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IEEE

THE SUNCOAST SIGNAL

THE INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS, INC.

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3D Printed Drug

The tour of USF's Design for X lab in May included demonstrations of 3D printers that were capable of producing some pretty amazing objects. But plastic gadgets are just the beginning.



The U.S. Food and Drug Administration recently approved the first 3D printed pharmaceutical drug. How will 3D printing change the pharmaceutical industry?

Visit: http://bit.ly/25hAJW9

Upcoming Meetings

EXCOM Meeting

Tuesday, July 5th, 2016 5:30PM at TECO Plaza

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

Open to all FWCS Members

Power Supply Design from Scratch

Wednesday, July 13th, 2016

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IEEE Member-Get-a-Member (MGM) Program

No one knows how beneficial IEEE membership is to technical and career development better than IEEE members. Consider sharing your IEEE membership experience and get rewarded for doing so. Through the Member-Get-a-Member (MGM) program, IEEE rewards your efforts in recruiting new members. Your local IEEE Section can also benefit.

Professional members can earn:

- US\$15 for each Professional member recruited
US\$5 for each Professional member recruited to e-Membership (offered in developing nations only)

Student members can earn:

- US\$2 for each Student or Graduate Student member recruited
US\$15 for each Professional member recruited
US\$5 for each Professional member recruited to e-Membership (offered in developing nations only)

The maximum amount a member can earn during the membership year is US\$90.

For more information on this membership benefit that pays, please see

http://www.ieee.org/mgm

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## PE Corner

Art Nordlinger, PE, Senior Member

### What Qualifies for Continuing Education Credit?

Summer approaches and you're thinking, "It's time I got serious about getting some Continuing Education Hours." And you are dreading the thought of having to sit through 16 hours of technical education (section 2, below). Well, there are other things that qualify of which you may be able to take advantage. Sections 61G15-22.003 and .004 of the Florida Board of Professional Engineer's rules address this. The first section addresses Qualifying Activities for Area of Practice Requirement and the second Conversion of Education Units to Continuing Education Hours (CEH). I'll combine the sections here and provide some editorial commentary.

#### 1) Successful completion of college courses.

One (1) college semester hour credit is equal to 45 CEHs

One (1) college quarter hour credit is equal to 30 CEHs

*Yes, you can complete the entire requirement by taking one college level course in your area of practice.*

#### 2) Successful completion of short courses, tutorials, webinars, and distance education courses offered through delivery methods such as live, correspondence, recorded, Internet-based; or attending seminars (including in-house engineering seminars), workshops, or professional and technical presentations at meetings, conventions or conferences presented/sponsored by a provider or vendor with specific knowledge related to the licensee's area of practice approved under Rule 61G15-22.011, F.A.C.

**One (1) contact hour of professional development in course work, seminars (including in-house seminars at an engineering firm), or professional or technical presentations made at meetings, conventions, or conferences is equal to 1 continuing education hour.**

*Note that Rule 61G15-22.011 requires that providers and content be approved by the Board. So if you are planning to go this route, make sure that the provider and content have been approved.*

#### 3) Teaching or instructing in subsection (1) or (2) above. However, teaching credit is valid for teaching a course or seminar for the first time only. Teaching credit does not apply to full-time faculty. For teaching of subsections (1) through (3) above, apply a multiple of 2, if the requirements of subsection 61G15-22.003(3), F.A.C., are met.

*Here is a way for many of us to get double credit by teaching a course with appropriate technical content in our area of expertise. Talk to an IEEE officer about this opportunity.*

#### 4) Authoring published technical engineering papers, articles, or books; or accepted licensee examination items for NCEES. Each published peer-reviewed paper or book in the licensee's area of professional practice is equal to 10 continuing education hours. Each published paper or article (other than in paragraph 5 below) in the licensee's area of professional practice is equal to 5 continuing education hours. Authoring accepted licensee examination items for NCEES is equal to 2 continuing education hours.

*If you've been thinking about publishing a paper, might be time to dust it off and get it reviewed.*

*...continued on Page 3*

## PE Corner—continued from page 2

### 5) Patents.

Each patent developed using engineering principles is equal to 10 continuing education hours.

- 6) **Active participation in professional or technical societies.** Civic or trade organizations do not qualify under this provision. Credit for this activity requires that the licensee serve as an officer of the organization or actively participate on a committee in the organization. Continuing Education credits are not earned until the end of each year of completed service. Active participation in professional and technical societies as described in subsection 61G15-22.003(6), F.A.C. Each hour of participation is equal to 1 continuing education hour, with a maximum credit of 4 continuing education hours per renewal period.

Get involved! You could earn up to 4 hours for your participation.

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. And for the PEs, don't forget that the next renewal deadline is only 7 months away. Better start earning those CEHs now!



## Joint Chapter of IEEE PES/IAS

Over the past several months, membership in the joint student chapter of PES/IAS at USF has been growing, demonstrating student interest in the power and energy field. High on the wish list of the student members is more opportunities to visit engineering facilities. Technical tours are always a hit, and the USF PES/IAS members would like to ask members of the Florida West Coast section to help.

Do you work in a facility that would be interesting and educational for college students to visit? If so, please contact the USF PES/IAS student chapter chair, Sayed Abdullah Sadat, at [sayed\\_abdullah@ieee.org](mailto:sayed_abdullah@ieee.org), or the student chapter advisor, Dr. Ralph Fehr, at [r.fehr@ieee.org](mailto:r.fehr@ieee.org). We would love to see your facilities and get to know more about our local engineering community.

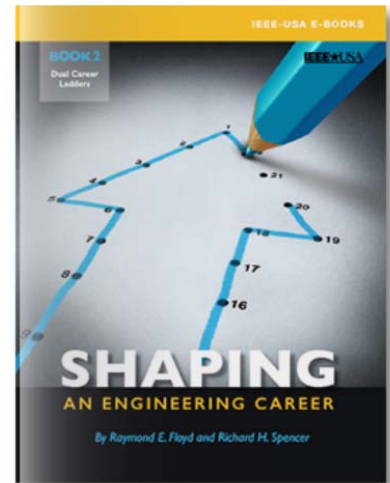
And are you looking for co-op students or interns to help with your workload? Hesitant to hire a new entry-level engineer for fear of making a "bad hiring decision"? We have motivated undergraduate and graduate students who have completed various stages of their education available for you to "test drive." If you'd like to take advantage of this valuable opportunity, contact Dr. Fehr to arrange interviews or a "meet and greet" with students who meet your requirements.

## FREE EBOOK

This E-book features dual career ladders.

The dual career ladder represents the choice of career paths many engineers face: technical, management or both. In some cases, depending on the needs of the corporation, the engineer can move from one side to the other. The choice, however, is not always simple.

Authors Raymond E. Floyd and Richard H. Spencer caution that many organizations are careful about using the words "engineer" and "manager." The rationale is that such a title may give the impression that someone has all the responsibilities of a manager when they really don't.



From today through 15 July, you can get your free e-book to download by going to <http://shop.ieeeusa.org/usashop/product/careers/75870>. Log in with your IEEE Web account, add the book to your cart and use promo code JUNEFREE16 at checkout.

For more on the dual career ladder, see this article from IEEE-USA InSight:

<http://insight.ieeeusa.org/insight/content/careers/60215>

## Coming up...

In July, IEEE-USA E-BOOKS will offer "A Living Resume -- Volume 1: Documenting Your Accomplishments."

The Living Resume Series, by Harry T. Roman, helps you to document your growth as a professional. It is designed to make you think carefully about what you have accomplished and explore how you can record it in a logical manner. Roman writes that one day you might need a compendium of your career to help you keep your job or perhaps land a new one.

Volume 1 discusses how to document your career accomplishments.

## Seeking Authors

Do you have an idea for an e-book you think will benefit your fellow members? If so, IEEE-USA E-BOOKS would like to hear from you. We are seeking authors to write an individual E-book, or a series, on career guidance and development topics.

Please email your proposal to IEEE-USA Publishing Manager Georgia C. Stelluto at [g.stelluto@ieee.org](mailto:g.stelluto@ieee.org).

IEEE-USA serves the public good and promotes the careers and public policy interests of nearly 200,000 engineering, computing and technology professionals who are U.S. members of IEEE.





## Power Supply Design from Scratch

**Date:** Wednesday, July 13, 2016  
**Time:** 6:30pm  
**Location:** Largo STAR Center  
 7887 Bryan Dairy Rd. (at Belcher Rd.)  
 Largo, FL 33777

**Cost:** Students and Life Members—\$2  
 Members—\$4  
 Non-Members—\$6  
 Food and beverages will be provided

RSVP: Online at <https://meetings.vtools.ieee.org/m/39264>

Questions: Paul Beluzzi at [paul\\_beluzzi@selinc.com](mailto:paul_beluzzi@selinc.com), (509) 334-8895

Jim Cavanaugh at [james.a.cavanaugh@ieee.org](mailto:james.a.cavanaugh@ieee.org), (484) 459-9418

Speaker: **Todd Felege**, Field Application Engineer, Linear Technology Corporation

### Speaker Biography

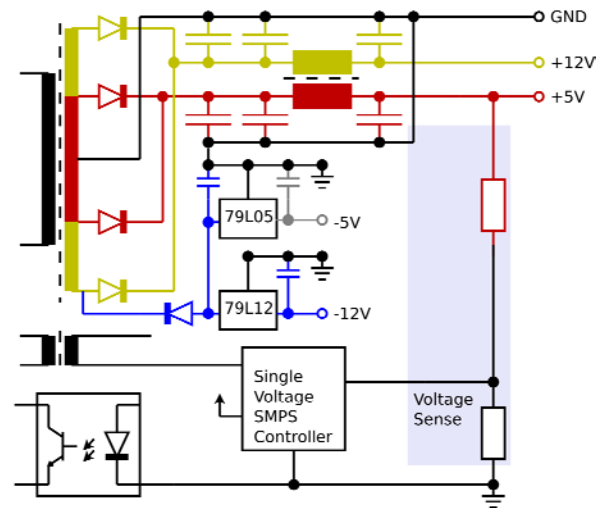
Todd has a BSEE from the University of New Hampshire. His specialty during school was analog electronics including VLSI and IC layout techniques. He began at age sixteen working in video editing electronics as a technician and PCB layout specialist for about five years. He then worked in the space science group helping in the design and implementation of satellite instrumentation for the analysis of the solar wind and cosmic radiation. This included time of flight mass spectrometry and gamma telescope work. The next twelve years were spent in the aerospace industry where he was involved in the architecture, design, and implementation of all types of avionic equipment from integrated displays to inertial and radio navigation. The last six years has seen Todd as the Field Application Engineer for Linear Technology Corp. in Florida.

### Meeting Description

Using LT PowerCad II design tool, we will synthesize a complex power supply design from scratch, highlighting the tools within PowerCad (such as Power Planner), and showing the design tool's analysis capabilities. We will export the working design, to LT Spice, and perform a simulation.



We will also touch on some of the more advanced topics and features of LTSpice during the simulation.



		
<h2>Distributed Resources—Operation, Protection, and Control</h2>		

**Date:** Friday, July 29, 2016      **Speaker:** Wayne Hartmann  
VP, Protection and Smart Grid Solutions  
Beckwith Electric

**Time:** Registration & Breakfast: 8:30 AM—9:00 AM  
Seminar: 9:00AM — 2:00 PM      **Cost:** \$ 100 Members, \$ 200 Non-Members, \$20 Students  
Includes Breakfast and Lunch

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

**CEH Credits:** Continuing Education Hours will be awarded. Be sure to provide your name and PE number as it appears on your license. IEEE Florida Provider Number 3849.

**RSVP:** Online at <http://time2meet.com/fwcs-pes1/index.html>  
Make checks payable to: IEEE FWCS      Send checks to: Jim Howard, IEEE FWCS Treasurer  
*Space limited to first 45 registrants!!!*      3133 W. Paris Street, Tampa, FL 33614-5964

**Questions:** Serge Beuzile at 863-834-6511, or [serge.beuzile@ieee.org](mailto:serge.beuzile@ieee.org)

### Seminar Description

Distributed Electric Resources (DER) are making larger inroads into our distribution systems. 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 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 discussed, including addressing the impact of IEEE 1547A.

### Speaker Biography

Wayne Hartmann is VP, Protection and Smart Grid for Beckwith Electric. 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 Power T&D 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 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."

<h2 style="color: red; margin: 0;">Tour of Tampa International Airport Solar Power</h2>		

Date: Tuesday, August 23, 2016

Cost: Free for IEEE Members and Students  
\$5 for Non-Members

Time: 4:00pm—5:00pm

Parking: \$1 per 20 minutes in Economy Parking Garage

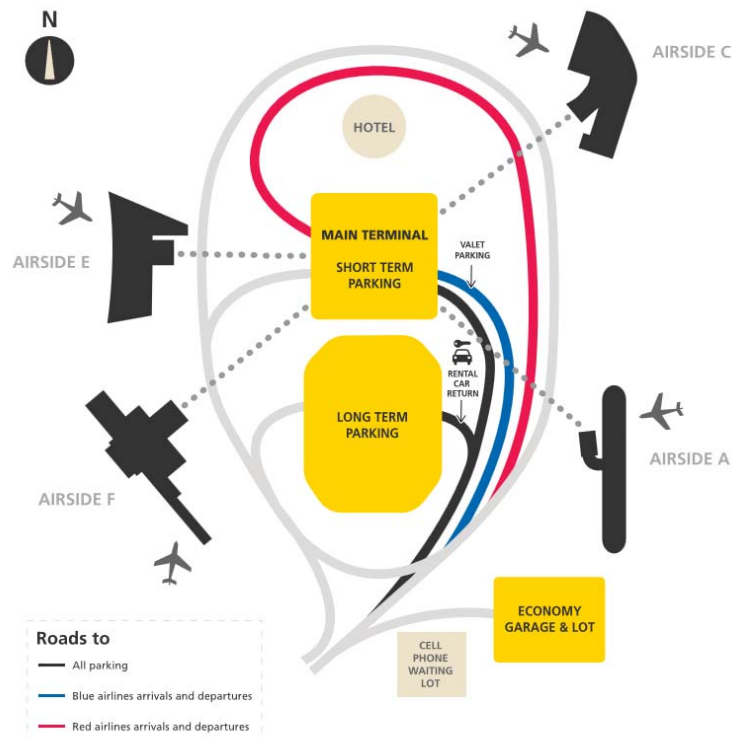
Location: Tampa International Airport  
Economy Parking Garage South  
(Top Floor of Garage)  
Economy Parking Rd.  
Tampa, FL 33607

RSVP: Online at  
<http://time2meet.com/fwcs-pes2/index.html>  
*Space limited to first 25 registrants!!!*

Questions: Tom Blair at [tom\\_blair@ieee.org](mailto:tom_blair@ieee.org)

### Tour Description

Your IEEE FWCS PES/IAS chapter is happy to announce a tour of the Tampa International Airport and Tampa Electric Solar Array facility at the Economy Garage at TIA. On Feb. 11, 2016, airport officials, community leaders and others dedicated the new photovoltaic (PV) array, atop the South Economy Parking Garage, which has the potential to generate enough clean electricity to power the equivalent of up to 250 homes. It will produce an environmental offset on the order of removing nearly 350 cars from Tampa-area roads over the course of a year. As an added benefit, the array will provide shade for cars parked on the garage's top level.



Come out and see the latest PV installation and learn about the future of solar energy in Tampa Bay. The new facility at TIA can produce up to 2 megawatts (MW) of clean, renewable energy. The tour will be on the top floor of the Economy Parking Garage (aka remote parking garage).

The tour is free for IEEE members, their guests, and students; however, there will be a small fee (**\$1 per 20 minutes or \$3 per hour**) to park in the economy parking garage.

## **Save The Date—2017 E-Week Banquet**

Plans are fully underway for the next Tampa Bay Engineering Week Banquet for 2017. The location again will be the Pepin Hospitality Center, 4121 N 50<sup>th</sup> Street, Tampa, FL 33610.

Date: Thursday, February 23, 2017

Time: 4:30-6:30 PM Networking & Exhibitions  
6:30-9:00 PM Dinner Program & Awards

Watch future Signal newsletters for more details and registration information.

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## **FWCS Senior Member Roundup**

Date: Tuesday, July 05, 2016

Time: 5:30p-7:30p

Cost: FREE

Location: TECO Hall North, 702 N. Franklin Street Tampa, FL 33602

Reservations: <http://time2meet.com/fwcs-section/index.html>

Questions: Tom Blair at 813-228-1111, ext. 34407 or [thblair@tecoenergy.com](mailto:thblair@tecoenergy.com)

OR Claude Pitts at 727-262-3884 or [Claude.Pitts@ieee.org](mailto:Claude.Pitts@ieee.org)

The Florida West Coast Section is looking to assist Members in elevating their grade to Senior Membership. We will be holding a Member - Senior Membership Roundup to assist individuals in completing the nomination forms and connecting them with Senior Members who can assist in the reference requirements.

If you know of someone who you feel is qualified then please encourage them to sign up for this event. If you have desired to become a Senior Member but not sure what to do or need references then please register for this event and your Section can help in making the next steps towards Senior Membership. Those that register will be contacted to ensure they know what is needed for the nomination process.

To be eligible for application or nomination, candidates must:

- be engineers, scientists, educators, or technical executives;
- have experience reflecting professional maturity;
- have been in professional practice for at least ten years;
- show significant performance for at least five years.

Senior member is the highest grade for which IEEE members can apply. IEEE members can self-nominate, or be nominated, for Senior member grade.

Have you been in engineering for over 10 years? If so, you may qualify for Senior Level membership in IEEE. There is no additional fee to apply for senior member grade.

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## **FWCS Seeking Volunteers for Section Officers for 2017**

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 time to dedicate to these very prestigious Officer Positions for the FWCS, please contact one of the following:

Jim Howard ([j.howard@ieee.org](mailto:j.howard@ieee.org))

Richard Beatie ([r.beatie@ieee.org](mailto:r.beatie@ieee.org))

Robert Aasheim ([robert.aasheim@duke-energy.com](mailto:robert.aasheim@duke-energy.com))



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## Power Engineering Training and Consulting

### **Power System Analysis: 8 Sessions @ 3 hours per session for 2.4 CEU's [or 24 PDH's]**

This course, designed for engineers and technicians, focuses on the use of symmetrical components to analyze unbalanced power systems. It covers the essential topics necessary for power system analysis including:

- Phasors and Complex Number Mathematics
- Three-Phase Power Calculations
- Per-Unit System
- Delta-Wye Transformer Analysis
- Symmetrical Component Theory
- Sequence Network Development
- Short-Circuit Fault Calculations
- Open-Circuit Fault Calculations

### **Fault Current Calculations:**

#### **4 Sessions @ 3 hours per session for 1.2 CEU's [or 12 PDH's]**

This course is intended for engineers and technicians familiar with basic three-phase system analysis methods seeking a more thorough understanding of symmetrical components and sequence networks. A thorough development of symmetrical components, necessary for a thorough understanding of fault calculations, is presented. Then, a failsafe method of creating sequence networks is covered, followed by short- and open-circuit fault calculation methods.

### **Transformer Application: 4 Sessions @ 3 hours per session for 1.2 CEU's [or 12 PDH's]**

This course begins with a review of basic transformer theory, then progresses to the analysis of a single-phase transformer using a detailed circuit model. Next, the basic three-phase transformer connections (delta and wye) are studied, followed by an overview of special transformer connections including high-phase order applications, grounding transformers, phase shifting transformers, and autotransformers.

### **AC Motor Application: 4 Sessions @ 3 hours per session for 1.2 CEU's [or 12 PDH's]**

This course covers the essentials of induction motor application, including a review of basic motor theory, motor nameplate interpretation, speed-torque curves, and starting time calculations. NEMA frame sizes and NEMA starters will be addressed, along with motor and motor circuit protection practices as stipulated by the National Electrical Code. Motor control and special starting methods will also be covered. In addition, use of variable frequency drives (VFDs) will be discussed, along with concerns involving VFDs that need to be understood when working with power electronic technology.

### **Other Electrical Power Topics**

Power System Planning Strategies and Techniques

Asset Management and Maintenance Strategies

Power System Modernization Methods

Power Engineering for Non-Power Engineers — *this course is ideal for engineers new to the power field who did not have a strong power background at the university. It is also helpful for technicians new to the power engineering field.*

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### **FE and PE Review courses for electrical power engineering**

Contact Richard Heinze for additional information:

heinzerichard@yahoo.com  
(858) 945-8254




*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 2016 Calendar of Events (For more information see P. 1) in this Signal...**

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
					1	2
3	4  Independence Day	5 <i>EXCOM Meeting &amp; Sr Member Roundup 5:30PM TECO Plaza Details page 7</i>	6	7	8	9
10	11	12	13 <i>Power Supply Design from Scratch Details page 4</i>	14	15	16
17	18	19	20	21	22	23
24 31	25	26	27	28	29 <i>Distributed Resources Details page 5</i>	30