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**Florida West Coast Section**  
<https://r3.ieee.org/fwc/>

# The SunCoast Signal

**The Institute of Electrical and Electronics Engineers, Inc.**

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**Thomas M. Coughlin**  
**IEEE-USA President 2019**  
*(See Amendment on page 9)*

Great senior member elevation event at the Western Florida Section today. The nominators and endorsers met the candidates virtually in breakout rooms and had conversations to get to know the candidates better.



I really liked this approach as it emphasized that local sections are IEEE communities and communities of people help each other. I think this was a great example of how to do senior member elevations and working virtually actually helped to enable the exchanges.

I think regions may want to recognize sections like this that are doing exceptional jobs of senior member elevations, if they aren't doing so already, and to help the sections develop best practices for their section senior member elevations and share those practices with other regions.

Good luck to today's senior member nominees! #ieee #ieeeorg Timothy Lee, Barry Tilton, P.E., PMP, Ed Palacio PMP, Jill Gostin, Jim Look, Jason Gu, Antonio Luque, Alberto Sánchez, Deepak Mathur

## PE Corner

**Art Nordlinger, PE, Senior Member**  
**New FBPE Board Members**

For more than a year (has it really been that long?) I have been lamenting the failure of Governor DeSantis to appoint new members to the Florida Board of Professional Engineers. I'm happy to be able to report that much of that deficiency has been rectified.

*Continued on Page 2*

### UPCOMING MEETINGS EXCOM

Tuesday, August 3, 2021  
Google Meet  
Register with vTools

<https://events.vtools.ieee.org/m/277324>

**IEEE FLORIDA WEST COAST SECTION  
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Prior to these recent appointments there were five sitting FBPE board members, three of who were serving under expired terms, and two of who were appointed by the previous governor but never confirmed by the legislature. Of these, the three whose terms had expired have been reappointed to new terms and one of the two never confirmed have been appointed to serve out the remainder of their current term. The board member who has not been reappointed has also, as of this writing, not been replaced. This member may continue to serve, if they so choose, until a replacement is named. I would like to take this opportunity to thank all five of these board members for their continued service in the face of having to divide the work normally done by eleven members between only five.

Without further ado, the three new engineering board members are Jeb Mulock, PE from Bradenton, Yassi Myers, PE from Windermere, and Denise Ramsey, PE from Jacksonville. The new education board member is John Pistorino, PE from Miami. The two public board member seats, which are required to be individuals outside of the engineering profession, have yet to be filled. Congratulations to all of our new board members and thank you, in advance, for your service!

So what changed that appointments were finally made after all this time? I can't say for sure, but one obvious change is the recent appointment of Ms. Julie Brown as Secretary of the Department of Professional and Business Regulation. As I recently reported, the executive director of the FBPE and I, as Chair of FEMC, had the opportunity to meet with her recently and share our goals for the engineering community, including the urgent need for board member appointments. I can't say for sure to what extent Ms. Brown contributed to this welcome change, but I'm inclined to give her credit. It is my hope that we will see the final FBPE board member positions filled soon as well.

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.



## Rolling Sphere Method of Lightning Protection for Substations - IEEE Std. 998 and NFPA 780

**Date:** Tuesday, August 3, 2021  
**Time:** Seminar: 4:00PM – 5:00PM  
**Speaker:** Biren Patel, PE,MBA,PMP of Biren Patel Engineering  
**Location:** Online – meeting invitation will be emailed to attendees prior to seminar – Please ensure your email is correct on signup page.  
**Cost:** Free  
**CEH Credits:** No CEH's provided for this seminar. Florida provider #0003849.  
**RSVP:** Online at: <https://events.vtools.ieee.org/event/register/275447>  
**Questions:** Robert DeMelo - [Robert.demelo@ieee.org](mailto:Robert.demelo@ieee.org)

### Your local IEEE PES/IAS Chapter is offering the following seminar:

**Abstract:** The Rolling Sphere Method is a direct application of the Electro Geometric Model (EGM) for lightning protection. It provides a practical method for engineers and architects to design lightning protection systems to shield their high priority assets from direct strikes.

This presentation will go over the need for this method and will teach engineers how to apply the method to substations per IEEE Std. 998 and NFPA 780. While the presentation focuses on protecting substations, the concepts can be universally applied to any asset since lightning does not discriminate.

**Speaker:** Biren Patel is a Substation Design Engineer with 15 years experience working on high voltage transmission substations for electric utilities.

Biren and his company also have been designing solar plants and solar interconnections for developers and EPCs for 9 years. Biren graduated with a BSEE from Ga Tech in 2005 and an MBA from UGA in 2012.

He is a PE in 15 states, a certified PMP, and an IEEE member since 2003. In 2011, he left his first substation engineering job at Burns & McDonnell to start the poorly named company, Biren Patel Engineering. He, his wife, and his 3 year old son live in Macon, GA. According to his wife, the only reason he does these presentations is because he loves to hear himself talk and thinks he's a lot funnier than he really is.

We started Biren Patel Engineering with the goal of making life simple for our clients and our employees. We have a small company of 20 electrical engineers and designers all working from home (before we had to) in various locations, mostly in the Southeast. We currently perform substation, protection and control, and relay apps & settings work for utilities including Southern Company, Duke Energy, FPL/NextEra, MEAG Power, and Georgia Transmission Corp. Although substation work is our first love and primary service, we also consult for solar developers and EPCs as they seek simple answers in a complex utility world.

**LIFE MEMBER ALERT!****Richard Beatie, PE, Life Senior Member,  
Life Member Affinity Group Chair**

If you are a Life Member, I congratulate you for your many years of service to the IEEE and your profession! But, are you a Life **SENIOR** Member? If not, do **NOT** procrastinate! The Florida West Coast Section has made it easy for you to get elevated. The FWCS is running a Senior Member Elevation Campaign targeted to all eligible members, with guidance and reference reviewers provided.

There is no cost, only an hour or so of your time to participate in our online reference review by our committee volunteers. With your esteemed career history I guarantee you will be approved, and your application will be forwarded to the A&E Committee for their confirmation at their next meeting coming up in the near future.

You may ask, what are the benefits of elevating to Life **Senior** Member, since I am retired or close to it.

First, you will receive a new **GOLD** membership card, embossed with **Life Senior Member** and a congratulatory letter from our esteemed IEEE President!

Then you have bragging rights to your spouse, relatives, buddy's and friends! Our IEEE Florida West Coast Section will also benefit! We are

competing with other Sections in the Region to see who can elevate the most members!

We also get a bonus stipend in our rebate for each member we elevate, which helps us fund activities to support our members. If you won't elevate for yourself, then consider doing it to support your local Section.

To start the process contact:  
Hermann Amaya, the Elevation Committee Chair, at:  
[Hermann.amaya.us@ieee.org](mailto:Hermann.amaya.us@ieee.org) 727-543-1308

Hermann will set you up and guide you through the simple process to be elevated to **Life Senior Member!**

If not yet a Life Member you might ask how do I become one? It is automatic! IEEE tracks you! Must be 65 or older and have enough years of membership plus your age to equal 100. If you don't qualify for Life Member yet do not let that stop you from applying for Senior Member at your current grade!

Every one please consider upgrading to Senior Member NOW!

**Richard Beatie, PE**  
**IEEE FWCS Life Member Affinity Group Chair**  
[r.beatie@ieee.org](mailto:r.beatie@ieee.org)

## History of engineering - Part I

The Watt steam engine, a major driver in the industrial revolution, underscores the importance of engineering in modern history. This model is on display at the main building of the ETSIM in Madrid, Spain

The concept of engineering has existed since ancient times as humans devised fundamental inventions such as the pulley, lever, and wheel. Each of these inventions is consistent with the modern definition of engineering, exploiting basic mechanical principles to develop useful tools and objects.

The term engineering itself has a much more recent etymology, deriving from the word engineer, which itself dates back to 1325, when an engine'er (literally, one who operates an engine) originally referred to "a constructor of military engines." In this context, now obsolete, an "engine" referred to a military machine, i. e., a mechanical contraption used in war (for example, a catapult). The word "engine" itself is of even older origin, ultimately deriving from the Latin ingenium (c. 1250), meaning "innate quality, especially mental power, hence a clever invention."

Later, as the design of civilian structures such as bridges and buildings matured as a technical discipline, the term civil engineering entered the lexicon as a way to distinguish between those specializing in the construction of such non-military projects and those involved in the older discipline of military engineering (the original meaning of the word "engineering," now largely obsolete, with notable exceptions that have survived to the present day such as military engineering corps, e. g., the U. S. Army Corps of Engineers).

### Ancient Times

The ziggurats of Mesopotamia, the pyramids and Pharos of Alexandria in ancient Egypt, cities of the Indus Valley Civilization, the Acropolis and Parthenon in ancient Greece, the aqueducts, Via Appia and Colosseum in the Roman Empire, Teotihuacán, the cities and pyramids of the Mayan, Inca and Aztec Empires, and the Great Wall of China, among many others, stand as a testament to the ingenuity and skill of the ancient civil and military engineers.

The six classic simple machines were known in the ancient Near East. The wedge and the inclined plane (ramp) were known since prehistoric times.

The wheel, along with the wheel and axle mechanism, was invented in Mesopotamia (modern Iraq) during the 5th millennium BC. The lever mechanism first appeared around 5,000 years ago in the Near East, where it was used in a simple balance scale, and to move large objects in ancient Egyptian technology. The lever was also used in the shadoof water-lifting device, the first crane machine, which appeared in Mesopotamia circa 3000 BC, and then in ancient Egyptian technology circa 2000 BC. The earliest evidence of pulleys date back to Mesopotamia in the early 2nd millennium BC, and ancient Egypt during the Twelfth Dynasty (1991-1802 BC). The screw, the last of the simple machines to be invented, first appeared in Mesopotamia during the Neo-Assyrian period (911-609) BC. The Egyptian pyramids were built using three of the six simple machines, the inclined plane, the wedge, and the lever, to create structures like the Great Pyramid of Giza.

The earliest architect known by name is Imhotep. As one of the officials of the Pharaoh, Djoser, he probably designed and supervised the construction of the Pyramid of Djoser (a Step Pyramid) at Saqqara in Egypt around 2630-2611 BC.[14] He may also have been responsible for the first known use of columns in architecture.

Kush developed the Sakia during the 4th century BC, which relied on animal power instead of human energy. Reservoirs in the form of Hafirs were developed in Kush to boost irrigation. Sappers were employed to build causeways during military campaigns. Kushite ancestors built speos between 3700 to 3250 BC. Bloomeries and blast furnaces were also created during the Meroitic period.

The earliest practical water-powered machines, the water wheel and watermill, first appeared in the Persian Empire, in what are now Iraq and Iran, by the early 4th century BC.

Ancient Greece developed machines both in the civilian and military domains. The Antikythera mechanism, an early known model of a mechanical analog computer, and the mechanical inventions of Archimedes, are examples of Greek mechanical engineering. Some of Archimedes' inventions, as well as the Antikythera mechanism, required sophisticated knowledge of differential gearing or epicyclic gearing, two key principles in machine theory that helped design the gear trains of the Industrial revolution and are still widely used today in diverse fields such as robotics and automotive engineering.

**IEEE CALL TO ACTION ADDRESSING THE NATIONAL SKILLS GAP CRISIS**

First, we have a major skills deficit in our current talent pool in that manufacturers cannot find entry-level employees with basic skills they require to fill their jobs.

The Country’s “skills-lacking” talent pool cannot keep up with replacing older employees now retiring at record numbers leaving many companies to hire foreign tech professionals. In the next decade, 2.5 million jobs will go unfilled due to lack of U.S. tech workers!

The answer is to create a skills-gap training program for high school students with curriculum created from manufacturers' own basic skills requirements for needed new hires through 3-D CAD training.

Secondly, sixty-five percent of children in primary schools today will have future jobs that have not been created yet! We need to prepare them for these unknown tech jobs in all K-12 grades.

Third problem is the most significant. African American, Latin/Hispanic, and white college students are dropping out of STEM programs at alarming rates of 40%, 37%, and 27% respectively! This shows that we need to be preparing them for future digital jobs in their K-12 education.

**TEACHING 3-D CAD IN K-12 GRADES GETS U.S. STUDENTS UP TO SPEED WITH CHINA**

The goal is to put 3-D Computer Aided Design (CAD) technology into teachers’ hands to reignite students' desire in learning STEM again.

The 3-D printer and design technology fascinates kids, motivating them to want to "learn by do-

ing" all STEM subjects through the power of CAD technology.

Kids spend their lives in a 3-D digital world, and we need to reach K-12 Students in their 3-D world by creating the "21st Century Classroom!" But we still are teaching them in 2-D!

We cannot move forward competing Globally by continuing to relegate STEM programs to after-school programs, camps, and field trips. Which extra costs deter attendance of students from low-income families.

**The biggest challenge is training the Nation’s STEM teachers in using this 3-D CAD technology.**

Training retired teachers and veterans to provide 3-D CAD training classes for STEM teachers would help to prepare students for problem-solving in high-tech environments!

Preparing our teachers with the latest education technology now will ensure our students' success in future digital jobs.

A group of manufacturing professionals and myself believe with the backing of IEEE and Tampa Bay manufacturers, we can push educational reforms, increasing the STEM skills of our talent pool and giving students good paying jobs right out of high school.

Please let me know how IEEE members can help in solving our Nation’s skill gap crisis!

**Inventively,  
Brian England  
813-601-3577**

**3DSTEAMREVOLUTION.COM**

**SunCoast Signal Advertising Rates**

Size	1 Month		6 Months		12 Months	
	Member	Non-Member	Member	Non-Member	Member	Non-Member
<b>Business Cards</b>	\$25	\$35	\$120	\$150	\$210	\$252
<b>1/4 Page</b>	\$40	\$52	\$190	\$380	\$335	\$402
<b>1/2 Page</b>	\$75	\$98	\$360	\$450	\$630	\$756
<b>3/4 Page</b>	\$110	\$143	\$530	\$663	\$925	\$1,110
<b>Full Page</b>	\$140	\$182	\$670	\$838	\$1,175	\$1,410
<b>Insert / Sheet</b>	\$200	\$260	\$800	\$1,000	\$2,000	\$2,400



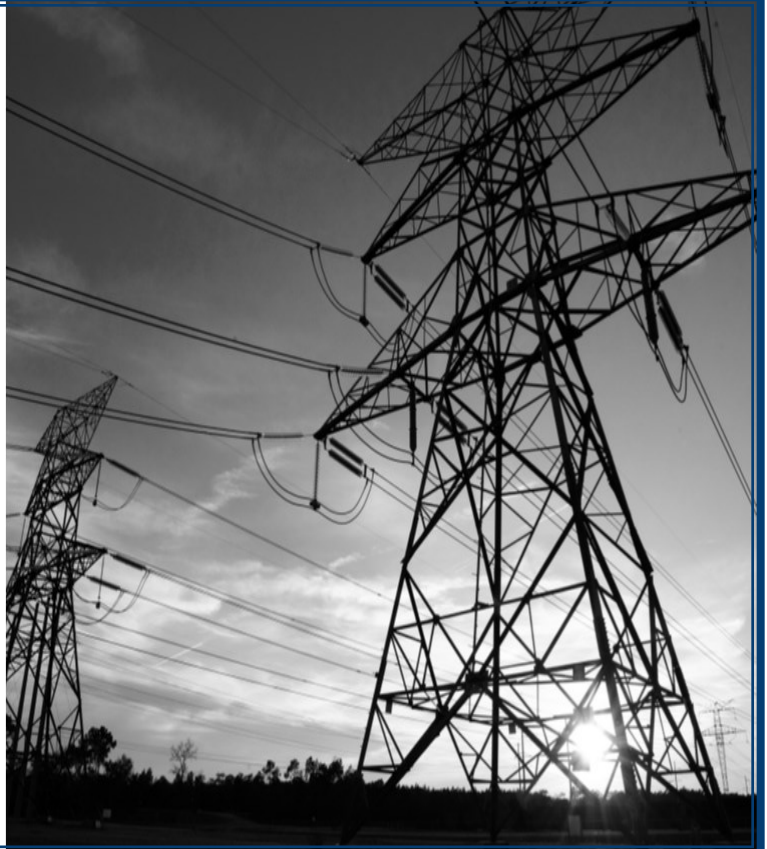
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**August 2021 - Calendar of Events (For more information see "Inside the SunCoast Signal in Page 1)**

Sun	Mon	Tue	Wed	Thu	Fri	Sat
1	2	3	4	5	6	7
		*ExCom Google Meet				
		*Rolling Sphere...				
8	9	10	11	12	13	14
	*Signal Inputs Due					
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				



## Amendment

The original August issue of the SunCoast Signal contained an article on page 1 by Thomas Coughlin indicating , in addition to his current position, that he is a candidate for President Elect.

Per IEEE rules the article should have included all the candidates. Following is a description of the IEEE annual election as well as a list of the candidates.

Full information can be found on the IEEE website at:

<https://www.ieee.org/about/corporate/election/candidates.html#>

IEEE President Elect Candidates 2022, please note that candidate listing order indicates no preference:

- Saifur Rahman (Nominated by Petition)
- Thomas M. Coughlin (Nominated by Petition)
- S. K. Ramesh (Nominated by IEEE Board of Directors)
- Francis B. Grosz (Nominated by IEEE Board of Directors)

The voting membership of IEEE annually elects officers that serve on the top-tier IEEE governing bodies.

The IEEE President-Elect candidates are nominated by the IEEE Board of Directors.

Recommendations made by divisional and regional nominating committees create the slate for the Division and Region Director positions.

The annual ballot will also include candidates for positions in the IEEE Standards Association, IEEE Technical Activities, and IEEE-USA. New for this election is the position of Chair-Elect for the IEEE Women in Engineering Committee.

The final ballot may include petition candidates for any of these positions.

[View more information on the petition process.](#)