

# CIRCUITRY

DEPARTMENT OF EEE // MAGAZINE

**NANDHA  
ENGINEERING  
COLLEGE**

The Electrical and Electronics  
Engineering Department  
has been Accredited by  
NAAC (A+) Grade & NBA.



**2023-2024**

**VOL-I**



**FEB 2024**

# VISSION & MISSION

## Vission:

To foster academic excellence imparting knowledge in Electrical, Electronics and allied disciplines to meet the changing needs of the society.

## Mission:

To equip the students with leadership qualities for accepting the challenges in various engineering sectors.

To excel in the thrust areas of Electrical and Electronics Engineering to solve real world problems.

To empower the students to adapt the latest technologies by providing innovative learning environment





# PROGRAM EDUCATIONAL OBJECTIVES



The graduates of Electrical and Electronics Engineering will be

PEO 1: Core Competency: A Successful professional with domain knowledge in Electrical and Electronics Engineering using emerging techniques.

PEO 2: Research, Innovation and Entrepreneurship: Able to demonstrate multi-disciplinary skills through innovation and research to meet the societal needs.

PEO 3: Ethics, Human values and Life-long learning: Able to demonstrate ethical practices and managerial skills through continual learning.

PE  
OS

# PROGRAM OUTCOMES



PO 1: Engineering Knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

PO 2: Problem Analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

PO 3: Design and Development of Solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO 4: Investigation of Complex Problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO 5: Modern Tool Usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO 6: The Engineer and Society: Apply reasoning acquired by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional Engineering practice.

PO 7: Environment & Sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the Knowledge of, and need for sustainable development.

PO 8: Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO 9: Individual and Teamwork: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO 10: Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

PO 11: Project Management and Finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO 12: Lifelong Learning: Recognize the need for and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change



PO's

# PROGRAM SPECIFIC OUTCOMES

The students of Electrical and Electronics Engineering will be able to

PSO 1: Analyze, design and validate processes, products by applying knowledge and skills in Power system, Electrical Machines and Power Electronics.

PSO 2: Design and analyze the processes of smart grid and renewable energy systems using appropriate tools and techniques.

# CHAIRMAN'S NOTE



## Thiru V Shanmugam

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**S**ri Nandha Engineering Trust. I am immensely pleased to know the Nandha Engineering College has become alma mater for many of our young and future generations. Success starts with a thought or an idea when a thought or an idea when nourished with hope and confidence, that idea sprouts, blossoms and leads to action with knowledge.

# SECRETARY'S NOTE



## S Thirumoorthi

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**S**ri Nandha Engineering Trust. Nandha Provides rich and diversified culture to hone the young brains so as to get envelope in to the challenging scenario with performance, competitiveness, value creation and other professional skills.

# PRINCIPAL'S NOTE



## N Rengarajan

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**S**ri Nandha Engineering Trust. I feel extremely amusement to observe that of Electrical and Electronics Engineering Department is bringing out magazine “CIRCUTERY” with the dedicate and committed efforts of faculty and students of the department. This magazine is the reflection of the students, involved in various activities. I congratulate the HoD, the faculty members and the students of electrical and electronics engineering department for their ingenuity and enthusiasm for this magazine and wish them all success.



# HOD'S NOTE



## Dr. Ramani .G

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I feel privileged in presenting the magazine “CIRUITRY” of our department. This magazine is intended to bring out the hidden literary talents among the students leadership skills among them. I am sure it will be a source of inspiration for the budding poets and writers among the students and will direct their creativity to new dimensions of mature expression. I extend my sincere thanks to the editorial team for their constant effort and support in bringing out the magazine in the present form. I acknowledge my gratitude to our principal for their continuous support to prepare these issues of magazine. Last but not least; I am thankful to all the authors who have sent their articles.

# EDITORIAL BOARD

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# 01

## Technical Article

Awesome innovations  
in the future

# TOPICS

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## “Efficient Power Distribution Systems: A Comprehensive Review”

01

In the ever-evolving landscape of electrical engineering, the quest for more efficient power distribution systems stands as a paramount challenge. The article, "Efficient Power Distribution Systems: A Comprehensive Review," navigates through the intricate web of advancements reshaping the traditional paradigms of power distribution. Addressing the imperatives of sustainability and reliability, the review delves into the integration of smart grid technologies, decentralized energy sources, and cutting-edge power electronics. It explores the role of intelligent switching devices, advanced metering infrastructure, and energy storage solutions in enhancing the resilience and efficiency of distribution networks. As the energy landscape undergoes transformative changes, this comprehensive review critically examines the current state, delves into innovative solutions, and envisages the future trajectory of power distribution systems.

## “Smart Grid Technologies for Sustainable Electricity Consumption”

02

"Smart Grid Technologies for Sustainable Electricity Consumption" delves into the transformative realm of modern power grids, exploring their pivotal role in fostering sustainable energy consumption. This article navigates through the integration of intelligent technologies, such as smart sensors and communication systems, within the power grid infrastructure. By enabling real-time monitoring and adaptive control mechanisms, smart grids optimize energy flow, enhance grid reliability, and promote efficient electricity consumption. The article emphasizes the significance of data analytics in demand forecasting and load management, illustrating how these technologies empower both consumers and utilities to make informed decisions for a more sustainable energy future. Consumers and utilities to make informed decisions for a more sustainable energy future. With a focus on innovation and interconnectedness, this review illuminates the promising avenues that smart grid technologies offer in achieving a harmonious balance between electricity demand and environmental responsibility.

## "Renewable Energy Integration in Electrical Grids"

03

"Renewable Energy Integration in Electrical Grids" is a comprehensive exploration of the pivotal shift toward sustainable energy sources within the framework of electrical grids. This article delves into the challenges and opportunities associated with the integration of renewable energy, such as solar and wind power, into existing electrical infrastructure. It examines the role of advanced grid management technologies in accommodating the intermittent nature of renewables, ensuring a seamless and reliable energy supply. The article highlights successful case studies and innovations in grid balancing through energy storage solutions, demonstrating how these integrations contribute to reducing carbon footprints and promoting environmental sustainability. In an era where transitioning to cleaner energy sources is imperative, this review provides insights into the dynamic landscape of renewable energy integration, offering a roadmap for a greener and more resilient electrical grid.

## "Role of Energy Storage in Enhancing Grid Stability"

04

The "Role of Energy Storage in Enhancing Grid Stability" is a critical examination of how energy storage technologies contribute to the resilience and stability of electrical grids. This article explores the multifaceted benefits of energy storage systems in mitigating challenges associated with intermittent renewable energy sources and demand fluctuations. By acting as a buffer for excess energy during periods of low demand and releasing stored energy during peak demand, energy storage enhances grid stability and reduces reliance on conventional backup power sources. The review underscores the importance of various energy storage solutions, such as batteries and pumped hydro storage, in improving the overall efficiency and reliability of electrical grids. As grids globally seek to incorporate a higher share of renewable energy, the role of energy storage emerges as a linchpin in ensuring a smooth transition toward a more sustainable and stable energy landscape.

## "IoT and Machine Learning Applications in Power Systems"

05

The integration of the Internet of Things (IoT) and machine learning in power systems is a transformative journey explored in the article "IoT and Machine Learning Applications in Power Systems." This review delves into how IoT devices enable real-time monitoring, data collection, and communication within power grids, fostering a more interconnected and intelligent energy infrastructure. Machine learning algorithms, applied to vast datasets generated by IoT devices, contribute to predictive maintenance, fault detection, and optimization of power generation and distribution. The synergy between IoT and machine learning not only enhances the efficiency of power systems but also enables adaptive responses to dynamic conditions, ultimately leading to improved reliability, reduced downtime, and a more sustainable energy landscape.

## "Advancements in Power Electronics for Energy Efficiency"

06

"Advancements in Power Electronics for Energy Efficiency" explores the cutting-edge developments propelling the field of power electronics toward a more energy-efficient future. This article delves into the innovative technologies and methodologies that are reshaping the landscape of power conversion and control. From wide-bandgap semiconductors to advanced converter topologies, the review navigates through key advancements that minimize power losses, improve efficiency, and enhance the overall performance of electronic power systems. The integration of digital control techniques and the evolution of power semiconductor materials are examined for their role in optimizing energy conversion processes. As power electronics continue to play a pivotal role in various applications, including renewable energy systems and electric vehicles, this review offers insights into the forefront of technological progress that promises a more sustainable and energy-efficient power infrastructure.

## “Power Quality Improvement Techniques in Electrical Systems”

07

"Power Quality Improvement Techniques in Electrical Systems" explores strategies and methodologies aimed at enhancing the quality of electrical power within modern systems. This article delves into the challenges associated with power quality, such as voltage sags, harmonics, and transient disturbances, and examines innovative techniques to mitigate these issues. From the application of advanced filtering technologies to the use of active power conditioners, the review navigates through the diverse set of solutions available for improving power quality. As industries and technologies become increasingly sensitive to power fluctuations, this review sheds light on the evolving landscape of power quality improvement, offering insights into both current practices and future directions in this crucial domain of electrical engineering.

## “Electric Vehicles and Their Impact on Power Infrastructure”

08

"Electric Vehicles and Their Impact on Power Infrastructure" delves into the transformative influence of electric vehicles (EVs) on the existing power grid. This article explores the challenges and opportunities arising from the growing adoption of EVs, emphasizing the increased demand for electricity and the need for an adaptive infrastructure. The integration of smart charging solutions, demand-side management, and grid-scale energy storage are examined as key strategies to mitigate the potential strain on the power grid. The review also addresses the potential synergies between EVs and renewable energy sources, highlighting how intelligent charging systems can facilitate the integration of clean energy into the transportation sector. As the automotive industry undergoes a paradigm shift towards electrification, this article offers a comprehensive analysis of the intricate relationship between electric vehicles and the power infrastructure, shedding light on the path toward a sustainable and resilient energy ecosystem.



## "Energy-Efficient Lighting Solutions in Residential and Commercial Buildings"

09

"Energy-Efficient Lighting Solutions in Residential and Commercial Buildings" explores the transformative impact of advanced lighting technologies on energy consumption within built environments. This article delves into the innovative solutions and sustainable practices that aim to reduce the energy footprint associated with lighting in both residential and commercial spaces. From the widespread adoption of LED lighting to the integration of smart lighting control systems, the review navigates through strategies that enhance energy efficiency without compromising illumination quality. As the world increasingly focuses on sustainable building practices, this review provides valuable insights into the evolving landscape of energy-efficient lighting solutions, offering a roadmap for creating environmentally conscious and economically viable illuminated spaces.

## "Challenges and Opportunities in Microgrid Development"

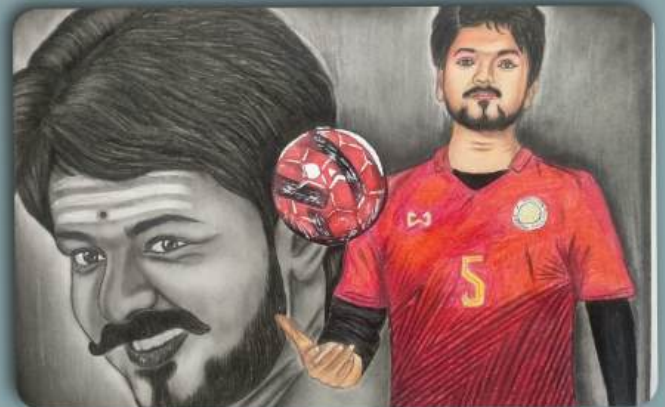
10

"Challenges and Opportunities in Microgrid Development" examines the intricate landscape of decentralized energy systems and their potential to reshape the traditional power grid. This article explores the multifaceted challenges faced by microgrid development, such as regulatory hurdles, financial considerations, and interoperability issues. It also delves into the opportunities that microgrids present, including enhanced energy resilience, integration of renewable sources, and the ability to serve remote or off-grid locations. The review emphasizes the role of advanced control systems and intelligent technologies in optimizing microgrid performance. As the energy sector continues to evolve towards more sustainable and resilient solutions, this exploration provides valuable insights into the complexities and promises of microgrid development, offering a nuanced perspective on the future of distributed energy systems.

# 02

## Drawings

Capturing Moments in Lines and Shades



RV MYTHILI  
IV/EEE



B Sowbarnigha  
III/EEE





Nandhini K  
II/EEE



# Capturing Moments in Lines and Shades



# 03

## Photo Gallery

Moments Frozen in Time: A Photo Journey



Aravinth Kumar A  
III / EEE



Dhanush KR  
III / EEE



Keerthivasan A  
III / EEE

# 04

## Poetry

### Poetic Imagery: A Photographic Tale

Eneya Sri. C  
III/EEE



A friend is like a rose  
One who is so close,  
She is not just a name,  
Who doesn't care for fame  
But a person to share and borrow  
Our daily joys and sorrow  
A person who helps in need  
And does only good deed,  
A friend is like a book  
Which in difficult time we can have a look  
A friend is modest and humble,  
No doubt, unselfish and simple  
I am sure if you have such a pal  
You are the luckiest of all!



# L



Dhivyasri V  
I / EEE



**ஆற்றுமை**

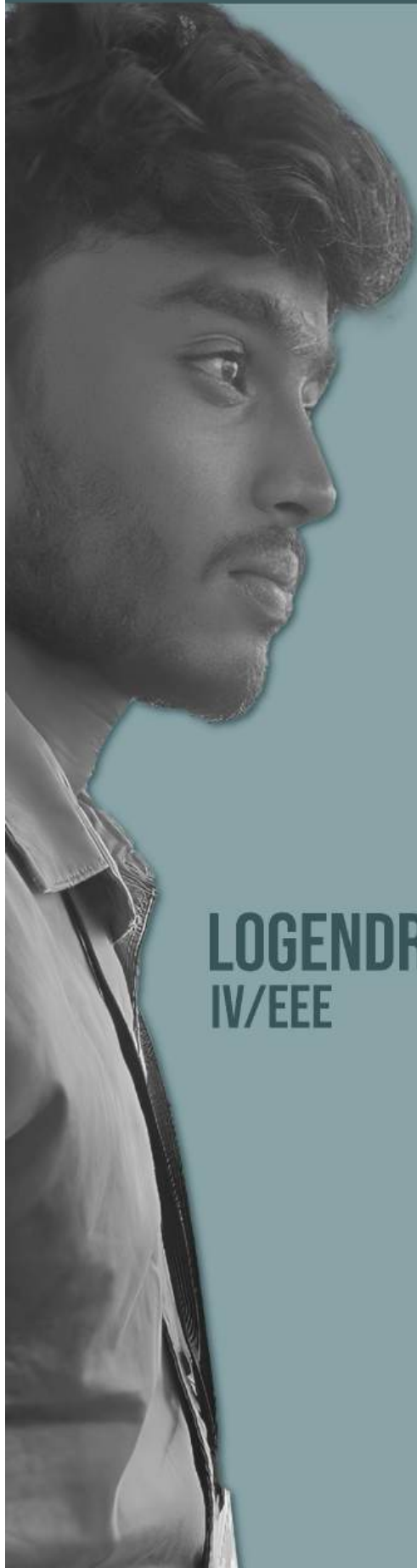
மரங்கள் சேர்த்தால் தாயகம்!  
மலர்கள் சேர்த்தால் மாண்பாகும்!  
மேகங்கள் சேர்த்தால் மழையாகும்!  
மலைத்தொடிகள் சேர்த்தால் நீர்வளமாகும்!  
முனைகளின் ஆற்றுமையைப் பார்.....  
எறும்புகளின் அணிவரிசையைப் பார்!  
மலையடிநிலில் ஆற்றுமையைக் காணவில்லை...  
அன்றாட வாழ்வில் ஆற்றுமையைக் காணு  
ஆற்றுமையாய் வாழ்த்தால் உயர்வாய்.....  
என்றும் இதை மறவாதே நண்பா!



# 05

## Sports

Elevate Your Game,  
Dominate Your Field.



**LOGENDRAN M**  
IV/EEE



CM TROPHY



JCI ROLLING TROPHY



# 06

## Did you Know?

### Uncover the Unexpected

- In a world buzzing with innovation, electronic engineers are the conductors of change
- Shaping the future with volts and vision
- Pulsating with the brilliance of electrical engineers
- EEE experts are vital for space exploration
- EEE engineers focus on cybersecurity
- They excel in interdisciplinary problem-solving

