

Calendar of Events

In February

Mon. Feb. 1, 6:45pm

[Consulting Contracts](#)  
Consultants Network

Tues. Feb. 9, 7pm

[Executive Committee](#)  
Chicago Section

Wed. Feb. 10, 11:30am

[Power Cables](#)  
Power & Energy

Fri-Sat. Feb. 12&13

[Power & Energy Conference](#)  
IEEE Region 4

Wed. Feb. 17, 5:30pm

[Energy Efficient Data Centers](#)  
Industry Applications

Wed. Feb. 17, 6:30pm

[IEC Standards](#)  
Electromagnetic

Fri. Feb. 19, 5:30pm

[Washington Award](#)  
Chicagoland E-Week

Sat. Feb. 20, 11:00am

[Engineers Week Expo](#)  
DuPage E-Week

Later in 2010

Tues., March 9, 7:00pm|

[Electrical Vehicle Insulation](#)  
Dielectrics

Sat., March 27, 6:30pm

[Awards Dinner Dance](#)  
IEEE-Chicago Section

Sat. April 10, 9:00am

[Productive Meetings](#)  
IEEE-Chicago Section

Sun-Tues. April 11-13

[Networking, Sensing and Control](#)

Thurs-Fri. April 22 & 23

[Control & Modeling: Biomedical Systems](#)

Control Systems

Sat. April 24, 9:00am

[Leading When Not In Charge](#)  
IEEE-Chicago Section

Mon-Fri. May 17-21

[Collaborative Technologies](#)

Please email upcoming events to [Work In Motion](#) for inclusion in the calendar.

McCormick Master of Product Design and Development

Northwestern Engineering OPEN HOUSE

February 23rd from 5:30 to 7:30 Northwestern University Evanston, IL [Register](#)

This Month's Articles

Chair's Column: Good News Abounds at IEEE-Chicago

Three IEEE societies—VTS, SMC & RAS—are forming local chapters, the Chicago Fund makes the daily news, and we're having a party! [\[more\]](#)

Chicago Section to Honor Its Five New Fellows at Awards Dinner Dance

The place to be on Saturday evening March 27 will be Manzo's Banquets in Des Plaines for the IEEE-Chicago Section Annual Awards Dinner Dance. [\[more\]](#)

Chicagoland Engineering Awards Banquet Culminates E Week

On February 19, Alvy Ray Smith will receive the 2010 Washington Award and student winners will be honored at the University Club of Chicago. [\[more\]](#)

Three IEEE Booths to Teach Youngsters at Engineers Week Expo

DuPage Area Engineers Week activities will once again include the immensely popular Engineers Week Expo on Saturday, February 20th at IIT in Wheaton. [\[more\]](#)

IEEE-Chicago to Offer Management Classes at Harper College

The Chicago Section will offer Positive and Productive Meetings on April 10<sup>th</sup> and Leading When You're Not In Charge on April 24<sup>th</sup>. [\[more\]](#)

New Fellow Tom Cloonan Enables Cable Triple Plays

Tom Cloonan, Chief Strategy Officer for ARRIS, was elevated to Fellow for leadership in the development of cable modem termination systems (CMTS). [\[more\]](#)

S&C's New Advanced Technology Center Enables High Power Testing

Steve Maruszewski of S&C Electric Company presented on the company's new testing capabilities at the January Chicago Power & Energy Society meeting. [\[more\]](#)

Open Systems: The Key Ingredient in Building Automation

George Thomas reports on the presentation by Precision Controls Systems of Chicago at the January Industrial Applications Society Chicago meeting. [\[more\]](#)

Chair's Column: Good News Abounds at IEEE- Chicago



I'm happy to report that three IEEE technical societies—[Vehicular Technology Society \(VTS\)](#); [Systems, Man and Cybernetics Society \(SMC\)](#); and [Robotics & Automation Society \(RAS\)](#)—are forming Chicago Chapters. Here's your chance to get in on the ground floor. In addition, the IEEE affinity group, [Women In Engineering \(WIE\)](#), is looking for officers. Please watch for meeting announcements and offer to help out if you can. Volunteering is a great way to network with your peers, meet leaders in your field, and develop leadership skills. To volunteer for the VTS, contact [Imad Isaac](#); for SMC, [Ganga Jayaraman](#); RAS, [Robert Pellegrini](#); and for WIE, [Vickie Peters](#). I hope to have announcements of more new and revived groups soon.

In more good news, the IEEE-Chicago Section Fund got some great press in the **Daily Herald** regarding the Science-to-Go kits for K-6 students at the **Mount Prospect Public Library**. It's great for us engineers to be seen helping the community. This is the first of what we hope will be many projects to promote interest in the profession to youngsters in our area. Read the [full article](#) and pass it on to your friends. To do more projects, we will need to replenish our funds. If you agree that grants like this one are worthwhile, please consider a tax deductible donation to the **IEEE Chicago Fund**. Click on the Chicago Fund tab on the top of this page for details.

Managing Product Design and Development

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Toni and Bernie Sander enjoy themselves with Jack and Karen Black at last year's Chicago Section Awards Dinner Dance.

Finally, our very enjoyable **Annual Chicago Section Awards Dinner Dance** will be held on Saturday March 27th. Scroll down for full details and do come! In addition to recognizing the achievements of our five new IEEE-Chicago Fellows, local volunteers will be honored for their work. If you think a certain IEEE-Chicago Section member should be recognized for his or her contributions to the Section, a Chapter, or Affinity Group, [email Jianhui Wang](#), call 630-252-1474, or click on the Volunteer Resources tab above. Nominations are due March 1.

Sincerely,

[William \(Bill\) Nartker](#)  
IEEE-Chicago Section Chair

[| top |](#)

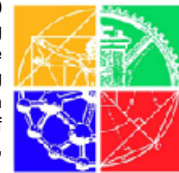
### Chicago Section to Honor Its Five New Fellows at Awards Dinner Dance

The place to be on Saturday evening **March 27** will be **Manzo's Banquets** in Des Plaines for the **IEEE-Chicago Section Annual Awards Dinner Dance**. The Section will honor its five 2010 Fellows: **Tom Cloonan** of **ARRIS**, **Chang Liu** and **Kevin Lynch** of **Northwestern University**, **Jafar Saniie** of **Illinois Institute of Technology** and **Dan Schonfeld** of the **University of Illinois at Chicago**. Chicago Section Outstanding Member and Distinguished Service Awards will also be announced. Chicago Section Chair **Bill Nartker** will serve as master of ceremonies. And, if past history is any indication of future performance, good and bad jokes will abound. Once again, the dancing will follow the awards. Mark your calendar! Festivities will begin at 6:30pm with dinner served at 7:30pm. Space is somewhat limited, so register before March 20th to reserve your spot and save: \$45 per person, \$85 per couple, \$25 per student, and \$35 per IEEE life member. Afterwards, \$55 per person, \$100 per couple, \$35 per student, and \$40 per life member. To register, [email Jianhui Wang](#) or call 630-252-1474. Don't miss this unique opportunity to meet and congratulate the honorees and network with your peers!

[| top |](#)

### Chicagoland Engineering Awards Banquet Culminates Engineering Week

On February 19, **Alvy Ray Smith** will receive the **2010 Washington Award** at the **Chicagoland Engineering Awards Banquet** at University Club of Chicago. The Washington Award, one of the first national engineering awards, is named after the nation's first president who was an engineer. Smith cofounded or was involved in the beginning of four centers of computer graphics excellence: **Altamira**, **Pixar**, **Lucasfilm**, and **New York Tech**.



**ENGINEERS  
WEEK® 2010**  
**February 14 - 20**

During the reception prior to the Awards Banquet, student winners of the many Engineering Week competitions will be on hand to demonstrate and explain their winning entries. The impressive young competitors—our next generation's engineers—stay for the dinner, giving all a chance to mingle and learn from each other.

For more information on the Awards Banquet, visit the Chicagoland eWeek [website](#).

[| top |](#)

### Three IEEE Booths to Teach Youngsters at Engineers Week Expo

As part of the **2010 National Engineers Week**, the **DuPage Area Engineers Week** activities will once again include the immensely popular **Engineers Week Expo** on **Saturday, February 20th** from 11:00 a.m. to 3:30 p.m. at the **Illinois Institute of Technology's Rice Campus** in Wheaton. The theme of this year's event, which seeks to make math, science, and engineering fun and accessible to learners of all ages, is **"Engineering Today's Play into Tomorrow's Careers."**



At last year's E-Week Expo, Jerry Meyerhoff demonstrates electromagnetic properties for a ready audience.

The IEEE will have three booths. The **IEEE-Chicago Section** booth will show how electronics helps determine traffic volume on the Chicago area expressways. The **Electromagnetic Compatibility Society (EMC)** exhibit includes examples of interference to radios from common household electrical products, showing how radio waves can be eliminated from causing interference and how static electricity can be generated by common household products. The **Women In Engineering (WIE)** booth will conduct a demonstration to illustrate how solder plays a role in running the signals in electronic gadgets such as cell phones and iPods.

The program this year is dedicated to the late **Jack Sherman**, an IEEE-Chicago Section Executive Committee member and a long time member of the E-Week Committee whose efforts helped make the Engineers Week Expo survive and grow.

The Expo is free and open to the public, so bring your children and grandchildren, friends and neighbors. Make sure to stop by the IEEE booths and say "Hello!" to your fellow IEEE-Chicago members. For more information, visit the [DuPage E-Week website](#).

[| top |](#)

### IEEE-Chicago to Offer Management Classes at Harper College

In April, the Chicago Section will offer two Saturday morning classes taught by **Marianne Rowe-Dimas: Positive and Productive Meetings** on April 10<sup>th</sup> and **Leading When You're Not In Charge** on April 24<sup>th</sup>. For more detail, visit the IEEE-Chicago calendar by clicking on the tab at the top of this page. For questions and registration, call Harper College at 847.925.6300.

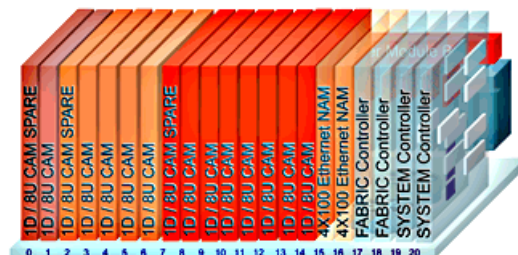
[| top |](#)

### New Fellow Tom Cloonan Enables Cable Triple Plays



**Tom Cloonan, honored for leadership in development of cable modem termination systems.**

Think about it: how do cable companies provide "triple plays"—phone service, Internet, and television—all through one line? How can we simultaneously talk on the phone, watch an HBO movie, and retrieve Google answers in a fraction of a second? Thank one of the Chicago Section's five new 2010 IEEE Fellows for the ability to multi-task on shared bandwidth. **Tom Cloonan**, who is currently Chief Strategy Officer for **ARRIS**, which provides broadband technology to the cable industry, was elevated to Fellow for leadership in the development of cable modem termination systems (CMTS). Located at the edge of the Internet at cable television company locations, a CMTS is the first router information packets pass through outside individual homes and offices on their way to the worldwide web. Able to handle 50,000 subscribers, a CMTS determines the direction that information packets should go and sends them on their way.



**Multiple Flexible Sparing Groups for Different Levels of Reliability.** This graphic illustrates how "sparing groups"—collections of N+1 circuit boards that include N active (operating) circuit boards and 1 spare (inactive) circuit board—can give a Cable Modem Termination System flexibility. If one of the active circuit boards becomes faulty, the functions of that faulty circuit board can be switched over and provided by the spare circuit board. The design permits cable TV operators to change the size of their sparing groups to match the specific reliability needs of their different subscriber pools.

Working initially at **Bell Laboratories** and **Lucent Technologies**,

Cloonan first applied telephony concepts to the cable space while Chief Technology officer at **Cadant@, Inc.**, which ARRIS later acquired.

The telephony equivalent of a CMTS is a Digital Subscriber Line (DSL) access module. Cloonan's work created a breakthrough CMTS that offers the same reliability as

telecom equipment, leading to dramatic repositioning of cable offerings in the marketplace. For voice, data, and video to share cable bandwidth, some information packets need to be delayed or dropped at the CMTS decision point in order to provide users with blip-free service. Cloonan's congestion control algorithms manage user traffic in a fair and intelligent fashion, providing quality service. The improved CMTS detects failures in radio frequency (rf) transport systems and then switches the rf service to spare circuit boards, all without the user's, or even the cable modem's, knowledge. His improved CMTS enabled cable companies to offer Voice Over Internet Protocol (VoIP) telephone services that eventually feed into the Plain Old Telephone Service (POTS).

Tom holds more than 20 U.S. patents and has written more than 80 articles for technical publications and conferences. He received his Ph.D. from **Heriot-Watt University** in Edinburgh, Scotland, his MSEE from **Purdue University** in West Lafayette, IN, and his BSEE from the **Illinois Institute of Technology** in Chicago.

[| top |](#)

### S&C's New Advanced Technology Center Enables High Power Testing



Steve Maruszewski

To an audience of over 40 IEEE members, **S&C Electric Company** Vice President – U.S. Sales **Steve Maruszewski** presented on the company's new Advanced Technology Center (ATC) at the January meeting of the **Chicago Chapter of the IEEE Power & Energy Society (PES)**.

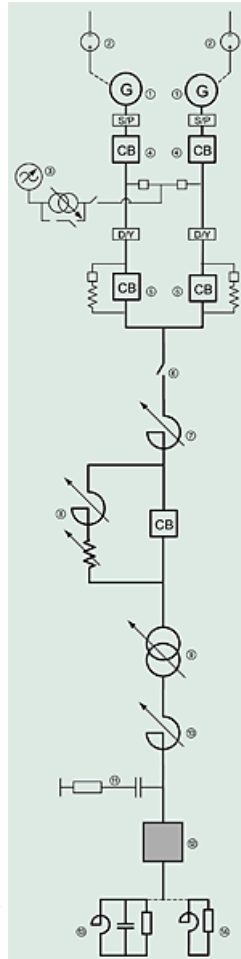
At the most basic level, the majority of S&C's products interrupt electrical current from flowing at inappropriate times. S&C tests its products with its high voltage impulse generator, which can put out one million volts at a very low current, and it also uses its high current test set to achieve higher levels of current for testing purposes. Prior to the

ATC, however, it couldn't test for high power applications—high voltage and high current both together. Now, it can. The two electrical generators in the ATC are each rated 850 megavolt-amperes (MVA) of apparent power for a total high power capacity of 1700 MVA. Together they can test up to 100 kiloampere (kA) of current at typical distribution voltages, which range from 5 kilovolts (kV) to 34.5 kV. These two new generators raise S&C's short circuit testing capabilities by 17 times. Previously, S&C's largest test generator had a very moderate power capacity of 100 MVA, which was not enough to test the limits of S&C's products' capabilities. Already with the ATC, S&C was able to increase the rating of one of its fuse products to 63K amps.

To test for high power capabilities, S&C previously needed to go out of the country, which required a lot of advance planning and expense. Only some of the engineers who were working on projects could attend the testing and benefit from observing it. Now, with the high power capabilities of the ATC, testing is a regular component of the product development cycle—easily accomplished on-site—and product development times will shorten as a result. Customers can also get involved in and witness testing. In addition, with the ATC, S&C's Power Systems Services Division can do project work, including forensic analysis for legal cases, that involves testing.

Steve's very interesting and entertaining presentation provoked a lot of specific technical questions. The Chicago PES Chapter is planning a follow-up tour of the facility so members can see first hand how the new high power laboratory really works. Stay tuned.

[| top |](#)



This single-line diagram shows the design of the new testing circuit that begins in the ATC. Everything from #1 – the high power generators represented at the top of the diagram – down to #9 – the six single-phase 220MVA short circuit transformers – is in the new ATC. But, the device under test, which is represented by #12 – the grey square at the bottom, is across a “bus bridge” in the existing Electrical Laboratories in an adjacent building.

## Open Systems: The Key Ingredient in Building Automations



Steve Hermanowski, IAS Chair with Marty LaFerrara (left) and Bob Senk (right) of Precision Control Systems of Chicago.

At the January 20<sup>th</sup>, **Industry Applications Society (IAS)** meeting at Costa's Restaurant in Greektown, IAS Chair **Steve Hermanowski** introduced **Bob Senk** and **Marty LaFerrara** of **Precision Control Systems of Chicago, Inc.**, a system integrator specializing in building automation systems. Bob Senk gave the forty attendees a brief history of the evolution of building controls, beginning with pneumatic controls followed by electronic controls. More complex systems brought the use of minicomputers to the industry. When microprocessors became viable, Direct Digital Controllers (DDCs) replaced these large and clumsy devices. Bob held up in his hand an example of a current technology building controller, which had more memory than the original minicomputers at a fraction of the cost. Besides the lower cost of hardware, the current trend in the industry is to specify open communication protocol systems such as BACnet, Lonworks and Modbus. Since numerous vendors support these protocols, system integrators have the freedom to pick and choose compatible equipment from several sources. Introduced in 1979, Modbus is the oldest, and it remains popular today. Marty LaFerrara discussed how Precision Control Systems of Chicago is linking together buildings for **the Illinois Tollway Authority**. Redundant communications, which are important, require the use of fiber optics and Ethernet technology to carry voice and data. An operator in Downers Grove can note an alarm situation in Springfield and drill down to the exact cause of the problem using his monitor. The challenge to the system integrator is developing an interface to existing electro-mechanical panels by mimicking their annunciators with graphics on a web browser. The use of open system protocols, standardized hardware, and PC-based web browsers can make this all happen.

| [top](#) |

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