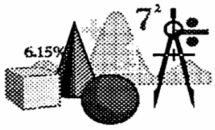

SPARKS

Daytona Section Newsletter
September 2022
https://r3.ieee.org/daytona/

UPCOMING EVENTS

SEPTEMBER'S PRESENTATION

Title: Recent Developments in Automotive Electrification

Thursday September 22, 2022

Time: 7:00 PM to 8:00 PM

Location: Lehman Bldg, Room LB 369 at ERAU

Speaker: Dr. Saeid Haghbin of the Eagle Flight Research Center ERAU

Different type of electric or hybrid systems will be presented with a focus on passenger cars. Components such as powertrain and the battery system will be introduced as well as the latest technological status, some practical examples and near future trends will also be discussed.

WOMEN IN ENGINEERING AFFINITY GROUP

Friday October 7, 2022

JOB SEARCH GUIDANCE PANEL

Time: 3:45 PM

Location: Lehman Bldg, Room LB 269 at ERAU

Town Hall style meeting with faculty, senior students, as well as industry experts to answer questions about career objectives. Pizza and refreshments courtesy of IEEE Daytona Section. RSVP by Email to niurekal@erau.edu by stating your name.

Wednesday, October 26, 2022

EXPERT PANEL Time: 4:00 PM

Location: Venue TBA at ERAU

The WIE Affinity Group will be featuring women in aerospace and aviation in an open forum expert panel. The Daytona Section WIE Affinity Group is actively seeking members to attend meetings (most of them will be virtual) and to volunteer for upcoming events.

LIFE MEMBER AFFINITY GROUP

The Daytona Section Life member Affinity Group is planning for a set of tours for its members. Notices will be sent once the tour dates and times are finalized.

LM Chair - Ron Gedney (rgedney@aol.com)

LM Vice Chair - Marty Oksenhorn (moksenho@yahoo.com)

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FROM THE DAYTONA SECTION CHAIR

This fall we have scheduled several meetings in a variety of formats: interactive presentation, town hall, and an expert panel. In the future we will be conducting more of these and will be looking for more of you to get involved. WIE is growing and student participation is increasing. All that is missing is you. Find out how you can get involved in section events and Women in Engineering. During the next 90 days we will also be holding voting for the Daytona Section's Executive Committee. Feel free to add your name to the list. Visit the section website for a list of positions. We WILL help you get started and involved!

PAST EVENTS, ARTICLES, SECTION OFFICERS

DAYTONA SECTION APRIL 2022 MEETING AND STUDENT PRESENTATIONS

Our Sections annual student recognition meeting was held on April 28, 2022. As is our custom, we heard presentations from our Sections Special Award winners at the Tomoka Science and Engineering Fair in January. We also had presentations and demonstrations from Bethune-Cookman University and the Embry Riddle Aeronautical University robotics teams.

The April meeting is always a highlight of our year and was enjoyed and well attended.

ANOTHER TALE FROM THE OLD PROFESSOR

THE DROPOUTS: AN INVENTOR'S TRILOGY
Part 1: The 60Hz Story

Tesla, to most people, is a car. To engineers and scientists, tesla is also the SI unit of magnetic flux density. How many people know the fascinating but tragic story of the man behind the name?

Nikola Tesla, an ethnic Serb, was born in 1856 in the often-chaotic Austrian Empire. Tesla had a checkered youth, attending several institutions of higher learning but dropping out before being awarded a degree. Even without a diploma, Tesla's stellar scientific acumen was very evident. As a young man, he held a number of jobs finally landing a position with the Continental Edison Company in Paris. Tesla started his tenure with Edison installing electric lighting systems, but his superiors recognized his skills in engineering and had Tesla troubleshooting problems and modifying machinery to improve operation.

Charles Batchelor, the manager of the Paris Edison plant and a close associate of Thomas Edison, provided Tesla with a highly complementary letter of introduction addressed to Edison. Letter in hand, Tesla left for the United States in 1884.

Tesla's tenure with Edison did not last long. The two brilliant inventors couldn't be more different and would lead to Tesla's departure. Tesla boasted to Edison he could redesign several of Edison's troublesome dynamos to fix their problems whereupon Edison promised Tesla $50,000 if he could. Working tirelessly for over a month, Tesla kept his part of the bargain, but Edison was not forthcoming with the $50,000 claiming he was just kidding, and Tesla didn't understand American humor. Tesla promptly resigned.

Shortly after leaving Edison, Tesla was approached by a group of investors to create the Tesla Lighting Company. The investors were more interested in the Tesla name and inventions and not so much sharing the profits of the company with its namesake.

Tesla did not believe in lawyers and entered into a number of verbal agreements and signed contracts without an attorney review. During his lifetime he was cheated out of sizeable sums of money and was pushed out of the Tesla Lighting Company by his investor stockholders. Tesla was left unemployed and ended up working for the New York City Street repair gangs just to survive.
A foreman on one of the street gangs heard of Tesla's AC induction motor and introduced him to an investor. The investor helped Tesla create the Tesla Electric Company. The company did well, and Tesla was granted more patents for his AC-based systems.

Tesla's company and his induction motor patents caught the eye of George Westinghouse who paid a visit to Tesla's New York laboratories. Liking what he saw, Westinghouse employed Tesla as a consultant to work on Westinghouse's AC power system in Pittsburgh. What the Westinghouse system lacked most was an effective AC induction motor. Tesla quickly discovered that the 133Hz frequency used by Westinghouse was not optimum for his motor designs, particularly the multiphase motors, which were designed for 60 Hz. Westinghouse changed their supply frequency from 133 to 60 Hz which remains the North American standard to this day.

Flush with Westinghouse money, Tesla returned to his laboratories in New York. It looked like Tesla's money woes were over, but it was not long-lasting.

Tesla was granted about 300 patents most of which he never developed into a marketable product. Edison, Tesla's rival, patent history is the exact opposite. Edison wouldn't pursue a patent that would not produce income. He shelved an experiment that showed the existence of the electron because he saw no income-producing applications. Edison actually created the first diode; found no use for it and shelved it.

Tesla was often invited to produce glitzy shows using glowing tubes having no electrical connections, long streams of arcs and so on. The force behind these shows was high voltage generated with his invention, commonly known as a "Tesla Coil". He would appear in a formal tuxedo with tails and dance around the stage brandishing lighted tubes like a 19th century version of a "light saber". Although entertaining, these shows produced very little revenue.

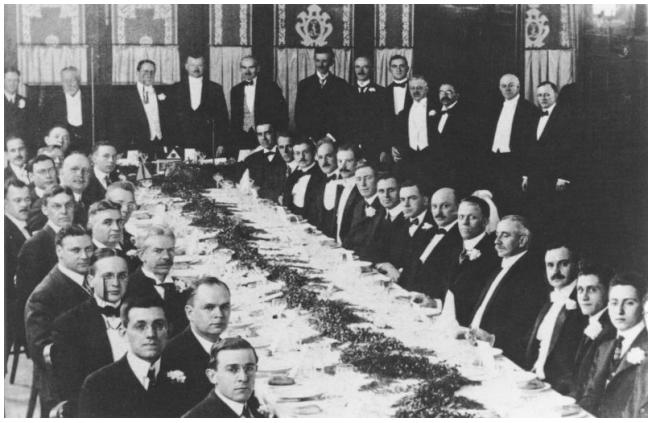

Left: One of Tesla's demonstrations. Right: Tesla nonchalantly reading under a shower of electrical discharges. The picture is misleading as it was taken using multiple exposures and was assembled using the late 19th century version of Photoshop: a skilled photographer.

Tesla was known for making outrageous predictions such as communicating with Martians and distributing huge amounts of power wirelessly. Transmitting electrical power wirelessly is what radio or "wireless" does on a much smaller scale. Tesla claimed that Marconi infringed on his patents during Marconi's development of wireless telegraphy. In 1904, under somewhat suspicious circumstances, the US patent office gave Marconi's patent credit for the invention of radio, thus quashing Tesla's claim of infringement. The issue went to the Supreme Court which, in 1943, ruled that Tesla's 1900 patent, filed in 1897, anticipated Marconi's 1900 patent applications which were granted in 1904. Thus, Tesla was the "Father of Radio" not Marconi. This did little good for "Father Tesla" as he died before the decision was handed down by the Court.

Tesla was not known for being thrifty. He hob-knobbed with high society, lived in an expensive hotel and dined only in the finest restaurants. He depleted his cash to a point where he had to solicit loans from the high society he associated with.

Tesla, one of the world's most prodigious inventors, made many machines that did wonderous things most of which were of little practical value without further development. He amassed a large fortune which he squandered on life in high society and died in debt.

A 1915 banquet of the Institute of Radio Engineers, IRE. Tesla is the tallest of those standing. The IRE was formed in 1912 and joined the American Institute of Electrical Engineers, AIEE, 1 JAN 1962, to become the IEEE.



Dr. Al Helfrick, a.k.a. The Old Professor

Epilogue: Another Dropout
Elon Musk, the founder of Tesla Motors, now Tesla, Inc., dropped out of Stanford graduate school in 1995 to form Global Link Information Network which was sold to Compaq for $307 million in 1999. 'Quite a good return on investment in just four years.

"That's usually not a good sign."

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