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THE SUNCOAST SIGNAL

THE INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS, INC.

Volume 51 — No. 8 **http://www.ieee.org/fwcs** **August 2008**

Inside this Signal…

This Month's Meetings

August 5th: EXCOM Meeting
At TECO Plaza

702 N. Franklin Street, Tampa
Meeting starts at 5:30PM and ends at 7:30.
Register online at http://time2meet.com/fwcs-excom/index.html
Meeting is open to all FWCS members and guests

Signal Processing and Communications Society Joint Meeting

Vehicle Infrastructure Integration (VII)
Speaker: George Gilhooley – HNTB Corporation, Lake Mary, Florida
Date: Wednesday 13 August 2008
Time: 5:30 pm
Location: Tampa Electric Co., TECO Hall
702 N. Franklin Street, Tampa, FL 33602
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Yuengling Beer Company Brewery Tour

August 29, 2008
The tour begins at 1PM and expected to last around 45 minutes
Yuengling Beer Co. of Tampa, Inc.
11111 North 30th Street
Tampa, FL 33612
Adjacent to Busch Gardens
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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. The opinions expressed, as well as the technical accuracy of authors, advertisers or speakers published in this newsletter are those of the individual authors, advertisers, and speakers. Therefore, no endorsement by the IEEE, its officers, or its members is made or implied.
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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This Month… (Editor's Column)

At the beginning of each month, the Signal Newsletter arrives in mailboxes of members of the FWCS. Prior to my taking on this job I had no understanding of what goes into making this happen each month. So, for this month's column I thought I would give some insight into the "process." It begins with the members of the FWCS when they send me articles or notices of upcoming events. These items take precedent over other types of articles since they highlight the things happening in the Section. I also use articles gleaned from various IEEE publications and websites.

The "official deadline" is the Friday after the EXCOM meeting. Submissions made by this time are considered for publication in the next issue of the newsletter. At some point, based on submissions, I decide whether the Signal will be eight or ten pages. I put it together and check for errors and consistency. Then I save it as a PDF and upload it to a website and I notify a group of sharp-eyed reviewers who go over it for grammatical and factual errors. After they reply to me with suggestions, I make the corrections/changes and repeat the process of uploading it to the website and notifying the reviewers. After additional comments and changes, each page is individually converted to PDF and e-mailed to the printer. They need three days or so to get it printed.

After they complete this, they are shipped to Jim and Donna Howard who fold and affix the address labels and take them to the Post Office. There, someone reads the Signal (really!) and checks that the content meets the requirements for Bulk Mail rates. If all is well with the Post Office, the Signal finally makes it through the mail system and arrives at your mailbox in time for you to plan to attend any events of interest. So that's all there is to it! I hope you take the time to read it over and if you would like to send in an article or event notice I would be glad to include it in an upcoming issue.

IEEE.tv

IEEE.tv is excited to announce its new series titled **Technical Tours**. The eighth series in IEEE.tv's program guide, Tech Tours introduces viewers to the features and operations of various engineering and scientific facilities.

Coal Gasification – Polk Power Station, Tampa Electric
Mark Hornick, General Manager of Tampa Electric Polk Power Station, provides an overview of one of the first coal gasification plants that creates a clean burning gas from coal in a "combined cycle" method that uses exhaust to create additional electricity.

The Story of Hoover Dam
Dan McRoberts, Guide Service Coordinator of the Bureau of Reclamation, gives a tour of Hoover Dam, including interior views of the turbines as well as the exterior structure. He discusses the use of the dam to manage water as well as to generate electricity.
2008 June - 8:08 min(s)008 June - 6:06 min(s)

IEEE Membership... Why We Joined
IEEE young professional members interviewed on their value of IEEE membership services, benefits and opportunities.
2008 June - 5:35 min(s)

IEEE Power & Energy Society
IEEE Power Engineering Society has officially changed its name to the IEEE Power & Energy Society (PES). In an announcement, this past April, at the 2008 IEEE PES Transmission and Distribution Conference in Chicago, Illinois. This video was exhibited as part of this important announcement.

2008 June - 3:11 min(s) **Did You See?**
Nerd Girls was featured in the June 16th edition of Newsweek, Revenge of the Nerdette.
These female engineers from Tufts University appeared on IEEE.tv in 2008 April documenting their task of building a solar car.

Check out Nerd Girls on IEEE.tv

IEEE

Capitol Hill Watch

10 JUNE: The House Subcommittee on Energy and Environment held a hearing to discuss the application of hybrid technology to medium and heavy duty trucks. Trucks use more fuel than cars and rising fuel costs for trucks are passed directly to consumers. Nonetheless, current research and government support have focused predominantly on passenger cars. The hearing focused on draft legislation proposed by Congressman James Sensenbrenner, Jr. (R-WI), (not yet available) intended to help correct the imbalance and accelerate the process of bringing these technologies to the market. Mr. Sensenbrenner said his bill "will create competitive grants for companies to manufacture plug-in hybrid utility and delivery trucks. Utility trucks typically drive short distances to and from a work site, but sit idle for hours while on site. A plug-in hybrid truck would use less fuel getting to and from the site, and could operate without any fuel while on site. Ultimately a plug-in hybrid engine in a utility truck could use up to 60 percent less fuel. Delivery trucks constantly stop and go. Hybrid engines excel at this type of driving. These examples are therefore well-suited for demonstration and advancement of this important technology."

IEEE Power & Energy Society Renewable Energy Policy Event a Success!

On Friday, June 27, 2008, the Florida West Coast Section of the IEEE, PES, welcomed Dr. P. K. Sen, PE and Dr. Keith Malmedal, PE, . The subject was on **Renewable Energy, Energy Policy Act of 2005, IEEE Std. 1547 – Interconnection Guidelines and Future of Electric Power Industry and Application Notes**. The group met at Seminole Electric with an attendance of over thirty participants.

Dr. Sen has over 42 years of experience and currently is a professor at Colorado School of Mines as well as a Senior Consultant with NEI Electric Power Engineering, Inc. Dr. Keith Malmedal has over 15 year of engineering experience and is presently a Principal Engineer and President at NEI Electric Power Engineering, Inc.

This was a four hour seminar that discussed

- Historical Perspective and the Current Status
- Where are we heading?
- Recent trends in the electricity market.
- Load and Loss Factor
- Energy Policy Act of 2005 – Pros and Cons
- IEEE Interconnection Standard 1547
- And much more.

Interestingly, the Energy Policy Act of 2005 has a stated purpose of achieving energy self-sufficiency by the year 2025 within the United States, Canada and Mexico. There are currently 11% renewable sources being used. Of that, hydropower is producing 75% of all renewable energy. The bill also has provision for anyone wishing to connect to the power grid.

A discussion of energy storage innovation illustrated how it has progressed such that systems are being developed for applications in large scale power and short term energy storage.

It was a great pleasure to have these two presenters as their passion for the field of Electric Power and the future is evident. I would like to thank Seminole Electric for the use of their conference room.

Nerds

"Nerds are the ones who don't go to the party so they can stay home and do homework; geeks bring their homework to the party"
Boston Herald, January 27, 2008: Once in a blue moon a book comes along that makes us want to shout from the housetops, "You've got to read this book!"
The book is "Nerds: Who They Are and Why We Need More of Them," by David Anderegg, a Lenox psychotherapist who teaches psychology at Bennington College in Vermont. A more moving defense of "nerds" (and "geeks") would be hard to find.

Signal Processing and Communications Joint Meeting

Vehicle Infrastructure Integration (VII)

Speaker: George Gilhooley – HNTB Corporation, Lake Mary, Florida
Date: Wednesday 13 August 2008
Time: 5:30 pm
Location: Tampa Electric Co., TECO Hall, 702 N. Franklin Street, Tampa, FL 33602
For driving directions, contact Hector at hmartinez@hntb.com or use Mapquest:

ABSTRACT: In this session we will address Vehicle Infrastructure Integration, what it is, who are the players and what it can do for the future of transportation.

1. Who are the VII Coalition and VII Consortium
2. Why do we need VII
3. Why DSRC 5.9
4. IEEE and SAE standards development
5. Safety, mobility and other applications
6. The future

The Vehicle Infrastructure Integration (VII) Coalition is determining the feasibility of a widespread deployment of vehicle to vehicle and vehicle to infrastructure communication which would enable applications to improve safety and mobility. Proof of Concept testing using 5.9 GHz for Dedicated Short Range Communication (DSRC) is underway in Michigan and California. The Coalition includes nine automobile manufacturers, the American Association of State Highway and Transportation Officials, ten State Department of Transportations and the United States Department of Transportation.

GEORGE GILHOOLEY received a BCE from University of Dayton in 1977. He is a registered professional engineer and has 30 years of experience with the Florida Department of transportation in all phases of transportation including planning, design, construction, maintenance, operations, intelligent transportation systems and administration. He has been the District Secretary for District Five (Central Florida) and served on the Boards of Directors for the Orlando-Orange County Expressway Authority, LYNX (Central Florida Transit Agency), and Metroplan Orlando (Central Florida Metropolitan Planning Organization).

In September, 2008, George joined HNTB as an associate vice president and Florida ITS Leader. He has continued his involvement with the VII Coalition that began over five years ago when the group was formed.

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USF Robotics Team News

Georgia Tech University will be holding the annual IEEE Southeast Hardware Competition for 2009. The University of South Florida is sending six of their finest electrical engineering students to participate in the competition. Currently the USF students are in the early stages of designing and building the robot which will enter the competition. The official purpose of the robot is to collect recyclables and so the robot must be able to collect, distinguish, and store glass bottles, plastic bottle, and aluminum cans. The USF group is lead by Mark Mniece, and includes Mohamad Khawaja, Eric Davidson, Souad Rochdi, Moez Oueslati, and Jose Salazar. This group's main goal is to reach the top and win the competition.

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NFPA 70E, 2004Standard for Electrical Safety in the Workplace September Event

How does this code apply to you and your workplace? What do you need to do now to become compliant? For the first time in 25 years, OSHA is updating the general industry electrical installation standards found in Subpart S of 29 CFR Part 1910, to include among other requirements, a more specific reference to the NFPA 70E requirements, Effective August 13, 2007.

"A qualified person shall be trained and knowledgeable of the construction and operation of equipment or a specific work method and be trained to recognize and avoid electrical hazards that might be present with respect to that equipment or work method."
"The employer shall provide the safety related work practices and shall train the employee who shall then implement them."
"Appropriate safety related work practices shall be determined before any person approaches exposed live parts within the Limited Approach Boundary by using both shock hazard analysis and flash hazard analysis."
"…employer shall document the incident energy exposure of the worker."
"When an employee is working within the Flash Protection Boundary he/she shall wear protective clothing ."
OSHA 1910.269(I) (6) Flame resistant (FR) clothing and PPE shall be used by the employee based upon the incident energy exposure associated with the specific task.
"Switchboards, panelboards… likely to require examination, adjustment, servicing or maintenance while energized shall be field marked to warn qualified persons of potential electric arc flash hazards."

When: Friday, September 12- Registration & Breakfast: 7:30AM-8:00AM
Training: 8:00AM – 4:00PM. Lunch will be provided.
Where: Lakeland Center, Room, 701 West Lime Street, Lakeland, FL 33815
How: Call 800-881-2698, Cost: $150.00, $125 for IEEE members, an NFPA 70E book will be provided ($50.00 value). Make reservations early, space is limited to 50 students. 8 PDH hours will be awarded.

Presented by**: Leedy Electric Corporation**

Teacher in Service Presentations!

Sean Denney and Ralph Painter will be making Teacher in Service Presentation for Hillsborough County at Robinson High School on August 12th and Pinellas County on August 15th. They welcome anyone that wants to help. For more information contact Sean at venner20@ieee.org or 727-381-7237

The Design of Future Things

Article from the IEEE Spectrum Online 2 July 2008

"I am a technologist," says Donald A. Norman in his brief and insightful book, ***The Design of Future Things***. "I believe in making lives richer and more rewarding through use of science and technology. But that is not where our present path is taking us

" Norman, a professor of electrical engineering and computer science at Northwestern University, became famous for his book The Design of Everyday Things (first published in 1988 as The Psychology of Everyday Things). In it he called for "user-centered design," a way to make everyday products easier to use and more foolproof. Now he turns to seemingly futuristic technologies that in fact may not be so far away. Many of Norman's examples involve automobiles.

For example, some new cars are now equipped with an adaptive form of the familiar cruise control. Like the old form, it keeps the car going at a constant speed; unlike the old form, it automatically slows the car when it gets too close to the car in front of it. But that extra automation can lull the driver into complacency, Norman says, taking over when the going is easy and unexpectedly giving up when things become difficult. Norman describes how one of his friends had a close call after driving for some time at low speed on a congested highway and then turning onto an exit ramp. The car suddenly accelerated because of the adaptive cruise control, which he had forgotten to disable. A better-designed system would have reminded the driver that the control had been activated. In fact, Norman thinks, automobiles should be designed to appear less safe than they actually are to keep the driver on guard, a suggestion not gladly accepted by some of his automobile-industry clients. Intelligent systems, he argues, should be understandable and predictable, and when something goes wrong they should send messages that get the user to make the right response intuitively. As an example of good design, he cites the aeronautical system that vibrates the control yoke to warn the pilot of an impending stall. For bad design he offers the writing recognition system in Apple's old Newton personal digital assistant, which could turn a carefully written word into nonsense without giving the user any clue as to how to correct the problem.

It's wrong, Norman argues, to try to make machines too smart. A car with an automatic navigation system that chooses a scenic route when it thinks the driver is in a good mood is unlikely to succeed, he says, because cars will probably never be good at reading human intentions. Instead, he wants machines that augment human capabilities for example, robots that allow auto-assembly workers to manipulate heavy objects while receiving tactile feedback, to make their operation intuitive to a worker.

The Design of Future Things is short, easy to read and clearly meant for a lay audience the very people who most need to be warned not to expect too much from automation. No doubt most engineers would agree with his criteria for good design. The problem is that many subtle usability issues manifest themselves only after somebody has gotten into trouble with a product; that's why designers, consumed by the rush to bring new products to market, overlook them. Norman inhabits the very particular world of designers of high-end consumer products. Such products chase those so lost in overconsumption that they can contemplate a refrigerator that locks its doors when a dieter approaches. Where is the guru for the bottom billion people in the world's economic order, who have too little to put in their nonexistent refrigerators in the first place?

The Design of Future Things: By Donald A. Norman; Basic Books, 2007; 231 pp.; US $27.50; ISBN: 978-0-465-00227-6

Brain Teaser Challenge Solution - May 2008

Butch Shadwell

If you recall, in the last BTC I recounted a discussion I had many years ago "…in a discussion among some physicists about a laser weapon There was some debate about whether it should be a high energy beam or a high power one in order to successfully shoot down a missile in flight I'd like to hear what you think"

I mentioned that the discussion was complicated by the fact that there were some engineers in the group. This stems from the fact that for a physicist the energy of a wave or particle beam refers to its wavelength Higher energy photons have a shorter wavelength Of course for the engineers, energy was simply the integral of the power over time

Even when we settle on the engineering terms, the answer is still not necessarily obvious You can impart the same amount of energy to the surface of the target with a low power photon beam as you can with a high power photon beam by letting the low power beam run longer (integral over time right) However, if the objective is to damage the target by heating the skin to the melting point, then the rate of heat dissipation in the target skin is a key factor This establishes a lower limit on the power level of the photon beam, ie – the beam must impart heating energy faster than it is dissipated on the surface of the target Finally, since it is very difficult to keep the laser accurately focused on a particular point on a fast moving target, then it would seem that you must have a very high power beam to have a chance of getting enough energy into the target to do any harm in the short time frames available But I bet you already knew that

Brain Teaser Challenge – June 2008

As I am writing this piece, the Fourth of July is just around the corner Everyone looks forward to the picnics, pyrotechnics, and patriotism This is definitely one of the happier holidays on the American calendar, the date that the Continental Congress adopted our Declaration of Independence, in Philadelphia Eventually, there were 56 signers of this document These brave men risked everything, including their very lives, to do what they believed was the honest and right thing I hope our congress men and women of today will reflect on these predecessors during this holiday

With gas prices going through the roof, holiday travel can be very expensive As a large part of our energy consumption is for cars, it is important that we understand how to get better gas mileage Most cars have two or three pedals on the floor This month I am asking you to tell me which one is the cause of the most loss of fuel economy Most folks get this one wrong

Have a great Independence Day …, if you are in the USA that is.

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 column.

IEEE

Call for Articles!

Have you ever thought about writing an article for publication in a newsletter like the SunCoast Signal? I am always looking for articles written by members of the FWCS. The article can be of any topic that would be of interest to the members of the Section. Don't worry about spelling, grammar or length of the article. That is what Editors are for! If you are interested in sending in something for consideration, get it to me by the first Friday after the EXCOM meeting (it's in the calendar) and in Microsoft Word format. If it's included in the Signal it will be seen by more than 2000 readers in the Section. Send to rsancz@verizon.net

IEEE

Teacher in Service Report

Dear Friends,

I had the opportunity of leading an engineering workshop at Walt Disney World on June 7th. The IEEE and ASME and other Engineering Societies hosted a morning of the *Inspire Innovation* workshop for teachers at the Swan Resort. I arrived early around 7:30AM and filmed the hotel. I was directed to the conference center where I met Yvonne Pelham from the IEEE corporate center in New Jersey. I was prepared to give my PowerPoint Presentation on the history of Teacher in Service and have the 34 individuals participate in the effective and popular "Building a Robot Arm" Exercise. We asked the teachers to design without guidance to encourage creativity. They were further challenged to upgrade it when weight was factored in. Moderator Karen Malesky had a stuffed toy dinosaur on a box in one corner of the room. Lava rocks and golf balls were placed in front of the box. We pretended the golf balls were dinosaur eggs. Everyone had the chance to show how effective their robot arms were by carrying the "eggs" over the lava pit and depositing in the dinosaur nest. It was fun for everyone!

Yvonne asked me to ask those teachers we have done a presentation for already to report how they have integrated into the classroom some of the Engineering topics we have given. Please reply?

Ralph Painter and I will lead the Rotational Equilibrium Presentation for the Pinellas In Service Day on August 15th. We still need specific information from Hillsborough County (when, where, what topic) for August 13th, please? Also if Pasco or Polk County is having summer in Service Events, please let me know. Please contact me to discuss and arrange a Teacher in Service Presentation for your school during the summer and fall.

Sincerely, Sean Denny,
venner20@ieee.org
IEEE FWCS TISP Chairman

Yuengling Beer Company Brewery Tour!

Come see the technical aspects of beer getting brewed! You are invited to meet us at the brewery for a plant tour on August 29, 2008. The tour begins at 1PM and expected to last around 45 minutes. We will end our afternoon at the Hospitality area. There is also an opportunity to sample the beer
Please reserve with Jeff Basiaga at jeff.basiaga@stantec.com so we can get a preliminary headcount for the plant. We shall see you there!
The tour is sponsored by the PE/IA Society and is courtesy of Yeungling Company.
Plant info:
Yuengling Beer Co. of Tampa, Inc.
11111 North 30th Street
Tampa, FL 33612
Plant is Adjacent to Busch Gardens.
Parking is across from Village Inn Restaurant on 30th Street at the Beirgarten entrance

August 2008 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 *EXCOM Meeting @ TECO Hall 5:30 PM*	6	7	8	9
10	11	12 *Teacher in Service presentation Page 6*	13*Signal Processing Meeting Page 5*	14	15 *Teacher in Service presentation Page 6*	16
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