



NANDHA ENGINEERING COLLEGE
(AUTONOMOUS)



VOLTRA

DEPARTMENT OF ELECTRICAL & ELECTRONICS
ENGINEERING

2025-26 VOL I

VISION & MISSION

VISION

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

PEO1: CORE COMPETENCY: A SUCCESSFUL PROFESSIONALS WITH DOMAIN KNOWLEDGE IN ELECTRICAL AND ELECTRONICS ENGINEERING USING EMERGING TECHNIQUES.

PEO2: RESEARCH, INNOVATION AND ENTREPRENEURSHIP: ABLE TO DEMONSTRATE MULTI-DISCIPLINARY SKILLS THROUGH INNOVATION AND RESEARCH TO MEET THE SOCIETAL NEEDS

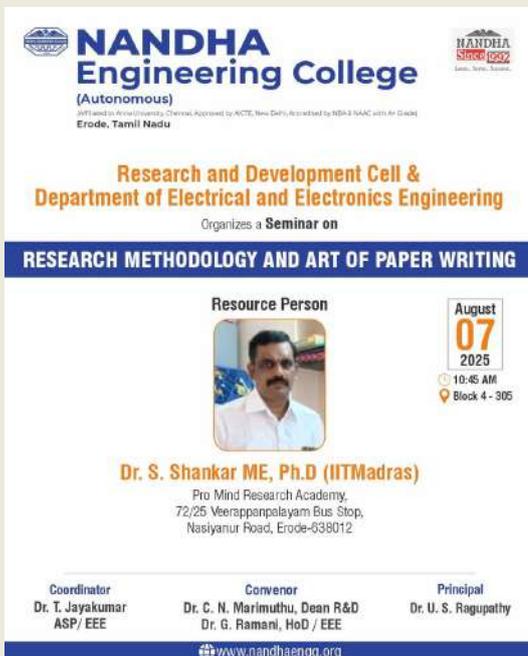
PEO3: ETHICS, HUMAN VALUES AND LIFE-LONG LEARNING: ABLE TO DEMONSTRATE ETHICAL PRACTICES AND MANAGERIAL SKILLS THROUGH CONTINUAL LEARNING.

PROGRAM SPECIFIC OUTCOMES

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.

EXPERT SEMINAR ON RESEARCH METHODOLOGY AND PAPER WRITING



NANDHA Engineering College
(Autonomous)
Approved by Anna University, Chennai, Approved by AICTE, New Delhi, Accredited by NBA & AACSB with An Grade
Erode, Tamil Nadu

Research and Development Cell & Department of Electrical and Electronics Engineering
Organizes a Seminar on

RESEARCH METHODOLOGY AND ART OF PAPER WRITING

Resource Person

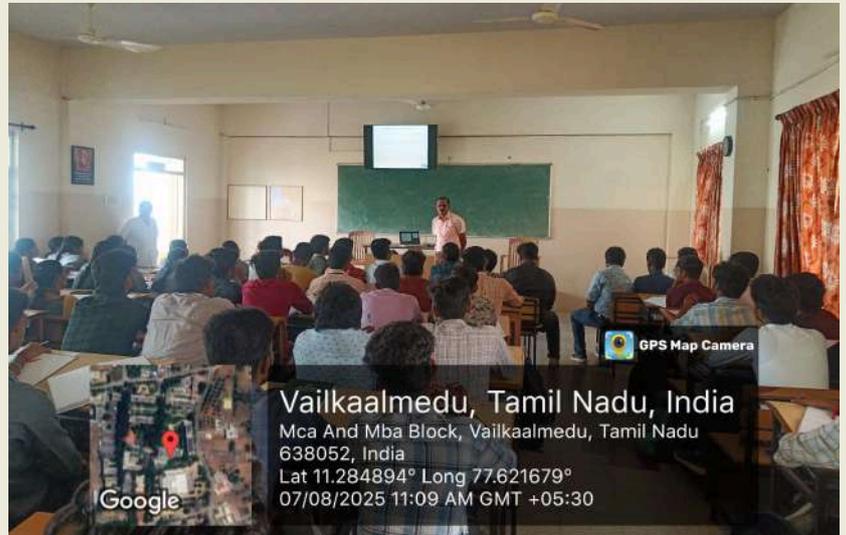


Dr. S. Shankar ME, Ph.D (IITMadras)
Pro Mind Research Academy,
72/25 Veerappanpalayam Bus Stop,
Nasiyanur Road, Erode-638012

August 07 2025
10:45 AM
Block 4 - 305

Coordinator: Dr. T. Jayakumar, ASP / EEE
Convenor: Dr. C. N. Marimuthu, Dean R&D, Dr. G. Ramani, HoD / EEE
Principal: Dr. U. S. Ragupathy

www.nandhaengg.org



THE RESEARCH AND DEVELOPMENT CELL IN ASSOCIATION WITH THE DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING ORGANIZED A SEMINAR ON “RESEARCH METHODOLOGY AND ART OF PAPER WRITING” ON 7TH AUGUST 2025, DELIVERED BY DR. S. SHANKAR, M.E., PH.D (IIT MADRAS), PROVIDING VALUABLE GUIDANCE ON RESEARCH PRACTICES AND SCHOLARLY PAPER PREPARATION.

INDUSTRY EXPERT SESSION ON ELECTRIC VEHICLES



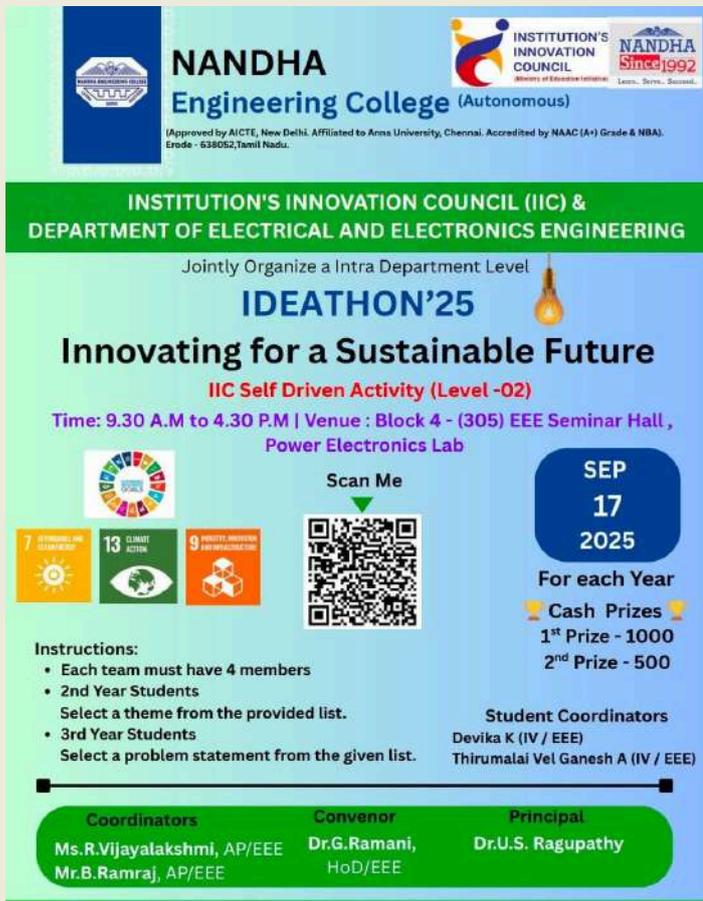
A SESSION ON ELECTRIC VEHICLE INNOVATIONS AND MARKET READINESS WAS CONDUCTED ON AUGUST 09, 2025, BY THE IIC AND EEE DEPARTMENT, FEATURING MR. DHAMODHARAN KARUPPUSAMY, CO-FOUNDER & CEO, GREAVES ELECTRIC MOBILITY.

INDUSTRY GUEST LECTURE ON POWER SYSTEM AND PROTECTION



A GUEST LECTURE ON POWER SYSTEM AND PROTECTION WAS HELD ON 30TH AUGUST 2025, IN WHICH ER. R. DHINAKARAN, ASSISTANT EXECUTIVE ENGINEER (METER & RELAY TESTING), TANGEDCO, PROVIDED VALUABLE INSIGHTS INTO PROTECTION SCHEMES, FAULT ANALYSIS, AND PRACTICAL CHALLENGES IN POWER DISTRIBUTION NETWORKS.

IDEATHON'25 - INNOVATING FOR A SUSTAINABLE FUTURE



NANDHA Engineering College (Autonomous)
(Approved by AICTE, New Delhi. Affiliated to Anna University, Chennai. Accredited by NAAC (A+) Grade & NBA).
Erode - 638052, Tamil Nadu.

INSTITUTION'S INNOVATION COUNCIL (IIC) & DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

Jointly Organize a Intra Department Level
IDEATHON'25
Innovating for a Sustainable Future
IIC Self Driven Activity (Level -02)

Time: 9.30 A.M to 4.30 P.M | Venue : Block 4 - (305) EEE Seminar Hall, Power Electronics Lab

Scan Me

SEP 17 2025
For each Year
Cash Prizes
1st Prize - 1000
2nd Prize - 500

Instructions:
• Each team must have 4 members
• 2nd Year Students
• 3rd Year Students
Select a theme from the provided list.
Select a problem statement from the given list.

Student Coordinators
Devika K (IV / EEE)
Thirumalai Vel Ganesh A (IV / EEE)

Coordinators
Ms.R.Vijayalakshmi, AP/EEE
Mr.B.Ramraj, AP/EEE

Convenor
Dr.G.Ramani,
HoD/EEE

Principal
Dr.U.S. Ragupathy



IDEATHON'25 - INNOVATING FOR A SUSTAINABLE FUTURE WAS ORGANIZED BY THE INSTITUTION'S INNOVATION COUNCIL AND THE DEPARTMENT OF EEE ON 17TH SEPTEMBER 2025. THE EVENT ENCOURAGED STUDENTS TO PRESENT INNOVATIVE AND SUSTAINABLE IDEAS, FOSTERING CREATIVITY AND PROBLEM-SOLVING SKILLS. THE COMPETITION CONCLUDED WITH WINNERS RECEIVING ₹1000 FOR FIRST PRIZE AND ₹500 FOR SECOND PRIZE FOR EACH YEAR, MOTIVATING STUDENTS TOWARD INNOVATION-DRIVEN LEARNING.

FIELD VISIT HIGHLIGHTS



THE DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING ORGANIZED A FIELD VISIT TO REALTECH SOLUTIONS ON 26TH SEPTEMBER 2025, COORDINATED BY MR. V. ARUN KUMAR, PROVIDING STUDENTS WITH PRACTICAL EXPOSURE TO REAL-TIME INDUSTRIAL ELECTRICAL APPLICATIONS.

AYUDHA POOJAI CELEBRATION



AYUDHA POOJA CELEBRATION - 2025

THE DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING CELEBRATED AYUDHA POOJA 2025 WITH DEVOTION AND CULTURAL SPIRIT. THIS FESTIVAL HONORS TOOLS, INSTRUMENTS, AND KNOWLEDGE, REFLECTING ENGINEERS' RESPECT FOR TECHNOLOGY. THE EVENT EMPHASIZED RESPONSIBILITY, ETHICS, AND GRATITUDE TOWARD THE INSTRUMENTS SUPPORTING OUR ACADEMIC AND PROFESSIONAL JOURNEY. AYUDHA POOJA REMINDED STUDENTS THAT ENGINEERING IS NOT JUST TECHNICAL SKILLS BUT ALSO VALUES, RESPECT, AND DISCIPLINE, BLENDING TRADITION WITH MODERN EDUCATION.

FACULTY DEVELOPMENT PROGRAM HIGHLIGHTS



A SIX-DAY FACULTY DEVELOPMENT PROGRAM ON "AI ENHANCED DESIGN THINKING FOR INNOVATION, CREATIVITY & ENTREPRENEURSHIP" WAS ORGANIZED BY MS. R. VIJAYALAKSHMI AND MR. B. RAMRAJ OF THE DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING AT NANDHA ENGINEERING COLLEGE DURING DECEMBER 19-24, 2025.



ELECTRIC VEHICLE CHARGING TECHNOLOGIES AND THEIR IMPACT ON POWER SYSTEMS

ELECTRIC VEHICLES (EVs) ARE TRANSFORMING THE POWER SECTOR BY INTRODUCING NEW CHALLENGES AND OPPORTUNITIES FOR GRID MANAGEMENT. MODERN CHARGING TECHNOLOGIES, INCLUDING FAST CHARGING, SMART CHARGERS, AND VEHICLE-TO-GRID (V2G) SYSTEMS, HELP INTEGRATE EVs EFFICIENTLY WHILE MAINTAINING GRID STABILITY AND OPTIMIZING ENERGY USAGE.

KEY APPLICATIONS

- SMART CHARGING WITH DEMAND RESPONSE
- VEHICLE-TO-GRID (V2G) ENERGY FEEDBACK
- REAL-TIME MONITORING AND GRID STABILITY SUPPORT
- INTEGRATION WITH RENEWABLE ENERGY SOURCES

CONCLUSION

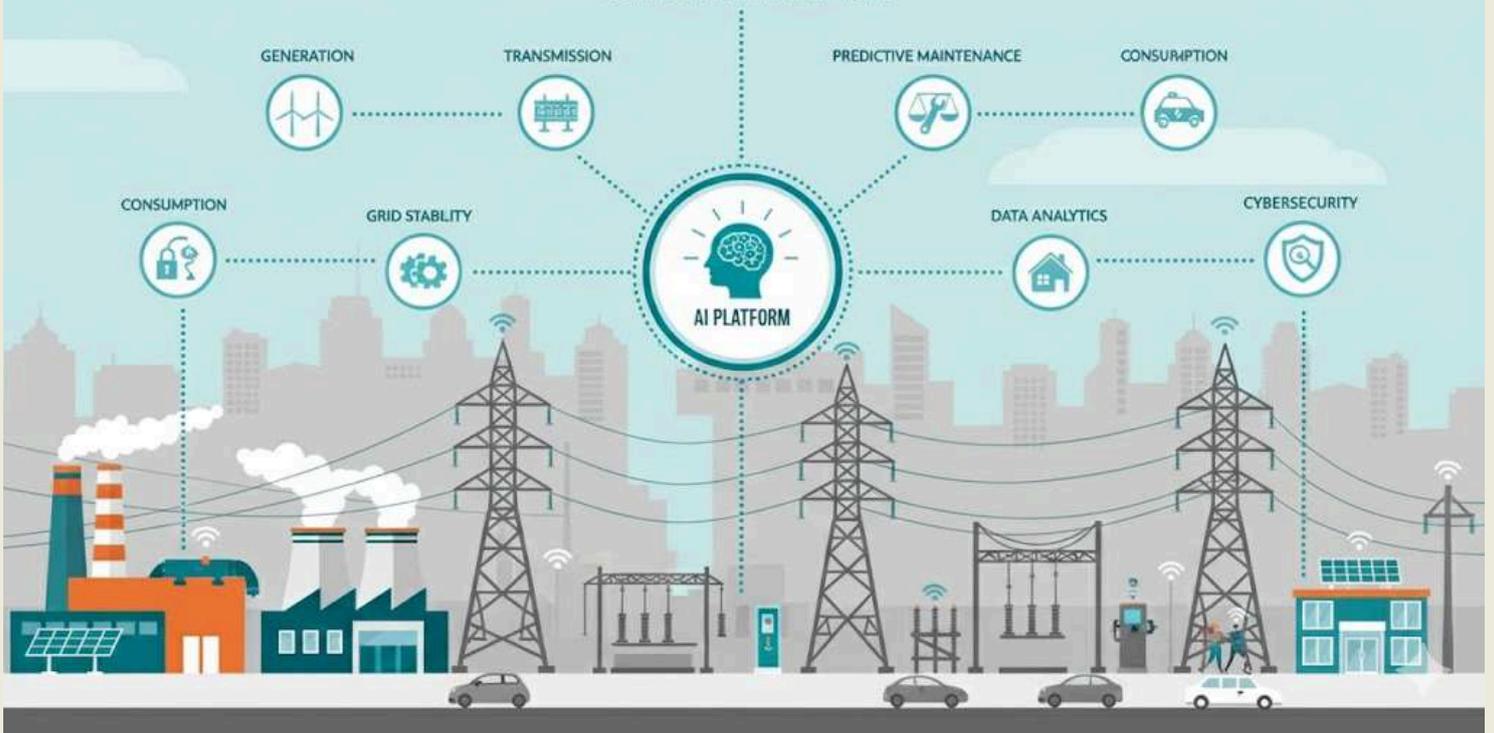
EV CHARGING TECHNOLOGIES ARE ENABLING ELECTRICAL ENGINEERS TO MANAGE POWER SYSTEMS MORE EFFICIENTLY, ENSURING RELIABLE, SUSTAINABLE, AND FUTURE-READY ENERGY DELIVERY FOR THE GROWING EV ECOSYSTEM.

N.PRITTHIKA III - EEE

SMART GRID

ARTIFICIAL INTELLIGENCE IN POWER SYSTEM MONITORING AND MAINTENANCE

YOE AIND UTOD S'FIRAUS TEKNORNE



ARTIFICIAL INTELLIGENCE IN POWER SYSTEM MONITORING AND MAINTENANCE

ARTIFICIAL INTELLIGENCE (AI) IS REVOLUTIONIZING THE WAY POWER SYSTEMS ARE MONITORED AND MAINTAINED. AI-DRIVEN TOOLS HELP DETECT FAULTS EARLY, PREDICT EQUIPMENT FAILURES, AND OPTIMIZE MAINTENANCE SCHEDULES, REDUCING DOWNTIME AND IMPROVING RELIABILITY.

KEY APPLICATIONS

- PREDICTIVE MAINTENANCE USING AI ALGORITHMS
- REAL-TIME FAULT DETECTION AND DIAGNOSIS
- AI-ASSISTED ENERGY MANAGEMENT AND LOAD FORECASTING
- SMART GRID MONITORING AND OPTIMIZATION

CONCLUSION

AI-BASED SOLUTIONS ARE EMPOWERING ELECTRICAL ENGINEERS TO ENSURE SAFER, MORE EFFICIENT, AND RELIABLE POWER SYSTEMS WHILE MINIMIZING OPERATIONAL COSTS AND ENHANCING OVERALL PERFORMANCE.

R. DEVIKA IV - EEE

WIDE BAND GAP POWER DEVICES

Silicon Carbide (SiC) & Gallium Nitride (GaN)



- ✓ Higher Efficiency
- ✓ High Breakdown Voltage
- ✓ Fast Switching

Renewable Energy



Electric Vehicles



Power Inverters & Converters



Data Centers & Power Supplies



High Efficiency | Compact & Reliable | Advanced Performance

WIDE BANDGAP (WBG) SEMICONDUCTORS IN POWER ELECTRONICS

WIDE BANDGAP (WBG) POWER DEVICES SUCH AS SILICON CARBIDE (SiC) AND GALLIUM NITRIDE (GaN) ARE TRANSFORMING MODERN POWER ELECTRONICS. COMPARED TO CONVENTIONAL SILICON DEVICES, WBG MATERIALS OFFER WIDER BAND GAPS, ENABLING HIGHER BREAKDOWN VOLTAGES, FASTER SWITCHING SPEEDS, AND RELIABLE OPERATION AT ELEVATED TEMPERATURES. THEIR SUPERIOR THERMAL CONDUCTIVITY AND HIGH ELECTRON MOBILITY SIGNIFICANTLY REDUCE POWER LOSSES AND IMPROVE OVERALL EFFICIENCY.

KEY APPLICATIONS

- SOLAR INVERTERS AND WIND ENERGY CONVERSION SYSTEMS
- ELECTRIC VEHICLES AND FAST CHARGING INFRASTRUCTURE
- DATA CENTERS AND HIGH-EFFICIENCY POWER SUPPLIES
- INDUSTRIAL MOTOR DRIVES AND HIGH-FREQUENCY CONVERTERS

CONCLUSION

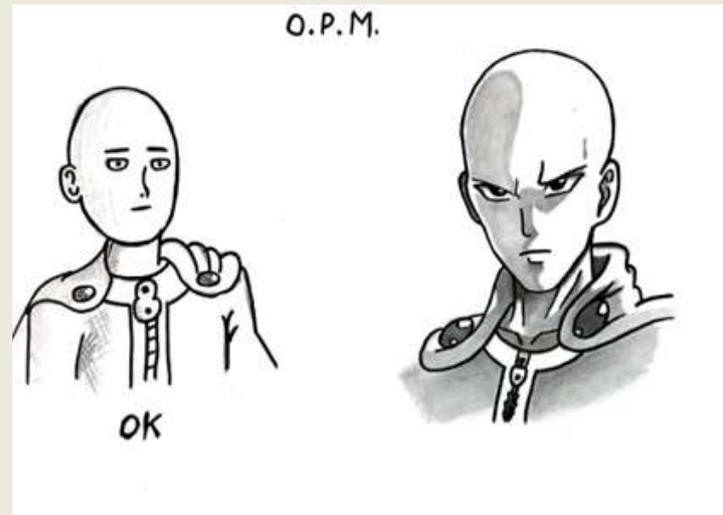
WIDE BANDGAP SEMICONDUCTORS SUCH AS SiC AND GaN ARE ENABLING THE NEXT GENERATION OF EFFICIENT, COMPACT, AND HIGH-PERFORMANCE POWER ELECTRONIC SYSTEMS. THEIR ADOPTION SUPPORTS ENERGY SAVINGS, IMPROVED RELIABILITY, AND SUSTAINABLE TECHNOLOGICAL ADVANCEMENT IN MODERN ELECTRICAL AND ELECTRONIC APPLICATIONS.

MS R. VIJAYALAKSHMI AP/EEE

ARTWORKS DONE BY OUR STUDENTS



K.A. RATHISH B.E EEE II-YEAR



G. KISHORE B.E EEE III-YEAR

PHOTO GALLERY



R. AKASH B.E EEE III-YEAR



G. KISHORE B.E EEE III-YEAR

SPORTS ACHIEVEMENTS



II EEE student Mr. M. Santosh won 2nd prize in the State Level Powerlifting Competition (under 83 kg category) organized by the Tamil Nadu Powerlifting Association at Coimbatore.



S. JAYASRI WON BRONZE IN THE CHIEF MINISTER'S TROPHY GAMES IN HANDBALL

AURA '25



AURA'25 PROVIDED STUDENTS WITH A VIBRANT PLATFORM TO SHOWCASE THEIR CREATIVITY, TEAMWORK, AND CULTURAL AWARENESS.

LYRIC DECODER TESTED PARTICIPANTS' KNOWLEDGE OF TAMIL MUSIC AND LANGUAGE SKILLS BY DECODING SONG LYRICS FROM ENGLISH PHONETICS.

GHIBLI GUESS CHALLENGED TEAMS TO IDENTIFY FAMOUS MOVIES FROM STUDIO GHIBLI-STYLE ARTISTIC INTERPRETATIONS, ENCOURAGING IMAGINATION AND ATTENTION TO DETAIL.

BOTH EVENTS SAW ENTHUSIASTIC PARTICIPATION, PROMOTING INTERACTION, RELAXATION, AND HOLISTIC STUDENT DEVELOPMENT BEYOND ACADEMICS

DID YOU KNOW?

THE FUTURE OF ELECTRICAL ENGINEERING

DID YOU KNOW THAT ELECTRICAL ENGINEERS ARE PLAYING A KEY ROLE IN BUILDING SMART CITIES BY INTEGRATING INTELLIGENT POWER DISTRIBUTION, AUTOMATED STREET LIGHTING, AND REAL-TIME ENERGY MONITORING SYSTEMS?

DID YOU KNOW THAT RENEWABLE ENERGY SYSTEMS SUCH AS SOLAR, WIND, AND HYBRID MICROGRIDS RELY HEAVILY ON ELECTRICAL ENGINEERS FOR EFFICIENT POWER CONVERSION, CONTROL, AND GRID INTEGRATION?

DID YOU KNOW THAT ELECTRICAL ENGINEERS ARE DRIVING THE GROWTH OF ELECTRIC VEHICLES (EVs) BY DESIGNING FAST CHARGERS, BATTERY MANAGEMENT SYSTEMS, AND MOTOR CONTROL TECHNOLOGIES?

DID YOU KNOW THAT ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING ARE NOW USED IN POWER SYSTEMS TO PREDICT FAULTS, OPTIMIZE LOAD DEMAND, AND REDUCE POWER LOSSES?

DID YOU KNOW THAT SMART GRIDS ENABLE SELF-HEALING POWER NETWORKS THAT AUTOMATICALLY DETECT, ISOLATE, AND RESTORE FAULTS WITHOUT HUMAN INTERVENTION?

DID YOU KNOW THAT ELECTRICAL ENGINEERS ARE CONTRIBUTING TO SPACE AND DEFENSE APPLICATIONS BY DEVELOPING SATELLITE POWER SYSTEMS, RADAR TECHNOLOGIES, AND HIGH-RELIABILITY ELECTRICAL CIRCUITS?

DID YOU KNOW THAT ENERGY STORAGE SYSTEMS, INCLUDING LITHIUM-ION AND SOLID-STATE BATTERIES, ARE SHAPING THE FUTURE OF UNINTERRUPTED AND SUSTAINABLE POWER SUPPLY?

DID YOU KNOW THAT INTERNET OF THINGS (IoT) IN ELECTRICAL ENGINEERING ENABLES REMOTE MONITORING OF SUBSTATIONS, TRANSFORMERS, AND INDUSTRIAL EQUIPMENT IN REAL TIME?

EDITORIAL BOARD

DR G. RAMANI, PROF/EEE
HEAD OF THE DEPARTMENT

FACULTY COORDINATOR
MS R. VIJAYALAKSHMI, AP/EEE

STUDENTS

MS N. PRITHIKA III/EEE
MR A. NIKESH III/EEE
MR G. KISHORE III/EEE
MR R. AKASH III/EEE

