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# THE

# SUNCOAST

# SIGNAL

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# IEEE



## IEEE C37.96-2000 IEEE Guide for AC Motor Protection

**Speakers:** Albert N. Darlington, P.E.,  
Consultant, DEDA Industries &  
Adjunct Professor – Electric Systems  
& Power System Protection,  
University of South Florida;

Thomas Blair, P.E. Consulting  
Engineer, Tampa Electric Company

**Date:** Friday, January 26, 2007

**Time:** Registration & Breakfast:  
8:00AM – 8:45AM Seminar -  
9:00AM – 3:00PM

**Location:** Seminole Electric, 16313 N. Dale  
Mabry Hwy, Tampa, FL 33618

**Credit:** 4 PDH are 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:** \$125 Members, \$200 Non-Members, \$50 Students Includes Breakfast, Lunch, &  
seminar text, "IEEE C37.96 – 2000 IEEE Guide for AC Motor Protection" (a \$40  
value)

**RSVP:** Online at: <http://time2meet.com/fwcs-meetings/> 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)

**Your local IEEE PES/IAS Chapter is offering this 4 hour seminar on IEEE C37.96-  
2000, IEEE Guide for AC Motor Protection by Albert N. Darlington, P.E.**

See AC Motors on p. 4.

# Happy New Year!

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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. Address all correspondence to:

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## *Sean Denny and the Young*

Thank you Sean for doing an outstanding job to bring technology to the public schools of our area. Recently, he involved Donald Hornak, Ralph Painter, and Randy Boiling in activities such as the Great American Teach In during November. He also trumpets the ongoing Teacher In-Service Program.

There is concern by some for lost engineering jobs due to the immigration to the U.S. of skilled engineers from other countries. The data shows that a key reason for this situation is the inadequate supply of trained engineers who are U.S. citizens.

Our young people are our future and we must encourage more of them to enter the technology fields. Sean's efforts are very important to this objective.

—PS, Editor





**Richard E. Beatie, P.E.**  
**Director Of Engineering**  
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## *Life Member Co-Chairs Needed*

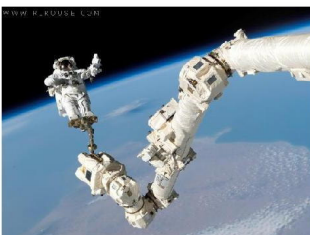
In order to serve the Florida west coast section life members in our 12 counties more efficiently, co-chairs are needed for the following areas: Pinellas county, Hillsborough county, ft. Myers and Naples. It would not only help the Florida west coast section, but would enhance Life Members greatly. Interested? Please contact Jules Joslow. at [joslow@ieee.org](mailto:joslow@ieee.org) or David McLaren, Region 3 Life Member Coordinator, [d.mclaren@ieee.org](mailto:d.mclaren@ieee.org)



# Celebrate Engineering Banquet

## Friday — February 16th, 2007

With the Evening's Guest Speaker: Thomas Pentrack



Forget walking on the moon -- how about living on Mars? NASA is planning to go back to the moon by 2018 and then trying for Mars after that. A key part of this new chapter in space exploration will be the International Space Station (ISS). The ISS is a manned research space facility that is being assembled in orbit around the Earth and which has finally given mankind a permanent human presence in space. The ISS is still under construction with a projected completion date of 2010.

Thomas Pentrack is NASA's deputy director for Operations and Exploration in the ISS/Payload Processing Directorate. His presentation will be focused on the ISS and NASA's Vision for Space Exploration.

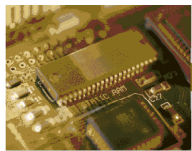
The 7th annual Celebrate Engineering Banquet brings together local leaders and Engineering Professionals to recognize the outstanding achievements of Engineers, Engineering Students, and Science & Math Teachers in our community.

- 
- Who:** Engineers of Tampa / St. Petersburg, Family and Friends  
**Where:** Wyndham Westshore Hotel, Downtown Tampa  
**Time:** Cocktail Reception (Cash Bar) 5:30pm - 7:00pm  
Dinner, Speaker, Awards 7:00pm  
**Cost:** \$30 per person  
**RSVP:** Register online at [www.time2meet.com/celebrate](http://www.time2meet.com/celebrate)  
or call Jim Anderson at 813-417-8854
- 

This Engineer's Week Banquet is a joint event with the following professional organizations:







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## ***So What Will Make 2007 Your Best Year Ever?***

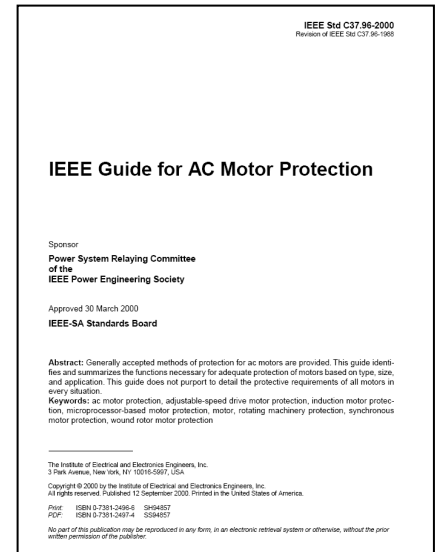
Welcome to a brand new year. Just like fresh snow the year stretches out in front of us untouched and ready for us to go running through it. Quick question: how are you planning on making 2007 your best year ever? As your new IEEE FWCS Chairman, I'm planning on making 2007 the best year ever for the FWCS. Here's what I want to get accomplished this year: (1) Have net gain of 10 to 20 members. (2) Convert 25 to 31 student members to regular members. (3) Elevate 22 FWCS members to Senior Member status. (4) Increase attendance at EXCOM meetings. This would include at least 75% of chapter chairs and meeting attendance of 20.

Our last few monthly EXCOM meetings have been popping and so I'm confident that we're going to meet that goal. The other three are going to require some help from you! It's a new year: one way to make this year your best ever is to get involved in your IEEE FWCS. Step one is to attend this month's EXCOM meeting. It's on Tuesday, January 9<sup>th</sup>. I'll be there and I hope to see you there also as we work together to make 2007 an unforgettable year! —JA, Chair, FWCS

## **AC Motors cont.**

This IEEE Standards product is part of the C37 family on Switchgear, Substations and Protective Relays. Guidance in applying relay protection to squirrel-cage and wound-rotor induction motors and synchronous motors is provided. The generally accepted forms of motor protection will be reviewed, and the use of relays and devices, singly and in combination, will be summarized so that the user can select the necessary equipment to obtain adequate motor protection. This seminar and IEEE guide will be concerned primarily with the protection of three-phase integral horsepower motors and variable-speed motors where specifically indicated. The recommendations are of a general nature, designed to cover the usual or typical motor installations. A copy of IEEE C37.96 will be included in the price of the seminar.

### ***Seminar Text***



***A \$40 Value***

Mr. Darlington is a member of the AC motor protection working group that developed 2000 revision to IEEE C37.96. He has worked in the utility industry over his career and has taught relaying classes at the University of South Florida.

Tom Blair was a balloting member for IEEE C37.96-2000.



## ***IEEE Financial Committee Meeting***



On January 26-27, 2007, Tampa will be the location for the first IEEE Financial Committee meeting of 2007. The Treasurers of the various Boards of the IEEE will meet to discuss the finances of this \$270 million per year organization. David Green (at left), the IEEE Region 3 Secretary was recently elected to the position of IEEE Treasurer for the Institute and will be leading this group through their work this coming year. Dave has a tremendous amount of experience as he held positions as Regional Activities Treasurer, and IEEE-USA Treasurer. —JH



## ***2007 Power Engineering Society General Meeting***

June 24-28, 2007 Marriott Hotel and Tampa Convention Center

The Local Organizing Committee (LOC) for this meeting is working hard to make sure this is another outstanding Conference hosted by the Section and its Chapters. The Committee is seeking volunteers to assist with this meeting, please contact one of the following Committee members if you would like to help with this conference.

Chair – Jim Howard ([j.howard@ieee.org](mailto:j.howard@ieee.org))

Technical Committee Liaison – Tom Blair ([thblair@tecoenergy.com](mailto:thblair@tecoenergy.com))

Vice-Chair – Jim Beall ([j.beall@ieee.org](mailto:j.beall@ieee.org))

Technical Tours – Randy Dotson

Secretary – Donna Howard ([dhoward@frcc.com](mailto:dhoward@frcc.com))

([randy.dotson@lakelandelectric.com](mailto:randy.dotson@lakelandelectric.com))

Treasurer– Ralph Painter ([rdpainter@tecoenergy.com](mailto:rdpainter@tecoenergy.com))

Companions Program – Donna Howard ([dhoward@frcc.com](mailto:dhoward@frcc.com))

For more information on this outstanding conference, please visit our web site at: <http://ewh.ieee.org/r3/floridawc/pesias/>



### ***Students Senior Banquet A Great Success***

On Friday, December 8<sup>th</sup>, 2006, the USF IEEE Student Branch held its Fall Senior Banquet. This years guest speaker was Dr. Dave Snider and he did his usual great job of presenting all of the attendees with food for thought. This year's event was held at the Alumni Center in Tradition Hall and was a very well attended, 120+ guests and students, event.

A special thank you to Irene Wiley and Chris Ferekides for all the hard work they put into this year's banquet and to the Student Officers and other volunteers who worked on this special occasion. Be sure to plan to attend the Spring Semester Senior Banquet as well as the Spring Picnic.



### ***TAW—Did you Miss It?***

Your PE/IA Chapter held another one of its great seminars on Thursday, December 7<sup>th</sup> at Tampa Armature Works. This seminar offered 4 PDH credits and covered Motor Theory and Softstart Technology. A special thank you to TAW, Michael Prater and Bill Jones, Jr. for their presentations and for sharing their knowledge with the entire group. In addition to the seminar, TAW offered the attendees a tour of their facility, which we all enjoyed.

Plan now to attend the January Seminar at Seminole Electric on IEEE C37.96-2000 – IEEE Guide for AC Motor Protection on Friday, January 26, 2007. —JH



### ***IEEE Power Engineering Society Governing Board Meeting***

On January 18-19, 2007 Tampa will be the location of the first IEEE Power Engineering Society Governing Board (PES BOG) meeting of 2007. The member of the Board will be meeting at the host hotel for the 2007 PES General Meeting – the Marriott Waterside Hotel and will be discussing the plans for 2007 and beyond for the PES. —JH



### ***New FWCS Officers for 2007***

At the last meeting of 2006 the IEEE members elected new officers for 2007.

These officers are:

Jim Anderson – Chair

Tom Blair – Vice-Chair

Jules Joslow – Secretary

Ralph Painter – Treasurer

The Chairs of the various committees, along with the Chapter Chairs, make up the remainder of the FWCS Executive Committee, and will be confirmed at the January meeting of the FWCS Executive Committee on Tuesday, January 9<sup>th</sup>, 2007. If you are interested in helping continue to make the FWCS one of the most active Sections in the Institute, please consider joining us at this meetings and volunteering your services. —JH

## New IEEE Fellows from the FWCS

The FWCS is proud to announce that the following individuals have been conferred as IEEE Fellows by the Board of Directors.

This is a great honor and these individuals should be congratulated for their outstanding accomplishments. As a point of information, the total number of Fellows selected in any one year can not exceed one-tenth of one percent of the total voting Institute membership of IEEE, truly one in a thousand.

We are privileged to have 51 Fellows in the FWCS including these two new Fellows.

### Roland Watkins

Cable Solutions, Oldsmar, Florida

Citation:

for leadership in development of category system for globally classifying performance of data cable



### Dmitry Goldgof

University of South Florida, Dept. of Computer Science and Eng., ENB118, Tampa, FL

Citation:

for contributions to computer vision and biomedical applications



### Information about the IEEE Grade of Fellow:

As it stands today, the IEEE Grade of Fellow is conferred by the Board of Directors upon a person with an extraordinary record of accomplishments in any of the IEEE fields of interest. A brief citation is issued to new Fellows describing their accomplishments and the total number selected in any one year does not exceed one-tenth percent of the total voting Institute membership.

*In accordance with the IEEE Bylaws, the following requirements must be met:*

**Nominator** Any person, including non-members, are eligible to serve as a nominator with the following exceptions: members of the IEEE Board of Directors, members of the IEEE Fellow Committee, IEEE Technical Society/Council Fellow Evaluating Committee Chairs, members of IEEE Technical Society/Council Evaluating Committee reviewing the nomination, or IEEE Staff. **Self-nomination is not permitted.**

**Candidate** The person must be an IEEE Senior Member at the time the nomination is submitted; his/her IEEE Membership dues must be current, and he/she must have completed five years of IEEE Membership. **Note: IEEE affiliate membership, does not apply.** The candidate cannot be a member of the IEEE Board of Directors, the IEEE Fellow Committee, IEEE Technical Society/Council Fellow Evaluating Committee Chair, or a member of IEEE Technical Society/Council Evaluating Committees reviewing the nomination.

## CAREER OPPORTUNITY

**Beckwith Electric Co., Inc., located in Largo, Florida, is a premiere global manufacturer of relays and controls, technical services and solutions for the electric power industry. We are seeking qualified candidates for the following position.**

### POWER SYSTEMS APPLICATION ENGINEER

Beckwith Electric Co., Inc. is seeking a highly qualified individual as a Power Systems Application Engineer with the following requirements and responsibilities:

- BSEE with a focus in power systems engineering and a minimum of 10 years experience in the application of protection and control systems for power generation, transmission and distribution
- Assist in the design of protection and control systems
- Install, commission and service protection and control systems
- Conduct product application presentations, training courses and demonstrations of protection and control equipment
- Prepare technical and commercial international bid proposals
- Knowledge of international electrical standards, such as UL, IEC, ANSI, IEEE and CE
- Latin American travel two weeks a month.
- Speak, write and read English and Spanish fluently

Please include salary requirements with resume.

*Our Compensation Package includes a Competitive Salary, Paid Vacation and Holidays, Profit Sharing & 401(k) Plan, Health & Dental Insurance, Life, Short & Long Term Disability Insurance, and Educational Assistance.*

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### Region 3

## WIE – A Well-Kept Secret

Women in Engineering is an affinity group that was formed to encourage women engineers in their careers and professional development. There are over 10,000 members and more than 100 WIE Affinity Groups and Student Affinity Groups reports George McClure (right). Affinity groups are affiliated with a section and student groups with a student branch.



The Women in Engineering Affinity Group:

- **RECOGNIZES** women's outstanding achievements in electrical and electronics engineering through [IEEE Awards](#) nominations.
- **ORGANIZES** receptions at major technical conferences to enhance networking and to promote membership in WIE.
- **ADVOCATES** women in leadership roles in IEEE governance and career advancement for women in the profession.
- **PROVIDES** assistance with the formation of new [WIE Affinity Groups](#) and supports ongoing activities.
- **PROMOTES** IEEE Member Grade advancement for women to the grades of Senior Member and Fellow.
- **FACILITATES** the development of programs and activities that promote the entry into and retention of women in engineering programs.
- **ADMINISTERS** the IEEE Student-Teacher and Research Engineer/Scientist ([STAR](#)) [Program](#) to mentor young women in junior and high schools

The Florida West Coast section already has GOLD and Life Member affinity groups and includes numerous women IEEE members who could form a WIE Affinity Group.

Members have access to a WIE membership directory which aids networking. It includes separate lists for WIE members only, for WIE members and IEEE women members, WIE and IEEE women members by geographic location, and WIE and IEEE women members by technical society affiliation. For higher grade WIE members, address, phone and email information is provided.

Only six signatures are required to form an affinity group. The Northwest Florida Section formed a WIE affinity group earlier this year. The Florida West Coast section could provide this service for its women members by also forming a WIE group. For student members and life members, membership is offered at no cost.

—George McClure, Region 3 Director

## CAREER OPPORTUNITY

**Beckwith Electric Co., Inc., located in Largo, Florida, is a premiere global manufacturer of relays and controls, technical services and solutions for the electric power industry. We are seeking qualified candidates for the following position.**

### **QUALITY ASSURANCE** **DEPARTMENT MANAGER**

Beckwith Electric Co., Inc. is seeking a highly qualified individual as a Quality Assurance Department Manager with the following requirements and responsibilities:

Experienced in methods of manufacturing, certification and testing of high quality, high-tech, digital and analog electronic equipment with embedded firmware and software for the electric power industry; system protection and control devices is preferred

Must be able to champion proactive quality practices to promote continuous quality improvement opportunities and substantiate results to include SPC, sampling plans, component variance analysis, capability studies, correlation studies and design of experiments to verify process quality and improvements.

Understands compliance with ISO9001, ANSI, IEC, CE, CSA & UL regulations and requirements

BS/BA in a relevant field or equivalent, 10-15 years experience in Quality and high tech electronic manufacturing processes. CQE or CQO certification a plus.

Please include salary requirements with resume.

*Our Compensation Package includes a Competitive Salary, Paid Vacation and Holidays, Profit Sharing & 401(k) Plan, Health & Dental Insurance, Life, Short & Long Term Disability Insurance, and Educational Assistance.*

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## **IEEE-USA PROGRAM TO ENHANCE IMAGE OF ENGINEERS, ENGINEERING**

WASHINGTON (29 November 2006) -- As part of its ongoing effort to enhance the image of engineers in the United States, IEEE-USA volunteer leaders have endorsed a 2007 IEEE-USA public-awareness program that reaches out to youngsters, adults and the public at large. At its meeting on 17 November in New Orleans, the IEEE-USA Board of Directors approved \$65,000 in unbudgeted expenditures, plus \$63,000 in already budgeted expenses for the 2007 IEEE-USA public-awareness program.

The public-awareness program includes six components:

-- Adding IEEE technologies to TV engineering news spots developed through the American Institute of Physics (AIP) "Discoveries & Breakthroughs" syndication service

-- Helping print and broadcast journalists communicate authoritatively to the public about engineering and science through the selection of two IEEE-USA Engineering Mass Media Fellows as part of the AAAS program; and recognizing journalists for furthering the public understanding of the engineering profession

-- Launching an engineering film festival with the American Film Institute, or similar body, and U.S. IEEE sections to help highlight engineering as it is presented in popular media

-- Backing engineering reconstruction efforts in and outside of the United States by recognizing accomplishments of students in the non-profit humanitarian organization, Engineers Without Borders-USA

-- Introducing youngsters to basic engineering concepts and communicating engineers' support for local community activities through National Engineers Week 2007 Discover Engineering Family Day in Washington, D.C.

-- Informing younger students, 9-to-13-years-old, about careers in engineering through a brochure distributed to a cross-section of children's museums nationwide

For more information, go to <http://www.aip.org/dbis/>.

IEEE-USA is an organizational unit of the Institute of Electrical and Electronics Engineers, Inc. created in 1973 to support the career and public policy interests of IEEE's U.S. members. IEEE-USA's mission as outlined in the IEEE Bylaws is to recommend policies and implement programs specifically intended to serve and benefit the members, the profession, and the public in the United States in appropriate professional areas of economic, ethical, legislative, social and technology policy concern. The vision is to serve the IEEE United States member by being the technical professional's best resource for achieving life long career vitality and by providing an effective voice on policies that promote U.S. prosperity.

## **CAREER OPPORTUNITY**

Beckwith Electric Co., Inc., located in Largo, Florida, is a premiere global manufacturer of relays and controls, technical services and solutions for the electric power industry. We are seeking qualified candidates for the following position.

### **SR. ELECTRONIC MANUFACTURING ENGINEER**

Beckwith Electric Co., Inc. is seeking a highly qualified individual as a Sr. Electronic Manufacturing Engineer with the following requirements and responsibilities:

- Must be able to program, operate & troubleshoot state-of-the-art electronic manufacturing equipment such as, solder paste applicators, pick and place assembly machines, reflow ovens, wave solder machines and conformal coating robots
- Familiar with all phases of both through-hole & surface mount (SMT) manufacturing processes for micro-processor-based controls
- Working knowledge of IPC, RoHS and ISO 9000 standards
- Understanding of both ERP systems and "lean manufacturing" concepts, with the ability to appropriately utilize each to enhance operational efficiencies
- Must be able to work cooperatively with Design Engineering & QA, to introduce and guide manufacturing of electronic products meeting highest quality standards
- Process leadership must be evident in the areas of design-for-manufacturability, electronic component storage & manual and automated assembly, test, inspection & SPC
- BSEE, BET, or BSIE and a minimum of 10 years experience in an electronic manufacturing environment
- Strong communication skills with all levels of employees
- Reports to Director of Manufacturing

Please include salary requirements with resume.

*Our Compensation Package includes a Competitive Salary, Paid Vacation and Holidays, Profit Sharing & 401(k) Plan, Health & Dental Insurance, Life, Short & Long Term Disability Insurance, and Educational Assistance.*

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## Brain Teaser Challenge Column

—By Butch Shadwell

**December BTC** If you ever find yourself buried alive, you might want to calculate something like the following: "...your lung capacity is 1 liter, and with every breath you remove 20% of the oxygen in that air. Your body occupies a volume of 30 liters. Then you get trapped in an airtight box that is 70 cm by 220 cm by 50 cm inside. How many breaths will it take you to consume 50% of the available oxygen in the box, just before you pass out? Assume that when you breathe out the gas in the box is immediately homogenous again before you breathe in, so the air starts 100% oxygenated and then it is reduced with each breath. Also we will ignore the biological effects of the rising CO2 levels."

I suspect this one was a little harder than most. I have only received one answer as I write this, and he got it right. The first step is to calculate how much air is in the box. From above it is clear that the box is 770 l. When we subtract 30 l for the volume of the person, we get 740 l. So then, since this person's lung capacity is 1 l, with each breath he reduces the current oxygen content of the box by a factor of  $(1 - (2/740))$  or .99973. So  $0.99973^n = 0.5$  (50%), where n is the number of breaths breathed to get to the 50% point requested. To solve for n we can use a log conversion,  $x^A = y$ , or  $A * \ln x = \ln y$ . This leads to  $A = \ln y / \ln x$ , where  $y = 0.5$ ,  $x = 0.999729$ , and A is the unknown n in the original equation. Making the substitution we get 2564.29 breaths to oblivion. At 15 breaths per minute, life seems very short. But I bet you already knew that.

**January BTC** Chuck Yeager is an aviation icon. The first man to exceed Mach 1 in level flight, his accomplishments as a test pilot and Air Force combat pilot and commander are unequalled. He was advanced post retirement to Major General. He recently got himself a new wife, and is still setting records.

His last official flight in a military jet was in October of 1997. He flew in the front seat of an F-15D Eagle. Some years ago I worked at Northrop doing R&D on an electronic counter-measures package for an earlier version of this aircraft. This system involved many advanced components and circuit techniques for that time. While developing new microwave technologies we would build prototype MICs (microwave integrated circuits) on an alumina substrate. There was a tuning technique used at lower frequencies, involving small adjustable capacitances created and adjusted by twisting two pieces of insulated

## IEEE GOLD 10th Celebration

IEEE GOLD was initiated in 1996. Ten years have passed and GOLD gained momentum by connecting recent graduates with their peers and section colleagues by focusing on professional topics, technical interests and social events. In 2006, the GOLD Committee has undertaken the project to celebrate the past ten years by providing information to its website, initiating a GOLD bulletin board for communication among GOLD members worldwide and developed an online challenge contest with questions on the IEEE.

During 20-29 October 2006, the GOLD Online Challenge will test IEEE knowledge and provide opportunities to win many great prizes, including MP3 players and USB flash wristbands. Visit the GOLD website. Find out about the history and achievements. Embrace the current IEEE GOLD programs world wide. Post your opinion on the GOLD bulletin board by meeting GOLD enthusiasts around the world. Visit the GOLD web today at <http://www.ieee.org/gold>. If you have any questions, please send to [gold@ieee.org](mailto:gold@ieee.org).



### Profile: Carlos Oscar Fernandez

The Lifelong Volunteer When it comes to volunteering, 91-year-old Carlos Oscar Fernandez doesn't plan on slowing down anytime soon. Although the life senior member already has a slew of IEEE accomplishments under his belt -- founder of the IEEE Argentina Section, president of the section eight times, former director of Region 9 (Latin America) -- he says he still has a lot of work to do. To learn more, visit <http://bmsmail3.ieee.org:80/u/4458/04215844>



### Don't forget Celebrate Engineering Banquet in February!



wire together. What were these adjustable capacitors called? There was a somewhat similar technique used on MICs too. Please describe it. No calculating this month, just dusting of old memories.

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**Jan. 2007 Calendar of Events (For more information see P. 1 *Inside this Signal...*)**

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
31	1	2	3	4	5	6
7	8	9 <i>5:30 pm</i> <i>IEEE FWCS</i> <i>ExCom</i> <i>TECO Tampa</i>	10	11	12	13
14	15		17	18	19	20
21	22	23	24	25	26 <i>8 am:</i> <i>Motor</i> <i>Projection</i> <i>Seminar</i> <i>Tampa p. 1</i>	27
28	29	30	31	1	2	3

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