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**IEEE**

# THE SUNCOAST SIGNAL

THE INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS, INC.

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## Upcoming Meetings

Tuesday, November 5, 2019 5:30PM  
EXCOM Meeting  
at TECO Plaza Register online at  
[http://time2meet.com/fwcs-excom/  
index.html](http://time2meet.com/fwcs-excom/index.html)  
Open to all FWCS Members

## MxFEs – Multi-Channel, Multi-Gigasample, Mixed-Signal Processors Are Changing the Face of RF Front End

**Date:** November 13, 2019

**Location:** 701 N. Franklin Street, Tampa, FL

TECO Hall

**Cost:** \$2.00 Students, \$5.00 IEE Members, \$10.00 Non-IEEE Members

**Speaker:** Ray Baker

For a couple/three decades now RF engineers have been pulling the analog-to-digital boundary closer and closer to the antenna. Converter improvements in cost, speed, and resolution make direct sampling a reality for many RF systems today, from low cost consumer devices to wideband electronic warfare. We'll introduce the MxFE concept through a live demo of a low-cost USB instrument, the ADALM 2000. This ADI developed teaching tool puts an oscilloscope, DMM, spectrum analyzer, signal generator, logic analyzer, and bipolar power supply in the palm of your hand.

In our newest MxFE devices, the AD908x family, we're performing the next level of integration with on-chip digital frequency conversion, filtering, and other signal processing functions. This approach merges the most computationally intensive, highest bandwidth functions with the converters for lowest overall system power, cost, and complexity. This architecture enables new applications like multi-beam 5G and SATCOM antenna arrays.

## Biography:

Ray Baker holds a BSEE from the University of Illinois, a MSCSD from the University of Houston Clear Lake, and additional graduate level coursework at the University of South Florida. He has performed circuit level to system level designs for RADAR, SATCOM, and wireless products, both commercial and military. Now an Application Engineer for Analog Devices, he assists customers developing RF and high performance analog products across the Southeast US.

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**THE INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS, INC.**
**PE Corner**

Art Nordlinger, PE, Senior Member

**The Rule Making Process**

The Florida Statutes are the laws that have been passed by the legislature, including those governing the practice of licensed professions. Chapter 471 of the Florida Statutes governs the practice of engineering in the state. As I discussed in a previous column, a bill (HB 827) in the last legislative session made significant changes to the laws governing the practice of engineering. This law became effective October 1, 2019. These changes include the replacement of Certificates of Authorization for engineering firms with a registry, the “uncoupling” of the experience requirement with being allowed to sit for the PE exam, the ability to reinstate a null and void license with the same license number, and others.

Not atypical of the way our laws are enacted, however, it is up to the agency or board that administers that part of the law to craft detailed rules that put the law into practice. These rules constitute the Florida Administrative Code. In the case of engineering, the Florida Board of Professional Engineers is tasked with that responsibility. Chapter 61G15 FAC contains the rules governing the practice of engineering.

The rule creation process is not done in a vacuum but rather in a public forum with input invited from any interested party. Practice of Engineering rule changes may begin in a number of ways, including as a result of a change to the Florida Statutes, an issue brought forward by a Board member or staff, or from a suggestion from an engineer or other interested party. The Board Chair may assign review of the suggested change to the standing Rules Committee, or may create a special committee for this purpose. Committees, whether standing or special purpose, are chaired by a Board member and include participation from interested parties and Board staff.

They review the suggested change and come up with new rule language. However, this is just the starting point.

Once the committee process is completed, a rule change is proposed to the full Board. The Board may vote to adopt the rule, or may send it back to committee for further work. Once adopted, the rule is published for comment. The process is iterative, with the FBPE proposing changes to the rules, followed by a comment period, followed by more proposed changes, etc. until consensus is reached on final rule language. This new rule then becomes part of the FAC.

Since the governor signed HB 827 making it law, the FBPE and its staff has been working tirelessly to develop new rules and amending existing ones implementing the new law. These changes impacted at least twenty different sections of Chapter 61G15. At its recent meeting the Board reviewed, and in some cases debated, the proposed rule changes. Ultimately, the Board voted to adopt all but one of the proposed changes. Those adopted will now be published for further comment. The last one will be sent back to committee for further review and refinement, taking into consideration the discussion and concerns raised by Board members and the public, before being presented to the FBPE again for discussion and approval. Stay tuned!

Whether you are a PE looking to attain required CEHs, or an engineer looking to learn something new or keep current with the latest trends in the profession, IEEE has seminars that will meet your needs.

## Leader's Center

### Getting a Team to Work Together: Try Listening—2

Paul Schnitzler, Ph.D—Life Senior Member

Last time I described a tool to reach an objective with the help of your team. Here is an actual use of truly listening to the team.

When I became VP of engineering for a digital electronics company, I inherited a three-year-old systems design which seemed far from being finished. In this company's field, we were lucky that the market still existed! My objective was to bring this product to market as quickly as possible. This was *almost* a SMART objective: **Specific** (specs existed); **Measurable** (was it done?); **Assignable** (to me); I hoped it was **Realistic**; however, **Time-Based** had to be determined.

I spoke with all of the engineers involved on the product and found that they thought that the current design was missing many important capabilities/features. I set up a meeting with all of the engineers and the VPs of Marketing and Sales. I wanted to know everything that was missing.

We created a list of over 80 capabilities that the product did not have and listed them on flip-chart paper. I began at one end of the list and, item by item, asked "What would happen *to the customer* if this item was not in the first release?" The engineer who had placed the item on the list thought it was very important. What about Marketing and Sales? For most cases, the two VPs thought the customers wanted the feature but it did not have to be in the first version. ...Hmm.

When we finished, there were just six which we decided were "must haves."

For one of these I asked, "Who proposed this?" The engineer

raised his hand. "How long do you think it will take to complete this feature?" "About an hour."

Of all six all only one would take more than three hours. For that one, the engineer said he needed two weeks. I said "Great. We will demo the whole system two weeks from Friday." "No, no, no!" "What did I miss?" "I need an additional week for testing." "Fine. The demo will be three weeks from Friday, okay?" "Well I guess so..." And demo we did!

The **Time-Based** element of the SMART objective had been set and met!

The other features were reviewed and most were set to be added in future versions. Because it took a few months to prepare for production, several of the simpler features were actually added to version one. Five months after I started looking at this product, first units were being shipped.

*Challenge your team but truly listen to them!*

BTW, there will be no column in the December issue—I am taking a vacation.

\*\*

Have you any ideas for possible topics for this column? Please let me know. Contact info below.

Want to learn more about change and leadership? Need a speaker? Have questions? Ideas? Contact me at [pauls@usf.edu](mailto:pauls@usf.edu) or go to <http://leadchangewithoutfear.com/> and click the tab "Successful Real Change."



### SAVE THE DATE for the next FWCS ANNIVERSARY CELEBRATION

The Florida West Coast Section will be planning its next Anniversary Celebration at the Florida Aquarium, in Tampa. Please mark your calendar for December 7. More details to follow next month.

# HAPPY ANNIVERSARY HKN!

On the 28th of October 1904, [Eta Kappa Nu](#) (HKN) was founded on the campus of the University of Illinois, Urbana-Champaign. At 115 years old, HKN remains the dynamic organization that the founders envisioned.

Our students are performing tens of thousands of community service hours each year. We have 20 international Chapters. And 83 Chapters earned [Key Chapter Recognition](#) this past year.

A few more impressive facts:

- Each year, 3,000 students take the oath of scholarship, character, and attitude. That's double the annual average in 2010.
- This year, HKN welcomed its 263rd chapter: the Universidad Autonoma de Queretaro in Mexico.

We will have more than 200 attendees at our signature event, the [Student Leadership Conference](#), the largest number of people ever registered for this event.

What is behind this record of success? The support the honor society receives from our students, our alumni, our volunteers, and our generous donors is the answer. With their support, we have been able to offer en-

hanced training for student leaders and faculty advisors to help them more effectively execute IEEE-HKN initiatives. We have held one-day workshops devoted to professional development. We have reconnected with alumni and work with our partners in academia and industry to mentor and support our members.

So, won't you join us today in celebrating HKN's successes?

You may want to:

- Share an HKN memory on Social Media and tag us: #IamHKN, #HKNFOUNDERSDAY, @IEEE\_EtaKappaNu. Add your HKN status to your social media profiles.
- Donate US\$115 to commemorate this milestone and to support the students of today and tomorrow! [Donate online](#).
- [Reconnect with HKN](#)

If you want to know more about IEEE-HKN, volunteer opportunities or ways to be involved and support your honor society, let us know! Email me, Nancy Ostin, at [n.ostin@ieee.org](mailto:n.ostin@ieee.org)

## **FWCS Seeking Volunteers for Officers**

The FWCS Nominating Committee is seeking volunteers for the following positions within the Section Executive Committee:

**Chair      Vice-Chair      Secretary      Treasurer**

If you are willing to volunteer and have the tie to dedicate to these prestigious positions, please contact Richard Beatie, ([r.beatie@ieee.org](mailto:r.beatie@ieee.org)), or Jim Howard, ([j.howard@ieee.org](mailto:j.howard@ieee.org)).



## Distribution Automation\* and Distributed Energy Resources

**\*Special Presentation by incoming PES President – Frank Lambert**

***During this special Seminar, you will have a chance to meet and discuss issues with the incoming PES President, Frank Lambert – Don't Miss this Great Opportunity!***

<b>Date:</b>	Friday, November 8th, 2019
<b>Time:</b>	Registration & Light Breakfast: 8:30AM - 9:00AM Seminar: 9:00AM - 2:00PM
<b>Speakers:</b>	Frank Lambert, PE – PES 2020 President - Principal Research Engineer at Georgia Tech's Center for Distributed Energy (CDE) and National Electric Energy Testing Research and Applications Center (NEETRAC). Wayne Hartman - Wayne Hartmann, Senior VP, Protection and Smart Grid, Beckwith Electric
<b>Course Level:</b>	Intermediate.
<b>Location:</b>	FRCC 3000 Bayport Drive., #600, Tampa, FL 33607 Parking: Use parking lot for Hyatt (North side only).
<b>Cost:</b>	\$100 Members, \$200 Non-Members, \$10 IEEE Students, \$20 Non-IEEE Students. Includes Light Breakfast, Lunch.
<b>CEH Credits:</b>	<b>4 Professional Development Hours will be awarded.</b> Be sure to enter your name and PE number on the signup website as it appears on your license. <b>IEEE Florida Provider Number is 0003849.</b>
<b>RSVP:</b>	Online at <a href="http://time2meet.com/fwcs-pes1/index.html">http://time2meet.com/fwcs-pes1/index.html</a> (Meeting) Make checks payable to: IEEE FWCS Send checks to: Jim Howard, IEEE FWCS Treasurer 3133 W. Paris Street Tampa, FL 33614-5964
<b>Questions:</b>	Jim Howard at 863-834-6585, or <a href="mailto:jim.howard@lakelandelectric.com">jim.howard@lakelandelectric.com</a>

### **Key Areas to be Covered:**

**Frank Lambert - Distribution Automation:** Past, Present, and Future: A look from the past and into the future moving from a centralized grid to the decentralized and distributed grid.

**Wayne Hartman -** This technical session provides a background into DER operation and associated protection and control considerations for conventional and inverter-based power sources. We will review types of DER/DG and the modes in which they can operate in parallel with the distribution system.

Key aspects of IEEE 1547-2018 and a sample DER interconnection screening process are highlighted. Details of on-site standby power system conversion to operate in parallel with the distribution system are shown. Protection methodology at the point-of-common coupling (PCC) and point-of-interconnection (PI) is detailed for all types of DER. A treatment of distribution system protection and control considerations and applications with DER is also discussed.

(Continued on Page 5)

(Continued from Page 4)

*This session will benefit Electrical Distribution Engineers, Planners and DER P&C practitioners.*

- 1) Define Distributed Electrical Resource (DER)
- 2) Explore Types of DERs
- 3) Why DER?,
- 4) Utility and Facility Drivers for DER
- 5) Mission Critical Power and Conversion to DER
- 6) Rates and DER Operational Sequences
- 7) Industry Concerns
- 8) IEEE 1547: Industry DER Guide
- 9) Sample Utility DER Interconnection Guide
- 10) Interconnection Protection: "The Five Food Groups"
- 11) Inverter Active Anti-Islanding Protections
- 12) Interconnection Transformer Impacts
- 13) Generator Types and Impacts
  - a. Synchronous Machine
  - b. Induction Machine
  - c. Inverter Based
- 14) Example Protection Applications
- 15) Distribution Protection Coordination Issues
- 16) Smart Grid / Microgrid and DER
- 17) Impact of IEEE 1547A
- 18) System Control with DER
- 19) Summary and Q&A

**Speakers:****Frank C. Lambert, P. E.**

Mr. Lambert is a Principal Research Engineer at Georgia Tech's Center for Distributed Energy (CDE) and National Electric Energy Testing Research and Applications Center (NEETRAC). He is responsible for interfacing with members to develop and conduct research projects dealing with transmission and distribution issues. Mr. Lambert previously worked at Georgia Power Company for 22 years in transmission / distribution system design, construction, operation, maintenance and automation. He is serving as the 2018-2019 President Elect of the IEEE Power and Energy Society. Mr. Lambert holds a bachelors and M.S. degree in Electrical Engineering from the Georgia Institute of Technology.

**Wayne Hartman**

Wayne is Beckwith Electric's top strategist for delivering innovative technology messages to the Electric Power Industry through technical forums and industry standard development. He provides customer and industry linkage to Beckwith Electric's solutions, contributing expertise for application engineering, training and product development.

Before joining Beckwith Electric, Wayne performed in application, sales and marketing management capacities with PowerSecure, General Electric, Siemens Energy and Alstom T&D. During the course of Wayne's participation in the industry, his focus has been on the application of protection and control systems for electrical generation, transmission, distribution, and distributed energy resources.

Wayne is very active in the IEEE as a Senior Member and serving as a Main Committee Member of the IEEE Power System Relaying Committee for 25 years. He is presently the Chairing the "Investigation of the Criteria for the Transfer of Motor Buses" Working Group. His IEEE tenure includes having Chaired the Rotating Machinery Protection Subcommittee ('07-'10), contributing to numerous standards, guides, transactions, reports and tutorials, and teaching at the T&D Conference and various local PES and IAS chapters. He has authored and presented numerous technical papers and contributed to McGraw-Hill's "Standard Handbook of Power Plant Engineering, 2nd Ed."



## Rules and Laws that Govern the Practice of Engineering in Florida

**Date:** Friday, November 15, 2019

**Time:** Registration and light breakfast at 8:30AM

Presentation: 9:30AM—11:30AM

**Speaker:** Mr. Art Nordlinger, PE, IEEE Representative to the Florida Board of Professional Engineers

**Location:** FRCC Headquarters, 3000 Bayport Dr #600, Tampa, FL 33607 Parking: Use parking lot for Hyatt (North side only).

**Cost:** \$30 for Members, \$50 for Non-Members, \$10 for IEEE Students, \$20 for all other students. Make checks payable to: IEEE FWCS. Send checks to: Treasurer—IEEE PE/IA Chapter, 3133 W. Paris Street, Tampa, FL 33614-5964

**CEH Credits:** One Rules & Laws CEH will be awarded, One Ethics CEH will be awarded, which will meet the current requirements for PE Renewals.

**RSVP:** Online at: <http://time2meet.com/fwcs-pes2/index.html>

**Questions:** Art Nordlinger at [a.nordlinger@ieee.org](mailto:a.nordlinger@ieee.org) or (813) 630-6203

Be sure to enter your name and PE number on the signup website as it appears on your license. IEEE Florida Provider Number is 0003849. Cancellation must be submitted online 24 Hrs prior to the seminar at: <http://time2meet.com/fwcs-pesx/index.html> No shows will be invoiced for the total cost of the seminar.

The Rules and Laws That Govern the Practice of Engineering in Florida. This course is at a basic to intermediate level. Florida Statute 471 – Engineering FBPE and FEMC Florida Administrative Code Updates from NCEES and FBPE .

Ethics and the Practice of Engineering in Florida. This course is at a basic to intermediate level Basic Engineering Ethics Precepts Florida Administrative Code 61G15 Recent Cases and Examples

**SPEAKER:** Art Nordlinger is the Manager, Transmission Tariff and Contracts at Tampa Electric Company. Art earned a Bachelor of Science degree in Electrical Engineering from Northwestern University in 1979 and his Master of Engineering degree in Electric Power Engineering in 1988 from Rensselaer Polytechnic Institute. Art is a Senior Member of IEEE and a registered PE in Florida.

## OCTOBER FREE B-BOOK

**IEEE-USA's October Free E-B Book for Members Continues Exploring Great Inventor Thomas Edison's Life, Lifetime Partnerships**

**WASHINGTON (1 October 2019)** -- Lifetime partnerships tremendously influenced the commercial success of creative genius, Thomas Edison. According to author Harry T. Roman, Edison's relationships with others both influenced and invigorated the great inventor. In Volume 2 of the series—***Thomas Edison -- Man of the Millennium—Vol.2: Lifetime Partnerships***—Roman postulates that not only Edison's fellow inventors and technicians in the lab; but also his mother and his second wife were fundamental to Edison's creative growth and business success.

From 1 October through 15 November, IEEE members can download their free e-book, ***Thomas Edison, Man of the Millennium--Vol. 2: Lifetime Partnerships*** by going to: <https://ieeusa.org/shop/views/edison-vol-2/>

Sign in with your IEEE Web Account; add the book to your cart; and enter Promo Code **OCTFREE19** at checkout.



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

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
					1 Phasetronics / Motortronics Tour See page 7	2
3	4	5 EXCOM Meeting, TECO Plaza 5:30pm	6	7	8 Distribution Automation* and Distributed Energy Resources See pages 4 and 5	9
10	11 A graphic with a red background, white stars, and blue stripes, featuring the text "HAPPY VETERANS DAY" in a circular arrangement.	12	13	14	15 Laws and Rules, and Ethics Seminar See page 6	16
17	18	19	20	21 PES/IAS Planning Meeting at Village Inn, 6 am	22	23
24	25	26	27	28 A graphic featuring a cartoon turkey wearing a pilgrim hat and holding a sign that says "HAPPY THANKSGIVING!"	29	30