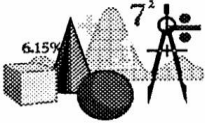




SPARKS

Daytona Section Newsletter
March 2021



SECTION MEETING

**Due to continuing Covid-19 considerations,
there will be no Daytona Section Meeting for March**

CHAIR'S REPORT



We are going to have a Face-to-Face Section Meeting on April 22 at the Daytona Beach Yacht Club (321 South Beach Street in Daytona Beach Florida). We hope to have our usual ERAU and B-CU student presentations as well as presentations from our Sections Tomoka Science and Engineering's Special Award winners. With Covid-19 (SARS-CoV-2) vaccinations becoming available and sections of the country beginning to reopen we can seriously begin thinking of what is next. I believe it is time for the EXCOM to begin looking into the future to understand what future meetings will look like. We ask each attendee to practice social distancing at the meeting. We are also investigating methods of

streaming the meeting.

During the first 10 weeks of 2021, I have virtually attended dozens of hours of IEEE meetings with the Florida Section, Region 3, and SoutheastCon 2021. I have listened to dozens of reports of other Sections throughout Florida and the Southeast. When I come across something of interest (failures and successes), I immediately send an email to the Daytona EXCOM to start a discussion. It is my desire, that we can learn from and grow from the experience of other groups within IEEE.

Currently, I am investigating the effectiveness of our communication within the Section. To assist me, I am asking each member of the IEEE Daytona Section to complete a 5-question survey to help your EXCOM plan for the remainder of the year. The survey is available online at <https://bit.ly/2Op5OX8> (the O are capital 'o's, the rest is case sensitive).

You can also find the link via our Facebook page (<https://www.facebook.com/daytonaieee>).

In closing, I would like to applaud and thank Charles Husbands for his many years and commitment for working on the Daytona Section website. It is a significant endeavor to document and maintain a web presence and Charlie has done that very well.

Shawn

W. Shawn Wilkerson
386 322-7999

LIFE MEMBER NEWS

On March 11, the Daytona Section, Life Members Affinity Group was given a tour of Sandvik Corporation in Palm Coast, Florida. Sandvik is a global corporation based in Sweden that employs over 40,000 people. Sandvik was founded in Sweden in 1862 by Goran Fredrik Goransson. Goransson was the first in the world to use the Bessemer process for steel production. As of this writing, Sandvik has 6060 active patents coming from 55 Research and Development centers.

Sandvik Corporation business units are:

- Machining Solutions – Manufactures tools and tooling systems for metal cutting.
- Mining and Rock Technology – Supplies equipment and tools for mining and rock excavation for the construction industry.
- Materials Technology – Develops and manufactures stainless steel, powder-based alloys and special alloys for industry. This is the division that Sandvik Palm Coast is in.

In 1999, Sandvik Palm Coast manufactured its first product. It was fine wire leads for pacemakers. In 2016, the Exera brand name of medical wires was launched.

The Sandvik Palm Coast location employs 120 people in various positions including management, HR, Engineering and production. The Palm Coast plant produces wire used for medical devices and other custom wire products under the brand name Exera. In addition, value added products are also manufactured at the Palm Coast facility such as precision tolerance coated wire, multi-conductor wire braided together and cut to length wires. Sandvik Palm Coast medical products are used for sensing, stimulation or signal transmission. Applications include cochlear implants, glucose monitoring, deep brain stimulation and pacemaker leads. Medical wire accounts for 85% of the sales at Sandvik Palm Coast.

In order to manufacture their products, Sandvik Palm Coast designs their own manufacturing and measurement equipment. The wires are extruded using custom, in-house designed and maintained diamond dies. A single wire strand may be 0.0009 inches in diameter. Small wire cables may have 2-3 or as many as 20 strands. The wires can be made of platinum, iridium, gold and other precious and non-precious metals. Sandvik also has a class 7 clean room used as needed in production.

ANOTHER TALE FROM THE OLD PROFESSOR

WHEN IS A BLACK BOX NOT A BLACK BOX?

The first to build electronic circuits were hobbyists, mostly radio amateurs, in very early days of the 20th century. In the first two decades of the last century, electronic circuits were most often built on a wooden base. *(I will use the term “electronic” in this Tale but that term was coined about 1930 by a journalist. Electronic circuits in the early 20th century were overwhelmingly radio. Even “radio” wasn’t the common term in the United States, but “wireless”. Radio was mostly a European term until the 1920’s.)*

Early electronic components were intended to be fastened to a flat surface, usually wood. For the hobbyist, the best source of a suitable wooden base was the local hardware store in the form of a bread cutting board. This is the genesis of the term “breadboard” for an early prototype of a product, a term still being used today. Bread cutting boards were made of hard wood and had a flat surface which made them ideal for mounting the electronic components of the day. Early commercial “breadboard” radios were constructed on a mahogany board with a shiny lacquer finish in an attempt to make the radio blend in with living room furniture. Broadcasting didn’t start



A 1924 Atwater Kent
breadboard radio

until November 1920 so radio receivers made before the advent of broadcasting were amateur radio receivers. There was no attempt to make the amateur receivers blend in with any style of furniture except what might be found in an attic or basement. Before commercial broadcasting, there was no market for home entertainment receivers anyhow.

Some more expensive radios meant for the living room had wooden cabinets that contained not only the vacuum tubes and other circuitry, but the A, B, and C batteries for the radio. A cabinet radio rather than a breadboard didn’t make the living room look like Frankenstein’s laboratory. But a look inside the cabinet revealed a wood floor with the components screwed thereon; in other words, a breadboard with a cabinet.

Because wood offers no shielding to radio waves, the disadvantages of using wood began to be understood. Early radios would squeal and howl if one moved their hand close to the front panel because of feedback from one’s body to the antenna wire. This led to the use of metal cabinets. Considering raw material costs, wood and metal were probably similar. But the cost of finishing was higher for wood. First, not all wood can be used for a finished product. Boards with big knots or cracks had to be avoided. Also, the boards tended to be furniture-grade hardwood which was expensive. Finishing a wood cabinet involved sanding, staining and several coats of hand-rubbed lacquer.



A 1926 Atwater Kent with a brown wrinkle finish

Sheet metal, on the other hand, could be finished with a coat or two of spray paint. But a smooth

paint would allow all the scratches and machining marks required to fabricate the cabinet to show. After painting, fingerprints would also be visible. To minimize this, a textured paint was used; typically,

brown for home radios and black for commercial products. The black was referred to as “black wrinkle” paint. One problem with wrinkle paint is that it is not possible to print any nomenclature on the rough surface. Therefore, nomenclature was either nonexistent or on the dials, switches or an escutcheon. (You might have to look that one up.) Notice the 1926 Atwater Kent radio shown has no lettering to indicate what the dials or switches do.

Aircraft radio equipment that was remotely controlled from the cockpit was always finished in black wrinkle paint. This continued until recently when the trend is to not paint aviation electronics at all but to use anodizing to prevent corrosion. (*Actually, there is a trend to not paint anything on an aircraft, exterior or interior, to save weight. A 747 carries 550 pounds of exterior paint; as an example.*) This led to the term of “black box” for aviation electronics. Large aircraft have a room full of “black boxes”.

There are two boxes in an aircraft that are not black but orange as required by international mandate. These are the cockpit voice recorder, CVR, and the flight data recorder, FDR. Being the only boxes painted orange, they are easy to spot and distinguished from the assemblage of black boxes after an aircraft accident. These two boxes are crucial for understanding the causes of an aircraft crash.



One of the two “black boxes” in an aircraft: the all-important flight data recorder

After an aircraft mishap it is usually reported that investigators are looking for the “black boxes”. It took years, but I think the news media and people in general, have finally realized that the boxes being sought are the only ones that are not black; but orange. But, I still hear and read that investigators are looking for the “black boxes”.

Al Helfrich, a.k.a. The Old Professor

PE CORNER

Florida Board of Professional Engineers Vacancies

When Governor Ron DeSantis took office two years ago, one of his early actions was to hold a “Deregathon”. The Governor’s website describes this as, “The one-day event held in conjunction with Florida’s Professional Licensing Boards aims to find solutions to harmful regulations facing Floridians to strengthen the state’s economy.” The Boards were asked to look at all of their rules and identify any that could be eliminated or changed to be less prescriptive. On its face, this sounds like a laudable goal. However, what has become apparent over the last two years is that our Governor’s bent to reduce regulatory hurdles in the state has extended to crippling the State’s regulatory and licensing boards by not filling vacancies. Additionally, another of Governor DeSantis’ early actions was to rescind the appointment of all regulatory board members appointed by his predecessor that had not been ratified by the legislature.

A few instances of the Governor not filling board vacancies, including the Florida Communities Trust and on the South Florida Water Management board last year created a significant enough problem that the press brought it into the daylight. However, there are many other Boards, including the Florida Board of Professional Engineers, that are suffering from the Governor’s intentional neglect of the duties of his office.

In the FBPE’s case, there are currently no board members serving during their appointed terms; NONE. Thankfully, the rules allow for Board members to continue to serve, if they desire to do so, until they are replaced and allows a majority of the serving members to constitute a quorum, so the Board continues to function. And thankfully again, five individuals continue to serve. Three of these reached the end of their first term and though they were not reappointed for a second term, they continue to serve since a replacement has not been named. The two others were appointed by Governor Scott prior to the end of his term, but were never ratified by the legislature. Though Governor DeSantis rescinded their appointments, they also continue to serve as well. There are additionally six vacancies that are unfilled; more than half the Board positions. There are plenty of applicants for these seats, but the Governor has made no appointments.

We owe these individuals a huge debt of gratitude, not just for their service, but for the fact that these five are carrying the load for a board that is typically eleven members. Even more impressive is that all of the Board’s functions continue without interruption. And as I’m sure you are aware; all of these individuals are otherwise employed and serve as FBPE Board members without compensation.

You may be thinking, how can this be? Why haven’t individuals, the engineering societies, and groups from other professions spoken up? Believe me they have, communicating these concerns to Governor DeSantis’ and all levels of administration. However, at least to this point, very few vacancies have been filled. Clearly the current situation is unsustainable but a solution seems, so far, to be out of reach. If you feel so inclined, bring this to the attention of your state legislators, the press, or anyone else who could help our profession with this dire situation.

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.

Art Nordlinger, PE, Senior Member

DAYTONA SECTION SHIRTS



We are pleased to offer Daytona Section polo shirts for our Section members. The shirts are embroidered with the IEEE Logo and DAYTONA SECTION on the left and your name and grade, if desired, on the right. The shirt is a high quality 5 oz, 65/35 poly/cotton pique in Royal Blue with white embroidery. Available in S - 2XL in men's as well as ladies' sizes. Price is \$30, including tax, for S-XL size's, 2XL size is \$3 additional.

For more information or to order shirts contact: Allan Jusko 386-671-3706 or a.jusko@ieee.org

FUTURE MEETING DATES:

Planned 2021 meetings, depending on the coronavirus situation at the time:

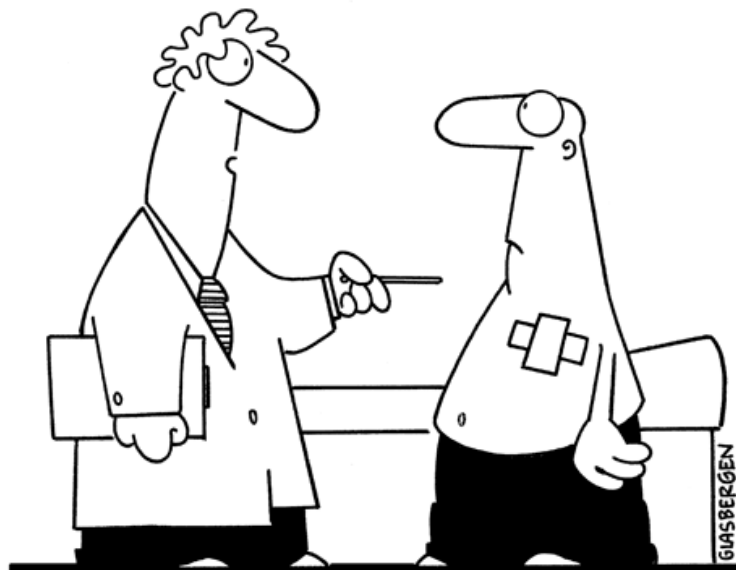
Spring semester: Apr 22 Fall semester: Sep 23, Oct 28, Dec 2

EDITORS NOTES

Visit our Daytona Section website: <https://ewh.ieee.org/r3/daytona/>

ENGINEERING HUMOR

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**“It’s a pacemaker for your heart,
plus you can download apps for your
liver, kidneys, lungs, and pancreas!”**

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