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THE

SUNCOAST

SIGNAL

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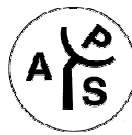
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FWCS MTT-S/APS/EDS MTT/AP/ED Chapter Meeting Chapter Social Hour

Tuesday, August 30, 2007, 5:30pm

Location: Four Green Fields in Downtown Tampa (205 W. Platt St)

Show your face and press some palms at the first Florida West Coast MTTs/APs/EDs Chapter Social Hour. Members and guests are invited. The Chapter will provide each attendee with two tickets good for a beverage of your choice. We always run out of time for socializing at the Chapter meetings, so this is an attempt to allow some time just for socializing. I hope to see you there! www.fourgreenfields.com.

For more on this and on the MTT/AP/ED chapter see page 3.



IEEE Women in Engineering

— www.ieee.org/women

See page 7 for information about WIE activities. Their next meeting is planned for the last week of August.



In October the PES/IAS will be holding a Seminar on IEEE 450 & 485 Standards on Sizing, Operation, Maintenance, and Replacement of Vented Lead Acid Batteries for Stationary Applications. See page 6 for more information.

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

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The Creative Engineer (Editor's Column)

I noticed that the IEEE is working with the Discovery Channel (see p. 8) to highlight the creative engineer. This raises the questions "Are engineers creative?" and, if so, "How are engineers creative?"

At USF we have decided to provide the opportunity for students to uncover their own creativity through a new course, Creativity in Technology. It is being offered for the first time this fall on the Tampa campus.

The premise is that most people have the ability to be creative but for many it has been blocked or lain fallow. This new course is intended to provide experiences where the student will learn how he or she is naturally creative. We are all different and particularly so in the ways our creativity manifests.

Dr. Paul McCright and I are co-teaching this course and we will provide a set of experiences that help us all learn about ourselves, our most fundamental aspects. Since we cannot tell anyone how they can be creative, we help the students figure this out for themselves.

Please contact me if you would like more information about this course. I may be reached at paulschn@ieee.org.
—PS



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The Institute—Notes

- Part-time Passions: a Speed Demon and a Teller of Tales IEEE members do more than just work all day. Many have intriguing passions, including driving race cars and writing adventure novels. Read about these two people at <http://bmsmail3.ieee.org:80/u/6530/00939637>
- A quartet of web site have been updated recently. Some useful enhancements have been added to IEEE Xplore, the IEEE Job Site, IEEE.tv, and myIEEE. For what's happened, visit <http://bmsmail3.ieee.org:80/u/6534/00939637>
Candidates are being sought for the 2009 Technical Field Awards. Nominations for the 30 awards are due 31 January 2008. For more information and a list of the awards, visit <http://bmsmail3.ieee.org:80/u/6540/00939637>



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News from the Chapters MTT / AP / ED

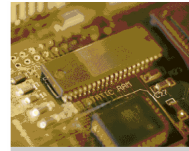
Welcome to summer in Florida. Sure, it's sunny and warm, but maybe a little too warm. With temperatures in the mid 90's and high humidity, it's tough to find the motivation to go check the mail! However, I hope you'll find the motivation to come out, show your face and press some palms at the first Florida West Coast MTTs/APs/EDs Chapter Social Hour. Members and guests are invited. It will be held on August 30th at 5:30p. The location will be at Four Green Fields in Downtown Tampa (205 W. Platt St.). The Chapter will provide each attendee with two tickets good for a beverage of your choice. We always run out of time for socializing at the Chapter meetings, so this is an attempt to allow some time just for socializing. I hope to see you there! For more on the location see www.fourgreenfields.com.

So far this year, the Chapter has held two Technical Meetings. The first speaker was Dr. Kawthar Zaki from the University of Maryland. She presented "Multiple Coupled Resonator Filters and Multiplexers". The meeting was well attended and the topic led to discussion that lasted for quite a while after the formal presentation was complete. Thanks to those of you who attended this meeting.

We also hosted Dr. Juin J. Liou from the University of Central Florida and EDs. He presented "Evolution and Recent Advances in RF/Microwave Transistors". This meeting was also well attended and the topic was very interesting. The Chapter showed Dr. Liou a warm welcome by engaging him with many questions and a discussion after the presentation was complete. Thanks to those of you who attended this meeting!

Also, mark your calendar for the Chapter's two upcoming Technical meetings remaining this year. On September 19th at 6p, we'll host Dr. Peter Siegel of CalTech and JPL. He will present "Terahertz Technology in Outer and Inner Space". Dr. Siegel is well renowned in the industry and has been involved in the analysis and development of millimeter-and submillimeter-wave sensors for over 30 years! This Technical Meeting will be held at TRAK Microwave (4726 Eisenhower Blvd, Tampa, FL).

On November 13th at 6p, Dr. Wolfgang Heinrich will visit the Chapter from the Ferdinand-Braun Institut (Berlin, Germany). He will present "Flip-Chip for Millimeter-Wave Packaging". Dr. Heinrich is also well renowned. His present research activities focus on MMIC design with emphasis on oscillators, GaAs and GaN power transistors, electromagnetic simulation and mm-wave packaging. This Technical Meeting will be held at TRAK Microwave (4726 Eisenhower Blvd, Tampa, FL).



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MTT / AP / ED TRAK Cont.

TRAK Microwave has graciously agreed to sponsor the refreshments at all four of our Technical Meetings this year. TRAK's support and generosity to the Chapter over the years is greatly appreciated. The Chapter would like to give a big Thank You to TRAK Microwave.

The Chapter invites these speakers to the area to make technical presentations that benefit the community of engineers in the geographical area of the Florida West Coast Section of IEEE. In order to continue bringing speakers of this caliber to the area, the Chapter needs your support. You can help support the Chapter by simply attending one or all of these meetings. The attendance numbers that we report to the IEEE show the strength of the support on the Engineering Community in this area. So, mark your calendars and I hope to see you at all three upcoming meetings!

P.S. If you are interested in volunteering to help with the duties of the section, please email me at kenoconnor@ieee.org.



2007 IEEE PES General Meeting

June 24 – 28, 2007

Marriott Waterside Hotel, Tampa, Florida USA



Meeting Wrap-up

As everyone knows by now the Power Engineering Society held its 2007 general meeting June 24-28, 2007 at the Tampa Convention Center and the Marriott Waterside Hotel in Tampa, Florida, USA. The conference, with its theme *Powering the Future, Today*, provided an international forum to address policy, infrastructure and workforce issues. We are pleased that over 1800 colleagues from around the world came to Tampa for this memorable industry meeting.

Here are some observations and photographs from this memorable meeting.

Sean Denny's report on June 25, 2007 activities:

At the Tampa Convention Center, the volunteers were everywhere: helping attendees with all manner of questions, directing the assembly of the general meeting in the ballroom, and in general, providing a welcome atmosphere for the world-wide turnout. At the general assembly candidates for the PES executive board were introduced with each giving their nomination address.

The plenary session had three speakers who gave their perspectives on "Keeping the U.S. Transmission Systems Reliable." Richard Sergel discussed the National Perspective, Peter Brandien discussed the Regional Perspective, and Linda Campbell discussed the State Perspective. After the speeches, the volunteers gathered question ballots and deliver them to moderator John McDonald who selected questions for the speakers to discuss.

At the Marriott Waterside Hotel, volunteers directed attendees to their workshop meetings as well as helping set up the ballroom for the afternoon's poster session. Boards were provided for engineers and students to hang their posters. Later, they would defend their papers or topic when the general public arrived. The session opened to all at 5PM. To make the session festive, food was set out including Cuban Sandwiches, Chicken Tenders, and more.

Sean and others provided the photographs here and on the next page.



Distinguished Speakers: Peter Brandien, Richard Sergel, Linda Campbell



The new PES Fellows



PES Executive Board Candidates Mani Venkata, Nelson Segoshi, Erich Gunther, Cheryl Warren, and Alan Rotz.

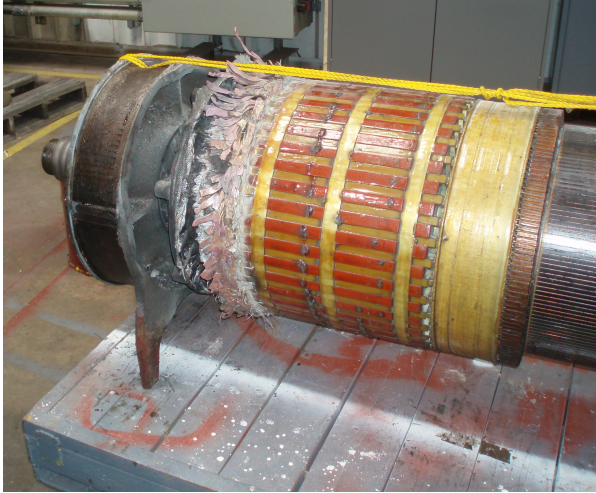


John Stankowich and Don Hornak

PES General Meeting

Student Tour of the Tampa Armature Works

Dr. Ralph Fehr arranged for student attendees to visit the Tampa Armature Works. Several members of their staff took small groups around. Below are some photographs from the trip.



Look what can happen when a motor is not properly treated.

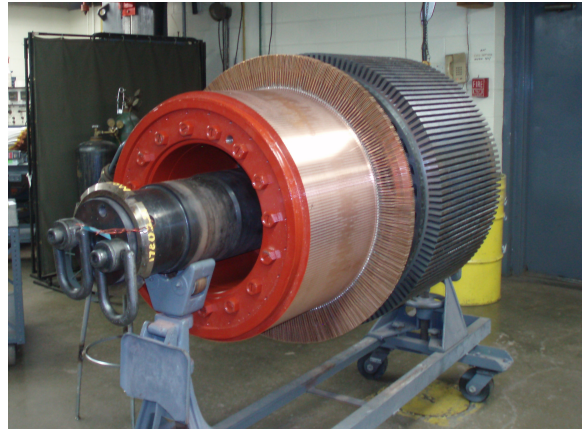


But they can be cleaned and totally reworked
—here in the last stages of repair.



A reconditioned stator that has been coated.

TAW Tour cont.



Here is a rotor nearly ready for assembly into its stator.



And here is one being inspected.

PES General Meeting —Thanks Volunteers

First my thanks to everyone for the tremendous job you all did at the conference. We received many compliments on our volunteers and their commitment to making the conference a great success. Each and every one of you played a part in making this a conference to remember for the attendees, and hopefully we will get them to return to the Tampa Bay Area in the not to distant future.

Jim Howard—IEEE PES General Meeting 2007 Chair



November Great American Teach-in

As reminder, Rudy Henning is preparing an objective Plan for the early years in Pinellas County Schools. He is looking for more IEEE members to expand the penetration to reach out to a broader spectrum of students on Math, Technology, Science and application of the basic principles of the topics. Please contact Sean Denny at Venner20@aol.com if you wish to participate.
—Don Hornak

Coming in October 2007



Seminar on IEEE 450 & 485 Standards on Sizing, Operation, Maintenance, and Replacement of Vented Lead Acid Batteries for Stationary Applications

OBJECTIVE

The objective of the Stationary Battery Seminar is to provide the participants with a basic knowledge of stationary batteries by exposing them to a vast array of battery installations of many types and sizes, in different applications. IEEE Standards will be the reference material for this seminar and used as the guide for stationary battery applications. This includes becoming familiar with the terminology used, as well as, the types of charging used and the design considerations for installation. It also provides the participant with information on how to install, maintain and test a stationary battery. For those participants that are more experienced with stationary batteries, the course provides an opportunity for gaining a greater depth of knowledge of stationary battery installation and maintenance. It also provides the experienced user an opportunity to learn about battery problems that he/she may have never encountered in the field.

Time: Registration & Breakfast: 8:00AM – 8:30AM
Seminar: 8:30AM – 3:30PM (Lunch Included)

Speaker: Marco W. Migliaro – IEEE Fellow, President and CEO of Industry Standards & Technology Organization, Piscataway, NJ.

Sponsor: Nolan Power Group
<http://www.nolanpower.com>

Location: Location to be announced next month

Cost: \$199 Members, \$299 Non-Members. Includes Breakfast, Lunch, & copies of:

- IEEE 450 – IEEE Recommended Practice for Maintenance, Testing, and Replacement of Vented Lead-Acid Batteries for Stationary Applications (an \$83 value),
- IEEE 485 – IEEE Recommended Practice for Sizing Lead-Acid Batteries for Stationary Applications (a \$106 value), associated training handouts, and battery sizing calculation software.

PDH Credits: 6 professional development hours (6PDH) will be awarded. Be sure to enter your name and PE number on the signup website as it appears on your license. IEEE is Florida exempt provider #00015.

RSVP: Online: <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

Your local IEEE FWCS Joint PES/IAS Chapter is offering this 6 hour seminar on Vented Lead Acid Battery Sizing, Installation, Maintenance, and Replacement for Stationary Applications and references IEEE Standards 450 and 485 as guides. Many thanks to Nolan Power for sponsoring this seminar.

Marco W. Migliaro – IEEE Fellow has more than 36 years of experience in the design of electrical auxiliary systems for power generating stations and industrial facilities. Additionally, he has been responsible for the installation, pre-operational testing, startup and maintenance of these systems and their components. He is an acknowledged industry expert in the areas of emergency power systems, dc systems, batteries and uninterruptible power supply systems.

Watch for more information in next month's Suncoast Signal.



*IEEE Women
in Engineering*



Members of the IEEE-FWCS Women in Engineering Affinity Group actively participate in 2007 IEEE International

University of South Florida graduate research assistants Bojana Zivanovic and Suzette Presas had the opportunity of engaging in two of the most prestigious professional conferences of the year, the IEEE International Microwave Symposium (IMS) and the IEEE Antennas and Propagation Society (AP-S) International Symposium. Both of these conferences took place in Honolulu, Hawaii during the first two weeks of June 2007.

IMS is the premier conference of the IEEE Microwave Theory and Techniques Society and was held during Microwave week, June 3-8. The AP-S International Symposium fosters the exchange of research in antennas, propagation, wireless topics, and electromagnetic engineering and took place June 10-15. Bojana and Suzette were very much involved in many activities during both conferences such as organizing and manning a USF University Research Exhibit booth at IMS, acting as student volunteers, obtaining valuable insight at technical sessions, and taking part in industry exhibits where the newest microwave and electromagnetic products were unveiled. The highlight of their attendance was when they shared experiences with other women in the field at the Women in Engineering receptions.

Bojana had the distinguished opportunity of taking part in the technical program of the AP-S Symposium. During her oral session "Microstrip Antenna Elements," she impressively unveiled her most current research findings by presenting the technical paper titled "The Effect of Alignment Tolerance on Multilayer Air Cavity Microstrip Patches." Both WIE members showed support for several

other USF student peers from the Wireless and Microwave Information Systems program that presented their technical papers on subjects like RF-MEMS and UWB technology.

Participating in the conferences provided an intensive learning experience in a period of two weeks. Through these symposiums, Bojana and Suzette shared their passion for research with other engineers that also make major contributions to the field and gained much insight into the future of Electrical Engineering.



Bojana Zivanovic and Suzette Presas manning the USF University Exhibit at IMS 2007.



*IEEE Women
in Engineering*

• www.ieee.org/women

WIE Affinity Group News

WIE keeps busy during summer months by planning events for the rest of the year:

- Distinguished Speaker Sessions
- Engineering projects aimed at elementary and middle school students
- Social Events

Our next meeting will be scheduled for the last week of August.

For more information please check the WIE link at <http://www.ewh.ieee.org/r3/floridawc/>



Howard Receives Award

Jim Howard receives award from John McDonald, President of the Power Engineering Society for his work on the 2007 PES General Meeting. The plaque was inscribed with "In Sincere Appreciation for Services as 2007 Tampa General Meeting Chair".


Jim was surprised with the above award at the PES Governing Board dinner held during the IEEE Power Engineering Society General Meeting here in Tampa. This meeting was held from June 24th-28th, 2007 at the Tampa Convention Center, Marriott Waterside Hotel and the Embassy Convention Hotel. A total of 1,787 attendees, 104 companions and many others attended the conference with it multitude of papers presented, panel sessions, short course, tutorials, technical tours and companions activities. Over 75 local volunteers worked to make this one of the best conferences ever for the PES.



Engineering on the Discovery Channel

There is a new engineering-based TV show that is being produced for the Discovery Channel. The idea is to feature new inventions and innovative ways to improve safety in our everyday lives. Engineers will be selected to demonstrate their invention and will be asked to serve as consultants for that particular show.

Anyone interested can contact Chris McManes Discovery Channel; IEEE-USA, Senior Public Relations Coordinator Phone: + 1 202 530-8356; E-Mail: c.mcmanes@ieee.org.



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IEEE and Eta Kappa Nu

The IEEE is pleased to announce that IEEE and Eta Kappa Nu (HKN), the electrical and computer engineering honor society, have signed a memorandum of understanding (MOU) to enhance cooperation between the organizations and to encourage joint activities in such areas as awards and student activities. The MOU will strengthen the already existing ties between IEEE and HKN (including HKN student chapters and IEEE student branches), promote joint endeavors, improve services to members of both organizations and serve to increase the reputation of the profession.

If you are an IEEE member who was inducted into HKN in the past, this is an excellent opportunity to renew your ties to HKN by updating your contact information using this link: <http://www.hkn.org/updateinfo/index.asp>.

IEEE and HKN look forward to working together in the service of their memberships and the profession. For the complete text of the MOU please contact education-services@ieee.org.



Students Hack the Ultimate Green SUV

For the final year of the U.S. Department of Energy Challenge X competition, university students tackled the job of finishing highly modified SUVs that use precious little fuel and emit scant pollutants. Our automotive correspondent, John Voelcker, takes us inside the action as the young engineers attempt to perfect a ride fit for the environmentally conscious penny-pincher. See IEEE Spectrum Tech Alert, 2 July 2007, The Ultimate Green SUV. If you cannot locate this, email IEEE Spectrum Tech Alert [techalert@ieee.org]

Brain Teaser Challenge Column

—By Butch Shadwell

July BTC Last month I reviewed one of my design problems that involved data storage after power had been cut. We said that the “controller circuitry will continue to operate on the energy stored in the power supply filter capacitors. The system is powered from a 12 vdc supply. I have 100 uF on the input to the voltage regulator and I have 100 uF on the output of the voltage regulator. The microcontroller circuitry normally runs on 5 vdc. If this circuitry pulls a total of 20 mA, and the controller and EEPROM memory stop working at 2.5 vdc, how much time do we have to complete the data transfer to EEPROM? For this problem we will assume that the regulator uses zero current for itself, and has a drop out voltage of zero. This means that the regulator will continue to pass current to the load without resistance, as the input drops below 5 vdc. Also assume that the load current does not change, all the way down to the point where it stops functioning.”

This is actually a common problem in embedded system design. Perhaps the simplest approach is to look at the total charge in the capacitors at the point power is removed, and then at the point in time when the caps are below the required 2.5 vdc. The problem made it clear that the only path for the discharge current was through the load at $20\text{E-}3$ coulombs per second. At $t=0$ the input cap has $(q = C \times V)$ $q_{1a} = 1.2\text{E-}3$ coulombs, and the other cap has $q_{2a} = 5\text{E-}4$. When the voltage reaches the low end $q_{1b} = 2.5\text{E-}4$ and $q_{2b} = 2.5\text{E-}4$. So the total change in charge is $1.2\text{E-}3$ coulombs. When you divide by the rate of current drain to the load you get 60 mS. But I bet you already knew that.

August BTC I do a lot of guest lecturing at universities around Florida. I enjoy talking with and teaching young folks, but I am afraid I would make a terrible academician. One of the things the students enjoy about my talks is that I can relate having applied these technical classes they are enduring to the development of actual products and commercial devices. One element still badly lacking in our educational system is teaching young EEs how to actually take an idea through to a practical, working system.

Sometimes at the conclusion of one of these talks, students get a little excited at the prospect of actually designing something that they or their friends would find useful. The next question I get is “What should I make?” Challenging the imagination is another area of education that could stand some work. At any rate, someone had an idea that required the transmission of a varying analog signal between two circuits at much different ground potentials. The obvious solution was to use an opto-isolator IC. I happened to have an extra Fairchild MCT9001 and some op-amps. Can you draw a circuit configuration that will offer (approximately)

Pinellas, Pasco, and Hillsborough In-Service Days:

- Professional Day in Pinellas County on August 17th at Largo High School.
- Pasco County is arranging a Math Professional Day August 10. There will be a probability/geometry presentation. Don Hornak and Sean Denny will present at this program. Teachers are invited to participate.
- Pasco County also announced the Secondary Pasco Science Fair on February 2 and the Young Engineers Fair on April 26th, 2008 in Wesley Chapel. IEEE members and other Engineers are also invited and requested to help coach these event. Coaches are needed for August 10th in Pasco and August 17th in Pinellas.
- Hillsborough County date has not been set.

Anyone interested in participating or judging any of these events contact Sean Denny, venner20@aol.com.



Life Member Activities

There will be a meeting of Life Members and other interested parties in Mid September. The topic will be: IEEE Voting Technology Standards Activity. Look for details in the September Signal. Location: to be defined in mid-Pinellas County

If anyone has experience or knowledge relating to Voting Machines, Touch Screens, Document Scanners, Election Systems or Standards Development, please come prepared to share your insight and contact Jack Killingsworth, j.killingsworth@ieee.org . . .



BTC cont.

the same delta V on both sides of the optical barrier? I say approximately, but if you do it right, you can probably get linearity and accuracy of the delta V better than 1%. No digital ICs are available and you can have whatever passive components you think you need. How simple can you make this design? Think about it.

For the BTC: 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.

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

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
29	30	31	1	2	2	4
5	6	7 <i>5:30 pm</i> <i>IEEE FWCS</i> <i>ExCom</i> <i>TECO Tampa</i>	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28 <i>TBA WIE</i> <i>meeting some</i> <i>time this week</i> <i>USF Tampa</i> <i>See pp. 1 & 7</i>	29	30 <i>5:30 pm</i> <i>MTT/AP/ED</i> <i>Social Hour</i> <i>Tampa p. 1</i>	31	1

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