



THE WATT



FEBURARY

2 0 2 5

3RD EDITION

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MEMOIRS OF BMSCE



VISION

- Promoting Prosperity of mankind by augmenting Human Resource Capital through Quality Technical Education & Training.



MISSION

- Accomplish Excellence in the field of Technical Education through Education, Research and Service needs of society.



ESTABLISHMENT AND LOCATION

- Founded in 1946 by Late Sri. B. M. Sreenivasaiah, and nurtured by his illustrious son Late Sri. B. S. Narayan. Located in the heart of Bangalore, the Garden City of India.



IMPACT AND LEGACY

- One of the largest student populations among engineering colleges in the state. Currently, about 5000+ students are studying here and 350+ are pursuing PhD.



ACADEMIC EVOLUTION

- BMSCE pioneered private engineering education in India. We started with 3 UG courses, now offer 13 UG & 16 PG courses.



CAMPUS DETAILS

- Spread over 11 Acres 30 Guntas with a built-up area of 99,500 Sq.M. Wi-Fi-enabled campus. with 24x7 internet facilities in departments and hostels.



RESEARCH AND RECOGNITION

- 14 Departments are recognized as Research Centers. We offer PhD/M.Sc degrees in Science, Engineering, and Management.

ACADEMIC EVOLUTION

- The institution is approved by AICTE, affiliated with VTU, and aided by the Karnataka Government. It holds autonomous status (UGC-approved) since 2008 and follows Outcome-Based Education (OBE). BMSCE has excelled in all three phases of TEQIP and benefits from GIAN initiatives. It is the only Indian partner of the Melton Foundation, USA, promoting cross-cultural learning.
- BMSCE is NAAC-accredited with an A++ grade (CGPA 3.83/4) and holds NBA accreditation for UG and PG programs. It has received AICTE Doctoral Fellowship (ADF) recognition since 2018-19 and was listed as a lead innovator by Clarivate Analytics in 2020-21. The institution ranks in the Excellent band in ARIIA (ATAL Rankings) 2021 and is among the 100 colleges awarded a 5G use case laboratory.
- BMSCE offers 17 UG and 15 PG programs, with 14 research centers producing 244+ PhDs. The college has MOUs with global organizations, Centers of Excellence, and state-of-the-art labs. It follows project-based learning, industry collaborations, and innovation-driven pedagogy to produce industry-ready graduates.
- The Training & Placement Cell attracts 350+ companies annually, offering exceptional placement opportunities. Faculty members are distinguished as NBA, NAAC evaluators, AICTE members, and recipients of prestigious awards. BMSCE has been consistently ranked among the top engineering colleges in India and has received numerous accolades for its contribution to technical education.
- The R&D Center at BMSCE promotes research and innovation among faculty and students by identifying new research areas, supporting project development, and facilitating publications and patents. With academic autonomy, the institution integrates research from the first year through Propel Labs, where multidisciplinary student teams work on projects from concept to prototype, fostering creativity, innovation, and participation in national and international competitions.
- BMSCE fosters a vibrant student community with 54+ clubs spanning technical, cultural, providing students with opportunities to explore their interests beyond academics. It conducts its annual techno cultural Fest UTSAV and technical fest PHASE SHIFT .

COURSES OFFERED

- Civil Engineering
- Electrical & Electronics Engg.
- Industrial Engineering & Mgmt
- Electronics & Communication Engg.
- Computer Science and Engineering
- Computer Science and Engineering (Data Science)
- Computer Science and Engineering (Internet of Things & Cyber Security including Blockchain Technology)
- Bio-Technology
- Aerospace Engineering
- Artificial Intelligence and Machine Learning
- Artificial Intelligence and Data Science
- Mechanical Engineering
- Chemical Engineering
- Computer Science & Business Systems

THE DEPARTMENT OF EEE

VISION


Facilitating the development of competent professionals capable of adapting to the constantly changing global scenario in the field of Electrical Sciences.


MISSION


Impart quality technical education and encourage research in the field of Electrical Sciences.


Empower every individual to develop as a professional with an ability to apply his/her knowledge and skills to adapt to the evolving technological requirements of society.





 Established in 1946 as the Department of Electrical Engineering.


 Evolved into the Department of Electrical and Electronics Engineering.

 Graduates known worldwide for significant contributions in various domains.


 Tradition of providing a free, encouraging, and motivating learning environment.


 Focus on equipping students with capabilities for holistic professional development.


 Wide exposure to all aspects of electrical and electronics engineering.

 Students and faculty receive support from alumni and guidance from industry experts.

 Active involvement in collaborative projects and activities.

 Meritorious scholarships from alumni and past Professors for academic excellence.

 Students known for zeal in organizing and participating in professional society activities.

 History of leading and organizing technical symposia, conferences, and events like Blitzkrieg, E³, Phase Shift, both nationally and internationally.

FROM THE HOD'S DESK



DR. R S GEETHA
PROFESSOR AND HOD,
DEPT. OF EEE

The Department of Electrical Engineering (presently Electrical and Electronics Engineering) was started in the year 1946 with a great vision to foster the development of competent professionals equipped with in-depth knowledge and capability of technically adapting to the evolving needs of the society.

Since its inception, the Department has successfully realized its vision by producing skilled Engineers in the field of Electrical and Electronics Engineering as well as allied branches. Electrical and Electronics Engineering Association (EEEA) has played a pivotal role in providing a platform for our alumni to share their expertise with the younger generation of BMSCE EEE family. The activities organized by the Association not only focus on the technical talks, workshops, industrial visits, that provide an insight into the industry practices and cutting edge technologies, but also includes extracurricular activities, where the students exhibit their talent, creativity and managerial skills. Additionally, the association is also actively involved in Community outreach programs.

Kudos to the EEEA faculty and student team for organizing a variety of wonderful, thoughtful and impactful events throughout the year 2024.



PRESIDENTIAL PERSPECTIVE



DR.PADMAVATHI K
PROFESSOR, DEPT. OF EEE
PRESIDENT, EEEA

Aim

To provide a platform for student-alumni to network, contribute to their alma mater and thereby facilitate industry-institute interaction.

Objectives

- To establish a healthy relationship between students, alumni, and institute.
- To organize activities and establish initiatives to promote research and quality education.

At the outset I would like to thank all the faculty members and students for providing me with an opportunity to work as President of EEE Association. Earlier EEE association was functional and was involved in actively conducting events for students. A workshop on house wiring for 10 th standard children organised by the association in the year 2005 is a memorable event for me.

The EEE Association, was revamped in the year 2021 again to organise events which will bring out students' talent in co-curricular and extra-curricular activities. The journey, with students as a faculty advisor, from 2021 has brought a sense of content in me. I am surprised by the skills and talent among the students in various fields. Enthusiastic students make activities happen and in the process all of us grow together. In future, a greater number of students should involve in conducting various activities as well as showcase their talent through the events of EEE Association. I will be glad to see all the students of EEE Department enjoy their student life being an active member of the association. I wish all the students of EEE Department a great success in their future endeavours of the Association.

THE TEAM

FACULTY CORE 2024



**DR.PADMAVATHI K
PROFESSOR, DEPT. OF EEE
PRESIDENT, EEEA**



**DR.CHAMPA V
(ASSOCIATE PROFESSOR)
SECRETARY**



**SMT.CHAITANYA .L
(ASSISTANT PROFESSOR)
TREASURER**



**DR.CHETHAN RAJ D
(ASSISTANT PROFESSOR)
FACULTY COORD.**

THE TEAM

STUDENT CORE 2024



**MANOJ S
PRESIDENT**



**GNANESHWARI S
SECRETARY**



**ARJUN RAJA
TREASURER**



**KUSHAL S
SOCIAL MEDIA AND
LOGISTICS HEAD**



JOURNEY UNFOLDED



THE SECRETARY'S REPORT - DR.CHAMPA V

The EEE Association, a triumph in synergy, finds its origins in the rich tapestry of the EEE alumni network. Born from the necessity to integrate alumni into the student journey and harness departmental resources, it emerged as a beacon of collaborative learning. Bridging the gap between extracurricular and co-curricular realms, it not only imparts knowledge but cultivates invaluable connections with esteemed alumni. A mere initiative to revive networks has flourished into an extraordinary success story, resonating not only within the department but echoing across the entire college.

Through riveting keynote speeches, spirited competitions, enlightening seminars, and insightful industrial visits, the EEE Association has consistently injected vitality into student life. Its transformative impact is particularly notable in the recent year, where it has evolved from a concept to a cornerstone of experiential learning. The association's triumph lies not just in numbers but in the enriched experiences, lasting connections, and profound contributions it has sown into the dynamic landscape of the EEE department.

2024 YEAR IN REVIEW



ANNUAL GENERAL MEET-2024

Uniting Vision and Progress, 16th March 2024



The Annual General Meet of 2024 started off with a warm welcome to the attendees. Pavan Nagur, the Student President of EEEA - 2023, along with Student Treasurer Vishwas M, provided a recap of the previous year's highlights. Following this, the much-anticipated launch of the EEEA Magazine 'The Watt – Edition 2' took place, orchestrated by both the Faculty core and the EEEA 2023 core committee.

Pavan and Vishwas graciously welcomed the new office bearers with roses, setting a tone of camaraderie for the year ahead. The newly appointed Student President Manoj S, then outlined the plan of action for 2024, laying out ambitious goals and objectives. In a touching gesture, the new committee expressed their appreciation to the faculty core and the previous core members by presenting them with mementos, certificates, and roses. The volunteers of EEEA were also acknowledged and welcomed with roses. As the event drew to a close, heartfelt gratitude was expressed to all attendees.

ENHANCING POWER SYSTEM PROTECTION WITH PSCAD

Value added course, 24th Jan 2024

The EEE Association organized a workshop on "PSCAD Application to Power System Protection" on 24th January 2024, from 2 to 4 PM. The session was conducted by Dr. Mallikarjuna Balmidi, an esteemed expert in power systems. The workshop focused on leveraging PSCAD for modeling and simulating power system protection mechanisms. It offered insights into software functionalities, practical use cases, and its importance in addressing protection challenges in power grids. Participants actively engaged in interactive discussions and gained valuable skills in simulation techniques.

DEPARTMENT OF EEE
IN COLLABORATION WITH
EEE ASSOCIATION

presents

**PSCAD
APPLICATION
TO POWER
SYSTEM
PROTECTION**

BY
DR. MALLIKARJUNA
BALMIDI

Join us
24TH JANUARY 2024
2:00 PM- 4:00 PM
COMPUTER LAB, PG BLOCK

A FOND FAREWELL: CELEBRATING THE BATCH OF 2024

Farewell to the Batch of 2024, 13th May 2024



The Department of Electrical and Electronics Engineering (EEE) bid a fond farewell to the Batch of 2024 on a heart-warming afternoon. The event began with a speech centered around the proverb, "Every end is a new beginning," highlighting the bittersweet nature of farewells. The Head of the Department, Dr. AN Nagashree, addressed the gathering with words of

wisdom and encouragement, followed by heartfelt messages from faculty members. The release of the department's latest magazine – 'Renaissance' was another highlight, showcasing the students' creativity and the collective efforts of the department. A nostalgic video presentation captured memorable moments shared by the graduating class during their time at the college. The class representative, Vishwas M, spoke on behalf of the batch, expressing gratitude and reflecting on the unforgettable experiences they had together. Many students followed with their own reflections, further adding to the emotional tone of the event. The ceremony concluded with the distribution of mementos to each student as tokens of appreciation for their contributions to the department. The evening was filled with applause and well wishes as the Batch of 2024 embarked on their new journeys, leaving behind a legacy of cherished memories and strong friendships.

VLSI WORKSHOP: BRIDGING THEORY AND INDUSTRY

Value Added Course, 28th - 29th March 2024

The EEE Association, in collaboration with BMSCE IEEE PELS & IES, hosted a two-day workshop on VLSI on 28th and 29th March 2024, from 5 to 7 PM. The sessions were conducted by Mr. Bhargav S, an ASIC Engineer at NVIDIA. The workshop covered fundamental VLSI design principles, the latest advancements in semiconductor technology, and real-world applications in integrated circuit design. Through interactive discussions and hands-on demonstrations, participants explored VLSI tools and workflows used in the industry. The event provided a platform for aspiring engineers to delve deeper into the VLSI domain under expert guidance.

A digital poster for a VLSI workshop. The background is dark blue with glowing circuit traces. At the top, there are logos for BMSCE, IEEE PELS, IES, and EEE Association. The main text reads: "BMSCE IEEE PELS & IES IN COLLABORATION WITH EEE ASSOCIATION PRESENTS A WORKSHOP ON: VLSI". Below this, it specifies the date as "28th - 29th March 2024", time as "5:00 PM To 7:00 PM", and mode as "Online". The resource person is listed as "BHARGAV S, ASIC ENGINEER, NVIDIA". At the bottom, there is a tagline: "UNLOCKING THE MICROCHIP MARVELS: JOURNEY INTO VLSI". Contact numbers are provided at the very bottom: "Pragna- 938074247" and "Gnaneshwari - 90368 72779".

POWER PLAY

Mini Mania, 17th to 18th May 2024



The EEE Association in collaboration with BMSCE IEEE SSIT hosted Mini Mania, as a part of UTSAV 2024. It was a three-day event held on the 17th, 18th, and 19th of May 2024 at the Ground Floor, PG Block. Participants, either in teams of two or as solo entrants, competed in five exciting games designed to challenge their precision, memory, and quick reflexes. These games included Buzz Wire, Memory Game, Tetris, Stop Watch, and Whack a Mole, all crafted using Arduino and electronic components. Each game contributed to a cumulative score, with winners declared based on the highest points. The event saw enthusiastic participation, with 70 teams registering and 56 teams competing, and concluded with overwhelming positive feedback.

ROYAL RUMBLE: A BATTLE OF SKILL AND PRECISION

Royal Rumble, 18th May 2024

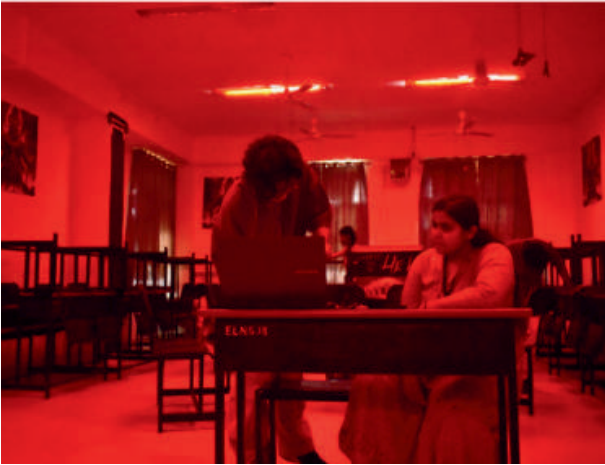
The EEE Association, in collaboration with SSIT, organized Royal Rumble, a fun-filled event as part of UTSAV 2024 on 18th May 2024. Held at the Flight Mechanics Lab on the 4th floor of the Mech Block, the event featured three unique rounds: Red Light and Green Light, Duck Game, and Dart Game. The games tested participants' reflexes, coordination, and precision in a light-hearted environment. A total of 16 participants competed, with winners determined by their cumulative scores across all



rounds. The event concluded seamlessly, receiving highly positive feedback from participants, who appreciated its creative and enjoyable theme.

SURA VS ASURA: THE ULTIMATE CHALLENGE

Sura vs Asura, 17th to 19th May 2024



As part of UTSAV 2024, the EEE Association in collaboration with BMSCE IEEE SSIT hosted the thrilling event Sura vs Asura from 17th to 19th May 2024 at CR-6006, PG Block. The event comprised three rounds: Beach Buggy Racing, where one player from each team raced to achieve the fastest lap for up to 300 points; an Escape Room Challenge, where teams solved 10 hidden questions to earn up to 600 points; and a Dart Throwing challenge, testing accuracy for additional points. A total of 52 teams

participated, competing to accumulate the highest total score. The event was conducted smoothly, receiving excellent feedback for its engaging theme and innovative rounds.

THE CHRONICLE: A JOURNEY THROUGH HISTORY

The Chronicle, 17th May 2024

As part of UTSAV 2024, the EEE Association in collaboration with BMSCE IEEE SSIT hosted The Chronicle on 17th May 2024 at PJ Block CR-304. This history-themed event aimed to rejuvenate participants' knowledge of India's rich historical eras through a series of engaging rounds. Teams of two competed in games like Heads Up, a History Quiz, and a live simulation of Snakes and Ladders, with challenges



like brain teasers and riddles. Out of 22 registered teams, 14 participated with immense enthusiasm, representing various colleges. The event received positive feedback for its innovative approach to learning and entertainment. Participants gained a deeper understanding of Indian history while enjoying a fun and dynamic event, enhancing their critical thinking and teamwork skills. The event successfully created a lively and educational platform that brought together students from multiple colleges, fostering camaraderie and intellectual curiosity.

APPLICATION OF PATENT LAW TO TECHNOLOGY

Navigating patent law in the tech age, 4th October 2024



The EEE association hosted the thought-provoking talk on application of patent law to technology on 4th October 2024. The session was delivered by S. Sridhar co-founder and chief operating officer off Graphrme labs, and esteemed alumnus of BMSCE (2002-2006). The top delved into the significance of patent law in safeguarding technological innovations,

exploring its practical applications in the rapidly evolving tech industry. The session witnessed active participation from students and faculty, providing them with valuable insights into the intersection of law and technology.

PRACTICAL INSIGHTS: MATLAB/SIMULINK FUNDAMENTALS WORKSHOP

MATLAB Fundamentals workshop, 5th October 2024

The EEE Association organized a One-Day Hands-on Workshop on MATLAB/Simulink Fundamentals on 5th October 2024, from 10:00 AM to 5:00 PM. The workshop was led by Prof. Soniya Agrawal and Dr. Venkata Madhava Ram Tatabhatla, Assistant Professors from the Department of EEE, BMSCE.

This interactive session covered the fundamentals of MATLAB/Simulink, including system modeling, simulation techniques, and practical problem-solving. Participants actively engaged in hands-on exercises, gaining valuable insights into leveraging the software for addressing challenges in electrical and electronics engineering.



REFLECTIONS ON LIFE

A Few Lessons From a Professional Career, 15th November 2024



The EEE Association organized a thought-provoking talk titled “A Few Lessons from a Professional Career” on 5th October 2024. The session was delivered by Kiran Mirle, Quality Leader at Philips India Limited and an alumnus of the 1995 batch.

This unique event offered students an invaluable opportunity to learn from an industry veteran with extensive experience in quality management and process improvement. The session began with an introduction

to the esteemed speaker, followed by insights into his professional journey, major accomplishments, and strategies for addressing workplace challenges. The interactive Q&A session further enriched the experience, allowing students to engage directly and gain insights to shape their own career paths.

CULTURAL EXTRAVAGANZA, 27TH NOVEMBER 2024

Voltu Vaibhava, 27th November 2024



The EEE Association made history by hosting its first-ever Cultural Day, Voltu Vaibhava, on 27th November 2024, marking a significant milestone at BMSCE. The event commenced with a traditional lamp-lighting ceremony, graced by the presence of esteemed guests – Vice Principal (Academic) Dr. L. Ravikumar and Dean of Student Affairs Dr. Rajeswari Hegde – alongside the EEE faculty.

The celebration featured a vibrant array of performances by students and faculty, including singing, dancing, instrumental music, and skits, showcasing their diverse talents. The program concluded with a spirited combined dance performance, followed by refreshments that brought the event to a delightful close.



ENERGY GAME

Bob The Circuit Builder, 5th December 2024



Bob the Circuit Builder was a flagship event organized by the Department of Electrical and Electronics Engineering in collaboration with the EEE Association and Phase Shift, as part of Phase Shift 2024. This innovative competition featured three rounds designed to test participants' problem - solving skills and

technical skills. The first round, Scavenger Hunt, required teams to solve clues and locate hidden flags, fostering strategic thinking and teamwork. The second round, a Word Search centered on sustainability themes, challenged participants' speed and attention to detail.

THE REUNION

Sammilana 2024, 21st December 2024

Sammilana 2024, the annual alumni meet organized by the Department of Electrical and Electronics Engineering in collaboration with the EEE Association and the BMSCE Alumni Network, was a heartwarming and memorable celebration.

The event brought together distinguished alumni, including the esteemed 1964 batch, and



faculty members such as the revered Prof. N. N. S. Sir, to honor the department's rich legacy. Alumni shared heartfelt stories from their time at BMSCE, evoking cherished memories. Prof. N. N. S. Sir captivated the audience with his inspiring words and a soulful song. The department also expressed gratitude to the 2013 batch for their contributions and presented the prestigious Prof. Vijay Vittal Awards to deserving recipients.

BRIDGING THEORY AND PRACTICE

Field Trips to TDPS , Bhoruka , Pavgada

The Department of EEE has consistently emphasized hands-on learning and practical application over traditional theoretical instruction and classroom-focused teaching. To support these innovative teaching methods, the EEEA arranged a series of field visits for B.E and M.Tech students during their 2nd and 3rd years.



The students visited TDPS, a hydroelectric generating station - Bhoruka Power Plant in Thalakadu and a solar farm in Pavagada. The students were also taken to various other industries throughout their course. These field trips provided invaluable technical insights while also serving as a great opportunity for students to bond and collaborate outside the classroom.

The locations were chosen for their curriculum relevance and the hands-on learning opportunities they offered. These visits helped students connect theoretical concepts with real-world applications while gaining insights from industry professionals.



Farewell, Forward, Forever

Signing Off with Success



This year has been a journey of growth, challenges, and remarkable achievements. From hosting impactful events to fostering collaboration and creativity, we have strengthened our bond as a community. Every effort, big or small, has contributed to shaping an environment of learning and innovation. The memories we have created will serve as a foundation for the future, inspiring us to aim higher. As we step into a new chapter, we embrace new opportunities with renewed enthusiasm. The experiences gained will guide us in our pursuit of excellence. With gratitude for the past and hope for the future, we move forward together. Here's to another year of possibilities and success!

"As we turn the page, we carry forward the lessons and memories of our past, lighting the way for tomorrow."



DIGITAL SPARKS

THE NEW ERA OF E&E

NEUROMORPHIC ENGINEERING

MIMICKING HUMAN BRAIN

SHWETA
6TH SEM

Neuromorphic Engineering: Revolutionizing Technology by Mimicking the Brain

Neuromorphic engineering, also known as neuromorphic computing, is an interdisciplinary field of study that draws inspiration from the structure and function of biological neural systems to design and develop advanced computational systems. This field, which bridges neuroscience, computer science, and electrical engineering, holds the potential to transform artificial intelligence (AI), robotics, and many other domains by creating systems that are faster, more efficient, and closer to human cognition.

Understanding Neuromorphic Systems

Neuromorphic systems aim to replicate the way neurons and synapses in the human brain process information. Unlike traditional computing architectures, which operate linearly and are constrained by the von Neumann bottleneck, neuromorphic systems process data in a massively parallel and event-driven manner, mimicking the brain's efficiency and adaptability. These systems leverage spiking neural networks (SNNs), where information is transmitted through discrete spikes, similar to biological neurons. This enables low-power consumption and real-time processing, making them ideal for edge computing and AI applications. Neuromorphic hardware, such as IBM's TrueNorth and Intel's Loihi, demonstrates the potential of brain-inspired computing for tasks like pattern recognition and decision-making. As research advances, neuromorphic computing is expected to revolutionize fields like robotics, autonomous systems, and neurosymbolic AI.

WEARABLE ELECTRONICS

THE NEXT STEP IN DIGITAL HEALTH

SINCHANA HG
4TH SEM

For the past two decades, wearable technology trends have evolved significantly. Smart wearable devices are now equipped with sensors and are often connected to the Internet and the cloud. That wasn't always the case, as the first Bluetooth headset was sold in the year 2000, bringing a lot of excitement. In 2022, device usage is projected to grow 1.1 to billion users.

Recent advancements in wearable electronic devices are significantly enhancing healthcare, particularly in wound healing and health monitoring. some of the notable inventions includes smart bandages and wound healing monitors, Advanced Health Monitoring Wearables, glucose monitoring etc..

Smart bandage and wound healing device

Conformable Ultrasound Patch (cUSP): Developed by MIT engineers, this flexible patch uses ultrasound to enhance drug delivery through the skin, promoting faster wound healing. The compact design allows for hands-free application, making it user-friendly for patients.

Nanodiamond-Silk Fibroin Membranes: Researchers have created electrospun membranes combining nanodiamonds and silk fibroin. These membranes not only support tissue regeneration but also monitor wound temperature, detecting infections early. Their antimicrobial properties further aid in preventing bacterial growth.

Advanced Health Monitoring Wearables

Hexoskin Smart Shirts: These garments integrate sensors to continuously monitor vital signs such as heart rate, respiration, and activity levels. Data is transmitted in real-time to connected devices, assisting in remote patient monitoring and fitness tracking.

E-Textiles: Electronic textiles embed components like sensors and microcontrollers into fabrics, enabling health monitoring through everyday clothing. Innovations include textile-based ECG sensors and fabrics capable of detecting various health metrics, offering a seamless integration of technology into daily wear.

GlucoModicum's Magnetohydrodynamic Technology:

This device uses magnetohydrodynamic principles to extract interstitial fluid through the skin non-invasively, allowing for glucose level monitoring without needles.

Occuity Indigo: Aiming to measure blood glucose levels by analyzing the eye's refractive index, this device offers a needle-free approach to glucose monitoring.

Wearable electronic devices have significantly advanced healthcare, particularly in areas like glucose monitoring and wound healing.

The Continuous glucose monitoring (CGM) market is experiencing rapid expansion, with projections indicating a rise from \$6.8 billion in 2023 to \$20.2 billion by 2032.

Companies like Abbott Laboratories and DexCom are introducing innovative CGM devices targeting both diabetic and non-diabetic populations. Abbott's Lingo device, priced between \$49 and \$249 depending on the package, offers real-time glucose monitoring for health-conscious individuals. Similarly, DexCom's upcoming Stelo CGM aims to serve the vast market of non-insulin-dependent Type 2 diabetics and prediabetics, potentially reaching 125 million people.

The integration of wearable technology into healthcare, exemplified by advancements in CGM systems and smart wound healing devices, is revolutionizing patient care. These innovations offer real-time health monitoring and personalized treatment options, leading to improved health outcomes and quality of life.





PIEZOELECTRIC MICROBOTS: THE FUTURE OF MINIATURE ROBOTICS

SUMANTH CK
4TH SEM

Miniature robots have gained significant attention in academia and industry due to their unique characteristics, including small size, lightweight design, low cost, and agile movement. These attributes makes them highly suitable for applications in search and rescue, reconnaissance, micromanipulation, and even medical procedures inside the human body.

With the development of smart materials, various actuating elements have been introduced to enhance miniature robots' functionality. Among these, piezoelectric actuating elements stand out due to their compact structure, high power density, fast response, high resolution, and absence of electromagnetic interference. These advantages make piezoelectric actuators an ideal choice for driving miniature robots, leading to the development of miniature piezoelectric robots (MPRs).

Advantages of Piezoelectric Microbots:

Piezoelectric microbots leverage the inverse piezoelectric effect to convert electrical energy into mechanical motion. Compared to traditional electromagnetic motor-driven robots, MPRs offer several key benefits such as it has compact and simple structure, high power density, fast response time, high

resolution and it is electromagnetic interference free.

The mechanism by which piezoelectric microrobots achieve mobility, as well as the environment in which they are expected to maneuver, are important in the development of microrobots. Each mechanism has specific characteristics suitable for an objective environment. Ambulatory locomotion gives the advantages of mobility on rough surfaces as opposed to the traditional wheeled mechanism. Moreover, increasing the number of legs enables the system to be more robust due to the actuation failure. The inchworm mechanism can gain control of the friction force by exploiting the squeeze film effect. To create biologically-inspired flapping-wing microrobots like insects for exploration purposes, high-density actuation power is required, which can be developed using piezoelectric materials. Additionally, amphibious microrobots are designed to conform to the multi-environment.

The key roles in the operation of the microrobot are the power source to achieve mobility and the way it is transferred to the microrobot. The piezoelectric materials that are used in microrobots require high input voltages, which can reach as high as 220 V , creating challenges for power transmission.

As a promising strategy, there are a variety of methods based on energy harvesting in the direction of the wireless functionality of microrobots relying on piezoelectric actuation.

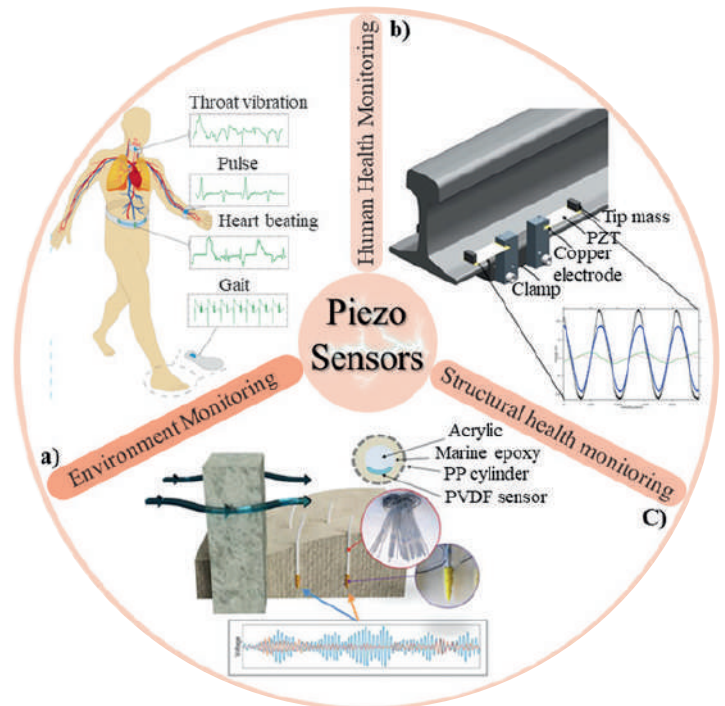
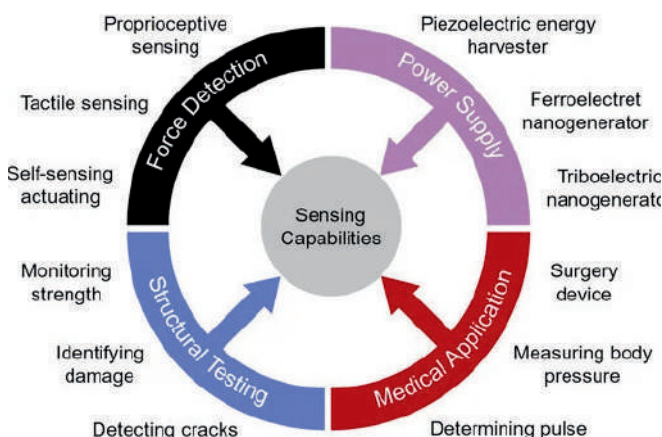
The sensing capabilities involve microrobots or piezo-based devices dealing with their environments to achieve autonomy like their biological counterparts, such as tactile sensing similar to that of nature-inspired insects. Additionally, piezoelectric sensing is investigated in a range of fields such as detecting cracks and human health monitoring, which could be used to inspire ideas for microrobotic applications.

Classification of piezoelectric microrobots
MPRs can be categorized based on different criteria:

Operating Environment: Microrobots designed for terrestrial, aquatic, and biomedical applications.

Structure of Piezoelectric Actuating Element: Various configurations, including bimorphs, stack actuators, and flexure-based designs.

Working Principle: Walking, crawling, and jumping mechanisms facilitated by controlled deformation of piezoelectric materials.



Recent Developments and Challenges

Over the years, significant advancements have been made in the design and functionality of MPRs, incorporating novel piezoelectric materials and advanced fabrication techniques. However, challenges remain in:

- Miniaturization:** Further reducing size while maintaining efficiency and power.
- Energy Efficiency:** Developing more effective energy management strategies.
- Scalability:** Mass production techniques for widespread adoption.
- Durability and Stability:** Enhancing longevity and resilience in varying environments.

Future Prospects

The future of MPRs looks promising with the continuous evolution of piezoelectric materials and microfabrication technologies. potential breakthroughs in autonomous control, improved power sources and enhanced locomotion strategies will further expand their applications in medicine, industry and exploration.

POWER OF QBITS: UNLOCKING THE QUANTUM FUTURE

SUMANTH CK
4TH SEM

Quantum computing is rapidly emerging as one of the most transformative technologies of 21st century. Unlike classical computers that process information using bits (0s and 1s), quantum computers harness the principles of quantum mechanics, using qubits to perform complex calculations at unprecedented speeds. This article explores the fundamentals of quantum computing, its key principles, potential applications, and current challenges.

Understanding Quantum Computing

At its core, quantum computing leverages unique quantum phenomena, such as superposition and entanglement, to process vast amount of information in parallel.

This capability makes quantum computers exponentially more powerful than traditional computers for specific problem-solving tasks.

Key Principles of Quantum Computing

Superposition: Unlike classical bits, which exist as either 0 or 1, qubits can be both 0 and 1 simultaneously. This allows quantum computers to explore multiple solutions concurrently.

Entanglement: When the qubits become entangled the state of one qubit directly influences the state of another, regardless of distance. This interconnectedness significantly enhances computational efficiency.

Quantum Interference: Quantum algorithms utilize interference to amplify correct solutions while canceling out incorrect ones, improving accuracy and processing power.

Potential Applications of Quantum Computing

Quantum computing has the potential to revolutionize multiple industries by solving problems currently intractable for classical computers.

- **Cryptography:** Quantum computers could break conventional encryption methods, necessitating the development of quantum-resistant cryptographic techniques. They also enable secure communication through quantum key distribution.
- **Drug Discovery:** By simulating molecular interactions at a quantum level, quantum computing can accelerate drug discovery and reduce research costs.
- **Optimization Problems:** Industries such as logistics, finance, and manufacturing can benefit from quantum algorithms that optimize processes and improve efficiency.
- **Artificial Intelligence:** Quantum-enhanced machine learning can process vast datasets more efficiently, leading to more accurate predictive models and advancements in AI.

Challenges in Quantum Computing

Despite its immense potential, quantum computing faces several obstacles:

- **Qubit Stability:** Qubits are highly sensitive to environmental disturbances, leading to calculation errors. Developing stable, error-corrected qubits remains a critical research focus.
- **Scalability:** Large-scale quantum computers require coherence among thousands or even millions of qubits, a significant technical challenge.
- **Practical Implementation:** The transition from theoretical quantum algorithms to practical applications that outperform classical computing is still underway.

Recent Breakthrough: Majorana 1 Quantum Chip

A groundbreaking development in quantum computing is the Majorana 1 chip, which employs Topological Core architecture. This technology introduces topoconductors, a novel class of materials capable of observing and controlling Majorana particles, exotic quantum particles that enable stable and error-resistant quantum operations. Microsoft compares this breakthrough to the invention of semiconductors, which revolutionized modern electronics.

Microsoft aims to develop a quantum computer with one million qubits, a threshold necessary for solving real-world industrial and scientific challenges. A quantum computer at this scale would surpass the combined computational power of all existing supercomputers, unlocking new possibilities in scientific research and industrial applications.

Quantum computing is poised to redefine the landscape of technology, offering unparalleled computational power for a wide range of applications. While significant challenges remain, ongoing research and breakthroughs like the

Majorana 1 chip bring us closer to realizing the full potential of quantum computing. As advancements continue, this revolutionary technology is set to shape the future of computing, cryptography, AI, and beyond.

BIT

QUBIT

ಡಿಜಿಟಲ್ ಸ್ವಾರ್ಕ್

ವಿದ್ಯುತ್ ಮತ್ತು ವಿದ್ಯುನ್ಮಾನದ ಹೊಸ
ಯುಗ



ಪುನರುಜ್ಜೀವಿತ ಶಕ್ತಿಯಲ್ಲಿ ಪವರ್ ಎಲೆಕ್ಟ್ರಾನಿಕ್ಸ್ ಮಹತ್ವ

ಪುನರುಜ್ಜೀವಿತ ಶಕ್ತಿ ಮೂಲಗಳು, ಉದಾಹರಣೆಗೆ ಸೌರಶಕ್ತಿ, ಪವನಶಕ್ತಿ, ಜಲಶಕ್ತಿ ಮತ್ತು ಜೈವಿಕ ಇಂಧನ, ಪರಿಸರ ಸ್ನೇಹಿಯಾಗಿದ್ದು, ಇಂಧನ ಭವಿಷ್ಯವನ್ನು ರೂಪಿಸುವಲ್ಲಿ ಪ್ರಮುಖ ಪಾತ್ರವಹಿಸುತ್ತವೆ. ಜಾಗತಿಕ ತಾಪಮಾನ ಹೆಚ್ಚಳ, ಪರಿಸರ ಮಾಲಿನ್ಯ ಮತ್ತು ನೈಸರ್ಗಿಕ ಇಂಧನ ಸಂಪತ್ತು ಕರಿದಹೋಗುತ್ತಿರುವ ಈ ಸಂದರ್ಭದಲ್ಲಿ, ಪುನರುಜ್ಜೀವಿತ ಶಕ್ತಿಯ ಮಹತ್ವವು ದಿನದಿಂದ ದಿನಕ್ಕೆ ಹೆಚ್ಚುತ್ತಿದೆ. ಆದರೆ, ಈ ಶಕ್ತಿ ಮೂಲಗಳು ನಿರಂತರವಿಲ್ಲ ಮತ್ತು ಅವು ನೈಸರ್ಗಿಕ ಸಂದರ್ಭಗಳ ಮೇಲೆ ಅವಲಂಬಿತವಾಗಿವೆ. ಉದಾಹರಣೆಗೆ, ಸೌರಶಕ್ತಿ ಕೇವಲ ದಿನದ ವೇಳೆ ಮಾತ್ರ ಲಭ್ಯವಿರುತ್ತದೆ, ಮತ್ತು ಪವನಶಕ್ತಿಯು ಗಾಳಿಯ ವೇಗವನ್ನು ಅವಲಂಬಿಸಿ ಕೆಲಸ ಮಾಡುತ್ತದೆ. ಈ ಅಸ್ಥಿರತೆಯನ್ನು ಸಮತೋಲನಗೊಳಿಸಿ, ಶಕ್ತಿಯನ್ನು ನಿರಂತರವಾಗಿ ಮತ್ತು ಪರಿಣಾಮಕಾರಿಯಾಗಿ ಬಳಸುವಲ್ಲಿ ಪವರ್ ಎಲೆಕ್ಟ್ರಾನಿಕ್ಸ್ ಪ್ರಮುಖ ಪಾತ್ರ ವಹಿಸುತ್ತದೆ.

ಪವರ್ ಎಲೆಕ್ಟ್ರಾನಿಕ್ಸ್ ಎಂದರೆ ವಿದ್ಯುತ್ ಪರಿವರ್ತನೆ, ನಿಯಂತ್ರಣ ಮತ್ತು ವಿತರಣೆಯ ತಂತ್ರಜ್ಞಾನ. ಪುನರುಜ್ಜೀವಿತ ಶಕ್ತಿಯ ಉತ್ಪಾದನೆಯಲ್ಲಿ ಡಿಸಿ (DC) ಮತ್ತು ಎಸಿ (AC) ವಿದ್ಯುತ್ ಪರಿವರ್ತನೆಯ ಅಗತ್ಯವಿರುವುದರಿಂದ, ಐನ್ವರ್ಟರ್, ರೆಕ್ಟಿಫೈಯರ್, ಮತ್ತು ಎಂಪಿಪಿಟಿ (MPPT) ಕಂಟ್ರೋಲರ್‌ಗಳಂತಹ ಸಾಧನಗಳು ಅವಶ್ಯಕವಾಗುತ್ತವೆ. ಉದಾಹರಣೆಗೆ, ಸೌರ ಪ್ಯಾನೆಲ್‌ಗಳಿಂದ ಉತ್ಪತ್ತಿಯಾಗುವ ವಿದ್ಯುತ್ ಡಿಸಿ ಆಗಿರುವುದರಿಂದ, ಅದನ್ನು ಎಸಿಗೆ ಪರಿವರ್ತಿಸಲು ಐನ್ವರ್ಟರ್‌ಗಳನ್ನು ಬಳಸಲಾಗುತ್ತದೆ. ಏಕೆಂದರೆ, ಹೆಚ್ಚಿನ ಗೃಹೋಪಯೋಗಿ ಉಪಕರಣಗಳು ಮತ್ತು ವಿದ್ಯುತ್ ವಿತರಣಾ ವ್ಯವಸ್ಥೆಗಳು ಎಸಿ ವಿದ್ಯುತ್ ಅನ್ನು ಬಳಸುತ್ತವೆ. ಇದೇ ರೀತಿಯಲ್ಲಿ, ಪವನಶಕ್ತಿಯಲ್ಲಿ ಗಾಳಿಯ ವೇಗದಲ್ಲಿ ಏರುಪೇರುಗಳಾಗುವುದರಿಂದ ಉತ್ಪಾದನೆಯಲ್ಲಿಯೂ ಅಸ್ಥಿರತೆ ಉಂಟಾಗುತ್ತದೆ. ಇದನ್ನು ಸಮತೋಲನಗೊಳಿಸಲು ಪವರ್ ಎಲೆಕ್ಟ್ರಾನಿಕ್ಸ್ ಆಧುನಿಕ ನಿಯಂತ್ರಣ ವ್ಯವಸ್ಥೆಗಳನ್ನು ಬಳಸಲಾಗುತ್ತದೆ.

ಪವರ್ ಎಲೆಕ್ಟ್ರಾನಿಕ್ಸ್ ಉಪಯೋಗವನ್ನು ತೀವ್ರಗೊಳಿಸುವ ಮತ್ತೊಂದು ಕ್ಷೇತ್ರವೆಂದರೆ ಶಕ್ತಿಯ ಸಂಗ್ರಹಣೆ ಮತ್ತು ವಿತರಣಾ ವ್ಯವಸ್ಥೆ. ಪುನರುಜ್ಜೀವಿತ ಶಕ್ತಿಯನ್ನು ನಿರಂತರವಾಗಿ ಬಳಸಲು ದಪ್ಪ ಬ್ಯಾಟರಿಗಳು ಮತ್ತು ಶಕ್ತಿಯನ್ನು ಸಂಗ್ರಹಿಸಿ ಹಗಲಿರುಳು ನಿರಂತರ ಪೂರೈಕೆ ಮಾಡಬಹುದಾದ ವ್ಯವಸ್ಥೆಗಳು ಅಗತ್ಯವಿರುತ್ತವೆ. ಇದನ್ನು ಸಾಧಿಸಲು ಅತ್ಯಾಧುನಿಕ ಎಲೆಕ್ಟ್ರಾನಿಕ್ ಪರಿಕರಗಳು, ಶಕ್ತಿಯ ಹರಿವು ನಿಯಂತ್ರಿಸುವ ಸ್ಮಾರ್ಟ್ ಗ್ರಿಡ್ ತಂತ್ರಜ್ಞಾನ ಮತ್ತು ಡಿಜಿಟಲ್ ಎಲೆಕ್ಟ್ರಾನಿಕ್ಸ್ ವ್ಯವಸ್ಥೆಗಳು ಮುಖ್ಯವಾಗುತ್ತವೆ. ಸ್ಮಾರ್ಟ್ ಗ್ರಿಡ್ ತಂತ್ರಜ್ಞಾನವು ಶಕ್ತಿಯ ಸರಬರಾಜು ಮತ್ತು ಬೇಡಿಕೆಯನ್ನು ಸಮತೋಲನಗೊಳಿಸಿ, ವಿದ್ಯುತ್ ನಷ್ಟವನ್ನು ಕಡಿಮೆ ಮಾಡುತ್ತದೆ.

ಇಂದಿನ ಪ್ರಗತಿಯಾದ ತಂತ್ರಜ್ಞಾನದಲ್ಲಿ, ಪವರ್ ಎಲೆಕ್ಟ್ರಾನಿಕ್ಸ್ ಅನ್ನು ಹೆಚ್ಚಿನ ದಕ್ಷತೆ ಮತ್ತು ನಿಖರತೆಯೊಂದಿಗೆ ಅಭಿವೃದ್ಧಿಪಡಿಸಲಾಗುತ್ತಿದೆ. ಪುನರುಜ್ಜೀವಿತ ಶಕ್ತಿಯ ಬಳಕೆಯು ಸಾಮಾನ್ಯ ಜನತೆಗೂ ಸುಲಭವಾಗಲು ಸರ್ಕಾರಗಳು ವಿವಿಧ ಉದ್ದೇಶಿತ ಯೋಜನೆಗಳನ್ನು ರೂಪಿಸುತ್ತಿವೆ. ಸೌರಶಕ್ತಿ ಪ್ಯಾನೆಲ್‌ಗಳನ್ನು ಮನೆಗಳಲ್ಲಿ ಅಳವಡಿಸುವ ಯೋಜನೆಗಳು, ಪವನಚಕ್ರಗಳ ನಿರ್ಮಾಣ, ಹಾಗೂ ವಿದ್ಯುತ್ ವಿತರಣಾ ವ್ಯವಸ್ಥೆಯನ್ನು ಸುಧಾರಿಸುವ ಪ್ರಯತ್ನಗಳು ಮುಂದುವರೆದಿವೆ. ಪವರ್ ಎಲೆಕ್ಟ್ರಾನಿಕ್ಸ್ ಇಲ್ಲದೆ, ಪುನರುಜ್ಜೀವಿತ ಶಕ್ತಿಯ ಸಮಗ್ರ ಬಳಕೆಯನ್ನು ಸಾಧಿಸುವುದು ಕಷ್ಟ. ಇದು ಶಕ್ತಿಯ ಉತ್ಪಾದನೆ ಮತ್ತು ಬಳಕೆಯ ವಿಶ್ವಾಸಾರ್ಹತೆ ಹಾಗೂ ಕಾರ್ಯಕ್ಷಮತೆಯನ್ನು ಹೆಚ್ಚಿಸುವಲ್ಲಿ ಪ್ರಮುಖ ಪಾತ್ರವಹಿಸುತ್ತದೆ.

ಭವಿಷ್ಯದಲ್ಲಿ, ಪುನರುಜ್ಜೀವಿತ ಶಕ್ತಿಯ ದಿಟ್ಟ ಅಭಿವೃದ್ಧಿಗೆ ಪವರ್ ಎಲೆಕ್ಟ್ರಾನಿಕ್ಸ್ ಇನ್ನಷ್ಟು ನವೀಕರಣಗಳನ್ನು ಅನುಸರಿಸಬೇಕು. ಈ ತಂತ್ರಜ್ಞಾನವು ಹೆಚ್ಚು ಸಮರ್ಥ, ಕಡಿಮೆ ವೆಚ್ಚದ ಮತ್ತು ಉನ್ನತ ಮಟ್ಟದ ಕಾರ್ಯಕ್ಷಮತೆಯೊಂದಿಗೆ ಅಭಿವೃದ್ಧಿಯಾಗುವ ಮೂಲಕ ಶಕ್ತಿಯ ಭವಿಷ್ಯವನ್ನು ನಾವೇ ರೂಪಿಸಬಹುದು. ಪವರ್ ಎಲೆಕ್ಟ್ರಾನಿಕ್ಸ್ ಮತ್ತು ಪುನರುಜ್ಜೀವಿತ ಶಕ್ತಿ ಒಟ್ಟಿಗೆ ಕೈಜೋಡಿಸಿದರೆ, ನಾವೊಂದು ಸ್ವಚ್ಛ ಮತ್ತು ದಕ್ಷ ಶಕ್ತಿ ಯುಗವನ್ನು ಸಾಧಿಸಬಹುದಾಗಿದೆ.

ಮೈಕ್ರೋ ಗ್ರೀಡ್ ತಂತ್ರಜ್ಞಾನ

ಮೈಕ್ರೋ ಗ್ರೀಡ್ ಎಂದರೆ ಸಾಂಪ್ರದಾಯಿಕ ವಿದ್ಯುತ್ ವಿತರಣಾ ವ್ಯವಸ್ಥೆಯಿಂದ ಸ್ವಾಯತ್ತವಾಗಿರುವ, ಸ್ವತಂತ್ರವಾಗಿ ಕಾರ್ಯನಿರ್ವಹಿಸುವ ಒಂದು ಸಣ್ಣ ಶಕ್ತಿ ನಿರ್ವಹಣಾ ವ್ಯವಸ್ಥೆ. ಇದು ಪುನರುಜ್ಜೀವಿತ ಶಕ್ತಿ ಮೂಲಗಳಾದ ಸೌರಶಕ್ತಿ, ಪವನಶಕ್ತಿ, ಜೈವಿಕ ಇಂಧನ ಮತ್ತು ಬ್ಯಾಟರಿ ಶಕ್ತಿಸಂಗ್ರಹ ವ್ಯವಸ್ಥೆಗಳನ್ನು ಒಳಗೊಂಡಿರುತ್ತದೆ. ಮುಖ್ಯ ವಿದ್ಯುತ್ ಗ್ರೀಡ್ ಅನ್ನು ಅವಲಂಬಿಸದೆ ನಿರ್ವಹಿಸುವ ಸಾಮರ್ಥ್ಯ ಇದಕ್ಕೆ ಇರುವುದರಿಂದ, ಈ ತಂತ್ರಜ್ಞಾನ ಗ್ರಾಮೀಣ ಹಾಗೂ ನಗರ ಪ್ರದೇಶಗಳಲ್ಲಿ ಶಕ್ತಿಯ ವಿಶ್ವಾಸಾರ್ಹತೆ ಹೆಚ್ಚಿಸಲು ಸಹಾಯ ಮಾಡುತ್ತದೆ.

ಮೈಕ್ರೋ ಗ್ರೀಡ್‌ಗಳು ಸಾಮಾನ್ಯವಾಗಿ ಚಿಕ್ಕ ಸಮುದಾಯಗಳು, ಕೈಗಾರಿಕಾ ಪ್ರದೇಶಗಳು, ಆಸ್ಪತ್ರೆಗಳು, ಹಾಗೂ ಸೈನಿಕ ಶಿಬಿರಗಳಲ್ಲಿ ವ್ಯಾಪಕವಾಗಿ ಬಳಸಲಾಗುತ್ತವೆ. ಇದರಿಂದ ಶಕ್ತಿಯ ನಷ್ಟ ಕಡಿಮೆಯಾಗುತ್ತದೆ ಹಾಗೂ ಪರಿಸರಕ್ಕೆ ಹಾನಿ ಕಡಿಮೆಯಾಗುವಂತೆ ಮಾಡಬಹುದು. ಈ ವ್ಯವಸ್ಥೆಯಲ್ಲಿ ಪುನರುಜ್ಜೀವಿತ ಶಕ್ತಿಯನ್ನು ಸಂಗ್ರಹಿಸಿ, ಅವಶ್ಯಕತೆಯ ಪ್ರಕಾರ ಬಳಸಲು ಸಾಧ್ಯವಾಗುತ್ತದೆ. ಇದರಿಂದ ಅವಶ್ಯಕತೆಗಿಂತ ಹೆಚ್ಚು ಶಕ್ತಿ ಉತ್ಪತ್ತಿಯಾದರೆ, ಅದನ್ನು ಗುಣಮಟ್ಟದ ಕುಸಿತವಿಲ್ಲದೆ ಸಂಗ್ರಹಿಸಬಹುದು ಅಥವಾ ಮುಖ್ಯ ಗ್ರೀಡ್‌ಗೆ ಮರಳಿಸಬಹುದು.

ಮೈಕ್ರೋ ಗ್ರೀಡ್ ತಂತ್ರಜ್ಞಾನದಲ್ಲಿ ಪವರ್ ಎಲೆಕ್ಟ್ರಾನಿಕ್ಸ್ ಪ್ರಮುಖ ಪಾತ್ರ ವಹಿಸುತ್ತದೆ. ಇದು ಶಕ್ತಿಯನ್ನು ನಿಯಂತ್ರಿಸಿ, ಗರಿಷ್ಠ ಕಾರ್ಯಕ್ಷಮತೆಯೊಂದಿಗೆ ಬಳಕೆ ಯೋಗ್ಯವಾಗಿಸಲು ಸಹಾಯ ಮಾಡುತ್ತದೆ. ಸ್ಮಾರ್ಟ್ ಗ್ರೀಡ್ ತಂತ್ರಜ್ಞಾನ ಮತ್ತು IoT (Internet of Things) ಬಳಕೆಯಿಂದ, ಮೈಕ್ರೋ ಗ್ರೀಡ್‌ಗಳನ್ನು ಸ್ವಯಂಚಾಲಿತಗೊಳಿಸಿ ಹೆಚ್ಚು ಸಮರ್ಥ ಮತ್ತು ಸಮಗ್ರ ಶಕ್ತಿನಿಯಂತ್ರಣವನ್ನು ಸಾಧಿಸಬಹುದು. ಭವಿಷ್ಯದಲ್ಲಿ, ಮೈಕ್ರೋ ಗ್ರೀಡ್‌ಗಳು ಗ್ರಾಮೀಣ ವಿದ್ಯುತ್ ವಿತರಣೆಯಲ್ಲಿ ಕ್ರಾಂತಿಕಾರಿಯಾಗಲಿದೆ.

ಮೈಕ್ರೋ ಗ್ರೀಡ್‌ಗಳ ಪ್ರಮುಖ ಲಾಭವೆಂದರೆ, ಅವು ಪ್ರಾದೇಶಿಕ ಶಕ್ತಿ ನಿರ್ವಹಣೆಯನ್ನು ಸ್ವಾಯತ್ತಗೊಳಿಸುವ ಮೂಲಕ ಶಕ್ತಿಯ ನಷ್ಟವನ್ನು ತೀವ್ರವಾಗಿ ಕಡಿಮೆ ಮಾಡುತ್ತವೆ. ಹೆಚ್ಚಾಗಿ ಗ್ರಾಮೀಣ ಪ್ರದೇಶಗಳು ಮತ್ತು ತ್ಯಾಜ್ಯ ಶಕ್ತಿಯ ಪರಿಣಾಮ ಅನುಭವಿಸುವ ಸ್ಥಳಗಳಲ್ಲಿ, ಮುಖ್ಯ ಗ್ರೀಡ್‌ಗೆ ಸಂಪರ್ಕ ಸಾಧಿಸುವುದು ಕಷ್ಟವಾಗಬಹುದು ಅಥವಾ ಅತಿ ದುಬಾರಿ ಆಗಿರಬಹುದು. ಇದನ್ನು ಮೌಕಟ್ಟಲು, ಮೈಕ್ರೋ ಗ್ರೀಡ್‌ಗಳು ಸ್ಥಳೀಯ ಶಕ್ತಿಸಂಗ್ರಹ ವ್ಯವಸ್ಥೆಯನ್ನು ಬಳಸಿಕೊಂಡು ನಿರಂತರ ವಿದ್ಯುತ್ ಪೂರೈಕೆ ಒದಗಿಸುತ್ತವೆ. ಇದರಿಂದ, ವಿದ್ಯುತ್ ಕಡಿತದ ಸಮಸ್ಯೆ ನಿವಾರಣೆಯಾಗುವುದು ಮತ್ತು ಪುನರುಜ್ಜೀವಿತ ಶಕ್ತಿಯ ಸುಧಾರಿತ ಬಳಕೆಯ ಮೂಲಕ ಪರಿಸರ ಸ್ನೇಹಿ ವಿದ್ಯುತ್ ಉತ್ಪಾದನೆಯ ಪ್ರೋತ್ಸಾಹ ದೊರಕುವುದು.

ಸಾಹಿತ್ಯ

ಕನಸು

ಮುಡಲು ನೀಸರಸಿ,
 ಪದುಮಳೆ ನೀಡುವ ಕನಸು;
 ಆಕಳಿಸುವ ನದಿಗೆ,
 ಹರಿದು ಹೋಗುವ ಕನಸು
 ದಾರಿ ತಪ್ಪಿದ ಹಕ್ಕಿಗೆ,
 ಗೂಡು ತಲುಪುವ ಕನಸು;
 ಮನಿಯಿನ ಹಚ್ಚಿಗೆ,
 ಉರಿ ನೀಡುವ ಕನಸು
 ಸೂರ್ಯನ ಮೊಗಕ್ಕೆ,
 ನಗು ಬೀರುವ ಕನಸು;
 ಬಾಲಕೋದ್ಯೋಗಿ ಹಸಿಗೆ,
 ಬಹುದೂರ ಹಾರುವ ಕನಸು
 ಕನಸು ಹೊತ್ತ ಕನಸು
 ಮಿದುಕ ಕಳೆಯುವದಕೆ?
 ಹಸಿ ಹಾಳು ಕನಸು
 ಆಗುವುದೆ ನನಸು?

"ಜನನಿ"

ಜನನಿ...

ಜೀವಿಸಲು ಉಸಿರಾದೆ ನೀ
ಭುವಿ ಕಂಡ ಬಲವೇ ನೀ
ನೋವ ಕಚ್ಚಿದ ಕಾಡ್ಲಿಚ್ಚೆ ನೀ
ನನ್ನ ಬಾಳಿನ ಕೊರವಂಜಿ ನೀ.
ಕಂಬನಿಯ ಕೂಗಲ್ಲ ನೀ ಜನನಿ!

ಕೊಟ್ಟ ಮೊದಲು ಮತ್ತು
ಕಂದಾ ಎಂದ ಧ್ವನಿಯ ಮತ್ತು
ನಲಿದಾಡಿ ಕಳೆದ ಹೊತ್ತು
ನಗೆಯಲ್ಲಿ ಕಂಡ ಗತ್ತು
ಎಂದೆಂದೂ ನನ್ನ ಸ್ವತ್ತು!

ಮಿಂಚಂತೆ ತಾಕಿದ ಮುಂಗುರುಳ
ಮಿತಿ ಇಲ್ಲದ ಮಮತೆ ಮಡಿಲ
ಸಲಿಗೆಯ ನಿನ್ನ ಒಡಲ
ಕಪ್ಪಿಟ್ಟ ಕೈ ಬೆರಳ
ನಾ ಹೇಗೆ ಮರೆಯಲಿ!

ತೊದಲು ನುಡಿಯ ಅಂಬೆಗಾಲಿಗಾಗಿ
ಪರಿತಪಿಸಿದೆ
ಕಂಡ ಕನಸನ್ನೇ ನನಗಾಗಿ ಬದಿಗಿರಿಸಿದೆ
ಬೆಚ್ಚನೆ ಮಲಗಲು ಹೊದಿಸಿ ಹಾಲುಣಿಸಿದೆ
ಕುಗ್ಗಿದ ಕ್ಷಣದಲೂ ಸೆರೆಗಲೆ ಕಾಯ್ದಿರಿಸಿದೆ!

ಲಾಲಿ ಲಾಲಿ ಲಾಲಿ ನನ್ನೆದೆಯ ಗೂಡಲ್ಲಿ
ಲಾಲಿ ಲಾಲಿ ಲಾಲಿ ಲಾಲಿ ಲಬ್ ಡಬ್
ಎನುವ ಸದ್ದಲ್ಲಿ

ಜನನಿ....

ಜೀವಿಸಲು ಉಸಿರಾದೆ ನೀ
ಭುವಿ ಕಂಡ ಬಲವೇ ನೀ
ನೋವ ಕಚ್ಚಿದ ಕಾಡ್ಲಿಚ್ಚೆ ನೀ
ನನ್ನ ಬಾಳಿನ ಕೊರವಂಜಿ ನೀ
ಕಂಬನಿಯ ಕೂಗಲ್ಲ ನೀ. ಜನನಿ!!

ಕಂಡಾಗ ನಿನ್ನ ಮೊಗವನು
ಮರೆವೆನು ಈ ಜಗವನು
ಹಾಡಿದ ಲಾಲಿ ಹಾಡನು
ಎದೆಯಲ್ಲಿ ಕೆತ್ತಿರುವೆನು
ಉಸಿರಿರುವ ತನಕ ಕಾಯುವೆನು

ಕೊಟ್ಟ ಒಂದು ಮಾತಿಗೆ
ಉಣಿಸಿದೊಂದು ತುತ್ತಿಗೆ
ಹೊತ್ತು ತಿರುಗಿದ ಚೆಲುವೆಗೆ
ಸುವ್ವಾಲಿ ಪದದ ಸೊಬಗಿಗೆ
ನಾ ಎಂದೆಂದೂ ಚಿರಋಣಿ

ಪ್ರೀತಿಯ ಗೂಡಲ್ಲಿ ಮುದ್ದಾಡಿ ಬೆಳೆಸಿದೆ
ಕೈಗೆಟುಕದ ಚಂದ್ರನ ಕಣ್ಣುಂದೆ ಕುಣಿಸಿದೆ
ನಾನೆಂದು ಕಾಣದ ದೇವರ ಕಡೆಗಣಿಸಿದೆ
ನೀನೇ ಸಾಕು ನಿನ್ನೆ ಹಿಂಬಾಲಿಸುವೆ!!

ಲಾಲಿ ಲಾಲಿ ಲಾಲಿ ನನ್ನೆದೆಯ ಗೂಡಲ್ಲಿ
ಲಾಲಿ ಲಾಲಿ ಲಾಲಿ ಲಾಲಿ ಲಬ್ ಡಬ್
ಎನುವ ಸದ್ದಲ್ಲಿ

“ನಾರಿ”

ಜೀವವನ್ನು ಬಿಟ್ಟೆ ಕೊಟ್ಟು ತಾಯಿಯಾದೆ
ನಾಳೆಯೆಂಬ ಕನಸಿನ ನಂಬಿಕೆ ಕೊಟ್ಟು
ನಾರಿಯಾದೆ.....

ಪ್ರೀತಿ ಕೊಟ್ಟು ಪ್ರೇಯಸಿಯಾದೆ
ಕರುಣೆ ತೋರಿ ಸಾಗರವಾದೆ
ಗಂಡು ಜೀವಕೆ ಶಕ್ತಿಯಾದೆ ನೀ, ನಿನಗಾಗಿ ಏನಾದೆ ಹೆಣೀ
ಹೇಳು ನಿನಗಾಗಿ ಏನಾದೆ.....!?

ಇಪ್ಪತ್ತು ವರ್ಷವಾಗಲಿ ಅವಳನ್ನು ಕಳಿಸಿಬಿಡುವ
ಎನ್ನುವ ಮನೆಯವರು
ಇಪ್ಪತ್ತು ನಿಮಿಷ ಸಿಗಲಿ ಅವಳ ಸೌಂದರ್ಯವನ್ನು
ಸವಿಯ ಬೇಕು ಎನ್ನುವ ನೀಚರು

ಇಂತವರ ನಡುವೆ
ಎರಡೆರಡು ನಿಮಿಷವು
ನರಕ ಕಂಡೆ ನೀ,ನರಕ ಕಂಡೆ....

ಸಾಕು ಎಷ್ಟಂತ ಸಹಿಸುವೆ...
ನೀನು ಒಂದು ಜೀವ

ತಿಳಿಸು ಈ ನೀಚರಿಗೆ
ಕೈ ಬಳಿಯ ಶಕ್ತಿಯನ್ನು!
ಕಾಲ್ಗಿಜ್ಜಿಯ ಇಂಪನ್ನು ಕೇಳಿದಿವರು
ಸ್ವಲ್ಪ ಮುಗುತಿಯಾ ಕೆಂಪನ್ನು ನೋಡಲಿ!

-ಸುಜನ್ ಎಸ್

PUBLIC RELATIONS



Facts Friday

Facts Friday was a cornerstone of our Public Relations strategy on Instagram, designed to both educate and engage our audience about the fascinating world of electrical and electronic components.

Objective and Approach

The goal of Facts Friday was to position our brand as a knowledgeable and trusted source in the electrical and electronics industry while creating meaningful engagement with our audience. By breaking down technical details into easily digestible facts, we encouraged learning in a fun and interactive way. Each post was carefully crafted to highlight key aspects of electrical components, including their functions, applications, and importance in everyday life.

Content Strategy

Every Friday, we focused on a specific topic related to electrical and electronic systems, such as:

- How fuses prevent electrical overloads and short circuits – Educating followers on the importance of circuit protection.
- The role of switchgear in managing and protecting power systems – Explaining how switchgear ensures the safe operation of electrical networks.
- The working principle of circuit breakers – Highlighting their function in stopping the flow of electricity during faults.

Engagement and Impact

The visually appealing and informative nature of the posts encouraged followers to engage by liking, commenting, and sharing the content. By using a consistent format and tone, Facts Friday established a sense of anticipation among followers, making it a key driver of weekly engagement. The campaign also fostered two-way interaction, with followers often asking questions or sharing their own insights in the comments section.



Posts For Festivals and Significant Days.

As part of our Public Relations strategy on Instagram, we created engaging and visually appealing posts to celebrate festivals and significant days. These posts helped us connect with our audience on a personal level, blending technical knowledge with cultural relevance. By acknowledging important events and festivals, we strengthened our relationship with followers and enhanced our brand's presence.

Highlights of Festival and Special Day Posts:

- Diwali – Shared electrical safety tips and highlighted the importance of safe lighting during the festival of lights.
- Engineers' Day – Paid tribute to engineers, showcasing their contributions to the electrical and electronics industry.
- Independence Day – Created a patriotic post, connecting the theme of freedom with technological advancements in the power sector.
- Earth Day – Promoted energy-saving tips and the importance of sustainable electrical practices.
- National Science Day – Shared facts about key electrical discoveries and their impact on modern life.



The Weekly Factoids

The Weekly Factoids on Instagram to engage our audience and build awareness about electrical and electronic components. This initiative aimed to educate followers through engaging and informative posts shared consistently each week. The campaign featured themed days focused on different electrical and electronic topics, providing valuable insights and increasing engagement with our brand.

Weekly Factoid Themes:

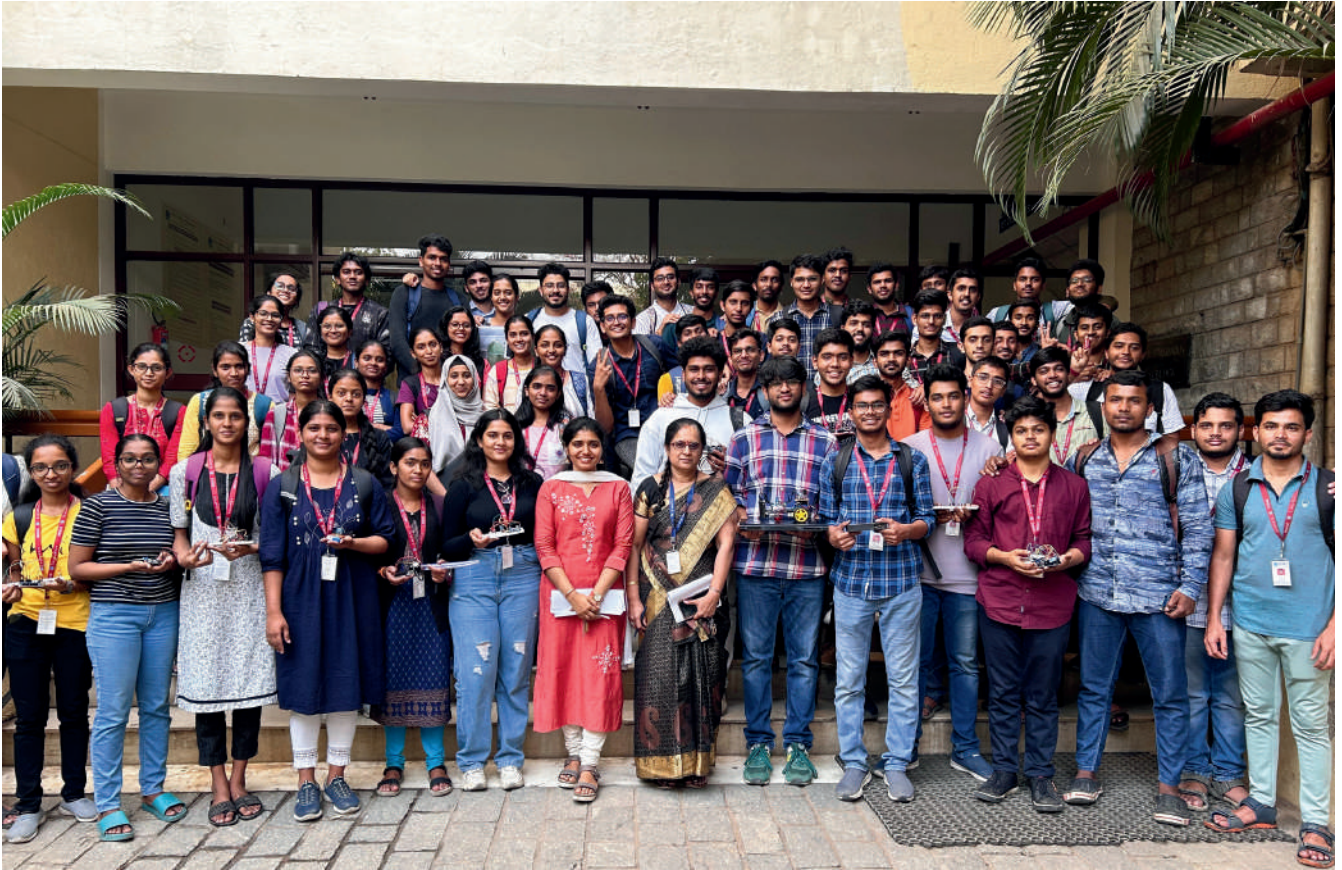
1. **Motor Monday** – Focused on sharing interesting facts about electric motors, their working principles, and real-world applications.
2. **Transformer Tuesday** – Provided insights into transformers, their role in power distribution, and how they step up or step down voltage levels.
3. **Wattmeter Wednesday** – Highlighted the importance of wattmeters, how they measure power consumption, and their relevance in electrical systems.
4. **Thyristor Thursday** – Explained the working of thyristors, their use in controlling power, and their role in industrial applications.
5. **Fuse Friday** – Shared facts about fuses, their role in protecting electrical circuits from overloads, and different types of fuses.
6. **Switchgear Saturday** – Focused on switchgear, its role in controlling, protecting, and isolating electrical equipment in power systems.



EEE Class of '25



EEE Class of '26



NINDRA SHEKAR
abrar
Aitha Nitya
NITHYAVATHI
vishaal
kaanishka
lakshmiputra
sumanth
harshith
sanjana
prajapati
preetham
harish
skanda kumar

sanchitha
chandrakala
pawan joshi
saurabh mahesh
dhanush Kumar
Vishnu vardhan
PRADEEPA S
anurag vinay nair
radha
Aitha Nitya
saniya
Vishnu vardhan
sanandan
sanandan
syad ali
sai charan
PREMA V
skanda kumar

samarth sadashiv
chandrakala
bhoomika
mahammad suhail
saketh
saniya
sakshi
udyaan
vishaal
narasimha bhatt
CHAMPA V
CHANDASHILDE DAS
chirag
deepika
NINDRA SHEKAR
NETRIVATHI S

harish
PRADEEPA S
pratyush
gopika
shweta shivanand
CHETHAN RAJ
LAKSHMINARAYANA C
sri gowri
pawan joshi
tejaswini
raghu
syad ali

GEETHA RS
supriya
pappu shah
vidya
supritha
CHETHAN RAJ
LAKSHMINARAYANA C
dinakar
lohith
sri gowri
abrar

saketh
sagaraz
CHAMPA V
akash P
Ajay kumar
yashas sirgh
pawan kumar
Ajay kumar
supriya
CHAITANYA

pradeep
lohith
sagaraz
sumanth
vakkalad
Oxel Sebastian
gopika
pratyush
harika
anagha suresh
PEAKASH TH

sanchitha
CHAMPA V
Aitha Nitya
bhoomika
gopika
deepika
pappu shah
NINDRA SHEKAR
PEAKASH TH
USHA A
LAKSHMIPOORNIA
radha
UMAVATHI
shreyas b

sarvvesh
shrikanth kamru
akashay gowda
PREMA V
udyaan
owais
supritha
CHAITANYA
preetham
faleshniputra
anagha suresh
BONAPATI VENKATESH

harika
USHA A
PADMAVATHI E
neel Sebastian
misba arjum
sarvvesh
pradeep
dinakar
monika
bhoomika
vaishali
owais
anagha suresh
skanda raghavendra

dhanush kamar
sakshi
vidya
misba arjum
sai charan
kaanishka
harshith
akshay bahubali

