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THE

SUNCOAST

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This Month's Meetings

November 3rd: EXCOM Meeting

Meeting starts at 5:30PM At TECO Plaza

Register online at <http://time2meet.com/fwcs-excom/index.html>

Meeting is open to all FWCS members and guests

Protective Relaying Seminar

Friday, November 6, 2009

to register go to <http://time2meet.com/fwcs-pes4/index.html>

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Signal Processing and Communications Society Joint

Meeting: Thursday 12, November 2009

Meeting Location:TECO Hall

702 N. Franklin Street, Tampa, FL 33602See page 7

***Florida Reliability Coordinating Council and the FRCC
Transmission Planning Process***

Thursday, December 17, 2009

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This Month...(Editor's Column)

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Friday after the 1st Tuesday of the month preceding the issue month.

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It's hard to believe that we are into the holiday season and the year is almost over! There is a lot happening in the FWCS. Plans are well under way for the Engineering banquet to be held early next year. Look for announcements soon in the Signal. Also, Lance Tenhoopen, a recent attendee of the EXCOM, has volunteered to help with PACE activities. I have been PACE Chair, but with Signal editing and other volunteer activities, I haven't had time to spare. I will now be helping Lance with organizing events. Look for PACE events in the future!

Thanks to all our contributors this month! Hector Martinez with a Signal Processing meeting, Jim and Donna Howard, each with meetings and Butch Shadwell and the BTC. There is also a follow-up on the Consultants Network meeting last month.



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IEEE★USA IN THE NEWS

WASHINGTON (25 September 2009) -- For years, those trying to interest children in science, technology, engineering and mathematics (STEM) have complained about a lack of sci-tech TV shows. Network TV executives took notice. The new fall broadcast TV lineup includes so many STEM-related shows that the current issue of "IEEE-USA Today's Engineer"

(<http://www.todaysengineer.org/>) includes a top 10 list. One of these is "NUMB3RS," which makes its season premiere tonight on CBS. "NUMB3RS" features FBI agent Don Eppes (Rob Morrow), who enlists the help of his mathematical-genius younger brother Charlie (David Krumholtz) to help solve some of the agency's more-challenging crimes. The younger sibling is able to discern mathematical patterns in criminal activity and use calculations that assist FBI investigators. Dylan Bruno, who plays agent Colby Granger, graduated from MIT in 1993 with a degree in environmental engineering.

The top 10 list includes Heroes (NBC), Bones (FOX) and Shark Tank (ABC). So check out the list at <http://www.todaysengineer.org/2009/Sep/STEM-TV.asp> and see what show is No. 1.

The latest issue of "Today's Engineer" also includes an article on getting noticed in the competitive job market ("Why Haven't I Been Hired Yet?") and the approval of a licensing exam for software engineers ("Software Engineering PE Examination Development Approved").

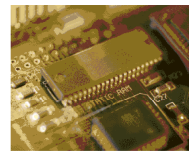
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Call for Articles!

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. I have published several from the membership in the past. 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!

Continued at right...



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If you are interested in sending in something for consideration, get it to me by the first Monday after the EXCOM meeting (it's in the calendar) and in Microsoft Word format and keep it to a page or less. If it's included in the Signal it will be seen by more than 2000 readers in the Section! Send to rsancz@verizon.net

Special Thanks to TECO

Last month the FWCS PE/IA Chapter had a great tour of the TECO Control Center and we hope all who attended enjoyed the opportunity to see this state-of-the-art facility. We would like to thank TECO as well as our tour guides, Art Nordlinger and David Darden, who did an excellent job of describing the operations and details of the systems involved in maintaining the reliability of the electric supply. For those of you who had hoped to attend and due to limitations on the number of attendees, we do hope to repeat this tour in the future, so be sure to watch your Signal and sign-up early to get your name on the list.





Protective Relaying

Date: Friday, November 6, 2009
Time: Registration: 8:30am-9:00am
 Seminar: 9:00am-3:00pm
Cost: \$100 IEEE Members, \$150 Non-Members, \$75 Students (lunch included)
 Make checks payable to IEEE FWC and mail a check in advance to IEEE FWC Treasurer:
 Dr. Paul Schnitzler, 30612 Nickerson Loop, Wesley Chapel, FL 33543
 PDH: 4 Professional Development Hours (PDH) will be awarded for Professional Engineers
Speakers: Ed Schweitzer, Ed Atienza, Eduardo Palma, Mike Collum
Location: Seminole Electric, 16313 North Dale Mabry Hwy, Tampa, FL, 33618
RSVP: Online at: <http://time2meet.com/fwcs-pes4/index.html>
 Space limited to the first 45 registrants!!!
Questions: Jim Howard at 863-834-6585 or Jim.Howard@Lakelandelectric.com

<p>Areas to be covered include:</p> <p>Session 1</p> <ul style="list-style-type: none"> - Real world synchrophasor solutions - Integrated Communication Network - Smart Security <p>Session 2</p> <ul style="list-style-type: none"> - Distribution Automation Solutions <p>Session 3</p> <ul style="list-style-type: none"> - Smart Automation and Integration <p>Session 4</p> <ul style="list-style-type: none"> - Advances in Transmission Protection 	<p>Agenda:</p> <p>There will be 4 sessions.</p> <p>(Times are approximate):</p> <p>8:30 Registration</p> <p>9:00-12:00 Sessions 1&2</p> <p>12:00-12:45 Lunch</p> <p>12:45-2:45 Sessions 3&4</p>
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Speakers: Dr. Edmund O. Schweitzer, III, Edsel Atienza, Eduardo Palma, and Mike Collum
 Schweitzer Engineering Laboratories, Inc., 2350 NE Hopkins Court, Pullman, WA 99163©5603

Since Dr. Edmund O. Schweitzer, III introduced smart grid products to the power system in 1984, he and the company he founded, Schweitzer Engineering Laboratories (SEL), have continued to develop innovative solutions to make electric power safer, more reliable, and more economical. Dr. Schweitzer will talk about recent breakthroughs that will help define today's power grid. Topics include real-world applications of synchrophasor measurement and control, high-speed distribution feeder restoration, substation automation, and advances in transmission protection. Associated communications and required security measures to implement smart grid solutions will also be addressed.

Dr. Edmund O. Schweitzer, III is recognized as a pioneer in digital protection and holds the grade of IEEE Fellow, a title bestowed on less than 1 percent of IEEE members. In 2002 he was elected a member of the National Academy of Engineering. He is the recipient of the Graduate Alumni Achievement Award from Washington State University and the Purdue University Outstanding Electrical and Computer Engineer Award. In September 2005, he was awarded an honorary doctorate from Universidad Autonoma de Nuevo Leon in Monterrey, Mexico, for his contribution to the development of electric power systems worldwide. He has written dozens of technical papers on digital relay design and reliability, and holds more than 30 patents pertaining to electric power system protection, metering, monitoring, and control.

Continued on following page...

From preceding page

Dr. Schweitzer received his bachelors and masters degrees in electrical engineering from Purdue University and his doctorate from Washington State University. He served on the electrical engineering faculties of Ohio University and WSU, and in 1982 he founded SEL to develop and manufacture digital protective relays and related products and services. Today SEL is an employee owned company that serves the electric power industry worldwide and is certified to the ISO 9001 international quality standard. SEL equipment is in service at voltages from 5 to 500 kV to protect feeders, motors, transformers, capacitor banks, transmission lines, and other power apparatus.

Edsel Atienza received his bachelors' degree in electrical engineering from the University of Idaho in 2001. He joined SEL in 2002 as an international field application engineer. In 2006, Edsel joined Tampa Electric as a substation operations engineer responsible for relay testing and maintenance. He returned to SEL in 2008, serving the southeastern United States as a field application engineer.

Eduardo Palma received his bachelors' degree in electrical engineering from the University of South Florida in 2003. An IEEE member, Eduardo is an integration application engineer with experience in application, training, integration, and testing of digital protective relays and communications equipment. His experience focuses on system integration and the application and testing of communications protocols. Eduardo joined SEL in 2003 and is serving the Latin America, Caribbean, Spain, and Portugal markets. He conducts and provides technical seminars, commissioning, technical support, and training classes to introduce SEL solutions and services.

Mike Collum, graduated from Mississippi State University with a bachelors' degree in electrical engineering and is a registered professional engineer in Mississippi. He started working with SEL in 1997 as a field application engineer. He is a senior field application engineer for the east region out of Tupelo, Mississippi. For 11 years prior to joining SEL, Mike was director of planning and protection for South Mississippi Electric Power Association, where he was involved in transmission planning and system protection applications.

Brain Teaser Challenge Solution - August 2009

Butch Shadwell

Harvesting hydrogen from the sea was the subject. "We all know that deuterium is found in much higher concentrations in the sea than in the atmosphere. Perhaps the heavier molecules find it harder to make the transition from liquid to gas phase on the surface, so most of the evaporation is of the lighter isotopes. So the problem today is - how big a container do I need to hold 1 mole of H₂ at STP?"



In this problem, fact that the gas is deuterium is not relevant at STP. The answer is approximately the same for a mole of any gaseous compound. Remember $pV=nRT$, where n is the number of moles of the gas in question and R is a proportionality constant that varies depending on the units selected for the other three variables. For p in atmospheres, V in liters, and T in degrees Kelvin, $R = 0.0821$ L atm/K mol. Since p and n equal 1, $V = R * T$ or $V = 0.0821 * 273$, or 22.39 liters. But I bet you already knew that.

Brain Teaser Challenge – September 2009

Little Schlomo had nothing on his mind as he rolled the wheel down Pearl Street with his stick. The sound this perfect circle made as it rumbled along and drew his thoughts away from here and now. It was 1889, and for a ten year old in New York, life was lived in the street, and things were hard. Uncle Lenny, who had been living with his family for as long as he could remember, was sure his ship would come in any day now. Even though he knew it was rubbish, sometimes Schlomo would enjoy listening as his uncle would explain his latest get rich quick scheme. It was on a Tuesday, as he heard his Uncle Lenny describe his new electric light business. As you know, light bulbs were pretty expensive, about a dollar a piece, and they didn't really last that long. Lenny's idea was to sell folks lower voltage light bulbs which were a little cheaper and would last a little longer. He planned on buying transformers to reduce the voltage. What turn ratio did he need to run 25 volt bulbs? Hope you remember your electrifying history.

Reply to Butch Shadwell at b.shadwell@ieee.org (email), 904-410-9751 (fax), 904-410-9750 (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 Consultants Network

Our last meeting was held on Tuesday, September 29th at CDB's Southside Italian Restaurant in Tampa. Our guest speaker was Mr. John Walters of Lewalt Consulting Group <http://www.lewaltconsulting.com> a financial and Tax professional who talked to us about "Actively Managing Your Business through the Work of Tax". During his chat, John covered the different types of businesses (S-Corporations, C-Corporation, LLC, etc.), how to set yourself up for business, advantages and disadvantages of each type, record keeping and how to carry on with the expenses of the company and more specifically how to manage your company taxes to your business advantage. This was an excellent opportunity to ask your questions about taxes for your Consulting Business and John certainly provided the answers that were placed to him in a very clear and concise manner. John also talked about Small Business Accounting and Tax Issues to give us all an idea as to how to maintain our books. Our members present certainly took advantage of this opportunity and kept John busy answering varied questions on this subject.

These series of chats have been directed to give everyone an idea of what to do to manage our small businesses, how to structure our companies and how to set ourselves up for operating them. We have provided views from the corporate level as to what is it that a manager looks for in a consultant, what resources does Pinellas Development Council has to offer, the legal ramifications of doing business, and the tax and financial workings of a corporation and how to structure it. We shall continue with this direction until we have presented a thorough view of the importance of structuring and managing a Consulting Business



IEEE-USA Releases Second E-Book in Innovation Series

WASHINGTON (16 October 2009) -- IEEE-USA has just released the second e-book in its new innovation series on "Doing Innovation: Creating Economic Value." Gerard H. (Gus) Gaynor, a retired 3M director of engineering, brings you "Book 2: Developing a Workable Innovation Process."

Gaynor writes that his new book "teaches the fundamentals related to the innovation process, presents various models with their limitations, describes the innovation design process, considers the issues in developing a process model, suggests a generic model and describes organizing for innovation."

Topics in the e-book include:

- Status of Innovation
- Innovation Process Models
- Summary of Process Models
- Working Toward an Innovation
- Innovating by Design
- Generic Innovation Process Model

You can purchase your copy of "Doing Innovation: Creating Economic Value – Book 2: Developing a Workable Innovation Process" at www.ieeeusa.org/communications/ebooks for the IEEE member price: \$9.95. The nonmember price is \$19.95.

IEEE members can purchase other IEEE-USA E-Books at deeply discounted member prices -- and download some free e-books.

To purchase IEEE members-only products and to receive the member discount on eligible products, members must log in with their IEEE Web account.

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Signal Processing and Communications Society Joint Meeting New Communication System Imperatives: Current and Future Value Creation

Speaker: *Dr. Frank Appunn* – St. Petersburg College, St Pete Florida

Date: Thursday 12, November 2009

Time: 5:45 pm

Location: Tampa Electric Co., TECO Hall

702 N. Franklin Street, Tampa, FL 33602

For driving directions, contact abelhct@hotmail.com

ABSTRACT: The future expectations of technology serving both individuals and organizations will strive to be secure while delivering “mobile” everything, based on “virtual” everything. Core to this future is the assumption that communications systems will deliver the required transport for these promises. This presentation takes current and imminent communications systems and then tracks a likely route through services to value creation and implied risks for practical solutions.

The impact of technical leadership being shared across global boundaries, forces the interaction between technology, services, and solutions to receive closer scrutiny. This presentation considers the horizon for communication technologies to be the role of new developments in fiber and wireless mediums including the WiMax, and 4G family. Services considered include virtualization; cloud computing, XaaS, grid computing, and security. Finally, value would depend on improved results from consumer, business, and governmental solutions in voice, video, and computing. The horizon for this presentation extends to 2013.

Speaker Biography: Dr. Frank Appunn holds a CISSP, obtained his B.Comm from Nelson Mandela University, an MBA from the University of Maine, and a Ph.D. in IT and security concentration from Capella University. His practical experience focused on innovation, and the efficient and effective use of technology for organizational benefit. Frank formed and headed organizations that provided systems management, security, and Web solutions in the US, Europe and Africa over a period of 22 years. Customers included large financial, medical, mining, governmental, and technology organizations.



After settling in the US in 2003, his scope increased to include teaching a broad array of business and technology topics. Primary research interests include the integration of organizations, people, and technology in the security, sustainability, and innovation fields. He teaches information technology, security, and management courses at St. Petersburg

College where he heads the Bachelor’s degree in Technology Management. Other activities include teaching in the Master of Science program at City University and information systems doctoral students at the University of Phoenix. He retains commercial currency through consulting in the computer security arena.



Florida Reliability Coordinating Council and the FRCC Transmission Planning Process

Date: Thursday, December 17, 2009
Time: Meeting: 11:30am-1:00pm (includes Lunch)
Cost: \$10 IEEE Members, \$20 Non-Members, \$5 Students
Speaker: John Odom, VP of Planning and Operations, FRCC
Location: Florida Reliability Coordinating Committee (FRCC)
1408 N. West Shore Blvd., Suite 1002, Tampa, FL, 33618
RSVP: Online at: <http://time2meet.com/fwcs-pes3/index.html>
Space limited to the first 45 registrants!
Questions: Donna Howard at 813-207-7966 or DHoward@FRCC.com

The FRCC is a not-for-profit company incorporated in the State of Florida. The purpose of the Florida Reliability Coordinating Council is to ensure and enhance the reliability and adequacy of bulk electricity supply in Florida, now and into the future. FRCC serves as a regional entity with delegated authority from the North American Electric Reliability Corporation (NERC) for the purpose of proposing and *enforcing reliability standards* within the FRCC Region.

The objective of the FRCC Regional Transmission Planning Process ("Planning Process") is to ensure coordination of the transmission planning activities within the FRCC Region in order to provide for the development of a robust transmission network in the FRCC Region. The Planning Process is intended to develop a regional transmission plan to meet the existing and future requirements of all customers/users, providers, owners, and operators of the transmission system in a coordinated, open and transparent transmission planning environment.

SPEAKER BIOGRAPHICAL INFORMATION

John Odom is Vice President of Planning and Operations at the Florida Reliability Coordinating Council (FRCC). John joined FRCC in May, 2005 after 26 years at Progress Energy Corporation (PEF). He is responsible for oversight of all Member Services Activities, including the Planning Committee, Operating Committee, FRCC Reliability Coordinator function and the FRCC Regional Transmission Planning Process. Additionally, he oversees the Regional Entity functions of reliability assessment, situational awareness, training and certification of system operators, and event analysis. John is one of FRCC's representatives on the Eastern Interconnection Reliability Assessment Group (ERAG) Management Committee. Until June 2007, John was the FRCC Representative on the NERC Reliability Assessment Subcommittee (RAS), a position that he held for 6 years. John is currently the chair of the Assess Future Transmission Needs Standards Drafting Team (AFTNSDT), which is re-writing the existing TPL-001 through TPL-006.

While at Progress Energy, John spent the majority of his time in Transmission Planning. He was actively involved in the Federal Energy Regulatory Commission's Open Access transmission proceedings and in various North American Electric Reliability Council (NERC) activities.

John has been a member of IEEE for more than 20 years. He received a BSE from the University of Central Florida and has been a registered Professional Engineer in the State of Florida since 1984.



Two Share Physics Nobel Prize

October 2009—Willard Boyle and George Smith, formerly of Bell Telephone Laboratories, in Murray Hill, N.J., will share half of this year's Nobel Prize in Physics "for the invention of an imaging semiconductor circuit—the CCD," the basis for digital imagery in everything from pocket cameras to the Hubble Space Telescope. (The "imaging" part of the citation is in dispute, as the first imaging CCD was developed by IEEE Fellow Michael F. Tompsett, a colleague of Boyle and Smith.) In announcing the awards, the Royal Swedish Academy of Sciences called Boyle and Smith "masters of light" and said that, with fellow winner and [optical-fiber pioneer Charles Kuen Kao](#), they "helped to shape the foundations of today's networked societies."



Boyle and Smith came up with the idea for the CCD during a brief meeting in 1969. The two were working on semiconductor integrated circuits, and Smith had been involved with trying to create an imaging chip for the Picturephone, which consisted of an array of silicon diodes. At the time, Bell Labs was also working on a new type of computer memory that relied on tiny bubbles of magnetism. As the two recalled in a 1976 article in *IEEE Transactions on Electronic Devices*, their boss, Jack Morton, urged them to look at whether it was possible to make a form of bubble memory using semiconductors.

The idea is fairly simple. You start with a layer of silicon, doped so that it's deficient in electrons and oxidized at the surface. Atop the oxide, add an array of metal electrodes as gates, creating capacitors that can store charge. Then apply a voltage to the gate, which repels the silicon's positive carriers—the holes—and creates a potential well at the surface of the silicon. When a photon strikes the silicon, it creates an electron-hole pair, and the electron moves toward an electrode into the well. Electrons accumulate in the interface between the silicon and the oxide. When you apply a sequence of high and low voltages to adjacent gates, the electrons move from one gate to the next, like water being poured from one bucket to another, until they reach the edge of the chip, where the level of charge can be read as a measure of light intensity.

Though their aim was to invent memory, Smith says it was obvious that the technology would work for imaging as well. And when random access memory (RAM) came along, attempts to create bubble memory were abandoned.

Carlo Sequin, a professor of electrical engineering and computer science at the University of California, Berkeley, joined Smith's group to work on CCDs after the initial invention. He helped build the first CCDs that were compatible with the U.S. television format, thus reducing the size of TV cameras. "It was very exciting, because there was this very new principle that at the beginning seemed to be very simple," Sequin says. In practice, he says, there were a lot of design issues to solve to make the device practical. Perhaps the greatest breakthrough came when Boyle and Smith developed the buried channel concept. By transferring the charges within the silicon instead of at the surface, they were able to avoid the losses caused by imperfections at the interface of the silicon and the oxide. That innovation allowed CCDs to grow from devices with only a few dozen pixels to arrays of 10,000 by 10,000 today.

"What used to be this incredibly simple principle is one of the most complex devices being built today, yet for \$100 you find it in every camera," Sequin says.



The Great American Teach-In is November 18th!

Reminder! The Great American Teach In for Hillsborough County Schools is November 18th. I and the EXCOM Board of the Florida West Coast Section of the IEEE encourage you to participate at your local elementary or high school. I have a small favor to ask of you, please? Please write me a reply email on where it was done, how many students were present, how it went, and what topic you chose to present. I have a questionnaire survey form which I need to send to IEEE in NJ. The form is available from Venner20@ieee.org. It is up to all of us to make sure the future engineers are taught properly. Engineering in education matters!



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Or fax your address changes to (732) 562-5445

November 2009 Calendar of Events (For more information see P. 1) *inside this Signal...*

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