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DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

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S V COLLEGE OF ENGINEERING

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DESIGN DEPARTMENT

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Vision of the Department

To prepare the learners globally competent, dynamic and multi talented young leaders with skill set & knowledge in Electrical and Electronics Engineering field with a focus on higher education, professional practice, research and technical consultancy competence ethical concern.

Mission of the Department

- To prepare the learners professionally deft and intellectually adept in the field of Electrical and Electronics Engineering with an excellent infrastructure, core values and qualified & experienced teaching faculty.
- To inculcate skill, knowledge and behavior to cater the dynamic requirements in the field of Electrical and Electronics Engineering.
- To motivate and prepare the learners for career guidance, placements and higher education with a focus on MoUs with premier institutes and industries.

About the Department

The Electrical & Electronics Engineering department was started with UG programme in 2007 with an intake of 60. The department has well talented, qualified, experienced & dynamic faculty along with skilled technical supporting staff who spearhead the process of achieving the vision of the department. The department has well equipped labs & infrastructure. It is continuously striving to impart quality education and competitive spirit among students for academic excellence.

Strengths of the Department

1. In every semester Department of EEE conducts minimum of two workshops and there guest lecturers in the re- cent trends in Electrical Engineering to bridge the gap between Academics & Industries, and the students will be guided to do their Major & Minor projects on the same topics.
2. Every faculty member of the department attends a minimum of one faculty development program in every aca- demic year. And most of the faculty members register for NPTEL online courses.
3. Department publishes a newsletter in every six months, which includes the activities that were done in the past two months; fortnight wall magazines based on recent advancements in the field of electrical engineering prepared by students

Message from Principal

I am delighted to convey my best wishes to the Department of Electrical and Electronics Engineering on the release of its technical magazine. This initiative is a commendable platform that encourages students and faculty to express their ideas, research, and innovations in the ever-evolving field of electrical and electronics engineering.

The EEE department has consistently demonstrated excellence in academics, research, and co-curricular activities. This magazine is a testament to the department's commitment to nurturing creativity, technical knowledge, and analytical thinking among students. It reflects the hard work, vision, and dedication of the entire team.

Wishing the EEE department continued growth, success, and recognition in all its future endeavours.

With warm regards,

Dr. N. Sudhakar Reddy,
Principal

Message from HOD

It brings me great joy to see your enthusiasm and talent reflected in the pages of this technical magazine. As your Head of Department, I take pride in watching you grow—not just as engineers, but as thinkers, innovators, and problem-solvers.
This magazine is a true representation of your dedication to learning beyond textbooks. The articles, projects, and ideas showcased here prove that the future of engineering is in capable hands.
Always remember: learning is a lifelong journey. Keep asking questions, keep building, and never be afraid to fail-that's where true innovation begins.
I congratulate all contributors, the editorial team, and the faculty mentors. Keep up the great work!
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Happy Reading.

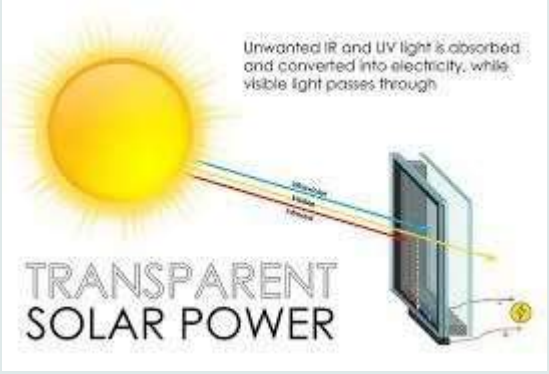
Dr. V. Lakshmi Devi, HOD, Dept. of EEE

Message from Faculty Advisor

I take this opportunity to congratulate every student who contributed their work, every faculty member who mentored and guided, and especially the editorial team for their tireless efforts, patience, and perseverance in bringing out this issue with excellence. May this magazine inspire more ideas, more innovations, and more aspirations. Let us continue to explore the unknown, question the ordinary, and design a better future with circuits in our hands and purpose in our hearts.

Dr. J. A. BASKAR, EEE

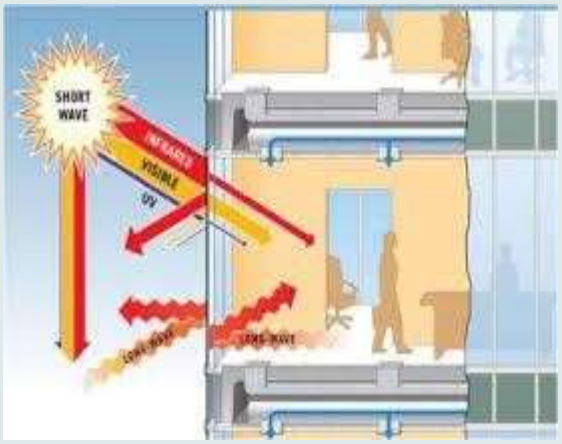
INVISIBLE SOLAR PANELS USING INFRARED TECHNOLOGY



Researchers have developed transparent photovoltaic cells that absorb non-visible parts of the light spectrum—infrared and ultraviolet—while allowing visible light to pass through. These can be embedded into windows, phone screens, and building facades. The transparent solar panels use organic molecules tuned to specific wavelengths and are expected to achieve efficiencies up to 10%. They offer the potential to transform skyscrapers into massive vertical solar farms without altering aesthetics.

The development of invisible solar panels represents a significant step toward integrating renewable energy sources into everyday life without compromising aesthetics. As research progresses and efficiencies improve, these panels have the potential to become a standard feature in modern architecture and portable electronics, contributing to a more sustainable future.

NANOCOATING FOR ENERGY-EFFICIENT BUILDINGS



A new nanocoating for building surfaces reflects infrared sunlight while letting visible light pass through, reducing indoor temperatures by up to 5°C. Made from silica and titanium dioxide, the coating forms a micro-layer that changes thermal behavior without affecting color or clarity. It can be applied to windows, walls, and roofs, lowering air conditioning use and cutting energy costs in warm climates.

A special **nanotech coating** applied to walls and windows reflects heat in summer and retains it in winter. When used on building exteriors, this passive technology can reduce cooling and heating costs by up to **30%**, contributing to sustainable urban development. Nanocoatings are applied to various building components, including facades, windows, roofs, and interiors, to improve energy efficiency and reduce environmental impact. They align with green building standards like LEED and WELL, contributing certifications, promoting sustainable urban development. . These nanocoatings can be applied to glass, walls, or roofing materials to reduce heat transfer, block harmful UV and infrared radiation, and minimize energy consumption for heating and cooling.

VERTICAL-AXIS WIND TURBINES FOR URBAN SPACES

Unlike traditional turbines, **vertical-axis wind turbines** (VAWTs) are compact, quiet, and bird-safe—making them perfect for cities. These turbines can be installed on rooftops or balconies and **rotate regardless of wind direction**, maximizing efficiency in tight urban environments.

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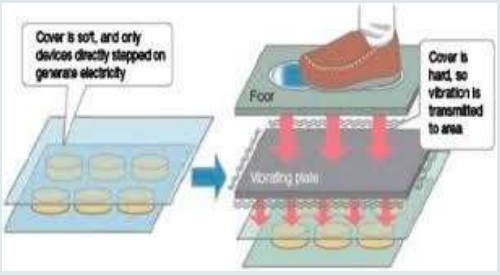
DRONES THAT FLY INDEFINITELY USING SOLAR CELLS

Vertical-axis wind turbines (VAWTs) are cylindrical and rotate around a central shaft, making them ideal for urban environments with turbulent wind patterns. These turbines are quieter and safer for birds than horizontal-axis models. Small VAWTs can be installed on rooftops and balconies, providing renewable energy for apartments and small businessesHigh-altitude drones equipped with **ultralight solar panels** can fly for weeks without landing. These drones can provide emergency communication during disasters, monitor environmental conditions, and even replace satellites for certain applications. High-altitude drones equipped with flexible solar panels can fly for weeks without landing.

These drones serve as atmospheric satellites, providing real-time data for weather prediction, disaster management, and rural communication networks. Powered entirely by sunlight, these drones eliminate the need for frequent battery replacements or refueling, reducing operational costs significantly.

PIEZOELECTRIC FLOORING THAT GENERATES POWER FROM STEPS

Piezoelectric materials generate electricity when mechanically stressed. Embedded in flooring tiles, these materials can convert foot traffic into energy to power LED lights, information displays, or public charging ports.



Cities like Tokyo and London have started pilot projects in train stations and stadiums.

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CURRENT EEE

AI-Controlled Microgrids for Energy Optimization

Abstract:

Microgrids equipped with AI algorithms can autonomously balance energy generation and demand. Using predictive models and real-time sensors, they optimize load distribution, improve grid stability, and integrate renewable sources. This is especially useful in rural and island communities.

Floating Solar Farms for Space-Limited Areas

Abstract:

Floating photovoltaic systems on reservoirs and lakes optimize space usage while reducing water evaporation. These solar farms stay cool due to the water body, improving panel efficiency. Countries like Japan and India are already adopting them for large-scale solar generation.

Flexible Control Strategy for Grid- Connected Inverter Under Unbalanced Grid Fault Without PLL

Abstract:

Power oscillation and current quality are the important performance targets for the grid- connected inverter under unbalanced grid faults. First, the inherent reason for the cur- rent harmonic and power oscillation of the inverter is discussed with a quantitative anal- ysis. Second, a new control strategy is pro- posed to achieve the coordinate control of power and current quality.

A phase-locked loop (PLL) or voltage/ current positive/negative sequence extrac- tion calculation. Finally, the experimental tests are conducted under unbalanced grid faults, and the results verify the effectiveness of the propose method.

3D-Printed Batteries with Custom Shapes and Sizes

Abstract:

Additive manufacturing allows for custom-designed batteries using printable conductive inks. These can fit unconventional shapes in wearables, drones, or IoT devices. They also support integrated electronics, reducing assembly complexity

Thermoelectric Materials Converting Heat to Power

Abstract:

Thermoelectric generators (TEGs) convert waste heat into usable electricity using the Seebeck effect. They are widely used in spacecraft, car exhaust systems, and industrial furnaces. New materials like bismuth telluride and skutterudites are boosting their efficiency The efficiency of a thermoelectric material is characterized by its dimensionless figure of merit, *ZT*, which depends on its electrical conductivity, thermal conductivity, and Seebeck coefficient.

KATTE AJAY

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Mega Minds

Edwin Armstrong (1890-1954):

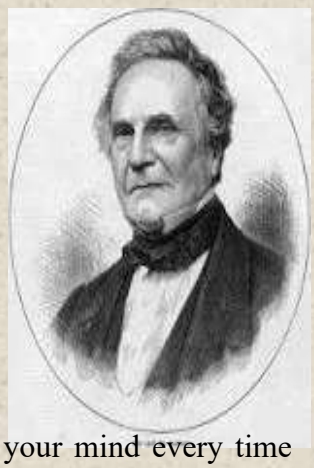
Edwin Howard Armstrong was one of great engineers of the 20th century, he was born in 1890, in New York City, and died in 1954, also in New York City. Edwin Armstrong was only eleven when Marconi made the first trans-Atlantic radio trans- mission. Enthralled, the young Armstrong began studying radio and building homemade wireless equipment, including a 125 foot antenna in his parent's backyard. Edwin Armstrong invented the superhetrodyne tuner that allowed radios to tune into different radio stations.

Benjamin Franklin (1706–1790) :

Franlin was an American polymath known for his groundbreaking experiments with electricity. He famously demonstrated that lightning is a form of electricity through his 1752 kite experiment, during which he flew a kite in a thunderstorm with a metal key attached to the string. This experiment helped prove that lightning and electricity were the same, laying the foundation for the development of lightning rods and further electrical research. Though not an inventor of electrical devices, Franklin's curiosity and experiments were crucial in advancing the understanding of electrical phenomena.

Charles Babbage (1791 – 1871):

Do you ever wonder who you have to thank for the powerful desktop or laptop you are now using for practically everything you do? You might say all thanks should be given to the computer companies of today but in fact, you have Charles Babbage to thank. The name might not be familiar to you just yet but read on because pretty soon, "Charles Babbage" will be on your mind every time you use your computer. Charles Babbage was born on Dec. 26, 1791 in England. He was a polymath and became a mathematician, mechanical engineer, inventor, and philosopher. He had a lot of contributions to different scientific fields but his most famous work is probably coming up with the idea of a programmable computing device.



Guglielmo Marconi (1874–1937):

The Italian inventor and physicist, Guglielmo Marconi was awarded the Nobel Prize in Physics with Karl Ferdinand Braun for their development of practical wireless telegraphy. His development of a radio telegraph system led to the esbalishment of many associated companies all over the world. During December 1901 Marconi proved that wireless signals were unaffected by the curvature of the earth. He transmitted the first wireless signals across the Atlantic.

SHAIK SHARUK
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Bacteria-Powered Batteries Generate Green Energy from Wastewater

Source: University of Bath, UK

Summary: Microbial fuel cells (MFCs) harness the metabolic activity of bacteria to produce electricity from organic waste in wastewater. This **eco-friendly technology** cleans water and produces energy simultaneously, offering applications in **rural sanitation, treatment plants, and disaster zones** with limited grid access.

Graphene-Based Supercapacitors Charge in Seconds

Source: University of Manchester

Summary: Engineers have developed graphene-based supercapacitors capable of charging in under 10 seconds while offering high energy density. These devices outperform lithium-ion batteries in terms of lifecycle, safety, and eco-friendliness. They are perfect for applications like **wearable tech, electric bikes, and fast-recharge tools**.

AI-Controlled Smart Grids Reduce Blackouts and Save Energy

Source: Stanford University

Summary: AI algorithms are now being integrated into smart grid management systems, allowing real-time load balancing, outage prediction, and energy routing. This improves grid **reliability, efficiency, and integration with renewables**—making future power distribution systems more resilient and intelligent.

Transparent Solar Panels Turn Windows into Power Sources

Source: Michigan State University

Summary: Researchers have created transparent solar cells that can be integrated into windows and phone screens. Utilizing organic photovoltaics and light-harvesting dyes, these panels offer 86% transparency while generating power—ideal for **urban skyscrapers, cars, and portable devices**.

3D-Printed Circuit Boards with Built-in Sensors

Source: MIT Media Lab

Summary: A new process enables the 3D printing of entire circuit boards with embedded sensors using conductive ink. These compact and custom-designed boards allow rapid prototyping and **low-cost production** of wearables, medical devices, and **IoT gadgets**.

Electric Planes Take Off with Next-Gen Battery Packs

Source: NASA & Ampaire

Summary: Hybrid-electric and fully electric planes are becoming reality with new lithium-sulfur and solid-state battery technologies. NASA-backed tests show that electric aircraft could reduce carbon

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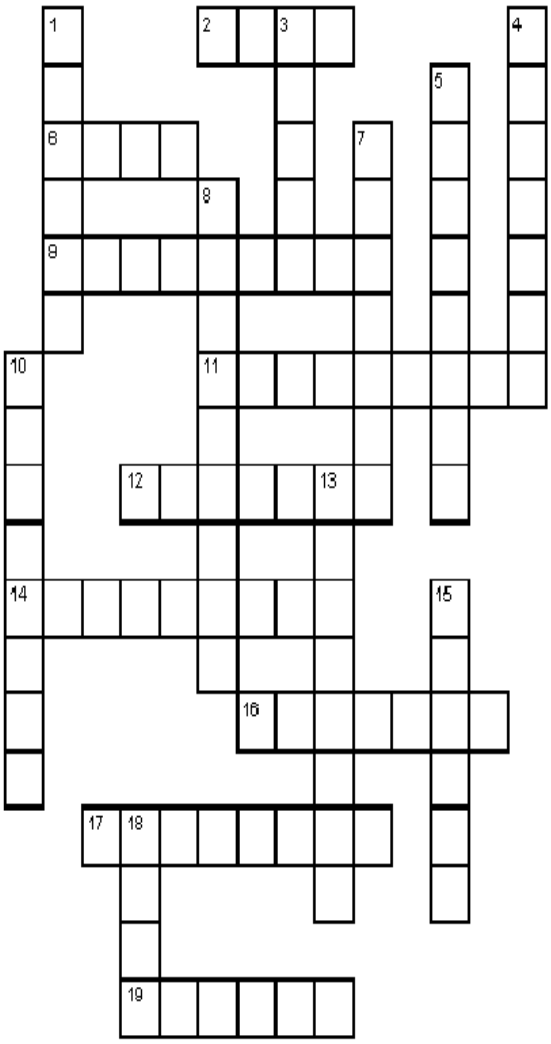
CROSS WORDS ON CIRCUITS

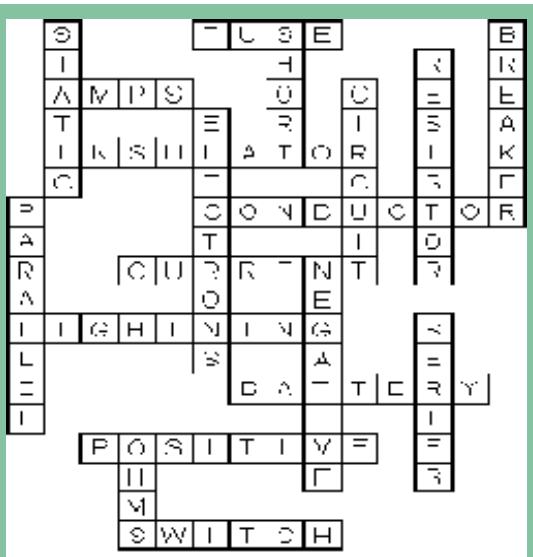


Across:

2. A safety device that break a circuit when too much current is flowing.
6. The unit that current is measured in (for short).
9. A material that doesn't conduct electricity well.
11. A material that conducts electricity will.
12. The flow of electrons through a material is called electric _____.
14. An electric discharge from the sky to the ground during a storm.
16. A voltage supply used in flashlights and many toys.
17. The charge on a proton.
19. A device that will open or close a circuit.

Down:

1. Kind of electricity resulting from a build up of charged particles.
3. A type of circuit where current by passes most resistance and large, dangerous currents flow.
4. A switch that open a circuit when too much current is flowing.
5. A device that resists the flow of electricity in a circuit.
7. A path through which electric current flows.
8. Electricity is the movement of _____ through a conductor.
10. A circuit with more than one path through which electrons can flow.
13. The charge on an electron.
15. A circuit with only one path through which electrons flow.
18. The unit that resistance is measured in.



G UDAY KIRAN
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