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# THE SUNCOAST SIGNAL

THE INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS, INC.

<http://www.ieee.org/fwcs>

Volume 49 - No. 2

February 2006

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## "Celebrate Engineering" Banquet 2006 Engineers Are Treasures Among Us!

**Date:** Friday Evening February 17, 2005  
**Speaker:** Mr. Roy Truman from Odyssey Marine Exploration  
**Location:** Wyndham Westshore hotel in downtown Tampa.  
**Cost:** \$30/person  
**Reserve NOW** <http://time2meet.com/celebrate/index.html> or  
call Jim Anderson at 813-417-8854.

It's finally here! The Florida West Coast Engineering Alliance will be holding its 6th annual "Celebrate Engineering" Awards Banquet (CEB) this month honoring all engineering fields and recognizing a number of individual achievements.



The speaker for the event will be a real Treasure Hunter—Mr. Roy Truman from Odyssey Marine Exploration. Ray will tell us how Odessey's search team located and raised the SS Republic off the coast of South Carolina. The SS Republic was a paddlewheel steamship that sank during a hurricane in October 1865. The ship was en route to New Orleans with a cargo of coins and other supplies destined to aid post Civil War Reconstruction. At the time of the Republic's discovery, estimates made from historical records and comparable coin sales placed the cargo's possible value at U.S. \$120 to \$180 million.

This premier networking event brings together local leaders and engineering professionals to recognize the outstanding achievements of Engineers, Science & Math Teachers, and Students in our community. In addition, over fifteen local notable companies will be exhibiting their products and services. Tickets will go quickly so register now online at <http://time2meet.com/celebrate/index.html> or by calling Jim Anderson at 813-417-8854.



—JA

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THE SUNCOAST SIGNAL is published monthly by the Florida West Coast Section (FWCS) of the Institute of Electrical and Electronics Engineers, Inc. (IEEE). THE SUNCOAST SIGNAL is sent each month to members of the IEEE on Florida's West Coast. Annual subscription is included in the IEEE membership dues. The opinions expressed, as well as the technical accuracy of authors, advertisers or speakers published in this newsletter are those of the individual authors, advertisers, and speakers. Therefore, no endorsement by the IEEE, its officers, or its members is made or implied.

All material for THE SUNCOAST SIGNAL is due in electronic form by **1<sup>st</sup> Friday after the 1<sup>st</sup> Tuesday** of the month preceding the issue month.

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## Editor's Column—It's Our Time!

Celebrate Engineering Banquet, National Engineers' Week, Engineers' EXPO, and National Engineering Week in Canada. This is for us.

Kick off NEW by joining us (and there will be a lot of us!) at the Celebrate Engineering Banquet. (See the cover story.) And it's not just for EE's so bring your friends and associates.

If you have any doubt that there are amazing new young engineers on the way, come to USF for the Engineering EXPO 2006! This is the official USF event celebrating National Engineers' Week. EXPO is the best, and fastest, way to get to know the College of Engineering and other professional engineers working in the Tampa Bay area. (See p.5.)

And perhaps you didn't know, Canada also celebrating although a week later. So take a break from the warm weather, maybe go skiing, and see what they are doing. <http://www.new-sng.com/maintemplate.cfm>

So take a break and enjoy yourself and see what the young people are doing. Celebrate Engineering! —PS



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## Sections Congress Creates Sharp Leaders

IEEE Senior Member Jim Howard calls it “the best and the greatest IEEE meeting there is.” Hyperbole aside, IEEE Sections Congress 2005, held 14-17 October 2005 in Tampa, Fla., brought together hundreds of volunteers from all over the world to sharpen leadership skills, enhance knowledge of the IEEE, and network with other volunteers.

Hosted by the Florida West Coast Section and Region 3, the Sections Congress, a triennial gathering of section leadership sponsored by the Regional Activities Board, drew more than 900 attendees—the most since the first meeting was held in 1984. The delegates, mostly section chairs and other officers, represented 269 sections, or approximately 89 percent of all IEEE sections.

From an article by Erica Vonderheid in the Institute 5 January 2006  
<http://boldfish.ieee.org:80/u/1586/010606>

## ***Building Engineering Education Infrastructure in Florida— Sharing What Works***

On April 28, 2006, the University of Central Florida's (UCF) College of Engineering and Computer Science (CECS) will be hosting this pre-college engineering education conference. The one-day conference will showcase pre-college programs that are successfully reaching young students in and outside of the classroom. UCF is working with the College of Engineering at the University of South Florida, O-Force, the IEEE West Coast Section, Project Lead the Way, and numerous schools and industry organizations to identify speakers for two panel sessions in the morning and two additional panel sessions in the afternoon. Additional details may be viewed at <http://partner.cecs.ucf.edu/EEC06/>.

Key to the success of the conference will be attendance by K12 administrators/educators and engineers. Practicing and retired engineers are especially invited to attend as they are the subject matter experts who are capable of helping teachers and other educators incorporate engineering concepts into the curricula. They further have the ability to assist educators and their students via mentoring in the classroom (and on-line), presenting what engineering is and what engineers do and connecting engineering to science, math and technology courses. In a recent "Why Engineering Survey" conducted by UCF-CECS in coordination with ASME members nationally, 84% of the engineers surveyed indicated they did not interact with a scientist or engineer as part of any classroom activity. Of the 16% who had the benefit of an engineer in the classroom, over 90% indicated it directly contributed to their pursuit of engineering as a career. Practicing and retired engineers have the ability to make an enormous impact on students and can forever change their career aspirations.

Please join with UCF-CECS and our partners to recognize what works in engineering education. You will learn about programs such as the Teacher In-Service Program (TISP) that "features IEEE Section volunteers sharing their technical acumen through the development and demonstration of technologically oriented subject matter to local pre-university educators in an in-service or professional development setting." Mr. Sean Denny with IEEE West Coast Section will be presenting the program and you can learn more about becoming involved.

Persons interested in attending the conference may sign up to be kept abreast of new developments by completing some basic contact information at <http://partner.cecs.ucf.edu/EEC06/StayInformed/New/>.

Please address any questions or comments about the upcoming conference to Mr. Bruce Furino at UCF-CECS at [bfurino@mail.ucf.edu](mailto:bfurino@mail.ucf.edu).

## **Career Opportunities**

Beckwith Electric Co., Inc., located in Largo, Florida, is a leading manufacturer of innovative high quality products, technical services and solutions for the electric utility industry. We are seeking qualified candidates for the following position.

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## ***Is It True "The World Is Flat?"***

***2006 IEEE-USA***

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Among the many 2006 IEEE-USA Leadership Workshop benefits you will

Help you to gain a better understanding of IEEE and IEEE-USA missions, visions and goals.

Train volunteers how to develop new and innovative Professional Activities Project plans to be implemented within your local section, chapter or society.

Provide participants with information on the IEEE-USA's current legislative priorities, and information on how to develop an effective grassroots lobbying network.

Provide skills and tools for your own professional development, job search and networking as well as your members at home. More details on insert and at:

<http://www.ieeeusa.org/calendar/conferences/2006workshop>



## *Fault Calculations and Selection of Protective Equipment*

**Date:** Wednesday, March 22, 2006  
**Time:** Registration & Breakfast: 8:00AM – 8:45AM  
 Seminar: 9:00AM – 3:00PM  
**Speaker:** Dr. Ralph E. Fehr III, Instructor – Power and Energy Systems, University of South Florida  
**Location:** Seminole Electric, 16313 North Dale Mabry Hwy, Tampa, FL 33618  
**Cost:** \$150 Members, \$225 Non-Members, \$100 Students Includes Breakfast, Lunch, & seminar text, “INDUSTRIAL POWER DISTRIBUTION” (a \$75 value)

**RSVP:** Online at:  
<http://www.ewh.ieee.org/r3/floridawc/>  
 (Select Reservations)

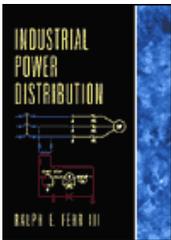
**Make checks payable to:** IEEE FWCS. Send checks to:  
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 Brandon, FL 33510-2937

**Space limited** to the first 50 registrants!!!

**Questions:** Tom Blair at 813-228-1111, ext 34407 or  
[thblair@tecoenergy.com](mailto:thblair@tecoenergy.com)

**PDH Credits:** 5 professional development hours will be awarded. Be sure to enter you name and PE number on the signup website as it appears on your license. Florida exempt provider #00015.

### Seminar Text



**Your local IEEE PES/IAS Chapter is offering this 5 hour seminar on Fault Calculations and Selection of Protective Equipment by Dr. Ralph E. Fehr III**

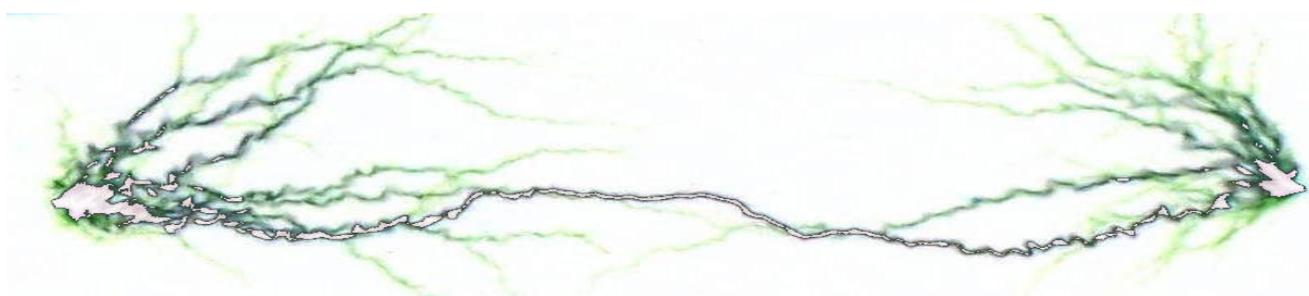
This training session will be devoted to the calculation of fault currents and the sizing of protective equipment such as circuit breakers and fuses. The method of symmetrical components will be used to analyze unbalanced fault conditions. The text for the training will be “Industrial Power Distribution” written by Dr. Fehr. A copy of the text is included in the training costs.

### A \$75 Value

Dr. Ralph Fehr earned his B.S. degree in electrical engineering from the Pennsylvania State University in 1983, his M.E. degree in electrical engineering (power) from the University of Colorado at Boulder in 1987, and his doctorate in electrical engineering from the University of South Florida in 2005. He has worked in the generation engineering field designing power distribution and control systems for nuclear and fossil-fired power plants. Dr. Fehr also has worked for electric utilities for over 15 years in the operations, planning, and design areas, including transmission, distribution, and substation engineering.

Dr. Fehr has taught courses ranging from computer operating systems to mathematics to power system analysis for several institutions, including the University of New Mexico at Albuquerque, the Pennsylvania State University, the University of Colorado at Boulder, St. Petersburg [Florida] Junior College, and the University of South Florida at Tampa. He has also taught review courses for candidates for the professional engineer examination through the Florida Engineering Society for ten years.

Dr. Fehr is a Senior Member of IEEE and is a registered professional engineer in New Mexico and Florida. His biography is published in *Who's Who in Science and Engineering* and *Who's Who in American Education*.



# FREE Admission to Exhibits



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## How to Register

**Mail Deadline - February 3, 2006**

Southcon 2006  
1514 First Street  
Manhattan Beach, California 90266

**FAX Deadline - March 3, 2006**

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

**Electronically [www.southcon.org](http://www.southcon.org)**

After February 17, 2006 badges will be held for pick-up at the Orange County Convention Center.

**On-Site**

Bring this form with you to Southcon/2006 for FREE admittance.

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

**Register Early:** Prices shown are effective through February 24, 2006. Beginning on February 25, the cost of "T" events will increase by \$50 each.

- \_\_\_\_\_ Southcon Exhibits (Tues., Wed., Thurs., Mar. 7-9, 2006) No Charge
- \_\_\_\_\_ Blue Ribbon Panel Discussion (Tues., Mar. 7, 1 to 3:00 PM) No Charge

**Application Engineering Tutorials (include lunch)**

- |   |  |
|---|--|
| _____ T1 - \$315 - EMC Printed Circuit Board Design Practices       | _____ T5 - \$165 - Manufacturing Implications of Lead-Free         |
| _____ T2 - \$165 - ESD Design for Electronic Subsystems & Equipment | _____ T6 - \$315 - MIL-STD-461E & MIL-STD-464A...                  |
| _____ T3 - \$700 - Highfrequency-Digital Design & PCB Layout        | _____ T7 - \$315 - Wireless Protocols - An Introduction & Overview |
| _____ T4 - \$315 - IEEE 802.15.4 and ZigBee - What's the Buzz?      | _____ T8 - \$195 - Wireless Security                               |

10% discount for IEEE & ERA members or companies sending more than three attendees IEEE/ERA Discount \$ \_\_\_\_\_  
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**Special Assistance:** If you require special assistance covered under the Americans with Disabilities Act, please call (310) 937-1006 by January 31, 2006.

**Grand Total \$ \_\_\_\_\_**

**Cancellation:** No refunds after February 4, 2006. However you may send a colleague in your place.

**Method of Payment**

- \_\_\_\_\_ Check (payable to Southcon 2006).
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(Street/City/State/Zip)

**Persons under 18 years of age not admitted. Students 18 or older admitted on Thursday, March 9, only.**

## For Complete Conference Information and Registration visit [www.southcon.org](http://www.southcon.org)

### Southcon and Amcon Exhibit Floor & Conference Companies Partial List as of 11-1-05.

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|---|---|---|---|---|
| A.M. Metal Finishing, Inc.<br>A.P.P.I.<br>AAK Corporation*<br>Able Systems Limited*<br>Ablerex*<br>Acme-Monaco Corporation<br>Acute Power Inc.*<br>Advanced Input Systems*<br>Advanced Machining<br>Advanced Machining Tech<br>AJ's Power Source*<br>A.J.L. Mfg.<br>Alpha Power*<br>Aluminum Alloys<br>American Aluminum Casting Co.<br>American Plastic Molding Corp.<br>APEM Components*<br>Applied Manufacturing Concepts, Inc.<br>APX Technologies, Inc.*<br>Arlink*<br>Armstrong Mold Corp.<br>ASH Industries<br>B.A. Precision<br>Bardane Aluminum Foundry<br>Bare Board Group<br>Bartlett Manufacturing Company*<br>C-MAC Microelectronics*<br>CET Technology<br>Challenge Electronics*<br>Chapman Tool & Mold<br>Cincinnati Sub-Zero Products<br>Cincon Electronics*<br>Clairson Plastics<br>CLOW Stamping*<br>CompuLink Cable Assembly, Inc. | Comus International*<br>Conductive Technology<br>Connecticut Spring & Stamping<br>Constellation Technology Corp.<br>Cost Cast, Inc.<br>Crane Connectors*<br>Criterion Instrument<br>Current Solutions, Inc.<br>Da-Tech Corporation<br>Da/Pro Rubber, Inc.<br>Data Graphics<br>Dayton Rogers Manufacturing<br>Dazor*<br>Deco Products Company<br>Dee Van*<br>Dictaphone - EMS*<br>DyCast Specialties<br>Dyna-Graphics<br>Dyna-Tech Corp.<br>E&T Plastics<br>EAC*<br>EBM Industries<br>EDAK*<br>EDM Technologies<br>Electronic Film Capacitors, Inc.*<br>Ellsworth Adhesives<br>EMS, Inc.<br>ETA-USA*<br>Exeltech*<br>Extetch*<br>Fab Masters Co.<br>Flat Display Technology*<br>Fort Walton Machining<br>Fujipoly*<br>Gaston Electronics | Gemstar Manufacturing<br>Gowanda*<br>Gross Publications<br>Hallmark Technologies, Inc.<br>Harmony Castings, Inc.<br>HFA, Inc.<br>Higbee, Inc.<br>Hitachi Computer Products, Inc.<br>Intech LCD Group Ltd.*<br>Integrated Power Designs*<br>J. Royal Company<br>Johanson Dielectrics*<br>KAI - Tropical Assemblies, Inc.<br>Kolver USA*<br>Kurt Manufacturing<br>Lamothermic Corporation<br>Lee Spring Co.<br>Lishen*<br>Loda*<br>Machine Specialties, Inc.<br>MAJR Products<br>Materials Converting<br>Memtron Input Components*<br>Metal Form, Inc.*<br>Metalade N.Y., Inc.<br>Micro-Accessories<br>Micro Care Corp.*<br>Micro Commercial*<br>Mid-West Spring & Stamping<br>Midgard, Inc.<br>Mnemonics<br>Morrissey, Inc.<br>Mueller Electric, Co.*<br>NADO Inc.<br>Nemco Elect* | Network Engineering Solutions, Inc.<br>Newman Machine<br>Noah Industries, Inc.<br>North Penn Technology, Inc.<br>Northwest Automatics<br>Nu-Way Industries, Inc.<br>Nylacarb Corporation*<br>Optical Polymers International<br>Ozark Circuits, Inc.<br>P&M Industries<br>PCM Products, Inc.<br>Performance Tech 2000, Inc.<br>Peter Parts Electronics<br>Phoenix Components, Inc.<br>Pifer International*<br>Plastic Concepts & Design, Inc.<br>Power-Sonic Corp.*<br>Powerstax plc.*<br>Precision Metal Industries<br>Precision Resistive Products, Inc.*<br>Profab Electronics<br>Progressive Technologies, Inc.*<br>ProSource Industries<br>Quaker Plastic Corporation<br>Rapid Product Solutions<br>Rapis Sheet Metal, Inc.<br>Renco Electronics, Inc.<br>RMI-F, Div. of Rotronics<br>Rubycon*<br>Saint-Gobain<br>Sanyou Relays*<br>Sealing Devices, Inc.<br>Seaway Plastics Engineering<br>SRC Devices*<br>Shoulder Electronics Group* | Sibex, Inc.<br>Soldering Technology International<br>Somec Corp.<br>Soneticom*<br>Southern Spring & Stamping, Inc.<br>SSI Electronics, Inc.<br>Static Control Components*<br>Steinel*<br>Sun Rep<br>Surehold*<br>Surface Finishes Co., Inc.<br>Swanstrom Tools USA*<br>Syrpris Test and Measurement<br>T.L. Fahringer Co.<br>Technical Specialties Co., Inc.<br>Technical Systems Integrators, Inc.<br>Time-Compression Technology<br>Tocos America*<br>Tri-Mag*<br>Tropic Fasteners<br>Truex, Inc.<br>UDT Sensors*<br>Universal Sales Company<br>US Tech<br>Vaga Industries<br>Weber Manufacturing & Supplies, Inc.<br>Williams Soud*<br>Wilsons Machine Products, Inc.<br>Wisconsin Tool & Mold<br>Wrico Stamping Co.<br>You Eal* |
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# Southcon®/2006

Education for Engineering Applications

## Today's New Products . . . Tomorrow's Innovative Solutions

Southcon, Florida's leading OEM electronics event, has long been the industry event where engineering and purchasing professionals come to see, touch, compare *and* learn about new cutting-edge products and innovative solutions. Southcon/2006 will feature product demonstrations, vendor exhibits and a high-quality conference program offering answers and solutions for the entire design, manufacturing and test team.

## Co-Locating with AMCON

Your Southcon badge also gains you free access to the American Contract Manufacturers Show (AMCON).

## When and Where?

### Orange County Convention Center

West Complex - Hall F  
9800 International Drive  
Orlando, Florida 32819

Exhibit Hours	Conference Hours
Tuesday, March 7 9:30am-4pm	Tuesday, March 7 9am-5pm
Wednesday, March 8 9:30am-4pm	Wednesday, March 8 9am-5pm
Thursday, March 9 9:30am-1pm	Thursday, March 9 9am-5pm

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Southcon is sponsored by the Florida Council and Region 3, Institute of Electrical & Electronics Engineers  and the Florida Sunshine Chapter of Electronics Representatives Association (ERA) 

Exhibit Hours		9:30-4		9:30-4		9:30-1	
Day Planner		Tues. 3/7		Weds. 3/8		Thurs. 3/9	
		AM	PM	AM	PM	AM	PM
Conference Hours		COST		9-5		9-5	
<b>Blue Ribbon Panel Discussion (1:00 to 3:00 pm)</b>							
K1	How to Survive Outsourcing and Offshore Design/Manufacturing	N/C					
<b>Engineering Application Tutorials (Include Lunch)</b>							
T1	EMC Printed Circuit Board Design Practices (6 Hrs.)	\$315					
T2	ESD Design & Test (3 Hrs.)	\$165					
T3	High-Frequency Digital Design & PCB Layout (12 Hrs.)	\$700*					
T4	IEEE 802.15.4 & ZigBee - What's the Buzz? (6 Hrs.)	\$315					
T5	Manufacturing Implications of Lead-Free (3 Hrs.)	\$165					
T6	MIL-STD-461E & MIL-STD-464A Evaluation & Compliance (6 Hrs.)	\$315					
T7	Wireless Protocols - An Introduction and Overview (6 Hrs.)	\$315					
T8	Wireless Security (4 Hrs.)	\$195					
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Workshop titles to date: Using Technology to Grow Your Business; Use More Than 10% of Microsoft Office; Streamline Business Processes with Microsoft Business Solutions							

\* Includes Textbook



## *Engineers Week*

### *Seminole Electric Unit 3 Generating Plant*

- Date:** Wednesday, February 22, 2006  
**Time:** 12 noon- 1PM  
**Speaker:** Mr. Jim Frauen, Manager of Environmental Affairs at Seminole Electric Cooperative  
**Location:** Conference Room #1 on the 9th Floor of TECO Plaza  
**Cost:** \$10 Members, \$15 Non-Members \$ 5 Student members, Lunch included  
**RSVP:** Online at: <http://www.ewh.ieee.org/r3/floridawc/> (Select Reservations)

**Make checks payable to: IEEE FWCS**

**Send checks to: Ralph Painter, IEEE FWCS Treasurer  
648 Timber Pond Drive  
Brandon, FL 33510-2937**

**Space limited to the first 50 registrants!!!**

**Questions:** Ghaff Khazami at 813-960 - 0990 or [gkhazami@megaway.com](mailto:gkhazami@megaway.com)

Seminole Electric Cooperative, Inc. is a generation and transmission cooperative headquartered in Tampa, Florida. An estimated 1.6 million individuals and businesses in portions of 46 counties in Florida rely on Seminole's 10 member distribution systems for their electric power.

The primary energy resource serving Seminole's member systems is the Seminole Generating Station. This 1300 megawatt, coal-fueled power station is located in Northeast Florida in Putnam County, on the St. Johns River, north of Palatka. Seminole recently announced plans to expand this Station to help meet Florida's growing energy needs.

Seminole's newest owned resource is the Payne Creek Generating Station. This 500 megawatt plant, which primarily uses natural gas as its fuel source, went into commercial service in January 2002. Payne Creek is located in Hardee County in south-central Florida, near Wauchula. This resource is also being expanded with the addition of 300 megawatts of peaking capacity, which is scheduled to go into service on December 1, 2006.

The addition of Unit 3, an advanced technology coal unit with state-of-the-art emission controls, will increase electric generating capacity at the Seminole Generating Station by nearly 60 percent. With upgraded environmental controls on the existing units at the station, overall environmental performance will improve, even as capacity is increased. In fact, station-wide, after Unit 3 is added, there will be no net increase in emissions of sulfur dioxide, nitrogen oxide or mercury.

#### **Speaker :**

**Mr. Jim Frauen** holds a degree in Agricultural Engineering from Kansas State University. He has over 20 years of engineering, environmental and regulatory experience and is currently the Manager of Environmental Affairs for Seminole Electric Cooperative. Jim has worked in Seminole's Environmental Affairs Department for over 14 years where he has been directly involved in a number of permitting and construction projects including the Payne Creek Generating Station Units, Seminole's FGD Gypsum Conversion Project and currently the Unit 3 Project at the Seminole Generating Station.



## 2006 Leadership Workshop

3 -5 March 2006

### Hyatt Regency St. Louis at Union Station

One St. Louis Union Station, St. Louis MO 63103  
Phone: +1 314 231 1234/Fax: +1 314 923 3970

#### Who Should Attend?

- Section/Chapter PACE Chairs
- Section/Chapter Chairs
- PACE Coordinators and Society PACE Chairs
- Region and Division Directors and their Society Presidents.
- IEEE-USA Committee Chairs & Committee Members

#### Why Should I Attend?

The 2006 IEEE-USA Leadership Workshop will:

- Help you to gain a better understanding of IEEE and IEEE-USA missions, visions and goals.
- Increase your understanding of the roles and activities of the IEEE-USA committees and volunteers in order to help you do your job better.
- Train volunteers how to develop new and innovative Professional Activities Project plans to be implemented within your local section, chapter or society.
- Provide participants with information on the IEEE-USA's current legislative priorities, and information on how to develop an effective grassroots lobbying network.
- Provide skills and tools for your own professional development, job search and networking as well as your members at home.
- Teach you new ways to improve dissemination of information, products and services to members through local sections and chapters through the PACE Network.

#### What Do I Need to Know?

The IEEE-USA Leadership Workshop will open on Friday, 3 March 2006 with the PACE Leader's Training from 1:00pm - 3:00pm. All attendees are invited and encouraged to attend the training. Following the training, all participants will meet with their home regions (1-6) for discussion and to prepare for the upcoming day of programs and individual workshops. The official Welcome Reception will begin at 6:00 pm with a dinner and an IEEE President's Forum. After the reception, there will be a networking exercise and free time to network.



We will resume on Saturday, 4 March 2006 at 8:00 am, following breakfast (served from 6:30 am-7:45 am). That evening, you are invited to attend the [IEEE-USA Awards Banquet and Ceremony](#) at 7:00 pm.

The Workshop continues with breakfast on Sunday, 5 March 2006 at 6:30 am. The entire workshop will end by 12 noon to allow you to catch your flight home that day.

Suggested attire for the workshop is casual with the exception of the Awards Banquet which will be business attire. We are looking forward to seeing you there.

**All registrations must be received no later than 6 February 2006.**



**ENGINEERS' WEEK®**  
**FEBRUARY 20-26, 2006**



**USF**  
**ENGINEERING**  
**EXPO**



This year's USF Engineering Expo is being held on February 17<sup>th</sup> and 18<sup>th</sup>.  
 EXPO is the official USF event celebrating National Engineers' Week.

EXPO is the best, and fastest, way to get to know the College of Engineering and other professional engineers working in the Tampa Bay area.

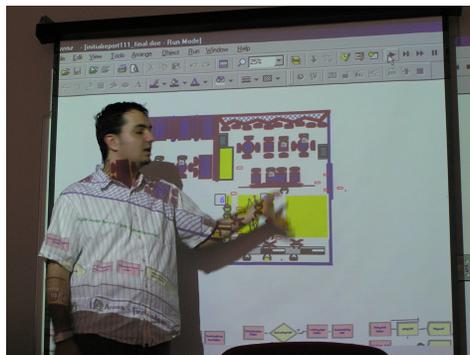
Essential parts of EXPO to experience are the many fine exhibits from corporations and government bodies, intended to show projects and products their engineers work on. Some of the expected exhibitors include TECO Energy, Raytheon, Honeywell, HDR Engineering, and Nielsen. These exhibits will be located in ENG, ENA, ENB, ENC, and CUTR buildings and should not be missed. Other exhibits included in EXPO are sponsored by individual professional societies and provide examples of their projects and activities. Three exciting shows run hourly: Fun With Physics, the Chemical Magic Show, and a Laser Light Show sponsored by the student chapters of IEEE and Eta Kappa Nu. Our Laser show has won the "Outstanding Show" award frequently through the years. On Saturday the 18<sup>th</sup>, don't miss the Electrathon (battery powered go carts) car races!

The EXPO is expected to host over 2,000 K-12 school kids and hundreds of adults. EXPO is an experience not to be missed. Visitors should stay as long as they can, and see as much as they can!

And it is all FREE!

For more information, visit the official expo website at:  
<http://expo.eng.usf.edu/index.php>

The photos are from EXPO 2005 and include (top left, clockwise) SAE's Mini-Baja, Dr. McCright (faculty advisor), TECO in the Fishbowl, Raytheon's robot, EE Online Gaming Room, IE people-flow simulation, and the EE electric car.





## What Is A UL Listing And What Does It Involve?

Date: Friday, April 21, 2006

Time: Registration & Breakfast: 8:00AM – 8:45AM

Seminar: 9:00AM – 2:00PM

Location: Seminole Electric, 16313 North Dale Mabry Hwy, Tampa, FL 33618

PDH Credits: 4 professional development hours will be awarded. Be sure to enter you name and PE number on the signup website as it appears on your license. Florida exempt provider #00015.

Cost: \$75 Members, \$125 Non-Members, \$15 Students— Includes Breakfast & Lunch

RSVP: Online at: <http://www.ewh.ieee.org/r3/floridawc/> (Select Reservations)

Make checks payable to: IEEE FWCS

Send checks to: Ralph Painter, IEEE FWCS Treasurer  
648 Timber Pond Drive, Brandon, FL 33510-2937

Space limited to the first 50 registrants!!!

Questions: Tom Blair at 813-228-1111, ext 34407 or [thblair@tecoenergy.com](mailto:thblair@tecoenergy.com)



Do you know the difference between the UL markings shown above? If not, you will benefit from this training. Each UL Mark has its own specific meaning and significance. The UL Mark on a product means that UL has tested and evaluated representative samples of that product and determined that they meet UL's requirements. Under a variety of their programs, products are periodically checked by UL at the manufacturing facility to make sure they continue to meet UL requirements. This seminar will cover what the requirements are for a product to be UL Listed.



## Top 10 Ways To Screw-Up Your Engineering Career

Happy New Year! For the past couple of months we've been discussing ways to completely screw-up your Engineering career. Our assumption was that it would be a shame to accidentally do harm to your career so instead, let's assume that you wanted to stop your career in a spectacular fashion. What would be the best way to do this? Here are two suggestions to kick the New Year off on the wrong foot:

### #6: Fall In Love With Your Employer

I'm sure that your job is a great place to work, but be careful. Please understand that by accepting your job you have entered into a peculiar type of relationship. Hopefully you will grow to love your job – the people, the place, the challenges. However, the company cannot and will not grow to love you -- because it can't. As with relationships between people, things change over time. Someday you may decide that you want a new relationship or the company may decide the same thing – this is the real world. However, while you are in this relationship you will get out of it what you put into it. Spend your time wisely and you will be better for having done so.

### #5: Only Be Nice To The Important People

Man, this is so true. However, there is one problem – there is no way to determine just who the important people are. What this means is that you need to be nice to everyone. I have worked for two companies in which the CEO started out in a lab and worked his way up to the top. Needless to say, when he became CEO there were many people who were kicking themselves for not treating him with more respect before he became CEO. Guards, secretaries, cafeteria workers, contractors – everyone deserves your respect.

It's a New Year and now you have two more suggestions for how to finish your career all by yourself. If you decide to ignore these suggestions, then stay tuned to next month's Signal – I've got more!  
—JA



## IEEE-USA Funds TISP Regions 1, 4

The Teacher In-Service Program (TISP) features IEEE Section volunteers sharing their technical acumen through the development and demonstration of technologically oriented subject matter pre-university educators in a professional development. A \$50,000 grant from the IEEE-USA Fund, through the IEEE Foundation, will expand TISP to IEEE Regions 1 and 4 in 2006. For more info visit: <http://boldfish.ieee.org:80/u/1595/010606>

## Brain Teaser Challenge Column

—By Butch Shadwell

**January BTC** Last month, after my little pointless rant, I asked "...if I were to design a circuit that did a perfect mathematical square of a bipolar sine wave input signal, what would the output look like? Many years ago I built a very neat version of such a circuit. We'll discuss it in the next answer column."

For the sake of this discussion, I will site a specific case of a +/- 1 volt sine wave input signal. And  $(A \cdot \sin(\omega t))^2 = A^2(1 - \cos(2\omega t))/2$ . As you can see, after squaring the function, the frequency is doubled and the peak amplitude is squared. In this specific case we will say that  $A = 1$ .

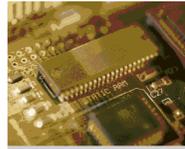
Some years ago I was working on a project where I needed to produce a sine wave output that was double the frequency of the input sine wave, and maintained the correct phase relationship with the original input. Of course I figured the best way was to simply square the input signal. I decided to take advantage of the fact that the voltage across a bipolar semiconductor junction is proportional to the log of the current input waveform. If one puts two junctions in series, the  $dv/dt$  is proportional to  $2 \cdot \log(A(i) \cdot \sin(\omega t))$ . When you apply this  $dv/dt$  to the base of a bipolar common emitter circuit, the  $di/dt$  in collector current is proportional to the antilog of that input voltage. Of course taking the antilog of a doubled log function is equivalent to squaring the original function, but I bet you already knew that. This is pretty easy to build and it really works cool. Maybe you can figure out how to use this technology to generate a voltage proportional to the true RMS of an input signal.

**February BTC** How often do you think about toast? You know, that thin sliced bread that has been charred a little on both sides. It seems that most people just take toast for granted, like it must have always been there. Recently I have taken it upon myself to research the origins, and extensive industrial applications, of this common breakfast victual.

It is an oft overlooked fact that many forms of toast can make a very useful, and biodegradable, building material. It is also a fact that many South American archeological digs have been unproductive due to the total digestion of Incan toastina dwellings. As many disappointed diners have found, there is the occasional petrified slice of toast, where it seems the normal food content has been replaced with limestone. Some have theorized that the Incas may even have had toast boats. If a piece of petrified toast that is perfectly rectangular, has no open pores, and measures  $\frac{1}{2}$ " x 4" x 4" and weighs 3 ounces, will it float in pure water at 4 degrees Celcius?

*Reply to Butch Shadwell at [b.shadwell@ieee.org](mailto: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 column.*



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## **Seminar: Economic Reliability of Power Markets: Concepts, Design & Assessment**

The University of South Florida College of Engineering presents the seminar, "Economic Reliability of Power Markets: Concepts, Design & Assessment" March 13<sup>th</sup> to March 16<sup>th</sup> on the USF Tampa campus. Registrations are being accepted through the APEX website, <http://apex.eng.usf.edu>.

This seminar analyzes the economic viability of power markets. Daily topics include power market concepts, system and economic reliability, understanding energy and transmission markets, bidding strategies for power markets, and bidding in the transmission market. The seminar will also hold computer simulations of power markets and will host a panel session with industry experts. Professional development hours (PDHs) will be awarded and may be used toward professional engineering licensure. The seminar will be archived online for remote attendance. For more information, please call the APEX offices at 813-974-3783 or visit us on the web at <http://apex.eng.usf.edu>

Contact: Jennifer Janda (813) 974-0951, [jjanda@eng.usf.edu](mailto:jjanda@eng.usf.edu)

**February 2006 Calendar of Events (For more information see P. 1 *Inside this Signal...*)**

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
29	30	31	1	2	3	4
5	6	7 <i>5:30PM: IEEE FWCS ExCom Meet'g, TECO Hall, Tampa</i>	8	9	10	11
12	13	14	15	16	17 <i>Celebrate Engineering Banquet,</i>	18
						Engineering EXPO
19	20	21	22 <i>Noon Lunch Seminole Electric TECO Plaza</i>	23	24	25
National Engineers Week						
26	27	28	1	2	3	4
						<i>IEEE-USA Annual Meeting Hyatt Regency St. Louis, MO 3-5 March 2006</i>

Institute of Electrical and  
Electronics Engineers, Inc.  
Florida West Coast Section  
3133 W. Paris  
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*IEEE/IAS Annual Meeting Oct. 2006 Tampa!*

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