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# IEEE

## THE SUNCOAST SIGNAL

THE INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS, INC.

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### IN THIS SIGNAL:

Page 2

- ♦ PE Corner— The Steps to Professional Licensure, Part 1

Page 3

- ♦ Customers and Leaders, Part 1
- ♦ Free IEEE USA E-Book

Page 4-5

- ♦ PES/IAS Electrical Safety Seminar

Page 5

- ♦ PES/IAS Electrical Safety Seminar (Cont. from PG 4)
- ♦ TISP—Hillsborough Professional Study Day

Page 6

- ♦ AESS—Can you Print That?

Page 7

- ♦ RAS—Great American Celebration of Speed

Page 8

- ♦ Advertising

Page 9

- ♦ Calendar



### 2019 FECA Engineer's Conference Recap

The Florida Electric Cooperatives Association held its annual engineer's conference in Clearwater again this year the week of June 10. For the past sixteen years IEEE's Florida West Coast Section's Power Engineering Society and Industry Applications Society Joint Chapter has supported this conference by providing educational content for the attendees. Though the engineers employed by the various Florida Electric Cooperatives nearly filled the house, some IEEE members were able to attend as well to take advantage of this great educational opportunity.

This year IEEE Senior Member Tom Blair presented an eight-hour seminar titled IEEE C37.230 Guide for Distribution Protective Relaying and Arc Flash Calculations – 2019 Update. IEEE's C37.230 standard was recently updated, making this a very relevant topic for the electric cooperative's engineers, as much of the power systems for which they are responsible consist of electric distribution facilities. Many of the attending engineers are IEEE members as well and additionally, many are registered professional engineers who received the added benefit of earning eight continuing education hours for their attendance.

Tom's presentation began with a review of the fundamental topics of fault and load characteristics, harmonics and interrupt ratings. He then went on to discuss various protection schemes, recommended criteria and the basis behind various protection philosophies. The seminar wrapped up with a discussion of arc flash hazard calculations including incident energy levels, how to apply the NFPA70E tables and arc flash hazard calculations utilizing IEEE 1584 – Guide for Performing Arc-Flash Hazard Calculations.

Tom has presented numerous seminars for IEEE and as a Senior Engineering Fellow with Tampa Electric he is very qualified to present these highly technical topics. Tom is a registered professional engineer in Florida. He has also served as an adjunct professor at the University of South Florida, presenting courses on topics including Electrical Machines and Drives and Energy Production Systems Engineering. We extend our appreciation to Tom for his volunteer work with IEEE and for presenting this excellent seminar.

### Upcoming Meetings

Tuesday, July 2, 2019 5:30PM EXCOM Meeting  
at TECO Plaza Register online at <http://time2meet.com/fwcs-excom/index.html>  
Open to all FWCS Members

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<http://www.ieee.org/discounts> Discounts Page

## PE Corner

Art Nordlinger, PE, Senior Member

### The Steps to Professional Licensure, Part 1

In last month's column I discussed reasons to become a professional engineer. In the next couple of months I'll review the process to get your PE license. There are essentially four steps required to get your PE.

First, get an ABET-accredited four-year engineering degree (or equivalent—see below). Second, take the Fundamentals of Engineering (FE) exam, formerly known as the Engineer Intern Test or Engineer in Training (EIT). Once you pass, you are an Engineer Intern (EI). Third, an EI must obtain appropriate experience, typically four years, as defined in the rules. And last, once the internship period is completed, the EI may take the Professional Engineers exam. Passing the exam qualifies the applicant as a Professional Engineer.

This year the Florida legislature passed changes to the "equivalent" requirements to take the FE exam related to Engineering Technology Degrees. They also made changes to the experience and timing requirements to take the PE. These will be the subject of a future column.

In Florida, an applicant may apply to take the FE directly with the National Council of Examiners for Engineering and Surveying (NCEES), or with the Florida Board of Professional Engineers. The process for both is described on the FBPE website. <https://fbpe.org/licensure/application-process/> If the applicant obtained their engineering degree from a foreign institution not subject to ABET accreditation, the Board will typically require that additional information be provided to determinate whether the courses taken are substantially equivalent to a program meeting ABET accreditation standards.

The FE exam has changed in several regards over the years. One thing that has remained consistent, however, is that the exam is administered by NCEES in all fifty states. No matter what state you pass the exam in, that passing grade is accepted by every state. In terms of the exam itself however, much has changed. For example, up until about twenty years ago, applicants could bring any books they desired into the exam room to use as a reference. This has changed to where the applicant can only use a formula reference book provided by NCEES. An applicant is given a new book for use during the exam; you can't bring one with you. In fact, nothing may be brought into the exam room except for pencils and an approved calculator. The exam is multiple choice, but now it is computer-based and taken at a testing center online. The exam may be taken all year where previously it was only given on two specific dates each year. The exam is one hundred ten questions in length, half in the morning and half in the afternoon with an optional twenty-five minute break.

Next, the exam used to cover eleven subject areas in the morning, followed by specific areas of the applicant's choosing in the afternoon. This has also changed to where the exams are specific to each engineering discipline. This is in line with changes in engineering curricula in that, for example, many electrical engineers no longer are required to take statics and dynamics, and structural engineers may not be required to take circuits.

Next month I'll discuss the experience required for an Engineer Intern.

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

## *Leader's Center* **Customers and Leaders—Part 1**

**Paul Schnitzler, Ph.D—Life Senior Member**

We all have to sell at one time or another: A product your company makes, a design you want your company to produce, or even selling yourself when you are seeking a new position! In each case there is a customer you want to convince to buy. This is tightly linked to being a leader!

Let's assume that you are selling an enterprise resource planning (ERP) system for a major international company. You are visiting a prospect and are excited to show how exceptional your ERP is. You are ushered into a nice conference room with six of their top people—after all, an ERP purchase is a big expense. You deliver a solid ten minute presentation (you don't want it to be too long) which hits all of the top features. Your prospect's team is polite and asks a few questions which you handle comfortably.

Then the IT manager says one of the following:

1. "Please leave your proposal and we will consider it."
2. "Very interesting presentation. Thank you. We'll get back to you next week."
3. "Very interesting. Let's talk about how it will address our specific needs."

Only choice 3 is a true prospect. The first two are blowing you off. Therefore, you must get your prospect to choose 3. Here is where leadership comes in.

Back up to when you enter the conference room. What if you open with the following? "You invited me because of our product's reputation. Since you already know that our ERP is excellent, let's talk about your needs. What are the key problems that you want an ERP to solve? Let's see how we can create your ERP system."

Good sales people lead this way, but there are few who do.

I met a salesperson from one of the big ERP companies at a conference. We talked about his ERP systems and some of my ideas regarding success. I said that I doubted that he had problems getting his clients to effectively use his products; after all, he is with a top company. Not so, he told me; his customers frequently do not get their desired benefits. Frequently, they just want the basic version.

They are certain that it is all that they need. He told me that he tries to engage them but often they are certain they know what they want. Getting everything you need from a complex ERP is not easy and customers often don't understand that. As a result, the customer is disappointed.

How can you do better? To see how leadership skills will improve the outcome, next time I will show how to work more effectively with your prospects.

Want to see 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."

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### **FREE IEEE-USA E-Book**

C'mon, engineers—take a break—have some fun! We created a crossword puzzle book just for you on the engineering profession. And starting today, IEEE-USA is offering IEEE members a free download of its [Engineering Crossword Puzzles for Adults](#) e-book. Crossword puzzles also sharpen your mental skills. Some people think crossword puzzles improve mental acuity -- because evaluating and analyzing some intentionally tricky clues, that the puzzle writer puts there, is often necessary to solve crosswords. And it's safe to say that millions of people of all ages enjoy crossword puzzles -- because they are relaxing, enjoyable, and help to reduce stress. Many fans believe the puzzles also encourage a better vocabulary, as well as improve memory and brain function.

So, IEEE-USA E-BOOKS commissioned Myles Mellor, one of the most popular puzzle writers in the United States, to develop this special, crossword puzzle e-book—just for technology professionals. At present, periodicals publish more than 80 of Mellor's crossword puzzles, reaching more than two million people, every month—including *IEEE-USA InSight*, IEEE-USA's flagship publication.

IEEE-USA is offering **Engineering Crossword Puzzles for Adults** exclusively to IEEE members beginning today -- it's a great way for engineers and other technical professionals to take a break, have a little fun, and keep their minds stimulated. IEEE members can download and print either one, or several puzzles, at a time; or the entire book of 25, and all the answer keys, at once.

What is a three-letter acronym for a discovery made by Swiss scientist Friedrich Miescher? How about the 8-letter word for Bitcoin's most sophisticated mining rig? Engineers -- sharpen your pencils!

From 1 June through 15 July, IEEE members can download IEEE-USA's June free e-book selection: [Engineering Crossword Puzzles for Adults](#), by going to: <https://ieeeusa.org/shop/fun/engineering-crossword-puzzles-adults/> Sign-in with your IEEE Web Account; add the book to your cart; and enter Promo Code JUNFREE19 at checkout.



# Summer of Safety Seminar Series

## IEEE PES/IAS Electrical Safety Seminar

- Date:** August 23, 2019
- Time:** Registration & Light Breakfast: 8:30AM - 9:00AM  
Seminar: 9:00AM - 2:00PM
- Speaker:** Thomas Blair, P.E., Senior Engineering Fellow, Tampa Electric Company
- Course Level:** **Intermediate.**
- Location:** FRCC 3000 Bayport Drive., #600, Tampa, FL 33607  
Parking: Use parking lot for Hyatt (North side only).
- Cost:** \$100 Members, \$200 Non-Members, \$20 Students. Includes Light Breakfast, Lunch.
- CEH Credits:** **4 Professional Development Hours will be awarded.** 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.**
- RSVP:** Online at <http://time2meet.com/fwcs-meetings/> (Select Meeting)  
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3133 W. Paris Street  
Tampa, FL 33614-5964
- Questions:** Tom Blair at 813-849-8368, or [tom\\_blair@ieee.org](mailto:tom_blair@ieee.org)

The IEEE Industry Applications Society (IAS) Electrical Safety Workshop (ESW) is dedicated to changing the electrical safety culture. The workshop is held each year in the spring to present and discuss current topics of electrical safety with the community. Lessons learned and new technology are shared with attendees. The 2019 ESW was held in Jacksonville, Florida this year. This year your local IEEE PES/IAS Chapter will share some of the highlights from this annual international safety workshop with the local engineering community during our summer seminar of safety series. Some of the topics that will be presented are listed below;

ESW2019-04 - Advancing Workplace Safety Through Vintage Equipment Upgrades.

ESW2019-05 - Drawing The Line - Where Does Troubleshooting End and Working On Begin?

ESW2019-07 - Neutral Conductors, the Un-Identified Hazard.

ESW2019-08 -What Could I Have Done Differently?

ESW2019-25 - Implementing Improvements in Hazard Identification and Barrier Implementation as a Corrective Action for a Serious Electrical Contact Incident

ESW2019-29 - Painful Memories of an Electrical Accident

ESW2019-32 - Electrical Injuries and Fatalities: Facts, Myths and Unknowns

(Continued on Page 5)



## Summer of Safety Seminar Series

### IEEE PES/IAS Electrical Safety Seminar

#### Continued from Page 4

Also, we will discuss the various methods to determine arc flash hazards in the workplace and we perform the example arc flash calculations detailed in the appendix of the newly released IEEE-1584-2018 standard

Being a workshop, we encourage attendees to bring their own electrical safety experiences with them and share them with the group during this seminar.

The 2020 ESW will be held in Reno, Nevada, USA, March 2 to March 6, 2020, at The Peppermill Resort. It is a must attend event for anyone that is involved in electrical safety. The website for the IEEE ESW is <http://www.ewh.ieee.org/cmte/ias-esw/>.

#### Speaker Bio

Tom Blair is a Senior Engineering Fellow with Tampa Electric. He performs electrical system analysis and uses the results to specify electrical equipment ratings, protective relay settings, and electrical system arrangement. Tom has also been adjunct professor in the past at the University of South Florida and has presented courses at the university on topics such as Electrical Machines and Drives, Energy Production Systems Engineering, and the FE and PE (power) exam preparation course at USF. Mr. Blair is a Senior Member of IEEE.

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#### TEACHERS IN-SERVICE PROGRAM—HILLSBOROUGH PROFESSIONAL STUDY DAY

On August 5, 2019 Hillsborough County Public Schools will have our high school science professional study day at **Spoto High School, 8538 Eagle Palm Drive, Riverview, FL 33569 from 8:30 a.m. to 3:30 p.m.** Please consider this an invitation to have a table display in the cafeteria from 10:30 a.m. to 1:30 p.m. We can accommodate a limited number of sessions for teachers to experience your products. The district is not charging a registration fee for this conference. However, if vendors wish to collaborate to provide food for the teachers, that donation would be welcome.

The Hillsborough Regional STEM Fair is January 27-29, 2020. The State Science and Engineering Fair is March 24—26, 2020.

Thank you for your partnership in preparing students for life.

Dan McFarland  
Supervisor of Secondary Science  
Hillsborough County Schools





## Can You Print That? Discover The World Of 3D Printing!



By now you've probably heard all about those fancy 3D printers that can be hooked up to computers. These mechanical marvels have the ability to accept designs that have been created on the computer and then, using a process that consists of building many different layers, create a real-world 3D object.

It's what they can create that is so amazing: complex rubber parts, revolutionary new weapons, undersea UAV components, titanium jet engine components, transparent materials, and 3D printed circuit boards. If you can imagine it, it can probably be 3D printed.

The days of you going to Home Depot to get a replacement part may be coming to an end: just print that toilet seat that you need! Your local IEEE Section's AESS Chapter is proud to be able to present to you a meeting in which Douglas A. Coggeshall, President of Coggeshall Engineering Associates Inc. will be providing us with an overview of 3D printing: where did we start, where are we at, and where are we going?

During his career Doug has worked for Raytheon, Harris Corporation, Honeywell, Aerosonic, Ocean Optics, and DRS Navel Electronics. Doug is responsible for setting up the UTB 3D-Printing center of excellence at the U.S. SOCOM. He really knows his stuff!

Join us for an evening of exploring what these machines can do for us. Doug will explain how they work, what they can and cannot currently do, and what designers need to keep in mind when they are considering having something 3D printed.

This presentation will be held on **Wednesday evening, July 17th at 6:00pm**. We'll be meeting at TECO Hall which is located at **TECO Plaza, 702 N. Franklin St., Tampa**. If you have any questions, feel free to contact the meeting organizer, Jim Anderson at [jim.anderson@ieee.org](mailto:jim.anderson@ieee.org). I'll see you there!

Sign up online at: <https://events.vtools.ieee.org/m/200030>

## IEEE FWCS ROBOTICS AND AUTOMATION (RAS) UPDATE:

The IEEE FWCS RAS Chapter invites you to John F. Germany Library in Downtown Tampa at the Hive Makerspace. The address is:  
Web: <http://www.hcplc.org>. Address is **2nd Floor, East; 900 N Ashley Street, Tampa, FL 33602**

**Date/Time: Thursday, July 16, 2019**

**Description: Great American Celebration of Speed Daytona International Speedway, CEO to discuss Automation and Electrathon**

About the **Great American Celebration of Speed™**

Through the years Americans have been fixated by the speed, bravery and innovation shown by the pioneers of the racing sports as well as today's contemporary heroes. The remarkable equipment developed over the years step by step increased the speed levels and thankfully, in many cases, have been lovingly preserved. Each venue of speed from NASCAR's tracks, Motocross, Indy and the World venue of Formula 1 to offshore power



boat racing and flying pylon racing and air shows has its own vast history. Never before, however, has this all been brought together in one location. That changes with The Great American Celebration of Speed™.

For the first time, at the Daytona International Speedway on October 11-13, all elements of speed are brought together in a single three-day event. It won't be just a static display but an action extravaganza in a never stop mix of simultaneous excitement and fan interaction. On the track, on the water and in the sky the historic legacy of speed rules for three exciting days at the Great American Celebration of Speed™. A true annual festival of celebration comprised of a mix of returning old favorites with the new. A festival where devotees and fans of one racing aspect will intermingle with fans and examples of other speed platforms learning, enjoying and watching them perform too.

**Speaker: Steve Hosid—CEO—Great American Celebration of Speed™**

Steve Hosid has been an innovator throughout his professional career. Creating a new major World Event that showcases the historic, current and future aspects of Speed and is a showcase for innovation as well is something he has worked on for ten years. "The visitors to our event are generational meaning grandparents, parents and kids so we want this to not only feature the past but also the very bright future for transportation and the innovative ways it's being achieved" said Hosid. "I'm also very proud that we are going to be able to conduct symposiums with Industry Icons in the Automotive, Aerospace and Marine industries and young people to inspire them for the future", he added.

GACOS will feature the heritage of NASCAR, Formula 1 Indy, Motocross, Racing boats, planes and blimps and a lot more along with the future as expressed with Electrathon car construction and racing and the sun powered cars from MIT and others. "Self-driving vehicles are not just a pipe dream", Hosid added, "in a world of increasing populations we need to move vehicles along in nontraditional ways to avoid traffic lock ups and our young leaders of the future are the key to solving these issues."

**To Register:** Please send an email to Sean Denny at [venner20@ieee.org](mailto:venner20@ieee.org).

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## Opportunity

for a

## Forensic Electrical Engineer Expert Witness

The right person for this opportunity has a P.E. license and experience as an electrical engineer with an electric utility or related industry. This can be an ideal part time or contract position for someone that has recently retired.

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offices in Plant City, FL and Bushnell, FL

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*Florida West Coast Section, Tampa*

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IEEE, 445 Hoes Lane, P.O. Box 1331, Piscataway, NJ 08855-1331 or call (800) 678-4333  
Or fax your address changes to (732) 562-5445

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

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1	2 EXCOM Meeting, TECO Plaza 5:30 p.m.	3	4	5	6
7	8	9	10	11	12	13
14	15	16 IEEE RAS Meeting, 6:30 pm 900 N Ashley St, 2nd Floor	17 Can You Print That? 6:00 p.m. TECO Plaza	18	19	20 YP & WIE joint trip to NASA 8am
21	22	23	24	25 PES/IAS Planning Mtg— 6AM at Village Inn, S Dale Mabry	26	27
28	29	30	31			