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THE SUNCOAST SIGNAL

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September 2006



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IEEE / IAS 41st Annual Meeting The Industry Applications Society

October 8 - 12, 2006, Marriott Waterside Hotel, Tampa Florida

60-plus Technical Sessions

Sessions run Monday through Thursday. See the Preliminary Schedule on the web site

9 Continuing Education Opportunities (tutorials)

This conference is designed for the Industry Applications oriented engineer and engineers in academia interested in this arena. It will be of interest to many Section members.

Meet engineers in your field from around the world.

Conference and Hotel Registrations are open for business. Register now!

See the web site www.ieee.org/ias2006



And in September:

Adaptive IIR Notch Filters: Low Complexity Algorithms with Communication Application

Prof. Juan E. Cousseau
2006 IEEE Signal Processing Society Distinguished Lecturer

Thursday, September 21, 2006, USF—See page 3 for details

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Editor's Column

The USF IEEE Student Chapter had its kick-off executive meeting and has a group of raring-to-go students heading into the fall semester. While much is not firm, the Chapter is planning to run an S-PAC, a picnic, several computer skills training sessions, several fund-raising activities, with the culmination of the semester being the Senior Banquet. Dates for these activities are tentative but keep October 7th for the picnic and December 8th for the Banquet.

Jonathan Wells will be offering two sessions on PSpice, a tool that is essential to circuit design. Mathcad, a tool used in several EE labs is the other training session to be offered; Andrew Quecan is seeking a lecturer for this program. (If someone can help with this please contact your editor at paulschn@ieee.org.)

SouthEastCon '07 is coming this spring and with it a number of contests for students. The USF Chapter is excited about the robotics competition and the EE faculty is supporting the students by giving senior project credit and more.

And to pay for all this, they will be selling T-shirts. Watch for the notice and get your own; they will sell out fast!

—PS



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TISP—Teachers at Armwood High School (see p.7)

Adaptive IIR Notch Filters: Low Complexity Algorithms with Communication Application

Prof. Juan E. Cousseau

2006 IEEE Signal Processing Society Distinguished Lecturer

Department of Electrical and Computer Engineering at
the Universidad Nacional del Sur (UNS), Bahia Blanca, Argentina

Date : Thursday, September 21, 2006
Time: 6:00 PM
Location: University of South Florida
Building/Room: ENB 109

Cost: Free (RSVP required). Non-members welcome.
RSVP closer to September by visiting the FWCS
homepage, click Reservation tab.
Web: <http://ewh.ieee.org/r3/floridawc/>

Prof. Cousseau is author/co-author of more than 135 journal and conference papers in the field of signal processing and communications. He has been involved in scientific and industry projects with research groups and companies from Argentina, Brazil, Spain and USA. He has served as a technical consultant to Argentinean Government agencies in the areas of signal processing and communications. He is coordinator of the Signal Processing and Communication Laboratory (LaPSyC) at UNS. His research interests span the areas of statistical signal processing, and communication applications, with particular emphasis in linear and non linear techniques.

Parking is approximately \$3. Parking passes must be obtained immediately after entering the campus grounds from Fowler Ave. on the right hand side. Please visit this link for a map showing visitor parking lots and the location of ENB 109 http://usfweb2.usf.edu/campus_map/.

More info: contact Doug Chronister, dchronister@ieee.org



Goals & Such

From the Vice Chair, James Anderson

Now that we find ourselves in September, this is a great time to take a moment to stop and check on how we are doing for the year, both personally and as an IEEE Section. If you can think all the way back to January and New Year's eve, can you remember what you promised yourself what you were going to do this year? I know that I have to struggle to remember my foolish promises also, but with a little thought they did come back to me.

In my case the goals that I had for myself for this year revolved around the usual suspects: doing a better job of getting in shape, working on some technical skills, and improving my financial situation (always!). I wouldn't be honest if I said that I had worked on all of these throughout the past eight months; however, I've pretty much worked on one or another during the year so far. I'm confident that come the end of the year, I'm going to be able to say that I've made progress in all areas.

The Florida West Coast Section also had goals for this year. At the start of the year I challenged the Section with two

goals (1) Have net gain of 10 to 20 members. Convert 25 to 31 student members to regular members. Elevate 22 FWCS members to Senior Member status, (2) Increase attendance at EXCOM meetings. This would include at least 75% of chapter chairs and meeting attendance of 20.

How are we doing? Actually, not bad – but we are not quite there yet. We have seen a recent surge in new members and so our goal of getting at least 10 new members is within our reach. Do you know anyone that could benefit from joining IEEE? We're going to have one more push to get the local student members to become regular members when the December graduation date starts to approach. Finally, I've been very pleased to see a number of new faces showing up at the Excom meetings. All are welcome (that means you) and participating in the monthly Section planning meeting gives you a unique view into what's going on in your Section.

We're not there yet, but we are looking good. Help the IEEE's FWCS to be able to say at the end of the year that we met our goals and that we'll be able to set the bar even higher next year!



Tour of the Hillsborough County Resource Recovery Facility

Several members and non members enjoyed the tour of COVANTA Plant which was coordinated by PES/IAS Chapter on July 25 2006

Mr. Glenn Hoag the plant manager provided an excellent presentation and the tour of the facility.

COVANTA is a waste-to- energy power plant with a capacity of about 30 MW; this capacity will be increased to 48 MW by adding a stand alone 18 MW generator unit and the forth boiler next to the existing facility.

The facility is located in SE Hillsborough County (Falkenburg Road West of the I-7).

Hillsborough County supplies approximately 1050 tons of waste per day to COVANTA plant for power generation.

COVANTA Energy Interconnects with TECO at the plant switchyard, the generator bus is 13 KV then step up transformers take it to the TECO Transmission (69 KV) system.

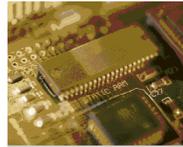
This facility uses secondary sewer treatment effluent from the adjacent wastewater treatment plant for part of its processed water. Installation of new emissions control equipment to comply with the Clean Air Act amendments was completed on August 25, 2000.

The tour was very informative to the participants and many questions were asked; such as the plant operations procedures, how the plant generates electricity, process of waste handling, plant design, future projections and environmental impact.

PES/IAS Chapter is planning for more tours this year and you will be informed prior to the scheduled dates.
—Ghaff Khazami, PE



See another photo on p 5.



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Nominate A Colleague To Become An IEEE Fellow

The respected IEEE membership grade of Fellow recognizes people of outstanding and extraordinary qualifications and experience in IEEE-designated fields and who has made important individual contributions to one or more of these fields. IEEE Members are being encouraged to nominate their peers for the rank of IEEE Fellow in categories such as Application Engineer/Practitioner, Research Engineer/Scientist, and Educator and Technical Leaders. The nomination period runs through 1 March 2007.

Please contact your Membership Development chair, Richard Beatie at rbeatie@lightningmaster.com or Tom Blair at tom_blair@ieee.org for more information and support. To nominate an IEEE member for Fellow status, please visit: <http://www.ieee.org/web/aboutus/fellows/request.html>

EMPLOYMENT OPPORTUNITY: Openings for an electrical engineer, electrical designer, and/or AUTOCAD technician. DFW EOE Long & Associates, Engineers/Architects, Inc., Tampa, FL, is a full service E/A design firm specializing in K-12, University, and Governmental projects. Send your letter of interest and resume to Curt Wasko, P.E. at curt@longandassociates.com

**IEEE Wireless and Microwave
Technology Conference**

“WAMICON 2006”

December 4 & 5, 2006—Marriott Suites Sand Key—
Clearwater, FL

**Invitation to Exhibit & Join Conference
Sponsorship List**

The 8th annual IEEE Wireless and Microwave Technology (WAMI) Conference will be held at beautiful Sand Key beach in Clearwater, FL on December 4-5, 2006. The conference will address up-to-date multidisciplinary research needs and interdisciplinary aspects of wireless and RF technology. The program includes oral presentations, poster presentations, workshops, and tutorials.

The steering committee would like to invite your company to become an exhibitor and/or sponsor of this exciting and high profile event. We can accommodate a limited number of 10’ x 10’ “pop-up” and table-top displays. The following options and sponsorship opportunities are offered:

	Event Dates	Sponsorship Level
Dinner	12/4	\$3000 (or 2 @ \$1500)
Reception / Poster Session	12/4	\$1500*
Lunches	12/4 & 12/5	\$1250 each day
AM&PM Break Sponsors	12/4 & 12/5	\$550 each break
Meeting Rooms & A/V	12/4 & 12/5	\$350 per day
Exhibit Booth Space (~8x 10)	12/4 & 12/5	\$650
6 ‘ Table Top Display	12/4 & 12/5	\$450
General Sponsorship	12/4 & 12/5	\$350

Sponsors at the \$1000 level and above will receive a complimentary table-top exhibit space upon request. Exhibit space is limited; our suggestion is to reserve your space soon. Please email Alen Fejzuli afejzuli@rflabs.com and cc: Larry Dunleavy at l.dunleavy@ieee.org with your exhibit plans and requirements. **Note that October 2, 2006 is the early registration deadline for the exhibit space.**

Booths will be reserved on a first paid/first served basis, please select 3 choices for exhibit location (contact Fejzuli or Dunleavy). Make checks payable to “IEEE WAMICON”

**Mark Your Calendar The 2007
Celebrate Engineering Banquet!**

The 7th annual Celebrate Engineering Banquet will be held at the Wyndham Westshore hotel on Friday, February 16th, 2007. (It's closer than you think!) This popular event is expected to once again sell out quickly. Engineering is a demanding profession that only a select few have the drive and determination to enter and remain in. We all know that we are part of an exclusive club of fellow engineers whose work does actually change the world that we live in. The Florida West Coast Engineering Alliance’s Celebrate Engineer Banquet is the once-a-year opportunity to celebrate our shared profession, get an award, or at least cheer on a buddy who is getting an award.

Mark your calendars for February 16th, 2007 and we’ll see you at the Celebrate Engineering Banquet! —JA



Another scene from Coventa—see article p. 4



WAMICON 2007 cont.—

and send to Attn: Ms. Gayla Montgomery, University of South Florida, 4202 E. Fowler Ave, ENB 118, Tampa, FL 33620. For credit card payment contact Alen Fejzuli for the form.

All sponsors and exhibitors will be acknowledged in multiple ways including on the conference website, on signs at conference events, and in other printed and electronic promotions and digests associated with the event. For a list of 2005 sponsors please see <http://ee.eng.usf.edu/WAMI/conferences/2005/sponsors-05.html>

Please, don’t forget to register for the conference. Go to www.wamicon.org for more information as well as Conference Registration and Hotel Information:

Assist Your Community and Help Your Profession

In the last 24 years the Pinellas/Hillsborough “YES! – We Care!” Youth Engineering Society provided over 2000 Middle and High School students, primarily from under-represented minorities, STEM tools (Science, Technology, Engineering and Mathematics) necessary for them to become professionals. Now the time has come for us to determine whether through changes in our approach we can make “YES! – We Care!”, which is always limited by its finite operating resources, even more productive for our profession and our community in future years.

An initial analysis, taking into account changes that have occurred in the last 2+ decades, led to the following proposed changes for next year which would make us even more effective.

1. Provide lectures by practicing engineers in a “club setting” to interested students in the K to 12th Grade range. (These lectures shall also welcome interested parents.) The main goal of this phase will be to provide interested students with basic information on both established, (electrical, civil, etc) and just developing (nano-technology, bio-medical, etc.) engineering career paths. Project speakers will become aware of these opportunities primarily through their professional societies; their lectures may be scheduled either after hours during the week or on Saturdays.
2. We propose to retain the current Saturday morning phase of teacher-directed projects which will continue to involve specific skills-building activity.. This phase aims at developing teams that compete in depth on specific goals at local, regional and national levels. Project examples are Mouse-trap Cars, Robotics, etc. As mentioned, we expect our resources to be limited. Thus we will no longer be able to support this project phase in two locations (down- and up-county) for 25 or more Saturdays. The fact that suitable teachers for this activity are becoming increasingly difficult to find also influences this recommendation.

STEM (Science, Technology, Engineering and Mathematics) provides a broad range of career paths. Dr. Rudy Henning, a Fellow in the IEEE and FES societies is starting this “Engineering Club” program. Members who want to participate as future speakers addressing one or more K through 12th grade levels should contact the following:

Dr. Rudy Henning,, henning@eng.usf.edu
Education Member, FWCS IEEE Exec. Committee
Distinguished Professor Emeritus

Or:

Sean Denny, Venner20@aol.com
Teacher In Service Chairman
FWCS IEEE Exec Committee



IEEE WISE Students Present Public Policy Research

WASHINGTON – Three U.S. IEEE student members were among a group of eight WISE students to present the findings of their public policy research projects on Capitol Hill on August 2.

The Washington Internships for Students of Engineering (WISE) program brings outstanding engineering students to Washington, D.C., for nine weeks each summer to conduct research and learn how engineers influence public policy on complex technological issues. Research projects must be on current engineering-related public policy issues.

The IEEE WISE participants were Emily Van Vliet of Cedarville (Ohio) University, Tony Azevedo of the University of California, and Sasha Kemmet of Iowa State University.

Van Vliet began the presentations at 10 a.m. in the Rayburn House Office Building (Room 2325) with “Patent Reform: Addressing Patent Trolling While Balancing Innovation and Intellectual Property Rights.” Azevedo discussed “America’s Engineers in a Competitive World” at 10:20; and Kemmet followed with “Financial Incentives to Encourage Wind Power System Production” at 10:40.

Each presentation, which was open to the public, ran about 20 minutes, including time for questions and answers.

The IEEE student members and Liz Morel of the American Institute of Chemical Engineers were working out of IEEE-USA offices. Dr. Wolf Yeigh, vice president for academic affairs and professor of engineering and management at Norwich (Vt.) University, was the 2006 WISE faculty adviser.

For more on the WISE program, see www.wise-intern.org .

From Chris McManes, Senior Public Relations Coordinator, c.mcmanes@ieee.org www.ieeeusa.org

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.



TISP —
Teachers at
Armwood High
School (see p.7)



Brain Teaser Challenge Column

—By Butch Shadwell

August BTC I continue to be amazed at the actors I meet with a background in engineering and physics. This was last month's discussion, "We have a 2 input Exclusive Or gate with an integrator on the output, being used as a phase detector. It generates an output voltage from 0 to 5 vdc as the phase changes over 180 degrees. One input of this gate is fed from a very stable local oscillator generating a 1 MHz squarewave. There is a similar function generator at a remote location transmitting over an RF carrier. The other input of our phase detector is looking at the output of a radio receiver picking up this remote squarewave. If we observe a change in the output voltage of the phase detector of 1 vdc, what is the change in distance between the transmitter and receiver that would account for this voltage change?"

This is a pretty easy problem if you read it carefully. I told that the phase detector changes 5 volts for a 180 degree phase shift. 180 degrees at 1 MHz is 500 nS in propagation delay. So, 1/5 of 500nS is 100nS of propagation delay. At 1 nS per foot (30 cm), that means that the range has changed by approximately 100ft (30 m). But I bet you already knew that.

September BTC I live on a cul-de-sac. It is a small finger of land that extends into a tributary to the intracoastal waterway. We have about 10 houses on our street, which tees off of a main thoroughfare in Jacksonville. I happen to have a house on the corner, so since they have decided to expand the thoroughfare, I have had a lot of construction going on on the north side of our lot. There is a constant drone of backup beepers beeping, dump trucks dumping, and scrapers scraping. And don't even get me started about the dust.

All of this annoyance has started me thinking about the future. Envisioning a future where we don't use roads and pavement to get from here to there. Some imagine that in a 100 years we will be whisked from place to place by some kind of automated transport system, a la The Jetsons. Others even image that we will be transported as energy in almost no time at all. I wonder if the future will be a place where one doesn't have to actually go anywhere. What if virtually everything we do in person today, shopping, meetings, delicate surgery, etc., could be done through technological surrogates? If we could have 100% of the sensations of being somewhere else, without having to pack for the trip, why not just stay home? In this future, if we wish to visit a desert in Africa, we might, by some kind of computer interface, extend all of our senses to an android device already in that locale, through which we could sense every breeze, aroma, touch and taste, from that distant place. Just imagine. And we wouldn't get tired from long days of sight seeing. After all it's not really our legs doing the walking. If the android were designed to be instantly transformed into a perfect replica of you, then as far as everyone knew, you would be there.

I could go on for pages on all of the advantages this future

TISP Activities

The Hillsborough Science Professional Day was held at Armwood High School on July 31, 2006. This was an all day workshop for Science Teachers. John Stankowich and Sean Denny set up an IEEE booth in the cafeteria. Ralph Painter (see picture below) and Tom Blair began a Teacher In Service Physics Presentation in Room 307 at 10AM. Ralph discussed how the educators could perform a lab exercise on thermocouples. The presentation was attended by 27 math and physics educators.



Tom, John, and Sean helped Ralph make kits and collect 19 evaluations. All teachers indicated they would use this in a classroom setting. Four educators requested additional in-service topics:

- 1) Semi/super conductor concepts ,
- 2) Laws of Science in the Math Classroom ,
- 3) Electrical Demos , and topics
- 4) Employers are looking to hire technicians with High School Degrees or a Bachelor of Science Degree.

Special thanks to Nancy Marsh who made this day possible.
—Sean Denny



Here Painter demonstrating for a group of science teachers. At the top, Stankowich and Blair setting up. Photos—SD



holds, but I guess we had to get to the problem. At the construction site across the street there are these yellow flashing warning lights, which seem to last forever on their batteries. When I design low power/low duty cycle devices, I sometimes use a capacitor power supply to tell me the average power consumption of the circuit. If my circuit draws 50 uA all of the time and then an additional 50 mA for 1 mS every second, what is the voltage drop on my 50,000 uF capacitor power source after 10 seconds? Assume that these current drains do not vary with the capacitor supply voltage drop.

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

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

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
27	28	29	30	31	1	2
3	4	5 5:30 pm: <i>IEEE FWCS ExCom TECO Tampa</i>	6	7	8	9
10	11	12	13	14	15	16
17,	18	19	20	21 6 pm: <i>SPC – IIR Filters – Prof Cousseau USF Tampa</i>	24	23
24	25	26	27	28	29	30

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IEEE/IAS Annual Meeting Oct. 2006 Tampa!

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