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THE SUNCOAST SIGNAL

THE INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS, INC.

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Inside this Signal…

Joint Seminar
IEEE PES/IAS & IAEI

Grounding & National Electrical Code Seminar

5th August 2005

Clearwater, FL

See Page 4

Tour of GE Instrument Transformer Plant

Clearwater, Florida

Date: Thursday, July 21, 2005
Time: 6:00 PM
Location: 1907 Calumnet St.
Clearwater, FL 33765
Cost: None
RSVP: Online at: http://weiquality.com/fwcs-pes1/index.html

Questions: Jim Howard at 863-834-6506 or Jim.Howard@Lakelandelectric.com

Come join your PE/IA Chapter for an Educational Tour of the GE Instrument Transformer Plant in Clearwater, Florida. In this fascinating facility, GE manufactures everything from 200 amp metering CTs for your meter shop, to 25,000 amp bushing transformers for your generators and switchyard equipment. You will also see 600V through 38KV CTs and PTs for your enclosed gear, test switches, and even rotary selector switches. Transformer design engineers eager to address your technical questions will host the tour.

The plant has 413 employees in Clearwater and offers over 300 standard models and some 2000 special, producing approximately 1 million transformers each year. Come join us for another of our outstanding tours.

See page 5 for map and directions.

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.

All material for THE SUNCOAST SIGNAL is due in electronic form by **7th day** of the month preceding the issue month.
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E-MAIL: paulschn@ieee.org

Signal Editor's Column—*Paul Schnitzler*

Hi. It is with pleasure that I take over the green eyeshades and leaky pen. I will use this space on an occasional basis. And this month I will simply say hello to you, the readers, and thank you to our retiring Editor.

While I do not know Srinivas Katkoori well, I have enjoyed the results of his work—the past issues of The Suncoast Signal. The Signal has been well-organized and attractive and has been delivered on time. Thank you, Srinivas.

I look forward to serving our Section as your Editor.

My website is http://www.paulschnitzler.com and I may be reached at paulschn@ieee.org.

Upcoming PES/IAS Meetings/Seminars

Look for upcoming Signals for more Information related to the following meetings and Seminars:

Series of Power Transmission Planning meetings and seminars. This program will start during the last quarter 2005 and continued until the first quarter of 2006.

National Electric Code and Power System Grounding Seminar August 6, 2006

Tour of Hillsborough County Garbage Burner Plant for month of September 2005.

Tour of GE Transformer plant in Bradenton for month of October 2005

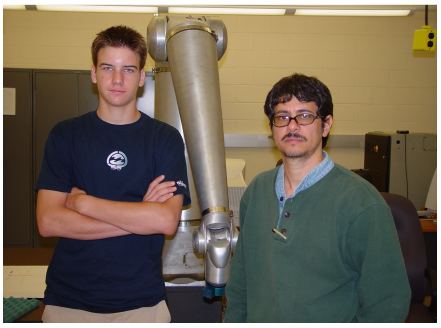
Update on the Gulf Stream Gas Pipelines, Luncheon meeting at TECO Hall November 2005.

Your PES/IAS Chapter is continuously looking for suggestions for events and meetings that would be beneficial to our local members. If you have any suggestions or if your company would like to sponsor a meeting or tour, please contact Ghaff Khazami at gkhazami@megaway.com or Tom Blair at tom_blair@ieee.org

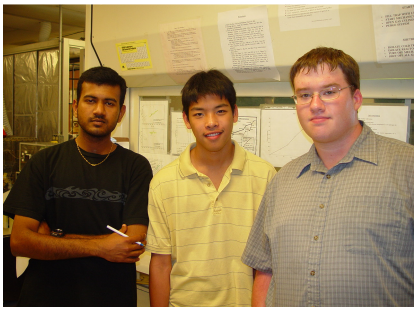
IEEE-FWCS USF Student Branch

Research Experience for High School Students Part Deux

By Carlomagno B. Dionson



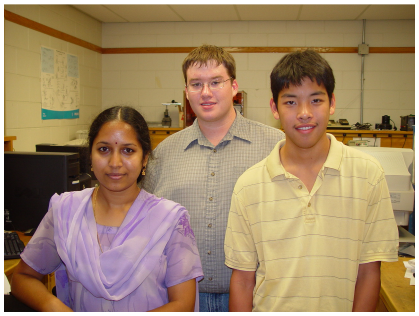
Matt Visokay and Eduardo Veras in the Mechanical Engineering robotics lab.



Yeshwant Venkatraman and students in the Solar Cells lab.

With initial support from the FWCS, the dream of merging IEEE's science fair involvement and USF's Research Experience for Undergraduates (REU) was realized in the summer of 2004 through the Research Experience for High School Students (REHS) program. For 2005, the second installment of this highly successful program received an additional blessing: The dean of USF's College of Engineering (CoE), Dr. Louis Martin-Vega provided NSF funds and a wider recruitment spectrum of both HS students and professors to participate in the program.

This year seven talented students from various local high schools got accepted. The current list includes some students who were featured in the nationally televised Extreme Makeover Home Edition show on ABC. Additionally, this year welcomed the first time participation of other engineering disciplines namely the mechanical engineering department. Hopefully, in its third installment, more departments will join in.



Sridevi Vakkalanka with Brent Savage and Mark Nuguid in Dr. Ferekides Solar Cells lab.

My thanks to the following for their involvement in the program: Dr. Sanjukta Bhanja, Dr. Rajiv Dubey, Dr. Chris Ferekides, Eva Fernandez, Dr. Louis Martin-Vega, Dr. Ravi Sankar, Dr. Rudy Schlaf, and the FWCS. The following research students also deserve a big thank you: Redwan Alqasemi, Anthony Cascio, Tanmoy Islam, Joshua Schumacher, Sridevi Vakkalanka, Yeshwant Venkatraman, and Eduardo Veras.

Massive Data Loss: It Happened To Me

Jim Anderson, FWCS Web Master

There are several things in life that we know that we need to do: complete your taxes before April 15th, visit the dentist twice a year, and be sure to backup your hard drive regularly. Needless to say, we don't always do all of these even though we know that we should. Last month my failure to regularly back up my hard drive at home finally caught up with me – my hard drive died and took all of my programs and files with it. Please note that this was an 80 GB hard drive so it REALLY took a lot of stuff when it left.

I found myself going through all of the well know stages of data loss: denial, anger, depression, acceptance. I contacted several companies that do hard disk data recovery (none appear to be located in the Tampa area). I got two quotes for recovering my files: $1,500 and $2,000. Now I do miss my files, but not that much! I was able to resist shelling out that kind of cash because I had made a partial backup last September when the hurricanes were bearing down on us and I was anticipating being flooded out. Still, I had done a lot of work in the following 8 months that is now lost forever.

I have now found religion: I've vowed to never get caught like this again. Here's what I've done. I think our Florida power outages may have contributed to my hard drive's death and so I now own an APC Back-UPS ES500 ($60 at Best Buy) which will buy my system about 10 minutes of power in the event of a power outage and will shut it down gracefully if the power does not come back on in time. I've purchased a Lite On DVD rewritable Drive ($59 over the Internet) so that I can back-up my new 80Gb hard drive to DVDs. Note: DVDs store about 4.38Gb worth of data uncompressed.

I've also ordered Acronis' True Image backup software ($33 over the Internet) to make a complete copy of my hard drive so even if the drive fails, I can recreate its contents at a touch of button on a new hard drive. I've also got my stack of 50 blank DVDs ($18 at Office Depot) and so now I'm all set -- assuming that I can remember to actually perform back-ups on a regular basis!

Now about that trip to the dentist…

Coming in August

Grounding & National Electrical Code Seminar

In a joint partnership with IAEI (International Association of Electrical Inspectors), your local IEEE PES/IAS Chapter is offering this 8 hour seminar on grounding and the 2005 NEC.

Date: **Saturday, August 06, 2005**
Speaker: Mr. Jim Pauley, Schneider Electric/Square D
Location: Harbor View Center, 300 Cleveland St. Clearwater, FL 33755
Cost: $110 Members, $125 Non-Members, Student Member fee TBD
PDH 8 PDH credits will be offered.
RSVP: http://www.ewh.ieee.org/r3/floridawc/ Checks payable to: IEEE FWCS. Mail checks to: Ralph Painter, IEEE FWCS Treasurer 648 Timber Pond Drive, Brandon, FL 33510-2937
Questions: Tom Blair at 813-228-1111, ext 34407 or thblair@tecoenergy.com

7:15-8:10am	Registration & Contl. Breakfast.
8:10 - 9:50am	Grounding/NEC Seminar.
9:50 - 10:05am	Coffee break
10:05 - Noon	Grounding/NEC Seminar Ct'd.
Noon - 1:00pm	Salad/sandwich buffet luncheon.
1:00 - 2:50pm	Grounding/NEC Seminar Ct'd.
2:50 - 3:05pm	Coffee/soda break.
3:05 - 5:00pm	Grounding/NEC Seminar Ct'd.

Mr. Jim Pauley of Schneider Electric/Square D will be the speaker for the grounding and NEC seminar. Jim started out in his working life as an electrical helper, progressing to journeyman electrician, master electrician, and then admirably completing an Electrical Engineering University curriculum thus entitling him to proudly become and maintain a Professional Engineer (P.E.) status in the electrical industry. His primary function for Schneider Electric is as world wide codes liaison. He is active in NECode CMPs and the NECode Technical Correlating Committee which compile the NECode.

Jim has been a frequent visitor to and contributor to Florida Chapter IAEI activities. Expect Jim to reveal intricacies of grounding as well as some of the engineering eloquence inherent in the subject. Be prepared to be enthralled by Jim's expertise. Be prepared to be dazzled by his well versed understanding of the ins and outs of the NECode. Be prepared to learn something about grounding and the code that you did not know when you walked into the room

The location for this seminar will be the Harbor View Center in Downtown Clearwater, 300 Cleveland Street, and overlooking the new high bridge to Clearwater Beach and also the north side of Clearwater Harbor. The Harbor View/ Stein Mart Building is the last building on the right on Cleveland Street before going out to Clearwater Beach. Free parking facilities are to the west and north of the building. The building entrance is at the SW corner on the west side of the building. Registration will be from 715am to 810am. The meeting will begin at 810am promptly.

Upgrade Your Membership Now!

As most of you know, Senior Member is the highest grade of membership for which an individual may apply. It requires 10 years of experience in an IEEE field (which can include education), 5 years of "significant performance," and written references from three IEEE Senior Members or Fellows. Therefore, it is a bit surprising that as of the end of 2004, only 7.4% of the total IEEE membership held Senior Member grade.

You may qualify for the Senior Member grade. Why not look into it? Contact our Section's Membership Chair, Tom Blair, at 813-228-1111 (ext: 46171) tom_blair@ieee.org

Calpine
Osprey Energy Center

By: Ghaff Khazami, PE Chair PES/IAS Chapter FWCS

We would like to thank the Calpine Corporation and their staff for a tour of the *Osprey Energy Center on May 24, 2005*. Members of the IEEE PES/IAS Chapter were treated to an informative tour of one of the nations top energy facilities.

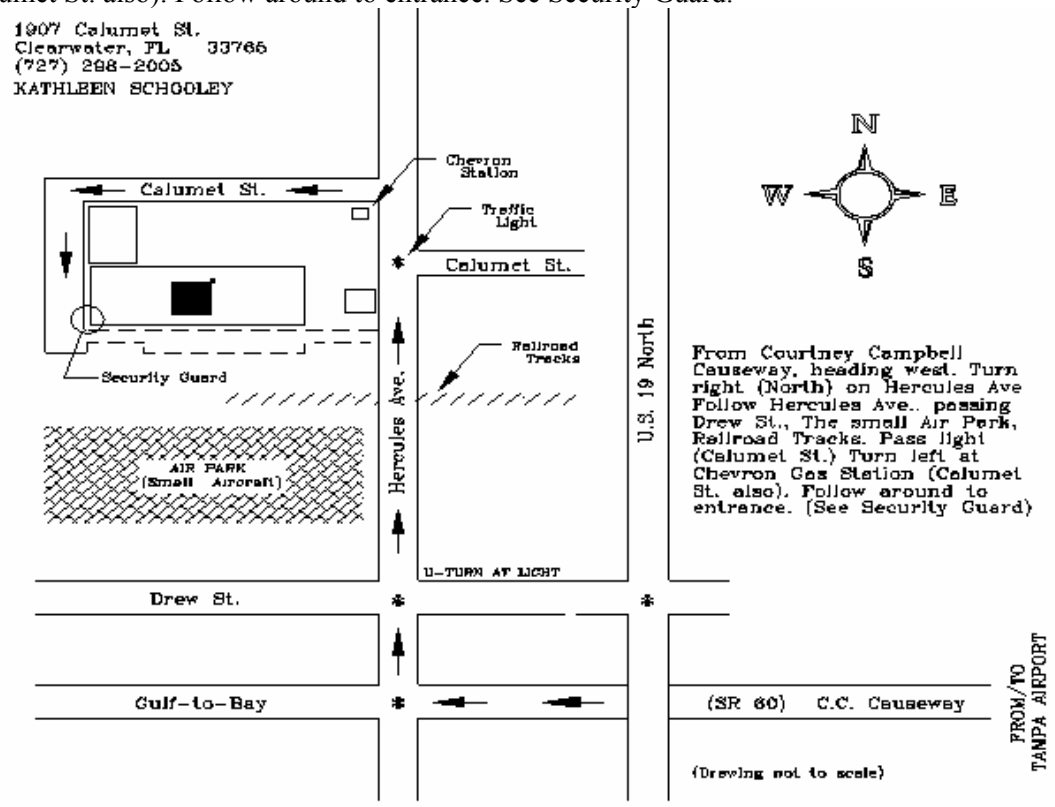
The Calpine Corporation is ranked as the number one overall Energy Company by Fortune Magazines 2004 List of Most-Admired Companies. Calpine has approximately 27,000 Megawatts in operation in 22 States, 3 Canadian Provinces and Mexico. In Florida alone they employee over 180 people and have over $800 million in investment.

The *Osprey Energy Center* is a natural gas-fired, combined-cycle generating facility located in Auburndale, Florida. The facility, which is the first and only advanced combined-cycle power plant built wholly-owned by an Independent Power Producer in peninsular

Florida, was completed in May 2004 and has a base load capacity of 530-megawatts. Electrical interface is a TECO 230kV transmission line. The majority of this facility's output is sold under a long-term contract to Seminole Electric Cooperative, Inc. Some of the technical features of the facility include, no cogeneration, a Cooling Tower Cooling System, Power Augmentation by inlet fogging, duct burners, steam injection, and a Natural Gas interconnection with Gulfstream.

Directions to GE Instrument Transformer Plant Clearwater, Florida

Directions: From Courtney Campbell Causeway, heading west. Turn right (North) on Hercules Ave. Follow Hercules Ave., passing Drew St., the small Air Park, and railroad tracks. Pass light (Calumet St.); turn left at Chevron Gas Station (Calumet St. also). Follow around to entrance. See Security Guard.



Student Memberships Surge Ahead

I**EEE membership** at the end of May is up 1.0% (+3,143 members) over May 2004. This is an improvement on the 0.5% increase that has been reported for the prior three months – and is mostly attributable to fairly robust gains in Students.

Higher Grade memberships are currently down 0.4% from the previous year (-1,144 members). This represents a marginal improvement from the -0.5% loss posted last month. The four Regions outside the U.S. continue to show positive results in Higher Grade memberships and are up a combined 1,460 members from last year. Unfortunately this is being more than offset by the decline of 2,604 HG members in the U.S.

Student memberships, at 69,848, currently stand at their highest levels ever for this time of year (see below chart), and are ahead of last year by 6.5% (+4,287). However, with student memberships we are also seeing the same geographic imbalance – declining U.S. student membership totals (except for R3), offset by quite strong growth outside the U.S. In fact, Regions 8 through 10 are all showing double-digit student growth this year - ranging from 12.5% in R8, to 29.3% in R9.

IEEE Society memberships stand at 325,079. This is down 3.6% from a year ago, which is unchanged from last month. Presently 62.1% of Higher Grade members and 38.5% of Students belong to at least one IEEE Society. Both of these numbers are below the levels of a year ago.

(IEEE membership Development Progress Report May 2005)

Student Branch officers (from the left):
Aaron Metzer -New President
Kristy Baksh -Past President
Jeffrey Burnett- SPAC Chair
Jeremy Ludes- Vice President (Ext.)
John Wells- Vice President (Int.)
Rocky Illen - Treasurer
Andrew Quecan- Secretary

Students' Corner—IEEE Student Branch

The Senior Spring Awards Banquet was a tremendous success. We thank all our sponsors for their generosity and support: Honeywell, CAE, Smith Equity Builders Inc, USF-EE Department, IEEE-FWCS Section and the WAMI Program at USF.

- The Summer Picnic was a huge success. We would like to thank everyone for coming out and hope to see everyone again during our Fall Picnic sometime in October.
- We are beginning our plans for S-PAC and could use any help from local companies to provide any speakers. Our theme this year will be Ethics and Business related. If anyone is interested in speaking at this years S-PAC please email us at IEEE@eng.usf.edu.
- We are also looking for Companies to provide speakers to join us once a month at our student meetings and speak about various topics. If anyone is interested please email us at IEEE@eng.usf.edu.
- We recently held our first Student Excom meeting; this is open to all IEEE Members to attend and is usually held the first Sunday before the FWCS Excom. We have many events planned for this upcoming school year and are looking forward to a very eventful year.

Brain Teaser Challenge Column

By Butch Shadwell

June BTC In the discussion of pigeon navigation, "… Norman had heard that pigeons have a small magnet in their heads that helps them navigate by the earth's magnetic field. He decided to try to measure this field. Short of trying to stick a paperclip to a pigeon's head, what technology could he use? Since he must subtract the earth's magnetic field from this measurement, just how strong is the earth's field in most places?"

Actually it appears the magnetic field of the earth has dropped by 10% in the last 160 years. Since we depend on this field to help protect us from solar wind, we may want to start getting ready for some problems. But who knows, maybe it will start getting stronger again. We don't really understand how this field is generated. Today the steady state field is about 0.5 gauss. In the past the field has been many times stronger and with different polarities. To measure a field of this strength one might possibly use a Hall Effect sensor, but more likely you might employ a flux gate or proton precession sensor. But I bet you already knew that.

July BTC I recently attended the graduation of my nephew from Drexel University, magna cum laude with a BSEE. He is a bright young fellow that is willing to work hard to do it right. He loves electronics so much that he always has one or two home projects he is designing for his own use, that are not for any course credit. I have been pleased to be able to give him a few pointers and needed components from time to time.

David has been working on a design for a trip/mileage computer for his car. He has already built the basic intelligence module and display that fits neatly into the dash, and has been experimenting with the miles per hour calculation and display software. David is planning to measure the time between successive pulses from a speed sensor to calculate speed, i.e. any two successive pulses could be used for a speed calculation. If his speed sensor is generating 2000 pulses per mile, and he wants to have 1% accuracy from 5 to 120 mph, what is the minimum number of bits needed for this interval timer and what clock rate is needed? Have fun!!!

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

July 2005 Calendar of Events

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
					1	2
3	4	5 *5:30PM: IEEE FWCS ExCom Meeting, TECO Hall,*	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21 *6PM Tour GE Instrument Transformer Plant, Clearwater*	22	23
24 31	25	26	27	28	29	30

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