto:daviddoria@ieee.org).

If you have suggestions for speakers or topics that might be of interest to the members, please contact Section Chair Saber Azizi, [saber.azizi \(at\)ge.com](mailto:saber.azizi@ge.com), or Membership Chair, Lou Tomaino, [schdyieee \(at\)yahoo.com](mailto:schdyieee@yahoo.com)

DO YOU NEED UP UPDATE YOUR PROFILE AT IEEE.ORG? (Has your employer changed domain name?) Section volunteers are getting an increasing number of e-mail bounces on event notices.

Capital District E-Week 2011

Each year, the Schenectady IEEE Section joins with other technical societies and the New York State Society of Professional Engineers in sponsoring e-Week during national Engineer's Week. In 2011, e-Week will take place on Thursday and Friday, 17 and 18 February at the Albany Marriott on Wolf Road.

Many states now require registered Professional Engineers to present evidence of continuing education as part of the registration renewal process. Since 2002, New York PE's have been required to undergo an average of 12 contact hours of qualified continuing education per year. E-Week offers a selection of seminars that have been evaluated for continuing education credit, and participation in both days of the e-Week program allows participants to earn up to ten qualified credits. In addition, seminar presenters can earn three credits per seminar, so a presenter who participates in the two days of e-Week can meet the entire New York annual continuing education requirement. Additional information on e-Week, and a link to the registration site, can be found at <http://www.capitaldistrictweek.org/Default.htm>.

Traditionally, the Schenectady Section has organized five to ten seminars on electrical engineering topics for e-Week. Individuals who are interested in offering seminars should contact Louie Powell ([louie.powell \(at\) ieee.org](mailto:louie.powell@ieee.org)) for further information.

WOMEN IN ENGINEERING AFFINITY GROUP FORMED

IEEE Schenectady Section's WIE group is newly formed as of Feb 1, 2010.

WIE is dedicated to facilitating the development of programs and activities that promote the entry into and the retention of women in engineering, science and mathematics-related programs, enhance the career advancement of women in the profession, and promote IEEE membership and retention of IEEE women members.

This group is in need of volunteers who can make a difference by contributions towards:

- Promoting Math and Science in Junior High and High schools in order to encourage girls to careers in mathematics, science, and engineering.
- Planning joint networking programs/events with other women professional societies.
- Providing women engineers/scientists as speakers and/or as mentors about careers in engineering and science.
- Encouraging women engineers/scientists to participate in IEEE governance.
- Increasing women engineers/scientists attendance at IEEE sponsored meetings and conferences.

More information on IEEE WIE can be accessed at the following link:
http://www.ieee.org/membership_services/membership/women/index.html
For more information please contact Haleh Najafzadeh at [najafzha \(at\) ieee.org](mailto:najafzha@ieee.org)

Wind Power and Electrical Engineering Issues

By Jamie Barrett

On June 18, Jamie Barrett of CG Power Solutions presented a talk at a membership lunch meeting. The subject was *Wind Power and Electrical Engineering Issues*. He presented information on a wide range of subjects relating to wind power turbines and their electrical characteristics. The following is a brief review of the material addressed.

History and Development - The modern wind power industry in the USA began to develop utility-scale projects in the late 90's in southern CA. Individual wind turbine generators (WTGs) grew from 100-250kW in the late 80's to 400-750kW in the 90's. Today WTGs range from 1.5 to 3MW and have blade diameters that can exceed 100m. Towers are usually about 80m tall. From 2000 to 2009, the installed capacity has grown at an average annual rate that exceeds 30%. The next decade is likely to see individual WTGs as large as 5MW onshore and up to 10MW in offshore applications. Due to strong wind speeds, the preferred areas for developing wind power are concentrated in the central plains states, bounded by Texas to the south, Montana to the northwest, and Minnesota to the northeast.

Conversion Technology - The mechanical power available in a moving air stream is proportional to the cube of the wind speed, so areas with strong, consistent winds are most desirable. Above a particular wind speed (often about 15m/s) a WTG will feather its blades to limit mechanical stress and electrical output. Three electrical machine types are most commonly used to convert mechanical power to electrical power: induction generators, doubly-fed asynchronous generators, and uncontrolled PM AC generators with full AC/DC/AC converters.

Typical Wind Project – A typical utility-connected wind power project is between 75 and 200MW, and ties into an existing transmission line of between 115 and 230kV. Power from individual WTGs is generated at ~700V and stepped up through pad-mounted transformers to 34.5kV. Underground cables usually connect the WTGs together and tie into a collection substation. The collection substation provides for various protection and control functions, and steps the power up to transmission voltage.

Grid Issues – WTGs must use variable speed generators in order to capture the most wind energy. This differs from nearly all other forms of generation that use synchronous generators. As a result, the performance characteristics of WTGs can vary widely. They have unique characteristics including short circuit contribution, reactive power capabilities, harmonics, low voltage ride-through, and system stability interactions. Electric utilities perform system studies to ensure that grid security is maintained.

Region 1 Northeast Industry Day Conference – Be a part of the solution

Industry Day serves to foster technological innovation and excellence by striving to enhance collaboration amongst all the key players engaged in advancing technology. *Industry Day brings IEEE members together with industry leaders, legislators and funding and venture capital institutions.* The Sections in the Northeastern part of Region 1 hosted this year's Industry Day on September 24, 2010. <<http://ewh.ieee.org/reg/1/irc/index.html>>

Call for Industry Day Volunteers

Volunteers are needed to plan and organize the Region 1 Northeast 2011 Industry Day

- We will identify and recruit industries in our geographical areas that employ engineers in the IEEE areas of interest and who are potential consumers of IEEE products and services.
- We will prepare documents that will help with this task by outlining all the benefits the IEEE and Industry partnership can bring about.
- We will plan an exhibition that will provide the industry sponsors the exposure of their products and services to IEEE members.
- We will identify emerging technologies that will shape the future of the industry in our area and invite speakers who will educate the participants about these.
- We will identify some interactive workshops or seminars that will inform participants of current and future needs of the industry and to inspire them to collaborate for innovation.

If you are interested in helping to organize Industry Day for 2011 please contact Sabir Azizi at [saber.azizi \(at\) ge.com](mailto:saber.azizi@ge.com)

Call for Nominations -Recognizing Outstanding IEEE Volunteers and Contributors

You can help recognize the efforts of outstanding volunteers by nominating someone for one of the prestigious [Member and Geographic Activities \(MGA\) Awards](#). Each prestigious award has a unique mission and criteria and offers the opportunity to honor distinguished colleagues, inspiring teachers, and corporate leaders, for their member engagement initiatives. If you know someone who has made substantial contributions to the [MGA Mission](#) (Inspire, Enable, Empower and Engage Members of IEEE) at the local level, through innovative projects, exemplary leadership, service, or by fulfilling the goals as related to transnational activities, consider nominating them for one of the following awards:

- [MGA Achievement Award](#)
- [MGA Innovation Award](#)
- [MGA Leadership Award](#)
- [MGA Larry K. Wilson Transnational Award](#)
- [MGA GOLD \(Graduates of the Last Decade\) Achievement Award](#)

Please complete the [Online Award Nomination Form](#) at www.ieee.org. The deadline is **15 October 2010**.

In addition to these individual MGA Awards, MGA also presents [Friend of IEEE Member and Geographic Activities Awards](#), which specifically recognize support provided to IEEE and its members, in support of its goals, by firms, divisions of firms, or individuals. Nominators can submit Individuals or organizations for Friend Awards, and awards can be earned at the Supporting or Sustaining level. Please complete the [Online Award Nomination Form](#). Please [e-mail MGA Awards \(mga-awards@ieee.org\)](mailto:mga-awards@ieee.org) with any questions about the MGA Awards and Recognition Program

Don't miss the Holiday Lunch! Watch our web site
<http://www.ewh.ieee.org/r1/schenectady/events.html> and your email inbox for details.