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THE SUNCOAST SIGNAL

THE INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS, INC.

<http://ewh.ieee.org/r3/floridawc>

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IEEE: Inside and Out

(Everything you wanted to know about IEEE but were afraid to ask.)

Date & Time: Friday, 21nd January 2005, Noon

Location: TECO Hall, 702 N. Franklin Street, Tampa.
Space is limited.

Cost: \$10 Members, \$20 Non-Members, \$5 Students

Speaker: Bob Dent, Executive Director for the IEEE Power
Engineering Society.

RSVP: Online at: www.weiquality.com/pes/

Questions: Jim Howard, 813-834-6506 (34407),
Jim.Howard@lakelandelectric.com



What is the future of your Power Engineering Society (PES)?; What plans does the Society have for all of its committees (Substation, Transformer, Switchgear, etc.)?; What plans for the Annual PES meetings?; Plans for its T&D Shows?: (Hint: The FWCS PE/IA Chapter is hosting the 2007 PES Annual meeting; and the FWCS and Orlando Chapters together are hosting the 2009 T&D Show at the Orlando Convention Center)

IEEE is the world's largest professional organization with over 350,000 members in over 150 countries. There are over 300 Sections, 1,200 Chapters, and 38 Technical Societies. Additionally, there six Major Boards in IEEE that organize activities in the regional area, technical area, standards, education, publications and services, and IEEE-USA. Finally, the ultimate responsibility rests with the IEEE Board of Directors. And, IEEE is a not-for-profit organization. This has strict implications for how it operates.

Bob has a great depth of knowledge about the PES and IEEE in general and he is YOUR Staff Director for the Power Engineering Society. This is your chance to hear what the plans for the future are and to provide him input on what you would like to see the Society do and accomplish in the future.

Brief Biography: Bob Dent has been the Executive Director of the IEEE Power Engineering Society since 2002. Previously, he worked as an engineer and an engineering manager at New York Power Authority (25 years), Gibbs & Hill, Inc. (8 years), and United Illuminating Company (3 years). He received his B.E. degree from Stevens Institute of Technology, and graduate degrees in computer science (from Pratt Institute), electrical engineering, and management (from Polytechnic University). He is a licensed Professional Engineer in New Jersey and New York.

Mr. Dent joined the IEEE in 1965 and is, presently, a Senior Member. He has held many PES volunteer positions in the past including president (1996-97), vice president (1994-95), chair of PES publications (1990-91), and Chapter Chair (1983-84). For the IEEE Board of Directors, he has served as vice president, technical activities, and Division VII director. He served as New York Section chair in 1989-90.

**IEEE FWCS
Executive Committee
Wishes All Its
Members And Their
Families
A Very Happy and
Prosperous New
Year 2005!!**

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All material for THE SUNCOAST SIGNAL is due by 7th day of the month preceding the issue month. Address all correspondence to:

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Chair's Comments

By Angela Alexander

Happy New Year! I wish you all happiness and prosperity in the coming year. As you have most likely renewed your IEEE membership recently, or very soon will, I encourage you to review the many member benefits offered. In addition to the educational and networking opportunities at local meetings, IEEE offers employment assistance, insurance plans, financial services, and travel discounts. Find out about these benefits and more online at www.ieee.org.

Much thanks to those in the Section who have diligently served us this past year. Extreme gratitude is due to the former Chair John Conrad and Vice-Chair Art Nordlinger for their dedication and service to the Section. Together with Jim Anderson, Vice-Chair, Jules Joslow, Secretary, and Ralph Painter, Treasurer, I look forward to serving as the Section Chair for 2005.

Prototypes

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Power Quality Seminar

6 PDH for PE Renewal



Date & Time	Friday, January 28, 2005 9 AM – 3PM
Subject:	Power Quality Seminar
Speakers:	Charlie Williams, PE
Location:	Lakeland Electric 501 E Lemon St. Lakeland, Fl.,
RSVP:	Make reservations at www.ewh.ieee.org/r3floridawc/
Questions:	Ghaff Khazami (813) 960- 0990, ghkhazami@ieee.org
Cost:	\$50Members; \$40 Senior Members; \$200 for nonmembers, \$150 for non members who fill out application to become a new IEEE member. \$10 student members.
Lunch:	Included and it will be served at the conference rooms 1A & 1B

PES West Coast Chapter invites you to the opportunity to attend our first series of 2005 Seminars. The Power Quality Seminar is intended for all members and non members including Utility Engineers, Industrial Engineers, and Student Engineers, Technical Staff, Operations and Maintenance staff.

Our speakers are well respected and highly qualified on the subject of Power Quality. They will provide you extensive PQ information starting from the basics; latest industry guide lines such IEEE 519, actual case studies and practical examples.

This will be good timing for licensed Engineers (PE s) to attend and earn 6 Professional Development Hours plus updating their PQ knowledge.

Speakers Biography

Charlie Williams grew up in Miami, Florida and graduated from the University of Florida with a B.S.E.E. in Electrical Engineering with a major in power systems engineering. Charlie has been employed for the past 33 years in the Distribution Engineering department at Florida Power Corp. (Now known as Progress Energy after the merger with CP&L) He has held several positions in both engineering and operations with Florida Power. His present title is Principal Engineer, Power Quality and Reliability. He is responsible for reliability analysis and development of reliability programs. His areas of interest include Transformers, Lightning Protection, Power Quality, Product Reliability, Weibul Analysis, EMTP, Harmonics and Special Engineering Studies and Problem Analysis. He is a Senior Member of the IEEE and his professional activities have included: (1) Active work with the IEEE SPD Committee including a term as chairman of the 3.3.11 W.G. on MOV arrester standards; (2) Utility technical consultant to the EPRI lightning Research Project; (3) Research projects at the University of Florida on rocket triggered lightning at Camp Blanding, Florida; and (4) Research on the impact of harmonics on revenue metering. He is a past member of the IEEE Transformers Committee where he conducted research and investigations into low side surge failures of distribution transformers. He is a past chairman of the Overhead Distribution Committee of the Southeastern Electric Exchange. Charlie has been a licensed Professional Engineer in the State of Florida since 1976

Mike Kotch graduated with a BSEE from the University of South Florida in 1985. Since then he has held a variety of engineering jobs at Tampa Electric Company in transmission and distribution design. For the last four years, he has been the power quality engineer for Tampa Electric. Mike is a Registered Professional Engineer and a certified Power Quality Professional. He is a member of IEEE and serves on several power quality committees.

Wayne R. Zimmerman Certified Power Quality Professional AEE (Association of Energy Engineers) Engineering Specialist at Orlando Utilities Commission (OUC) , Orlando Florida, 15 years experience in Power Distribution Design then Specializing in Power Quality for over 12 years at OUC A.S. in Manufacturing Engineering Pending EET at the University of Central Florida



SAVE THE DATE

PES/IAS Engineers Week Luncheon
System Restoration After Charlie, Francis, and Jeanne
Thursday February 24, 2005 TECO Hall
SPEAKERS



Allan Shaffer, Director Energy
Delivery, Lakeland Electric

David McDonald, Director of Distribution
Asset Management, Progress Energy Florida

T.J. Szelistowski, Director Transmission and
Distribution Operations, Tampa Electric

Celebrate Engineering 2005 Banquet

YOU ARE INVITED!

Join us for the **LARGEST GATHERING** of engineering professionals, companions and guests! South from Naples, North to Inverness, East to Lakeland and Winter Haven!

If you attended one of the last four annual Celebrate Engineering Banquets, you already know what an uplifting experience it was! If you haven't attended one of our banquets yet, you don't know the opportunities you have missed out on. Don't let this happen again this year!

What is the Celebrate Engineering Banquet about? Five major engineering societies in the Tampa Bay area joined forces to promote engineering awareness within our own societies and the local community, in conjunction with the promotion of National Engineers Week, co-sponsored by **your** society and many other engineering societies during early February.

AWARDS TO HEROS!

Each society will recognize outstanding officers and members for their contributions and accomplishments in the engineering community and profession, for engineering and technical achievement. Join us in congratulating them for their accomplishments!

ENTERTAINMENT!

For your most memorable experience of the year we have lined up a complement of entertainment to enhance your enjoyment of the evening!

A locally renowned personality will be our MC for the evening! He will not only pace the meeting, but keep us all in stitches with his stories and anecdotes, plus hand out many **DOOR PRIZES!**

GUEST SPEAKER!

Our Keynote Event is still being finalized and will be announced next month!

SPONSORS/VENDORS!

A number of vendors and sponsors have again graciously agreed to support our Celebrate Engineering Banquet. Because of their generous support, the Committee is able to provide this elegant event to our members at a **significant discount (50%)** over what it actually costs us to provide it to our members!

Many vendors will have tables set up at the banquet featuring their engineering services & products. We encourage all attendees to visit their exhibits and thank sponsors personally for helping to support **your** Celebrate Engineering Banquet. Without their dedicated support the Committee would not be able to provide you the elegance you will experience at such an affordable and reasonable cost!

New vendors/sponsors who would like to participate in our wonderful venue should contact Carl Gustafson at [727-726-2624](tel:727-726-2624) or gustafsonc@asme.org. All contributions are tax deductible!

VENUE (Mark your calendar today)!

Date: Friday, February 18, 2005

Time: Social, Registration: 5:30 – 7:00 pm; Dinner, events: 7:00 – 10 pm

Place: WYNDHAM WESTSHORE Hotel, 4860 W Kennedy BL, Tampa

Cost: \$30 per person (What a bargain – subsidized by **your** Society!)

Reservations **must** be made in advance for planning purposes – no reservations taken at the door!

Contact Angela Alexander at 727-539-2331 for tickets or reserve online at: <http://weiquality.com/celebrate2005>

DON'T DELAY - RESERVE NOW - WE WANT TO SEE YOU THERE!

2004 IEEE EAB Section Professional Development Award

The Florida West Coast Section was presented this prestigious award at the November IEEE board meeting in recognition of years of volunteer effort. The Citation reads

"For major contributions to life-long learning, continuing education and professional development through sponsorship of Section/Society Meetings, Seminars, Workshops & International Conferences"

The IEEE Florida West Coast Section, established in 1952, has many active volunteers who work together to plan and carry out numerous continuing education programs and events for the benefit of the membership. It hosts at least one major conference each year, such as WAMI (Wireless and Microwave Technology Conference) and the I&CPS (Industrial & Commercial Power Systems Conference) in 2004; IEEE Sections Congress in 2005; and the IEEE IAS (Industry Applications Society) Annual Meeting in 2006. The Societies in the Section sponsor monthly technical meetings, and the Section strives to sponsor at least one local conference per year to enable local members to attend without incurring travel expenses.

The Section has for several years hosted the Teacher In-Service Workshops to promote engineering through hands-on projects that teachers can take back to the classroom. This project was expanded to other Sections around the world. The exemplary FWCS website serves as a portal to the latest news, register on-line for meetings; obtain information about local conferences and link to many other IEEE activities. The Section has close ties to the University of South Florida and provides mentoring and other support for the Student Branch. This activity, as well as the Section's GOLD (Graduates of the Last Decade) Chapter, successfully promotes continuing involvement with the IEEE during college and after graduation.

The Section and the PES/IAS chapter were among the first in Florida to recognize the need to provide PDHs (Professional Development Hours) to members who are registered professional engineers. A comprehensive program was developed and implemented to insure numerous opportunities for these members to maintain their licenses and also to insure that the Section complied with all of the State's rules and regulations in this regard. This program has become a model for other Chapters in Florida that now provide similar services to members.

The momentum within the Section continues to draw new, enthusiastic volunteers who quickly realize the benefits derived from participation in IEEE activities, especially the opportunity to develop management and leadership skills in executing major projects - a skill that transfers directly into the workplace.

Jim Howard accepted the award on behalf of the Section.



SIGNAL Editing, Production, & Delivery

By Jim Howard

Your monthly IEEE newsletter, the Suncoast Signal, is a product of a considerable amount of volunteer effort each and every month. We realize that, at times, you might receive your Signal in less time than you would like to have to plan to attend the meetings, seminars, etc. But a lot of things have to come together in order to get the Signal to you each and every month. And, any point along the way can cause a delay in mailing - issues such as speaker delays in getting info to the editor, volunteers being out of town or having to work (they do have to make a living <grin>), heavy post office work loads, etc.

For each and every Signal, the following has to occur: (1) Input is received from the volunteers; (2) The Editor, who is also a volunteer, puts the Signal together based on the input he has received; (3) A draft of the Signal is reviewed by a few of the members of the FWCS Executive Committee; (4) The Signal is then sent to the printer; (5) In the mean time, volunteers print the latest labels available from IEEE Headquarters; and (6) Then volunteers pick up the Signal, fold, label, sort, and deliver it to the Post Office for processing.

The volunteers work very hard to get the Signal to you in a timely manner so you can plan to attend the meetings and other functions we offer. But, in case you were not aware, the hardcopy of the Signal is preceded by an electronic version that is sent out as soon as possible after the Editor releases it. To receive this electronic version, just sign up as indicated below

"Subscribe to the FWCS section E-mail List to keep in touch with all the section activities. Send an e-mail message to listserv@listserv.ieee.org and in the body of the email place the command: subscribe fwcs-section your_email_address. The subject line will be ignored."

Please continue to let us know of ways we can improve the newsletter for you and keep supporting our meetings with your attendance.

A Great IAS Distinguished Lecturer Presentation

Were you one of the attendees to the November IAS DL Presentation by Mr. Barry Brusso? If so, you were provided with a great deal of information on the issues and concerns of a facilities engineer in regards to new power system projects in an industrial facility. This was a great lunch-and-learn opportunity for all who attended. Mr. Brusso discussed why it is critical to have the facilities engineering staff take the lead in planning, design, preparation of specifications, installation oversight and commissioning of new power systems. Many thanks to Mr. Brusso for his time and expertise in this area. If you were unable to attend, keep you eye on the signal for the next upcoming Distinguished Lecturer presentation.



VFD Application training by SSD Drives

SSD Drives provided an excellent training session on AC and DC drive applications. Many thanks to Norm Lindner, Stacy Matin, and Brad Hagar for their time and efforts putting together this training session. If you were unable to attend, keep you eye on the signal for more upcoming PES/IAS Seminars. If you have any suggestions or if you know of someone interested in making a presentation to the section, please contact Tom Blair at tom_blair@ieee.org with suggestions.



Seventeen FWCS Members Elevated to IEEE Senior Membership in November

By Tom Blair

The following Seventeen Florida West Coast Section Members were recently elevated from Full Membership to Senior Membership.

Govindarajan Muralidharan, Stephen E. Armstrong, Warren M. Bartlett (*Communications Society*), **Kenneth D. Berg** (*Computer Society*), **Kwame A. Boakye** (*Communications Society*), **Steven Fasano**, (*Computer Society*), **Bruce A. Friedman** (*Engineering in Medicine & Biology Society*) **Melanie C. Jurgovan**, **Paul C. Levin, Thomas K. Neuberger, Shawn K. O'Brien B** (*Microwave Theory & Techniques Society*), **Paul Schnitzler** (*Computer Society*) **Raymond J. Sirianni** (*Industry Applications Society*), **Thomas S. Smith, John K. Sterrett** (*Power Engineering Society*), **John M. Whitmire** (*Computer Society*), **Severyn Zoledziowski**.

Hearty Congratulations and many thanks for your years of service to the engineering profession!! For questions regarding the IEEE Senior Membership Program, please contact Tom Blair.

IEEE and USF News

By Rudy Henning

Education's multiple facets provide IEEE members a broad range of opportunities for professional growth, for sharing ones knowledge with others and for improving our communities. Some of these opportunities exist on an international scale, others are distinctly local. A list of recent events and forthcoming activities in our "territory", the Florida's West Coast - The Tampa Bay area - should keep you informed on recent happenings and help you and your family to plan your future engineering-related activities.

Dec. 3rd was USF's E.E. Students' Seniors Day - it gave students a "Poster Presentation" opportunity to describe their design projects to a broader audience. The following twelve students (in alphabetical order) received Special Recognition for their presentations at the evening's banquet: *Daniel Castillo, William Dallas, Brian Dorman, Christopher Frewin, Phillip Hughes, Marjorie Laegel, Kevin Luongo, Antonio Morelli, Erin Penny, Adrian Perez, Avi Silverman, and Randy Smith.*

On Friday/Saturday, February 18/19, the USF's Engineering College will hold its annual EXPO - when USF students in all engineering disciplines and industry and governmental engineering organizations demonstrate "engineering" to the Tampa Bay community. This event attracts all ages - children to great-grandparents. Plan to bring your family!

USF's Spring semester classes start the week of January 10th. Its Wireless Seminar course presents different weekly speakers. For additional information contact: henning@eng.usf.edu.

Planning activity continues for Pinellas County's "Engineering Club" for Elementary (k-5) students. IEEE members interested in being part of this effort should contact Dr Henning. (Additional details on page 3 of November issue of Suncoast Signal.

Note from the new Chair of PE/IA Chapter

By Ghaff Khazami, PE

While growing up people asked me what I wanted to be when I grew up. I always responded an Engineer.

Becoming that Engineer was not so easy for me. I had to work and pay my way through college.

I would like to stress to younger members, Engineers and students to come and join us, share your thoughts and ideas with us but most of all enjoy a few moments with other engineers and expand your Engineering knowledge.

For the upcoming year we are going to continue with our programs to provide you monthly meetings seminars and tours of different facilities in the area. We are committed to update you with the latest changes in the industry. We will occasionally have joint meetings with other PES chapters such as the Orlando area.

It is my pleasure to continue to volunteer my time as a new chair of PES chapter.

Science Fair 2005 Updates

By Carlomagno B. Dionson

Calling all judges! It's that time of the year once again. Regional science fairs are coming up for the various counties under the FWCS area. To sign up as a volunteer judge, you may contact the regional coordinators for each county given below. Alternatively, you can put your name on the Science Fair registration page and I will submit your info. Here are the current schedules for the various science fairs in the FWCS area (<http://www.weiquality.com/fwcs-fair/index.html>)

County	Date	Venue	Contact
Hillsborough	Feb 23 rd and 24 th 2005	USF Sun Dome	Carmen Austin, Wharton High School 813-631-4710 ext. 256
Manatee	Jan 25 th 2005 4PM	Manatee Fair Grounds - Kendrick Auditorium 1303 17th Street West Palmetto, Florida	Joni B. Pirnot Manatee Community College 941-752-5523
Pasco	Jan 29 th 2005 8:30AM	Thomas E. Weightman Middle School (Wesley Chapel)	Kim Davis, kdavis@pasco.k12.fl.us 813-794-2257
Pinellas	1 st or 2 nd Week of Feb (tentative)	TBA	Bob Orlopp 727-588-6075
Sarasota	Feb 2, 2005 9:00 AM (High School) Jan 26, 2005 9:00 AM (Elementary)	Sarasota County Fairgrounds	Bonita Echstenkamper bonita_echstenkamper@sarasota.k12.fl.us (941)927-0965, Fax (941)927-3034

Students' Corner

By Kristy Baksh

Last December, the IEEE Student Branch hosted the Fall Senior Awards Banquet. It was a tremendous success and we would like to thank the following organizations for their continued support of the Student Chapter- IEEE FWCS, TECO, Raytheon and the Electrical Engineering Department at USF. The Spring Semester shows no signs of the student chapter slowing down. Events to look forward to this semester include EXPO, Spring Senior Picnic, WAMI Student Luncheon, another S.P.A.C. and Southeastcon 2005. The USF Student Chapter will be actively participating in this year's Southeastcon which will be held at Nova University in Ft. Lauderdale during the month of April. If anyone would like to participate in the Robotics Competition or T-shirt design contest, please contact us at ieee@eng.usf.edu. Want to keep up-to-date on the Student Branch Activities, join the listserv! <http://mailman.acomp.usf.edu/mailman/listinfo/ieee>

Brain Teaser Challenge Column

By Butch Shadwell

December BTC Trying to build a better voting machine for Palm Beach County brought us to the problem last month. "I have some passive parts, caps and resistors, and an assortment of quad gates, and, or, nand, xor, etc... Your task, ... is to design the simplest one-shot you can with these parts. We're looking for the fewest parts in this design... it would be good to get as many circuits as possible from each quad chip."

Well, now for many of you this would seem too easy. But I find from my responses to past BTCs that if the reader is either too young or too old, this technique may have escaped them. Since I have stated that I have some quad XOR gates, the solution should have jumped out at you. If you have a two input XOR gate and one resistor and one capacitor, you can make a very nice one shot pulse generator. It will generate a positive pulse on each edge, positive or negative, of the input signal. You simply put the resistor between the two inputs, and then attach the capacitor between one input and ground. The unknown input logic level signal is applied to the opposite input from the capacitor. Reviewing the truth table as we go, in the beginning, both inputs are low and the output is low. When the input signal goes high the output of the gate goes high (the cap side is low while the input side is high) until the capacitor on the other input charges up to a logic high voltage, through the resistor between the inputs, and then the output goes low. Then when the input goes low, the output goes high again (the cap side is high while the input side is low) until the cap discharges through the R to the logic low voltage, and then it returns low. Thus we can make four pulse generators from one quad XOR gate, four resistors and four capacitors. But I bet you already knew that.

January BTC Some of you know that besides my fascinating career in R&D, I have also enjoyed a notable acting career. I feel that performing on stage and screen is really a natural extension of what we do in technology. ... OK, so maybe that's stretching it a bit, but the acting stuff sure is a blast and I think it helps keep me young.

In the last twenty-five years I have been in over 50 stage shows, including many dinner theater shows, musicals, dramas, and comedies. I've also done small parts in a few movies and commercials. I actually performed in comedy clubs for a couple years in an improvisation troop. That's where I learned to juggle. Anyway, I just got an email from my agent telling me she's got me gig for next Thursday, but she can't tell me what it is or where I have to go. I'm guessing it is a commercial since I haven't been sent a script yet. The last commercial I did was for a well know credit union. Doing screen work is mostly standing around waiting for your next shot, so you have to have something to occupy your time.

So I decided it would be fun to bring a calculator and do p-chem problems in the down time. So if you had an air bladder that had negligible resistance to expansion, kept at sea level, by what percentage would the volume change as you raised the temperature of the gas inside from 27' Celsius to 100' Celsius? I hope this one isn't too easy for you folks.

Reply to Butch Shadwell at b.shadwell@ieee.org (email), 904-223-4510 (fax), 904-223-4465 (v), 3308 Queen Palm Dr., Jacksonville, FL 32250-2328. (<http://www.shadtechserv.com>) The names of correct respondents may be mentioned in the solution.

FREE Admission to Exhibits



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Orlando, Florida

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Priority Number

9-90101

How to Register

Mail Deadline - January 21, 2005

Southcon 2005
1514 First Street
Manhattan Beach, California 90266

FAX Deadline - February 11, 2005

813-996-4460
Please do not both fax and mail

Electronically www.southcon.org

After January 21, 2005 badges will be held for pick-up at the Orange County Convention Center.

On-Site

Bring this form with you to Southcon/2005 for FREE admittance.

1.

First Name		Last Name	
Job Title		E-mail	
Company			
Mailing Address		Mail Stop	
City	State	Zip	Country
() Telephone	() Fax		

2. Principal Job Function (check only one)

- AA Engineer - Design
- AB Engineer - Manufacturing
- AC Engineer - Quality/Test
- AD Engineering Services
- AE Engineering Management
- AF Corporate/General Management
- AG Press
- AH Purchasing/Procurement
- AJ Marketing/Sales
- AK Student/Educator
- AL Other

3. What is the Primary End Product at this Location (check only one)

- CA Communication Systems
- CB Components/Materials/Hardware Supplies
- CC Computers/Systems and Sub-systems
- CD Consumer Products, Automotive & Appliances

- CE Contract Services-Design/Manufacturing/Test/IC Foundry etc.
- CF Controls
- CG Military/Government/Avionics
- CH Medical Electronics
- CJ Semiconductors/ICs
- CK Test/Masurement/Inspection
- CL Distributors
- CM Other
- BF Contract Services - Design/Manufacturing/Test
- BG EDA Tools & Engineering Software
- BH Interconnection Devices
- BJ Laser & Electro-Optical Devices
- BK Microwave Components
- BL Packaging Hardware/Enclosures
- BM Power Sources
- BN Production Equipment
- BP Production Tools & Supplies
- BQ Sensors & Transducers
- BR System Boards
- BS Test & Measurement Equipment
- BT Other

4. Product Interest - Which of the following do you specify, recommend, approve, purchase or influence the purchase of? (check all that apply)

- BA ASICs, PLDs, FPGAs
- BB Board Level Products
- BC Semiconductors/ICs
- BD Components other than IC's
- BE Computers/Peripherals/Software

5. Years Involved in Industry

- DA 1 - 2
- DB 3 - 5
- DC 6 - 9
- DD 10 or more

6. Size of your organization

- | | At Your Location | In Entire Company |
|---------------|-----------------------------|-----------------------------|
| 1 - 49 | <input type="checkbox"/> EA | <input type="checkbox"/> EB |
| 50 - 99 | <input type="checkbox"/> EC | <input type="checkbox"/> ED |
| 100 - 499 | <input type="checkbox"/> EE | <input type="checkbox"/> EF |
| 500 - 999 | <input type="checkbox"/> EG | <input type="checkbox"/> EH |
| 1,000 or more | <input type="checkbox"/> EI | <input type="checkbox"/> EJ |

GA I would like to receive show and conference updates via e-mail

GB Send me complete Technical Program Information

I am a member of IEEE (or referred by) ERA



Persons under 18 years of age not admitted. Students 18 or older admitted on Thursday, February 17, only.

Also, please register my colleagues: Express Registration Free Admission-Exhibits Only.

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January 2005 Calendar of Events

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
30	31					1
2	3	4 5:30PM: IEEE FWCS ExCom Meeting, TECO Hall, Tampa Downtown	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21 12NOON: PE/IA Society Meeting, IEEE Inside & Out, TECO Hall	22
23	24	25 4PM: Manatee Science Fair, Manatee Fair Grounds (See Page 7)	26 9AM: Sarasota Science Fair, Sarasota Cty Fairgrounds (See Page 7)	27	28 9AM-3PM: PES/IAS Meeting, Power Quality Seminar, Lakeland Electric	29 8:30AM: Pasco County Science Fair, T.E.Weightman Middle School (See Page 7)

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Sections Congress 2005 is coming to Tampa!

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