

ELEKTRA

THE MONTHLY NEWSLETTER OF THE EEE DEPT JNTUACEP



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A WORD FROM HOD

With the ever changing world, the competition also increases. It is apparent that we, the electric power industry, are facing a new challenging paradigm dictated primarily by environmental and social parameters. As engineers, we are often seeking information and input to figure out the best solution to our current project or challenge. Climate change and sustainable development have become the essential challenges of the 21st century, with extraordinary implications for energy, economic competitiveness, water, and food security. There are extreme controversies worldwide on how to confront those challenges, on who will pay to adapt modern society to reduce global warming, and how to rapidly develop and deploy clean energy technology, among many divergences, that affect the actions of engineers. Looking back over the last 10-20 years, the advances that have taken place in the development of renewable energy and the impact that it has had on the planning, design, and operation of our electric power system is amazing. It has been a very exciting time for this great industry, and the developments have attracted a lot of much-needed new ideas and new blood into the electric power sector.

The young engineers, like you all, are budding and coming up with new ideas in the sector, which is highly appreciable and most invited. As drops of water make an ocean, your contributions are must for this big ocean of electric power industry.

Through this column I would like to invite you all to IDEATE, INVENT and DISCOVER the world to a different level. The best people want to work the big challenge

Adding to the words of Dr. Seuss, "You have brains in your head. You have feet in your shoes. You can steer yourself in any direction you choose. You're on your own. And you know what you know. You are the guy who'll decide where to go"; and I will be always your pole star. I'm very much thankful to management for their unstinted support towards excellence of department of EEE and I congratulate all the contributors and the editorial board for bringing out such a beautiful magazine. Wishing you all the best...



Dr. GV Nagesh Kumar,
Professor,
HOD, EEE Dept
JNTUACEP

Principal's Word

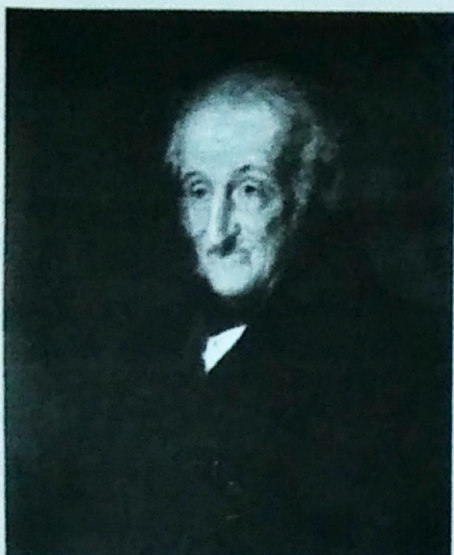


Prof. G. Sankara Sekhar Raju
Principal
JNTUACEP

It gives me immense pleasure to pen a few words as prologue to our new in-house magazine which shows glimpse of academic and non-academic activities of the EEE Department. It is exclusively meant for churning out the latent writing talent which bears immense potentiality of sharpening your Technical and Soft skills as part of your overall personality development. Empowerment of students for their all round development through education is our cherished motto. Today education means, much more than merely acquiring knowledge. It is acquisition of knowledge and skills, building character and improving employability of our young talent, the future leadership. When all the constituents come together and work in unison, the expected results are bound to flow. I am proud of being the Director of such a wonderful institution dedicated to the causes of better India. Through education and their real empowerment, I am happy to tell you that our institution stands a modern temple of learning through our diligence, devotion and dedication for a vision to become a global leader in higher education. I wish the faculty and students a great success.

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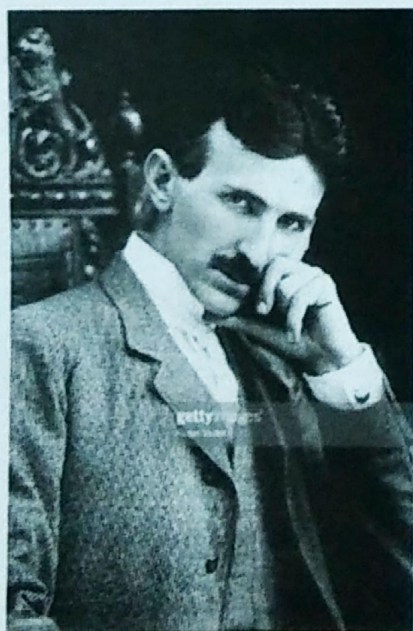


Sir Francis Ronalds in 1867, painted by his nephew Hugh Carter and held by the IET

THE FIRST ELECTRICAL ENGINEER

Sir Francis Ronalds (February 21, 1788-August 8, 1873) – inventor, engineer and scientist – is known for building the first working electric telegraph and, while director of the Kew Observatory, the first successful continuously-recording camera.

Although it is impossible to precisely pinpoint a first electrical engineer, Francis Ronalds stands ahead of the field, who created the first working electric telegraph system in 1816 and documented his vision of how the world could be transformed by electricity.



"If you want to find the secrets of the universe, think in terms of energy, frequency and vibration."

- Nikola Tesla

THE UNSUNG HERO OF ELECTRICAL ENGINEERING

NIKOLA TESLA

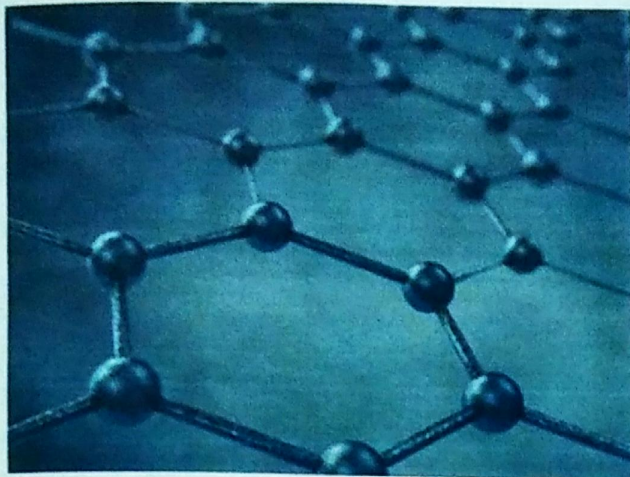
If you couldn't imagine life without your TV remote, thank Nikola Tesla for making it possible. Tesla invented, predicted or contributed to development of hundreds of technologies that play big parts in our daily lives -- like the remote control, neon and fluorescent lights, wireless transmission, computers, smartphones, laser beams, x-rays, robotics and, of course, alternating current, the basis of our present-day electrical system.

During the war of the currents, alternating current (AC) -- favored by Tesla -- battled for wide acceptance with direct current (DC), favored by Edison. At stake was the basis for the entire nation's electrical system. Edison launched a campaign against AC, claiming it was dangerous and could kill people; Tesla countered by publicly subjecting himself to 250,000-volt shocks to demonstrate AC's safety. Ultimately, alternating current won the fight.

In 1901, Tesla received financial backing from J. Pierpont Morgan to build his Wardenclyffe laboratory in Shoreham, Long Island. The facility included the "Tesla Tower," a 185-foot high structure with a 65-foot copper dome transmitter on the top. Tesla's vision was to use the tower to transmit signals and free, unlimited wireless electricity all over the world. Thanks to Tesla's early work, wireless transfer of energy is finally being realized today -- from wireless chargers for electric toothbrushes and smartphones, to wireless electric vehicle charging, a technology being researched at the Energy Department's National Labs.

Recent Trends

Graphene



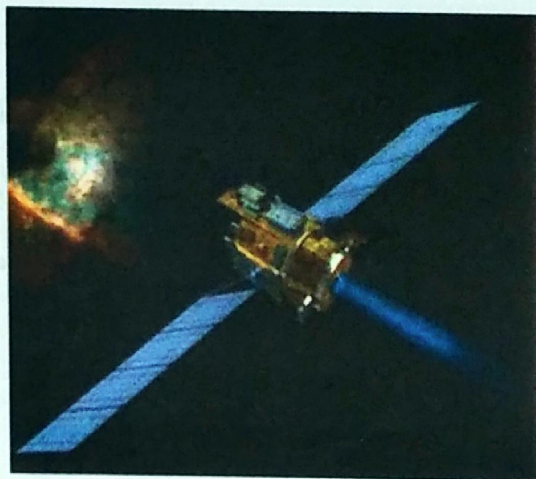
As electrical engineers reach the performance constraints caused by the fundamental properties of matter, advances in materials science become essential. Graphene is perhaps the most important recent innovation. Graphene consists of a single layer of carbon atoms one million times thinner than paper. It's so thin that it is actually considered two-dimensional.

Graphene's unique characteristics make it the strongest known material on Earth. It can stretch by 20%, making it as pliable as rubber. It will provide immense gains in battery life for portable devices and is uniquely well-suited for wearable technology that collects biometric information from the user. In short, it may be essential to the future of electrical engineering.

Ion Thruster Energy

It comes as no surprise *Star Trek* was a defining force in inspiring thousands of people around the world to develop and pursue an interest in engineering. One of the engineering challenges presented by that vision of the future was this: What kind of novel propulsion technology would be necessary to allow manned spaceflight to distant worlds?

NASA and others have been working on the prototype ion engine for years, envisioning a way to carry large amounts of supplies and equipment through space. It uses solar power as a charging mechanism and expels xenon gas. Electrons from the solar panel will be trapped in a magnetic field and then used to ionize the xenon propellant for total thrust of 13kW.



FACTS BOX

1. A spark of static electricity can measure up to three thousand (3,000) volts.

2. A bolt of lightning can measure up to three million (3,000,000) volts – and it lasts less than one second!

3. Thomas Edison didn't invent the first light bulb – but he did invent one that stayed lit for more than a few seconds.

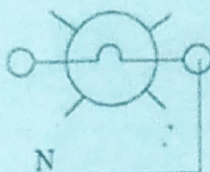
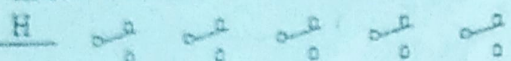
4. Benjamin Franklin didn't discover electricity – but he did prove that lightning is a form of electrical energy.

5. Most of the Nikola Tesla's work are classified

6. Zero watt bulbs available in the market are not actually rated for zero watt. Their ratings vary from 5W to 20W.

ELECTRICAL PUZZLE

Object is to connect all 5 switches so that the light burns only when they are all up or all down. Any other position the light must be out.



Most things are simple after you know the answer. Please do not give the answer away after you solve it. I have had this flopgate puzzle over 30 years. It has stumped some very smart people.

Electrical Puzzle

Arthur H. McWilliams

About the Department

Department of Electrical and Electronics engineering has been in existence since 2006 and has grown into a full fledged department with specializations in all the major areas of Electrical and Electronics engineering. The building is meant for conducting the lecture classes and laboratory classes. It has a total built up area of 29,996sq.ft. It consists of 7 laboratories, 5 lecture classes, 3 staff rooms and a seminar hall is assigned for conducting seminar classes.

UPCOMING EVENTS

Your Responsibilities

As the general Elections are ahead please don't forget to cast your valuable vote. Voting is NOT only just a RIGHT but its our RESPONSIBILITY. Voters play a central role in shaping the government and our very futures. So as a student its our responsibility to cast our vote wisely.



JNTUACEP

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