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THE SUNCOAST IEEE SIGNAL

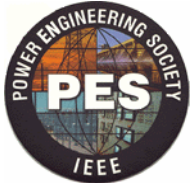


THE INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS, INC.

<http://ewh.ieee.org/r3/floridawc>

Volume 47 - No. 6

June 2004



Advanced Concepts in Transformation Protection Seminar

*Sponsored by the Florida Electric Cooperatives Association, Beckwith Electric,
and the Local FWCS PES and IAS Chapters*

- Speaker:** Wayne Hartmann, Applications Manager, Beckwith Electric
Date: Thursday, 10th June 2004
Time: Registration and continental breakfast 8:00 – 8:30 A.M.
 Seminar 8:30 – 3:00 with a one hour break for lunch (not provided)
Location: Adams Mark Hotel, Clearwater Beach
Registration: Register on-line at <http://www.weiquality.com/fwcs-meetings/>
 Registration is limited to 20 participants.
Cost: Members \$75, Non-members \$100. Registration must be paid in advance.
 Send checks payable to FECA to:
 Raymond G. Trusik, Florida Electric Cooperatives Association
 2916 Apalachee Parkway, Tallahassee, FL 32301
Contact: Art Nordlinger 813-630-6203. a.nordlinger@tecoenergy.com
 Six professional development hours will be awarded for completion of the seminar.
 Florida Provider Number EXP00015.



Joint Meeting IEEE Computer Society, AESS, and Progg., Logic User Group

Bus Functional Module Development



Abstract: Hardware Description Language (HDL) Test Benches for Advanced ASIC and FPGA design Verification often require software driven and timing accurate simulation models of processors and interface buses. In this meeting you will learn how to develop Bus Functional Models (BFMs) for bus transactions. The speaker will conduct a detailed "code review" of a recently developed VHDL model for a Texas Instruments Digital Signal Processor, the TMS320C31. VHDL File and Text I/O Operations, Functions, and Procedures will be explained as well as the BFM architecture. The model can easily be adapted to form bus models for other processors or buses.

*Admission is complementary. This is an open meeting. Non-IEEE members, professionals, students, and the general public are welcome.
Pre-registered attendees will receive a copy of the model.*

Biography: Jack is the President of Siliconexion, a local electro-technology consulting firm specializing in FPGA design, verification, and training. He has a BEE degree from Georgia Tech and a MBA from Florida Tech. He has been an FPGA designer since 1988 and using VHDL since 1993. He is a Xilinx expert and he teaches a three day tutorial on FPGA Design and Verification with VHDL at SouthCon.

- Speaker:** Jack Killingsworth,
President, Siliconexion.
Date: Thursday, 10th June 2004
Time: 6:30PM
Location: Griffin Room, Minnreg Bldg.,
6340 126th Ave North, Largo.
Contact: j.killingsworth@ieee.org
Online Reservations:
<http://www.weiquality.com/fwcs-meetings/>

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Chair's Comments

By John Conrad

Believe it or not! Your EXCOM is looking ahead to the end of the year and has formed a Nomination Committee to identify candidates for the four elected officers on the EXCOM.

The section by-laws require that all members be given an opportunity to stand for the office and participate in elections if multiple candidates come forward. My two-year term as Section Chair comes to an end in December and although I am really enjoying the experience, I do not wish to continue next year.

It is the Nominating Committee's job to find at least one candidate, which may include the incumbent, for Section Chair, Vice-chair, Treasurer, and Secretary. If you are interested in any of these positions, or if you want to help in any other way, please contact a member of the Nomination Committee: Jim Howard, Jim Beall, and Richard Beatie. You will find contact information on page two of this newsletter.

I am encouraged by some recent signs that things are finally moving in the job market. I know of a number of student members who have been offered jobs, a number of colleagues who were unemployed or underemployed are now working in challenging careers and more and more local companies are advertising job openings for Electrical Engineers at all levels. If you are looking for a job, do not forget the networking benefits of the IEEE. Attend as many meetings as possible and meet local engineers who are employed and who may know about the one opening that you have been looking for.

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USF Professor of Electrical Engineering Receives Award at White House

(TAMPA, Fla. May 6, 2004) - Rudolf E. Henning, distinguished university professor in the Department of Electrical Engineering at the University of South Florida's College of Engineering, has been selected to receive the 2003 Presidential Award for Excellence in Science, Mathematics and Engineering Mentoring (PAESMEM). The award, which includes a \$10,000 grant and a Presidential commemorative certificate, is administered on behalf of President Bush by the National Science Foundation. The award was presented to Henning today at the White House.



Each year, the president recognizes the people and institutions that have provided broad opportunities for participation by women, minorities and people with disabilities in science, mathematics and engineering in elementary, secondary, undergraduate and graduate education.

Accordingly, the PAESMEM identifies outstanding mentoring programs designed to enhance the participation of groups underrepresented in science, mathematics and engineering. The award of \$10,000 will help Henning continue his efforts to interest, influence and prepare minority pre-college students for success as engineering students through the Youth Engineering Society, an organization he founded in 1983 which later came to be called "YES, We Care."

Since 1983, students in Tampa Bay have been participating in "Yes, We Care" by building bridges with balsa sticks, racing small cars made from mousetraps, taking field trips to NASA, and learning the ins and outs of computers. Besides hands-on instruction in engineering skills, the program also provides certified teachers who instruct the Saturday morning students in math, physical sciences, biology, and physics.

"*Yes, We Care* has been aimed at better preparing students in math and science and providing them with mentoring and motivational support to help them pursue careers in engineering," says Henning. "I also wanted to introduce students to practicing engineers and help them feel more comfortable with technology and its applications."

Mentoring by practicing engineering professionals, participation in competitions and earning awards have been the hallmarks of the program, which lasts 25 weeks with hands-on instruction three hours every Saturday morning in two centers, each able to accommodate 30 students.

According to NSF, the awardees "serve as exemplars to their colleague" and are "leaders in the national effort to more fully develop the nation's human resources in science, mathematics, and engineering."

Half-Priced, Half-Year Dues Now Available on IEEE Memberships and Publications

Dues on new IEEE memberships and additional IEEE Society memberships are now available at half price through 15 August 2004. Discounted rates on new subscriptions to IEEE publications are also available to IEEE members during this period. Individual memberships and subscriptions become active upon payment and continue through the remainder of 2004. IEEE Societies focus on specific technologies such as communications and aerospace engineering or focus on general technology subjects. There are 120 publications that may be added to membership during this half-year cycle. For a list of IEEE Societies, visit <http://www.ieee.org/organizations/society/>. To join IEEE, visit <http://www.ieee.org/join>. To add societies/publications to your existing membership visit: <http://www.ieee.org/addservices>

IEEE Region 3 Employment Assistance Project

The IEEE Region 3 Employment Assistance Project has been developed to bring together into one location the best sources of career planning, current job openings and information about companies that may be hiring. This site has been organized to promote job searching for IEEE members at both the local and national levels. A key feature of the site is the availability of company contact information. There is a company database request that can provide information that can be used to find potential companies and make that first important contact. If you are either looking for a position or have a position to post, please consider visiting the IEEE Region 3 Employment Assistance Project website at <http://ewh.ieee.org/reg/3/ea/>.



Tour of Tampa Electric Bayside Power Station



Date: Monday, June 21, 2004
Time: Registration and Overall Review – 6:00 PM - 6:30 PM
Tour - 6:30 PM - 8:00 PM
Speakers: Jim Badgerow, Operations Manager,
Bayside Power Station,
Ralph Painter, Generation Engineering Manager,
Tampa Electric Company
Location: Tampa Electric Company, Bayside Power Station
3602 Port Sutton Road, Tampa, FL 33619
Cost: Members, \$10; Non-members, \$25, Students \$5
Please make your check payable to: IEEE, FWCS.
RSVP: Online at: <http://www.ewh.ieee.org/r3/floridawc/>
Questions: Contact Tom Blair at: 813-228-1111, ext 34407
or thblair@tecoenergy.com



*Refreshments will be served.
Space is limited to 25 attendees!!*

Mr. Jim Badgerow is the Operations Manager for Bayside Power Station and Mr. Ralph Painter is Generation Engineering Manager for Tampa Electric Company. They will be providing a presentation of Tampa Electric's newest power plant, Bayside Power Station. Bayside Power Station is a Combined Cycle power plant with 7 combustion turbine generators and 2 steam turbine generators.

Please wear either steel toe, or enclosed toe shoes for the tour. If you have access to a hard hat and safety glasses, please bring them. There will be a small supply of hard hats and safety glasses available on site for those that do not have these available.

April 2004 Tour of Beckwith Electric Facility

By Ghaff Khazami

In case you missed our April 20, 2004 Tour, here is more about Beckwith Electric: The PES West Coast Chapter organized a tour of the Beckwith Electric Facility for members and guests. The attendees were introduced to the Beckwith Electric manufacturing process, the testing of relays and the quality assurance program. The quality assurance program includes the test validation group which tests and validates engineering designs. Included is the Quality control group which does product inspection and testing, as well as, the incoming inspection. Furthermore, the test group does the testing on the parts that Beckwith Electric buys from outside vendors.

Beckwith Electric is a leading manufacturer of power system protective devices, such as, microprocessor relays for protection of power system generation, transmission and distribution. Beckwith Electric is an established provider of innovative and high quality products, technical services and capable of providing standard and custom product configurations. Beckwith manufacturing facility utilizes automated equipment throughout production to support their mixed technology (SMT and Thru Hole). The Beckwith manufacturing team practices high quality workmanship practices in accordance with IPC standards and ISO 9000 and 9001 certification.

In addition to the tour, there was an excellent technical presentation by Mr. Tom Jauch on LTC Power Transformer Paralleling Applications. Tom explained different methods of paralleling power transformers with case-study examples and discussed the latest technical information and methods (Master/follower / Negative Reactance / Power Factor / circulating current/Delta VAR) in paralleling large or small power transformers.

The speaker Mr. Tom Jauch, BE Consultant, is a graduate of Bradley University with over 35 years of experience serving Electric Power industry; Tom previous positions include Central Illinois Light Company and General Electric.

Beckwith Electric is located in Largo (6190, 118 Ave., North Largo, FL.) For more information call 727-544-2326, or visit online at <http://www.beckwithelectric.com>

Did You Miss It?

By Jim Howard

On Thursday, March 11 your PE/IA local Chapter had one of the best tours to date. We had the opportunity to see a state-of-the-art bakery at Butterkrust in Lakeland. This bakery produces thousands of loafs of bread daily and operates 24 hours a day, 365 days a year (we hear they sometimes actually take Christmas off), and, as you can imagine, it is extremely important that the number of power outages to this facility is at a very minimum. With that in mind, they have installed a 2-cycle transfer switch, which we heard has been working very well at limiting the interruptions the facility experiences.

Special thanks go to Doug Wimberly from Butterkrust, and to Randy Dotson from Lakeland Electric, for taking the time to provide our Chapter with an outstanding tour and with some very valuable information on facility reliability. If you missed this tour, you missed a lot! Keep watching your Signal and perhaps we will get the opportunity to tour this facility, or one like it, in the future.



Research Experience for Undergraduates (REU) at USF – A Student’s Experience

By Jeremy Z. Huffman

My experience as an undergraduate researcher in the REU Program, has been most enjoyable and educational, as it provides a unique environment in which I am able to use and apply the theory and knowledge gained from the completed/ongoing coursework. I received a stipend of eight dollars per hour for a maximum of ten hours a week, for programming and conducting research experiments. In Fall 2003 semester, I learned the *Labview* programming environment that will help me later in measuring the switching speed of MEMS switches. Thanks to feedback from my advisor, Dr. Tom Weller, and, graduate student, Thomas Ketterl, I was trained adequately experimenting with MEMS switches. In Spring 2004 semester, I had the privilege of working with Mr. Saravana Natarajan in performing experiments on his novel non-corrosive fluid conductivity sensor. Towards the end of the semester, I was able to present the experimental results at a couple of research competitions involving cash prizes! Now, in Summer 2004 semester, I plan to revisit both of the aforementioned projects, hopefully bringing these projects to a state of completion. I am very grateful to be able to continue my work in the REU program. I am looking forward to helping high school students become involved through the Research Experience for High Schoolers (REH) program.

3-D-Engineering at 17,500 ft: Dr. Barbara Kobzik, Senior Member of IEEE, is a participant in new Skydive World Record

By Barbara Kobzik



Photo Courtesy: www.TonyHathaway.com

How much engineering does it take to build a formation of 121 people, jumping out of 6 airplanes at 17,500 feet, do a transition to a second different formation, and be done with that in time to open the parachute at a safe altitude of 2,500 feet? This task seems not to be an easy one, otherwise, it would have been done before.

On April 18th, 2004, a new world record in skydiving was set in Zephyrhills, FL, with a 2 point 121-way formation. Barbara Kobzik, Senior Member of IEEE, is one of the 121 new record holders from all over the world.

The record jump was done out of a fleet of 6 aircrafts, flying in a V shape formation. 1 Casa with tailgate and 5 TwinOtters with left side doors, all equipped with oxygen supply for pilots and jumpers, brought 121 skydivers plus 2 camera flyers to the exit altitude of 17,500 feet. Leaving all planes in a

well-coordinated manner and exiting very quickly is essential. At a quick exit, the last person in the aircraft leaves the plane about 7 seconds after the first one. The average fall rate is 120 mph, which is about 180 ft per second. Hence, when the last person exits, the base is already 1260 ft below, in addition to the horizontal displacement caused by the plane speed. This distance has to be covered by a faster fall rate, combined with fast forward movement, called “the dive”, and caused by changes in body position. Speeds around 200 mph are reached in this phase. A very well designed traffic pattern is crucial.

Before approaching the base of the formation, the speed has to be adapted to dock without any momentum. The more people are already together in a formation, the slower the formation falls. Huge formations sometimes fall slower than a single person can fall. That means, if somebody is not careful enough during final approach and doesn't get into his slot immediately and gets lower than the formation, he may not be able to relatively get up to the formation again (by falling slower than the formation). The result usually is another failed attempt and a huge beer check for this person in the evening at the bar!

The skydive from 17,500 ft to the parachute opening altitude of 2,500 ft takes about 90 seconds. After the formations are built, the skydivers need to get clear space to open the parachute without collisions. A strict plan regulates the separation in waves. The first wave, which is the outer ring of the formation, leaves at 5,500 ft, initialized by a parachute opening in the center. A 180 degree turn away from the center and a fast forward movement, called “the track”, makes room for the next 3 waves of skydivers, each following 5 seconds after the preceding wave. This gives everybody enough room for a safe canopy opening, and looks very pretty from the ground, like big fireworks.

It was a “world record, delivered right in time and budget.” 20 training and record attempt jumps were scheduled. The improvement of the jump quality during the jumps was great, nevertheless there was no record yet after 19 attempts. The rules require that all jumpers have to be attached to the formation in their designated slots. If even one person is late and can't reach the formation, or takes a wrong grip, the record attempt fails. What is the probability, that 121 people who are exhausted after 4 days training in hot temperatures and jumping with oxygen, and who are under pressure due to the last possible record attempt of the event, accomplish something which had failed 19 times? Not very big, but it shows once more that focus and volition can overrule all statistical probability. The new 2 point 121-way world record was set on April 18th, 2004 over Zephyrhills, FL, a smooth flying tension free beautiful formation.

A mystery still exists in which IEEE members as experts may find an explanation for. When a huge formation is built perfectly, you can't see every part of the formation, but you can feel that it is done. Some skydivers describe it as “something like a huge electrostatic field.” Is the charge proportional to the numbers of skydivers in the formation? There is still a big scientific gap and some research needed, maybe IEEE can help.

If you want to do some research and gather some first-hand experience (hey, get out and jump, it's fun!), you can get more information from Barbara Kobzik (contact: barbarakobzik@hotmail.com).

USF 10th Mini-Circuits EE Projects Poster Presentation

By Dr. Rudy Henning, EE Department, USF

On April 23rd 2004, USF conducted its Tenth Mini-Circuits E.E. Projects Poster Presentation at which judges from industry and academia together judged last Spring's projects on such factors as presentation, organization, content, and completeness. Students whose projects were judged to be of superior quality received Special Recognition. The following EE students (listed in alphabetical order) received Special Recognition at last Spring's presentation: **Mazen Ajouz, Diana Aristizabal, Stephen Bates, Samuel Baylis, Michael Curnutt, Michael Grynewicz, Deron Hayslip, Jason Phillips, Joshua Rivas, Kristen Shipp, Shalyn Solevilla, and Matthew Wilbanks.** If you are interested in becoming a judge in the future, send an e-mail to henning@eng.usf.edu. Enclose a brief summary of your professional experience, (degree(s), years of professional practice, and/unique honors, and assignments.)

Students' Corner

IEEE Student Branch, USF

Thank you to all those who have helped make the Spring Senior Banquet a grand success. We would especially like to thank the sponsors of this event, namely, Raytheon, Honeywell, TECO, Electronic School Supply, Advanced Circuits, and the Electrical Engineering Department at the University of South Florida, IEEE Florida West Coast Section, and the Electrical Engineering Honor Society at USF, HKN. The Student Branch will not be as active over the summer. We are currently planning some summer events, please stay tuned to the listserv and the IEEE Suncoast Signal for more details. Our new listserv address is iee@mailman.acomp.usf.edu.



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IEEE Research Experience for High School Students

By Carlomagno B. Dionson

The first ever Research Experience for High School Students (REHS) tour at USF had an impressive turn out. Out of the six outstanding students we invited from the local science fairs, five of them showed up. The other one was given a tour the week after.

The students were first treated to some pizza and a brief introduction by Dr. Labrador about the current computer science and engineering research at USF. The tour began at Dr. Tom Weller's WAMI lab. The next stop was Dr. Schlaf's nanotechnology lab and followed by a stop at Dr. Ostapenko's lab. The tour ended in Dr. Bhansali's MEMS lab where the students were lead through a mini-maze of various equipment and instruments.

The overall reaction was very positive. We are hoping that we will get the same reaction from future participants. The goal is to keep scouring the local science fairs for outstanding students who are willing to participate in breakthrough research in various areas in electrical engineering and related fields.



(From Left to Right) W. Paul Skelton IV, Justin Lebar, Michael Petrovich, Aaron Wise, Michael Vente, and Dr. Rudy Schlaf.

Brain Teaser Challenge Column

By Butch Shadwell

May BTC I received several correct responses to the BTC last month. I know some newsletters will publish it later, so I may hear from more of you. As you recall the subject was mermaids and deserted islands; "After a storm we found a transistor radio kit washed up on shore. The schematic was there but we couldn't recall the IF amplifier frequency for an AM band super heterodyne receiver. What is the beat frequency that is amplified in the most common form of this kind of radio receiver?"

Of course, the correct IF frequency for most AM radios is 455 kHz. Recently some manufacturers have changed the design so that both the AM and the FM tuners put out the same IF frequency of 10.7 MHz. This way you only need one IF strip, though the signal is demodulated in a different fashion at the end. One of my more astute readers felt compelled to point out that in some modern receivers there is no IF amplifier at all, as they use a coherent demodulation scheme, using a local oscillator that is the same frequency and in phase with the signal carrier. But I bet you already knew that.

June BTC I've been on a personal war with trans-fats. These are lipid compounds that seem to be at the heart of many health hazards due to our diet. My wife tries to keep me up to date. They've been talking about requiring all food manufacturers to put trans-fat data on the wrappers so conscientious shoppers may gauge just how much of this stuff they want in their diets.

Keeping track of what's good for you and what's bad for you can be a daunting task. It occurred to me that I might be able to apply a little science and technology to make the problem a little simpler.

I came up with the idea for a fat detector. The design involved measuring the motion of charged particles due to electrostatic force. Keeping in mind that the repulsion force between two like charges in free space follows an inverse square law, how would you describe the repulsive force for a tiny charged object in close proximity to a large metal plate of like charge?

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.

June 2004 Calendar of Events

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		1 <u>5:30pm-7:30pm</u> <i>IEEE FWCS Excom Meeting, TECO Hall, Tampa Downtown</i>	2	3	4	5
6	7	8	9	10 <u>8-3pm</u> <i>FECA/PES Seminar, Clearwater Bch 6:30pm: IEEECS Seminar, Largo.</i>	11	12
13	14	15	16	17	18	19
20	21 <u>6:30-8PM</u> <i>PES Seminar: Tour of Tampa Electric Bayside Power Station</i>	22	23	24	25	26
27	28	29	30			

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