



IEEE Pittsburgh Section
Bulletin



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Editor of this issue: Jace Cochrane, P.E. jacejc@pghmail.com (412) 390-0718

Contributors: George Crawford, Karl Muller, Mike Oliver, Kal Sen, Keith Sueker, John Twigg, Chuck Urso and Dave Vaglia.

All announcements for publication in a particular month’s bulletin are due to the Editor by the 20th of the previous month. The accuracy of the published material is not guaranteed. If there is any error, please bring it to the Editor’s attention.

The Section’s web site www.ewh.ieee.org/r2/pittsburgh has past issues of the bulletin and lots of other useful information.

• *From the Chair*

As you noticed by now, this Bulletin was not sent as a PDF file attached to an email, but as a link to a file on our web site. This change was initiated by several of our members who use dial-up connections while they are on the road. Downloading our bulletin with its photos is a time-consuming process with a dial up connection. When the bulletin was an attachment, they were locked into downloading this attachment when they downloaded their email. With this new method, they can choose when they go to the link and download the bulletin. If you have any problems with this bulletin delivery method, please contact me, our Bulletin Editor (jacejc@pghmail.com), or our Webmaster (andrewnovotny@ieee.org).

John Twigg, Section Vice Chair and Computer Society Chapter Chair is leading the IEEE Pittsburgh Section Vision 20/10 Initiative, which is a regional campaign to create dramatic, large-scale economic growth in the Pittsburgh region by protecting and growing our information technology (IT) base. Vision 20/10 is concentrating on the IT industry because it is threatened by offshore outsourcing. John has been working with local and national leaders to bring this issue to the forefront in Pittsburgh. To help this effort, Dr. Ralph W. Wyndrum Jr., current President of IEEE-USA will address key Pittsburgh leaders from universities and industry on July 19 and discuss the Status and Future of Engineering in the US today. More on Vision 20/10 inside. Please support this effort and GET INVOLVED!

I am happy to report that once again our PES chapter is a recipient of a PES High Performance Chapter Award (2006). The IEEE PES has over 170 chapters and members in over 70 countries worldwide. It is an honor to receive this prestigious award. Additionally, the Pittsburgh PES chapter's web site won 2nd best PES web site of all chapters worldwide. Thanks to members of the PES Administrative Committee, Section members, and Andy Novotny, Webmaster.

We solicit your participation. In particular, we are looking for help with our annual picnic in September. Please contact me if you are interested.

Dave Vaglia

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Pittsburgh Innovation Day 2006

Join the *Pittsburgh Technology Council* for Pittsburgh Innovation Day as senior executives from the region's most innovative companies and the world's leading authorities on innovation, growth and execution share ideas on achieving profitable growth through innovation. In addition to participating in intimate roundtable and panel discussions, hear from thought leaders Jonathan Cagan and Peter Boatwright, co-authors of *The Design of Things to Come* and professors at Carnegie Mellon University; Peter Andrews, Innovation Strategist from IBM's Executive Business Institute; and Robert Tucker, author of *Driving Growth Through Innovation* and president of The Innovation Resource.

Date: Tuesday, June 6

Time: 8:00 a.m. - 5:30 p.m.

Venue: Westin Convention Center

Cost: \$125 for Council members, \$175 for non-members, \$50 for students

RSVP: 412.918.4229 or events@pghitech.org

<http://www.pghitech.org/events/innovationagenda.asp>

a paid advertisement

• *Pittsburgh Vision 20/10 Initiative*

Speaker: Working Group

Date: Wednesday, June 21, 2006

Time: 6:00 PM – social with pizza and pop, 7:00 PM – presentation

Place: University of Pittsburgh, Oakland Campus, Benedum Hall, Room 1175

Cost: No Charge

Sponsor: Computer Society

RSVP: By June 20 to John Twigg at (412) 795-4444 or jtwigg@ieee.org

The IEEE Pittsburgh Vision 20/10 Initiative is a collaborative regional campaign to re-industrialize the greater Pittsburgh region. The goal is to create dramatic, large-scale economic growth in the Pittsburgh region by protecting and growing our information technology (IT) base. Vision 20/10 is concentrating on the IT industry because it is threatened by offshore outsourcing, similar to our steel and manufacturing industries. We believe our region, and the U.S., must retain leadership in this vital component of our economy, as it is a significant part of all other industries such as engineering, robotics, biotechnology, etc.

Please join us on June 21st for our second working meeting. We are looking for assistance from the IEEE membership and others in the following areas:

- Regional IT Center site location(s) and infrastructure
- Industrial policy response
- Urban and metropolitan policy
- Education policy (K-12, trade, 2-year and 4-year colleges)
- Business environment / taxes / new business startup

We would like your assistance whether you are an expert or are simply interested in the initiative. The meeting is open to everyone. Please indicate your area(s) of interest when you RSVP. You are welcome to work in more than one area.

RESULTS OF APRIL 19, 2006 SURVEY taken at [Outsourcing America](#) presentation

(18 respondents employed in a traditional industry)

- | | | |
|---------------------------------------------------------------------|----------|---------|
| 1. Does your organization or company outsource any IT work? | Yes- 95% | No- 5% |
| 2. Is the outsourced IT work general programming? | Yes-100% | No- 0% |
| 3. Is the outsourced IT work higher level requirements or design? | Yes- 0% | No-100% |
| 4. Are you personally concerned about your job being sent offshore? | Yes-100% | No- 0% |

- **2005 National Electrical Code and Applications Course**

Instructor: Steve Musial, PE
Dates: Wednesday, June 14 and Wednesday, June 21, 2006
Time: 6:00 PM – 9:00 PM
Place: CJL Engineering
1550 Coraopolis Heights Rd, Suite 340, Moon Township, PA 15108
Cost: \$75 for IEEE members \$90 for non-members
0.6 Certified CEUs provided upon course completion at no extra cost.
Registration: Send your check payable to 'IEEE-Pittsburgh Section' along with your name, email address, and phone number to: Chuck Urso, 5077 Lougean Ave, Pittsburgh PA 15207.
Questions: Contact Chuck Urso at (412) 338-4871 or curso@llitechnologies.com

As a service to our community, the Pittsburgh PES/IAS Chapter is sponsoring this training session. Emphasis will be on Chapters 1-4 & 9 of the 2005 NEC, along with practical problem solving applications. Key code changes since the 2002 NEC will also be discussed. Topics include: code terms and definitions; arc flash; grounding; ground fault protection requirements; branch circuit and feeder sizing for non-motor loads; motors; transformers; capacitors; overcurrent protection for non-motor loads of various types; branch circuit short circuit and ground fault protection for motors; voltage drop from Chapter 9-Table 9; and conduit sizing for a variety of conductors in the same raceway.

About the instructor: Steve is a 1974 graduate of Carnegie Mellon University with a BS degree in electrical engineering. He began his career at Duquesne Light Company in the high voltage transmission group where he worked on engineering designs of all voltage levels of Duquesne Light's primary voltage system, from 4.16 kV to 345 kV, both overhead and underground. In 1985 Steve began working in an engineering consulting position at Duquesne Light doing electrical power system studies. When Steve left Duquesne Light in the fall of 2001, he was the Manager of Technical Consulting. At that time Steve moved to Carl J. Long and Associates, now known as CJL Engineering, as a principal. Steve has been a registered professional engineer (PE) since 1978 and is currently registered in 14 states and Washington, DC. More than 20 years ago, in January 1986, Steve began his evening teaching career with the Electric League of Western Pennsylvania, as well as other organizations. Today Steve teaches numerous courses and seminars at CJL Engineering in Moon Township and teaches Professional Review Courses for Penn State University (EIT and the Electrical Engineering PE) and the PSPE, Pittsburgh Chapter (EIT only). He also teaches undergraduate electrical engineering for Penn State as well as international teaching for Penn State's Advanced Power Systems School. Altogether Steve has taught 24 different courses (many of which have been taught a number of times) and teaches an average of 25 to 30 courses and seminars each year.



- ***Consultants Network Meeting***

Date: Tuesday, June 27, 2006
Time: 6:30 PM
Place: Westinghouse Energy Center, Monroeville Directions on page 8.
RSVP: **REQUIRED** by Friday, June 23 to George Crawford at (412) 675-9164 or gwc2@psu.edu. Provide your name, phone number, and email address.

If you are a consultant offering engineering services or thinking about becoming one, the IEEE Consultants Network (CN) is for you. Network with other consultants and be included in CN's on-line listing of consultants, which is used by companies in need of consultants. Contact George Crawford for more details about this meeting and to be sent CN emails.

- ***IEEE Conferences to be held in Region 2***

The following IEEE conference will be held in our geographic area in the near future, meaning your travel costs would be minimal. Don't overlook any conferences so conveniently located.
Philadelphia PA June 25-28 2006 IEEE International Conference on Dependable Systems & Networks With FTCS & DCC (DSN)

- ***Inverters and Motor Insulation***

Speakers: J. Franklin Roach and Keith H. Sueker
Date: Wednesday, June 28, 2006
Time: 6:30 PM – Pizza and pop 7:00 PM – Presentation
Place: Westinghouse Energy Center, Monroeville Directions on page 8.
Cost: No charge
RSVP: **REQUIRED** by Saturday, June 24 to Jace Cochrane at (412) 390-0718 or jacejc@pghmail.com. Provide your name, phone number, and email address.
Sponsor: PES/IAS Chapter

Abstract: Variable frequency inverters are widely used to power induction and synchronous motors for variable speed operation. While most of these applications present no problems, certain combinations of inverter switching speeds and connecting wiring have caused failure of motor insulation systems. The successful application of inverters to motors requires an understanding of these relationships, especially with medium voltages, long cables and older motors. Modern, fast-switching inverters can create standing waves on relatively short cable runs, and these can cause overvoltages on motors. Further, the fast-rising waveforms can affect the distribution of voltages within the motor windings and may lead to incipient failure of the insulation for partial discharge. These several effects will be explained and discussed in this program.

About the speakers: Dr. Roach was a long-time employee of the Westinghouse Research Laboratories and has an extensive background in insulation systems. Mr. Sueker was an Engineering Manager at Robicon Corporation. Both are contractors at Curtiss-Wright Advanced Products and Systems Division in Mt Pleasant.

university of pittsburgh

school of
engineering

Sixth Annual Golf Outing

Monday, July 17, 2006

Montour Heights Country Club, Moon Township

Cost: \$155 per person; \$620 per foursome
(includes greens fees, cart rental, lunch, and
dinner)

Registration and Lunch: 11:30 a.m.

Shotgun start: 1 p.m.

This is a four-person scramble, and all alumni
and their guests are welcome to participate
regardless of skill level. All participants must
have their own clubs.

Reservations due July 5, 2006. Contact Kristen
Bires Carothers at 412-624-9813 or
kmbcarothers@engr.pitt.edu for more information or
to make a reservation. *a paid advertisement*

Correction: The May issue of this
Bulletin incorrectly named the award
Nigel McQuin received at the History
Dinner the 2005 PES Chapter
Outstanding Engineer. The award Nigel
received was the 2006 PES Chapter
Outstanding Engineer. We regret the
error, but we are happy to congratulate
Nigel again on his accomplishments.

The Western PA Optical Society will
hold a meeting on Thursday, June 15 in
Harmarville. The title of the presentation
by Jongyun Zhang, PhD is 'Raman
Chemical Imaging & Associated
Technologies in Optical Engineering'.
IEEE members are welcome to attend.
For more information contact John
Mazurowski at (724) 295-7000 x 7139 or
jmazurowski@eoc.psu.edu. Reserva-
tions are necessary by June 5.

• ***A History of Thrills - Roller Coasters***
Bring the family to this one!

Speakers: David Markus and David Altman
Date: Wednesday, July 12, 2006
Time: 6:30 PM Videos of coasters from around the world
7:00 PM Presentation
Place: Westinghouse Energy Center, Monroeville Directions on page 8.
Cost: No charge
RSVP: **REQUIRED** to Andy Novotny at andrewnovotny@ieee.org or (412) 351-4954.
Limited to 50 people.
Sponsor: PES and IAS Chapters

This presentation will trace the history of the King of Thrill Rides – the Roller Coaster. We will look back to the 1400s and follow the evolution to rides over 450 ft high and faster than 120 mph. The key role that Pennsylvania played in their development and preservation will be revealed.

About the speakers: Both are members of the American Coaster Enthusiasts (ACE). Dave Markus is a regular guest lecturer on coaster design for CMU's Entertainment Engineering course offered by the Mech Eng department. Dave Altman has ridden nearly 600 different coasters in 15 countries and has written articles for ACE's publication.

- ***The Status and Future of Engineering in the United States***

Speaker: Dr. Ralph Wyndrum, Jr President of IEEE-USA
Date: Wednesday, July 19, 2006
Time: To be determined
Place: To be determined
Sponsors: IEEE Pittsburgh Section and Computer Society Chapter

The IEEE Pittsburgh Section warmly welcomes the President of IEEE-USA, Dr. Ralph Wyndrum, Jr. Dr. Wyndrum will discuss the status and future of engineering in the United States, as well as mid-career education and related programs offered by the IEEE. During his time as Vice President of Technology for AT&T, he worked closely with both Carnegie Mellon University and the University of Pittsburgh. Final details about the meeting will be included in the July issue of the Bulletin.



- ***Tour of Electro-Optics Center in Freeport***

We are planning a joint meeting with the Optical Society of America (OSA) for late summer or early fall 2006. We will tour the Penn State Electro-Optics Center in Freeport. The center is supported by the Office of Naval Research (ONR). The facility has about 100 employees and is housed in a building with over 15, 000 sq ft of research space.

The major technical divisions of the center are:

1. Electro-Optic Materials, Design, and Process Technology – production, processing, and characterization of electronic and electro-optic materials.
2. Sensor Technology – including robotics, advanced detectors, infrared cameras, and night vision systems.
3. Reliability and Failure Analysis – testing of diode lasers and other components for mechanical, thermal, and temporal stability.
4. Laser Technology – ultra-fast laser machining, and investigations into high-power laser design and optimization.
5. Fiber Optics and Optoelectronics – testing fiber optics components for military applications.

Look for more information in August's Bulletin.

DIRECTIONS TO WESTINGHOUSE ENERGY CENTER

From Pittsburgh take Interstate 376 East (Parkway East). Take Exit 14A to Monroeville. Cross Business Rt 22 at the traffic light and proceed on Rt 48 South (Moss Side Blvd) approx ½ mile (two traffic lights). The 2nd traffic light is at a 4-way intersection with an Exxon station on the right. Turn left onto Northern Pike. Proceed approx 0.2 miles and turn right at the 1st traffic light onto Westinghouse Dr. Travel 0.7 miles (past the guard stand) to the 3 flags where the building's main entrance is located. Parking in the evening will be plentiful. Use the main entrance and check with the security guards inside. You will be directed to the proper room for your meeting.

From the PA Turnpike, take Exit 57 (Monroeville). After the toll plaza, get in the left lane to get on Business Rt 22 West. At the first light, turn left onto Rt 48 South (Moss Side Blvd) and follow the above directions.

• *Advertise in the Pittsburgh Bulletin*

Reach over 2000 members of the IEEE Pittsburgh Section every month. The bulletin is issued on or about the 1st of the month, 12 months a year. Ads must be submitted in an electronic format compatible with Word. The ad and payment must reach the newsletter editor by the 20th of the preceding month to be included in a particular bulletin.

<u>Ad size</u>	<u>Business</u>	<u>University</u>	<u>IEEE Member</u>
Full page (8-1/2 x 11)	\$250	\$190	\$190
½ page	\$130	\$100	\$100
1/3 page	\$85	\$65	\$65
¼ page	\$65	\$50	\$50
Business card size	\$40	\$30	\$20

• *Keep Receiving the Bulletin*

Sometimes members of the IEEE Pittsburgh Section report that they are not receiving their Bulletins via email. Here are some troubleshooting tips.

1. Is your IEEE membership still current? If not, you will not receive the Bulletin. (If you are still getting Spectrum magazine every month, your membership is current.) Please renew your membership via the IEEE web site, www.ieee.org, or 1-800-678-4333.
2. Does IEEE headquarters have you in the Pittsburgh Section or another section? If you aren't in the Pittsburgh Section, you will not receive the Bulletin. If you know your IEEE member number and PIN, you can revise your section on the IEEE web site. Otherwise call IEEE at 1-800-678-4333 to check on your section.
3. Does IEEE headquarters have your current email address? Many people frequently change their email addresses because they change jobs or change ISP providers. (Consider a free IEEE email alias to avoid this problem.) If you know your IEEE member number and PIN, you can update your email address on line. Otherwise call IEEE at 1-800-678-4333 to give them your latest email address.
4. Is your spam blocker blocking the Bulletin? You'll have to fix this yourself.

- ***Become a Senior Member***

We have been receiving inquiries from members on how they can become Senior IEEE members. This has been discussed by the Executive Committee, and we have decided to set up a procedure to help members through the process. The basic concern of our members has been identifying references who are familiar with their work **and** are Senior members or Fellows of IEEE. We will help you find qualified references. You will need to provide a detailed resume/list of your work experience for them. We will also set up a meeting for the applicants and references to discuss the applicant's work experience.

Basic Requirements of Senior Membership:

1. Engineer, scientist, educator, etc. in professional practice for 10 years, showing significant performance over at least 5 of those years.
2. Recommendations from 3 Senior or Fellow IEEE members.

Additional detailed requirements should be reviewed at:

<http://www.ieee.org/organizations/rab/md/smguide.html>

Guide to Applying for Senior Member Grade

- Once you determine that you fulfill the requirements for Senior Member (SM) grade, identify your three references, who must be IEEE Senior Members or Fellows.
- If you have difficulty in locating individuals to serve as your references, contact Karl Muller at karlmuller@compuserve.com or (724) 327-0016 for assistance.

Fill out the electronic form to provide to your references

- Download the electronic SM Application form in Word and fill out the form completely. Fill in your references' Member numbers if known. Save this file and name it accordingly. You can then send this document to your references as an email attachment.
- **Contact** your references and ask them for a recommendation. Send them your completed application form as suggested above to give them supporting information on which to base their recommendation and to fill out the required reference form.
- Each reference must send a brief note of recommendation directly to IEEE, preferably using the online SM Reference form.

Submit the application form

- After you have notified all your references and given them the proper instructions, fill out the online form by cutting and pasting information from the electronic form that you have already prepared. You may submit your application in any of the formats provided, but for the quickest processing of your application, it is suggested that you submit the Web form, with the electronic format as the second preferred option.
- It is encouraged that a resume be submitted as well. Without a resume, there may not be sufficient information for the Admission & Advancement (A&A) panel to make a favorable decision.

If you have questions, contact Karl Muller, Membership Development Chair at (724) 327-0016 or karlmuller@compuserve.com.

2006 Calendar – Meetings of IEEE Pittsburgh Section

	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct
Executive Committee	19 Point Park	16 Point Park	16 U Pitt Greensburg	27 Point Park	18 Panera Monreville	15 Point Park				
Section		18 Engr Week table	31 Science Fair	20 History Dinner			19 Future of Engring in USA		Date TBD Picnic	
Communications		24 Random coding bounds								
Computer	18 Tour SunGard	18 Robot Race	29 Applctn Moderniz	19 Outsourc'g America	17 Vision 20/10	21 Vision 20/10	19 Future of Engring in USA	16 Technolg Co stories		
EMBS		15 Transm data: body as cable								
EMCS	31 FAQs	1 Path of Least Induc & EMF phobia			11 EMC Overview				Date TBD New EU EMC Directive	12 Testing for EMC Compliance
PES/IAS	25 P.E. License	13 Power Quality	25 Grounding & bonding course	6 CMU MBA program 20 History Dinner 26 FE review class starts	31 HV ckt brkr design 3, 10, 17, 24 & 31 FE review class	14 & 21 2005 NEC course 28 Inverters & motor insulation 7, 14, 21 & 28 FE review class	12 Roller coasters 5, 12, 19 & 26 FE review class	Date TBD Pirate game 2, 9, 16, 23 & 30 FE review class	6, 13, 20 & 27 FE review class	4, 11 & 18 FE review class
Magnetics				28 Beyond mag record limits						
Robotics			16 Next Level							
Signal Processing	9 Sensor Network		22 Temporal role-based access control	12 Gene reg networks						
Upper Mon		6 Interconn to Backplan 13 Fingerprint please 20 Magnet Reson Microscopy								
Consultants Network	24 Expand business	28 Business Mtg	28	25 Neural Networks	23 Legal questions	27				
Life Member				11 Intellectual Propty					14 Ansoft business & technol.	
GOLD				18 Engrs as Attys						
PACE				18 Engrs as Attys						
Student Activities										

TBD means 'to be determined'