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THE SUNCOAST SIGNAL

THE INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS, INC.



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2007 IEEE PES General Meeting

June 24 – 28, 2007

Marriott Waterside Hotel, Tampa, Florida USA



The Power Engineering Society is pleased to announce that its 2007 general meeting is scheduled for June 24-28, 2007 at the Tampa Convention Center and the Marriott Waterside Hotel in Tampa, Florida, USA. The Tampa Convention Center is across the street from the Marriot Waterside Hotel and is a short walk. The conference, with its theme *Powering the Future, Today*, will provide an international forum to address policy, infrastructure and workforce issues.

The range of events and meetings are first rate as are the facilities of the hotels and convention center. With the participation and support of the Florida West Coast Section members along with students from USF and elsewhere, every attendee is assured an educational and entertaining experience.

The city of Tampa and the neighboring areas have first rate entertainment as well as some of the finest beaches in the United States. Take some time to explore some of these venues and enjoy your visit.

We invite our colleagues from around the world to join us in Tampa for this memorable industry meeting. During the meeting you will have the opportunity to participate in many high-quality technical sessions and tours, committee meetings, networking opportunities and more. There will also be special student events and entertaining Registered Companion activities planned throughout the week.

To read more about this meeting, see **pages 4 and 5** in this Signal or visit <http://ewh.ieee.org/r3/floridawc/pesias>. On-line registration is available at www.pesgm07.org.



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PES and Student Branch (Editor's Column)

We have been waiting anxiously for the PES meeting and many members of this section are deeply involved in making it the best ever. This is a big, rich event which you must attend even if it is not your primary field. With over 1500 attendees, you have the opportunity to meet colleagues from all over the world, a great place to network.

Looking to the future, we have the graduating seniors from USF and other universities. These new engineers are going to be the creators, managers and leaders in the engineering organizations of the future. The United States needs these bright minds to retain our leadership in the globalizing world. If they sit back and let others do the job, the jobs will leave the US! See page 6 for the new IEEE at USF Student Branch leaders for the fall semester. They are already working on plans to provide career guidance, education, and just plain fun for IEEE students.

—PS



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2007 IEEE Annual Election Information

To ensure that you receive your 2007 IEEE Annual Election ballot materials, please verify that your IEEE member profile contains your current postal and e-mail addresses. Please make sure that your member profile information is updated by 12:00 noon EDT (16:00 GMT) on Friday, 29 June 2007. All eligible voting members will be mailed a ballot based on this information on or before 1 September 2007.

To access and update your profile, visit myIEEE (<http://www.ieee.org/myieee>) or the Update Profile Application (<http://www.ieee.org/coa>). If you encounter any problems, contact IEEE Member Services at member-services@ieee.org or at +1 800 678 4333 or +1 732 981 0060.

This year's annual election ballot has 18 categories and 42 nominated candidates. To view the slate of nominated candidates, and those seeking to be petition candidates, please visit <http://www.ieee.org/election>. Individuals seeking petition candidate status need to submit all required signatures to the IEEE Board of Directors by 12:00 noon EDT (16:00 GMT) on Friday, 8 June 2007.

What is PACE?



At a recent Florida West Coast Section (FWCS) Executive Committee (ExCom) meeting, one of the attendees asked the question: “What is PACE?” At the time, I think I gave a generic answer something like this: “PACE stands for Professional Activities Committee for Engineers. PACE’s charter is to help engineers develop their soft skills on topics such as interviewing, resume writing, and financial management.” Further discussion ensued and I mentioned that PACE also gets involved with influencing public policy to the extent that it affects IEEE-USA engineers. One of the members mentioned that he thought that PACE stood for Political Action Committee for Engineers. As a result of this discussion, we decided to periodically publish some articles in the *The Suncoast Signal* about PACE. This article is the first in the planned series; it will address “what PACE is” and “what PACE is not” as our discussion revealed that there may be some misconceptions about PACE, the PACE Network, and IEEE-USA.

Since “what PACE is not” has infinite possibilities, I cannot address all of those possibilities here, but I will address what may be some of the more common misconceptions. One thing PACE is not is a Political Action Committee (PAC). While the IEEE-USA PACE Network attempts to influence “legislation that affects the professional careers of engineers,” one does not have to have a particular political philosophy—Republican, Democrat, Independent, etc.—such as what we may associate a typical PAC. PACE is not a section or society; it does not target a particular demographic as societies do. All US IEEE members are essentially members of the IEEE-USA PACE Network, whether he or she knows this or not. As such, PACE is a very diverse group, in my opinion. PACE, at the national level, may take a political position that you oppose and that opposition is okay. If you feel strongly about the issue, get more involved and voice your opinion. My point is that one does not quit PACE and join the other party—there is no other party. The PACE Network is all of us and we shape its goals and objectives.

Now back to what PACE is. The PACE Network – which, as stated before, is all of us to some degree or another—is interested in improving and supporting an engineer’s soft skills. Specifically, PACE “promotes the professional interests of IEEE’s U.S. members and provides a mechanism for communication of members’ views on their professional needs.” To do this, the PACE Network has three primary objectives:

- “1) Encouraging the provision of member services, mainly in the form of increased economic benefits, professional stature, and employment security for engineers;
- “2) Enhancing public awareness of the socio-technical issues affecting American society and promoting public recognition of engineers as professionals;

What is PACE? (cont.)

- “3) Engaging in government action at the local, state, and national level by making the technological background and problem solving experience of engineers available to the legislative process and by influencing legislation that affects the professional careers of engineers.”

I realize that this article just touches the surface of what PACE “is” and “is not,” but the hope is that it at least answers some rudimentary questions. In the next article, the PACE Network’s member services will be highlighted.

[NOTE: The author borrowed heavily from IEEE-USA’s PACE web site, which is located at <http://www.ieeeusa.org/volunteers/pace/default.asp>, in preparing this article. (Exact citations are identified with quotes, above). To find out more information about the PACE network, PACE resources, contacts, upcoming workshops, and sample projects, please visit the aforementioned web site or contact me, Scott Haynes (813.220.1864 or Scott.Haynes@ieee.org), or Richard Sanchez (rasanche@hcsotampa.fl.us), FWCS PACE Co-Chairs.]

—Scott Haynes GRP Systems Engineering



ENG’G MASS MEDIA FELLOWS

Earlier this year, IEEE-USA Communications Committee Members Allan Schell and Abby Vogel participated in the selection of some two-dozen Science & Engineering Mass Media Fellows, including IEEE-USA Engineering Mass Media Fellow Sourish Basu. Basu, a Ph.D. candidate in physics at Cornell University, Ithaca, N.Y., will intern at “Scientific American” for 10 weeks this summer.

In his application to become an IEEE-USA Engineering Mass Media Fellow, Basu wrote: “Very often engineers and scientists need to speak to non-science and non-engineering professionals regarding their research. The reasons may be as diverse as securing funding for research, shaping the science and technology policy of a government, raising public awareness about some idea or technology, or simply getting people excited in science and engineering. Failure to thus communicate leads to unfortunate consequences, such as cuts in research grants and underfunded research labs, misinformed policy decisions, widespread misconceptions about scientific concepts, and misutilization of excellent technology.”

Since 2000, IEEE-USA Engineering Mass Media Fellows have backed eight U.S. IEEE undergraduate and graduate students who have helped journalists in print and broadcast fields communicate authoritatively to the public about engineering and science. From 2005-2006, the AAAS Science & Engineering Mass Media Fellows produced more than 400 news stories on science and technology. In 2006, for the first time, IEEE-USA backed two Engineering Mass Media Fellows and is the only engineering society involved in the AAAS program.

For more information on IEEE-USA involvement, see <http://www.ieeeusa.org/communications/massmedia.asp>; and <http://www.aaas.org/programs/education/MassMedia/index.shtml>.



2007 IEEE PES General Meeting

June 24 – 28, 2007

Marriott Waterside Hotel, Tampa, Florida USA



Meeting Overview (Also see page 1)

GENERAL MEMBERSHIP MEETING

The General Membership Meeting will be held on Monday, June 25th at 8:00AM in the Convention Center. PES President John D. McDonald will provide an update about PES progress and activities of the past year. Candidates for the PES offices of President-Elect, Secretary and Treasurer for the 2008-2009 terms will each make a short presentation to familiarize you with their individual views and goals so you can make an informed decision when you vote during the PES elections this fall. *(Note: Meet the candidates face-to-face at a reception co-located with the Poster Session on Monday evening, 5:00-7:00PM in the Convention Center.)*

PLENARY SESSION

The plenary session will be held on Monday, 25 June, at 9:00 a.m., immediately following the general membership meeting in the Convention Center. A group of notable, highly-respected speakers will address topics of major concern in the power engineering world from various perspectives

STUDENT PROGRAM

There will be an exciting program for IEEE PES student members including the student/faculty/industry luncheon and a poster contest. The Poster Contest is closed; many very interesting entries have been received. We are still accepting requests for the 2007 IEEE PES General Meeting Student Housing Program. For more information, please visit <http://pc-ee100-2.nmsu.edu/pesgm07/>. For questions, please contact Prof. Joydeep Mitra (jmitra@nmsu.edu), Prof. William (Bill) Rosehart (rosehart@ucalgary.ca) or Ganesh Kumar Venayagamoorthy (gkumar@ieee.org).

Students members are invited to participate in all other aspects of the general meeting as well. Students must register for the meeting at a nominal fee in addition to registering for the student program at no charge, Please note that student registration requires filling in a form online in addition to the meeting registration form. See Registration for info.

TUTORIALS

Power Grid Blackouts: Causes and Mitigation

This tutorial will provide a comprehensive overview of power system stability problems leading to grid blackouts, and will describe measures that can be used to enhance secure operation of power systems in the new electric power industry environment. The topics that will be covered include: physical aspects and classification of power system stability phenomena; examples of major system blackouts caused by different categories of instability; challenges to secure operation of today's power systems, complex modes of instability, deregulated market environment; major power grid blackouts in 2003 and 2004; comprehensive approach to secure system operation, risk-based reliability criteria, improved protective relaying, robust power system controls, coordinated emergency controls as a defense against multiple contingencies, on-line security assessment, wide-area monitoring and control, widespread use of distributed generation, and regulatory framework with well defined roles and responsibilities for individual business entities

Harmonics Modeling and Simulation

Over the past two decades, outstanding academic and industrial efforts and progresses have been made to improve the understanding and management of harmonics in power systems. The purpose of this tutorial is to provide an update of its previous version with new subjects that have significant impacts on the areas of harmonic analysis, modeling, and simulation. It is worth mentioning that, in addition to including major aspects of fundamental concepts and advanced topics such as interharmonics theory and real-time simulations and applications, two chapters of step-by-step analysis procedure performed by the commonly used harmonic simulation tool and real-life study examples are offered to facilitate participants to learn the area. The tutorial offers a handy material that is convenient for the beginners as well as those who already know the subject and is expected to provide the readers with a general background knowledge and further understanding on the subject.

Asset Management – Maintenance and Replacement Strategies

Maximal asset value and minimal life cycle cost are typical economic objectives of the electric utilities. However, attaining these objectives is constrained by the requirements of customers and regulators concerning the reliability of power supply. De-regulation of the electricity market has increased the incentives for cost effective and efficient use of available assets. Optimization of maintenance is one possible technique to reduce life cycle costs while improving reliability, and utilities need to implement new strategies for more effective maintenance techniques and asset management methods. The term “maintenance management” implies making the right decisions on: what assets to perform maintenance on, what level of maintenance to perform, what specific maintenance steps to perform, and when to perform the selected maintenance. However, to make the right decisions the manager needs strategic tools, planning tools and data and different support systems.

This tutorial covers these different needs by: showing maintenance as a strategic tool for asset management, introducing maintenance planning methods such as reliability-centered maintenance (RCM), showing condition monitoring methods for collecting maintenance data and maintenance software, and finally showing an example of asset management methods in practical use in a transmission company.

Probabilistic T&D System Reliability Planning

Historically the development of transmission and distribution systems was largely undertaken using deterministic planning and design criteria. Though easy to use, the drawback of deterministic criteria is that the results in the expensive design of power systems that can be under-utilized except for very short periods of high electricity demand. The deterministic criteria served electric utility industry well in the past when the utilities provided bundled services to customers. In the current era of intense price and service reliability competition under the deregulated market environment, the deterministic transmission and distribution system reliability planning criteria are no longer valid. In order to be able to provide customers with the optimum service reliability at the right cost, the movement towards reliability based planning criteria and models are inevitable. Consequently, a tutorial related to this area is very timely and is expected to attract a large attendance. Significant advances have been made in the last few decades in the development of probabilistic concepts, theories, models, collection of power system equipment outage and customer interruption cost data, and sophisticated computer programs that permit numerical assessment of transmission and distribution (T&D) systems

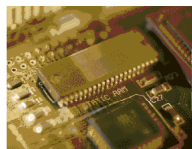
Probabilistic T&D (Cont.) reliability performance. This tutorial brings together instructors from academia and industry, who are able to provide a wide range of expertise on reliability techniques and applications. It summarizes the transmission and distribution systems reliability concepts and models that have been developed over the past forty years. Further, this tutorial presents the basic concepts and the recent developments in quantitative value based evaluation of transmission and distribution systems, and illustrate the practical applications of these techniques by utilities. The basic requirements of equipment outage and customer interruption cost data, and mathematical models in performing system reliability assessments are extensively covered in an easy to understand manner. The theories and models are illustrated using practical system examples. This tutorial would prove useful to anyone interested in gaining deeper understanding of transmission and distribution systems reliability and engaged in the business of electric energy systems- practicing engineers, regulators, transmission service providers, energy traders, students and academics. The materials presented in the tutorial strike a balance between basic reliability theories and their practical applications, and are presented by some of the renowned experts in the power system reliability field.

System Stabilization via Excitation Control

Power system stabilizers (PSS) have been used in various forms since the 1960's with the aim of improving power system stability by adjusting generator excitation. With the WECC and various independent system operators requiring their use, many more stabilizers have been installed in recent years. Despite this increased use, to many engineers working in the field of electric power generation the PSS can appear as a mysterious black box. This tutorial aims to demystify stabilizers, providing engineers with an improved understanding of power system oscillations and the underlying theories implemented within PSS units. Experts from industrial, academic and governmental organizations will make presentations on aspects of PSS theory including design principles, types of PSS and techniques for field testing.

Distribution Automation

There is renewed interest in distribution automation due to emergence of new technologies, specifically new measuring devices and sensors, more powerful and refined communication equipment, highly advanced computing equipment, advanced power electronics equipment, and new control and protection ideas. The technology has changed significantly and this tutorial will cover the latest technology related to distribution automation. Specific topics will include distribution automation functions, communication systems, technical/operation benefits, economic evaluation methods and case studies.



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The student branch has elected a new, strong executive board which we are pleased to announce:



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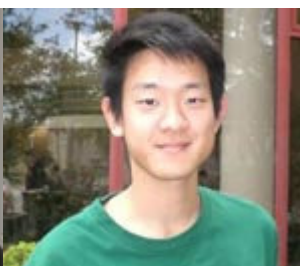
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Paul Schnitzler Named Tau Beta Pi Eminent Engineer

Dr. Paul Schnitzler, Editor of this FWCS SunCoast Signal, was honored by being named an Eminent Engineer of Tau Beta Pi by the USF Florida Gamma Chapter April 21, 2007. He was nominated by his students at USF.

Tau Beta Pi is the only engineering honor society representing the entire engineering profession. It is the nation's second-oldest honor society, founded at Lehigh University in 1885 to recognize students of distinguished scholarship and exemplary character.

An Eminent Engineer may be any alumnus of a recognized engineering college who graduated more than ten years ago

and who has achieved distinction for eminent attainments in engineering.

Paul's contributions have included work with surface acoustic waves, plasma video displays, undersea communications, radio telephones, digital television, microwave integrated circuits, creativity software products, and developing start-up companies.

He is now teaching engineering management at USF.



Brain Teaser Challenge Column

—By Butch Shadwell

May BTC Last month Bongo, having completed his correspondence course in electrical engineering was addressing a design problem for the local power company. It involved "...a reactive load comprised of a 500 uF capacitor in series with a 10 mH coil. On the US power grid, would this load seem capacitive or inductive? Ignore the resistive components for now. To get an A+ in this class, figure out the impedance angle if the resistance is 100 ohms."

There are many ways to approach this problem. I started with the understanding that a series LC circuit is capacitive at frequencies below resonance and inductive when above. I calculated the resonant frequency $F_{res} = 1/(2\pi(LC)^{1/2})$. Since resonance is at 71.2 Hz this circuit must be capacitive. Another method is to calculate the reactance at 60 Hz and see which is greater.

To get the impedance angle we need to get the hypotenuse of a right triangle where one leg is the net reactance of the series reactors, and the other leg is the resistance. $X_c = 1/(2\pi fC)$ and $X_l = 2\pi fL$. Since these reactances are 180 degrees out of phase $X_n = X_l - X_c$, $X_n = -1.54$ ohms. So the impedance angle is the arctan(1.54/100) = 0.88 degrees, just to the left of zero. But I bet you already knew that.

June BTC This week I am heading out to Albuquerque, New Mexico for the International Science and Engineering Fair. I know you're all thinking that I might be a little too old to compete with a bunch of high school kids, but I'm not sure who would have the advantage. These kids are all amazing. I have been active with the science fair program for over 30 years, and some of these kids pick up advanced technical concepts much faster than many EE grad students I've met.

Because these kids are so young, I always try to give them a sense of what has gone before. The ingenuity of engineers 50 years ago is worth studying. Many of those techniques could be useful today.

This month I am going to ask you to identify three pieces of technology which may be from the past, present, or a possible future. Do you know what a "flux capacitor", a "boxcar circuit", and a "warp coil" do? I hope you get to the movies once in a while.

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.

IEEE-USA Primary Mission Areas

In 2006, IEEE-USA 2006 President Ralph W. Wyndrum, Jr., in collaboration with IEEE-USA 2007 President-Elect John Meredith, focused on four primary areas of IEEE-USA's mission to:

- Offer increased member value in products and services
- Provide serious, career-long continuing education in order to maintain a competitive USA workforce and preserve careers
- Provide innovation leadership
- Support K-12 education for future technologists

The IEEE-USA 2006 ANNUAL REPORT, now online, highlights each of these four areas. And it provides additional highlights of the organization's activities in government relations and public relations.

The 2006 report, http://www.ieeeusa.org/about/annual_report/2006.pdf

CONTACT: Pender M. McCarter, Senior Public Relations Counselor, IEEE-USA, +1 202 530 8353



USF Senior Banquet

This IEEE Student Branch run activity was as successful as it could be. About 60 students, faculty and friends helped to celebrate the Spring 2007 graduates.

Dr. Ralph Fehr, the senior project advisor, announced the awards for the top projects. He also reported, with video, on the SECon 2007 robotics competition in which USF



participated. The competition robot was demonstrated and showed it mettle as a ping-pong ball hurler, picking off several unsuspecting nearby students and faculty.

Dr. Paul Schnitzler gave an upbeat keynote address exhorting the new graduates to pay attention to the needs of society. These students will be the next leaders and we are counting on them to make a difference.

The food and music were excellent although we must get more people up on the dance floor at future events.

Ms. Irene Wiley, as usual, made this all happen from making sure the room was available to getting local businesses to contribute prizes. Thank you Irene!

June, 2007 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 <i>5:30 pm</i> <i>IEEE FWCS</i> <i>ExCom</i> <i>TECO Tampa</i>	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
<i>24-28 IEEE PES General Meeting</i> <i>Convention Center, Marriott, and Embassy Suites, Tampa FL</i>						

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