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THE SPARK

Igniting Innovations

DEPARTMENT OF
ELECTRICAL AND ELECTRONICS
ENGINEERING

APRIL
2026



UNIVERSITY COLLEGE OF ENGINEERING KAKINADA (A)
JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA

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EVENTS

- A series of expert lectures on **“Smart Grid Technologies”** and **“Power Converters for Microgrids”** were organized for the M.Tech II Semester students of Advanced Electric Power Systems (AEPS) and Power Electronics and Drives (PED) from 1st to 4th April 2026. The sessions were delivered by Dr. T. Sreedhar, B.Tech (RECW), M.Tech (IIT Bombay), Ph.D., Assistant Divisional Engineer, Central Power Training Institute (CPTI), TGSPDCL, Hyderabad.
- Dr. K. Ravindra, Professor of EEE, Director, IQAC & Capacity Building, JNTUK, successfully completed a 5-day professional development programme on **“Integrated Strategies for NBA, NAAC, and NIRF”** from 6th to 10th April 2026. The programme focused on data-driven institutional decision-making and best practices for quality assurance, accreditation, and ranking frameworks in higher education.
- Dr. V. Shanmukha Naga Raju, Assistant Professor(C) and Dr. B. Ajay Babu, Assistant Professor(C) participated in a Five-Day Online Faculty Development Programme on **“Renewable Energy Systems and Smart EV Charging Infrastructure with Grid Integration”** organized by the Department of EEE, Sasi Institute of Technology & Engineering (SITE), Tadepalligudem, from 21 - 25 April 2026.
- Dr. V. Shanmukha Naga Raju, Assistant Professor (C) and Smt. Vijaya Bhanu Karri, Assistant Professor (C) , participated in the Faculty Development Programme on **“Engineering Foundations of Quantum Technologies (QT-09)”** conducted from 10th April to 2nd May 2026. The 44-hour (3-credit equivalent) programme was jointly organized by MNIT Jaipur, IIT Kanpur, IIT Roorkee, IIT Guwahati, and IIITDM Jabalpur with the support of MeitY.
- Sri. Venkata Narayana Lakamana Assistant Professor (c) participated in the Faculty Training Programme on **“Developing Power System Numerical Relay Experiments”**, organized by the Department of Electrical Engineering, Indian Institute of Technology (IIT) Kharagpur, through its Continuing Education Programme, during 24–25 April 2026.



Sports Achievements

Students of the Department of Electrical and Electronics Engineering actively participated in various sports events, including Handball, Basketball, Ball Badminton, Badminton, the 1500 m Run, and the 400 m Run, demonstrating exceptional enthusiasm and sporting spirit. K. Kavya (IV Btech) and B. Priya Varshini (I B.Tech) secured First Place in the 1500 m Run, while K. Kavya also secured Third Place in the 400 m Run. The department also appreciates the active participation of Jhansi, Gayathri (II B.Tech), Keerthana (M.Tech), Saathvika, Priyanka, Vasanthi, Hema Latha, Blessy, Nissi, Hari Chandana (I B.Tech), Praneetha (IV B.Tech), Meghana (M.Tech), and Sreeja (M.Tech) for representing the department and upholding the sporting spirit.



ACHIEVEMENTS

ANNUAL DAY

Student Awards and Endowment Prize Recipients

Students of the Department of Electrical and Electronics Engineering received several prestigious endowment prizes, scholarships, medals, and merit awards in recognition of their academic excellence and all-round achievements.

- Paila Lavanya (22025A0255) received Sri Mallampati Ramesh Memorial Gold Medal for Best Outgoing Student, The ECK 1963 Alumni Charitable Trust Scholarship, Ganesh Merit Grant, Arundhati Memorial Silver Medal and the Sri N. Ramachandra Rao Endowment Prize.
- Shaik Ashif (22025A0254) received Sri N. Ramachandra Rao Endowment Prize.
- Kasilanka Iswarya Sai (2102A0244) received Prof. G. Mallikarjuna Rao Memorial Cash Award and the Smt. S. Savitri Devi Cash Prize for Best All-Round Performance (Girl).
- Dampanaboina Vignesh (21021A0229) received Sri S. S. Sankara Rao Memorial Cash Prize for Best All-Round Performance (Boy).
- Badugu Sri Venu received (23021D0801) Late Smt. V. Narasamma Endowment Prize for outstanding performance in the M.Tech (High Voltage Engineering) programme.

The Department congratulates all the award recipients for their outstanding achievements and wishes them continued success.

M.Tech Placements



With CTC of 6 LPA



A. Bhavani Prasad
24021D0801



With CTC of 3.36 LPA



Badi Ramana
24021D3406



With CTC of 3.36 LPA



With CTC of 6 LPA



Boddu Jahnvi
24021D3409

B.Tech Placements



With CTC of 2.5 LPA



P. G. S. Sathwik
22021A0215



With CTC of 9.5 LPA



P. Pavan Subash
22021A0245



With CTC of 8.5 LPA



A. Prasanna Kumar
23025A0254



P. Sai charan
23025A0261

Smart Grids: The Future of Electrical Power Systems

Introduction

The foundation of both scientific advancement and economic expansion is electrical energy. Population expansion, urbanisation, the integration of renewable energy sources, and environmental concerns are putting more strain on traditional power systems. By adding automation and intelligence to electrical networks, smart grid technology tackles these issues.

Evolution of Power Systems

Power systems have evolved from isolated generation stations to interconnected national grids. The introduction of digital communication, SCADA systems, and intelligent monitoring has laid the foundation for modern smart grids. The need for flexibility, reliability, and sustainability drives the transformation.

Smart Grid Architecture

A smart grid consists of smart generation, smart transmission, smart distribution, and smart consumption layers. Advanced communication infrastructure allows bidirectional information flow, enabling real-time decision-making and operational optimization.

Core Technologies

Advanced Metering Infrastructure (AMI), Phasor Measurement Units (PMUs), Internet of Things (IoT), AI-ML, and Distributed Energy Resources (DERs) form

Renewable Energy Integration

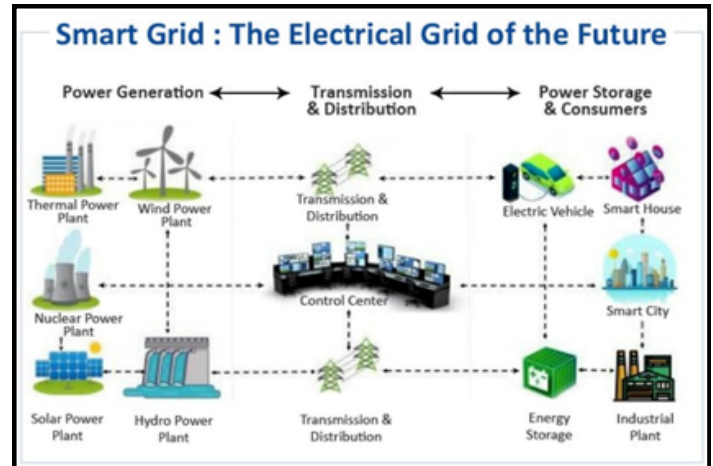
The increasing adoption of solar and wind power presents operational challenges due to intermittency. Smart grids utilize forecasting algorithms, energy storage systems, and automated controls to ensure stable and efficient integration of renewable resources.

Electric Vehicle Integration

Electric Vehicles (EVs) are expected to become major electricity consumers. Smart charging strategies, Vehicle-to-Grid (V2G) technology, and demand response programs help utilities manage charging loads while maintaining grid stability.

Impact of smart grids

Smart grids improve energy efficiency, reduce operational costs, minimize transmission losses, and lower greenhouse gas emissions. They support national sustainability goals and contribute to climate change mitigation efforts.



Challenges

Despite their benefits, smart grids face challenges including high capital investment, interoperability issues, regulatory barriers, workforce training requirements, and consumer acceptance concerns.

Future Research Directions

Future developments include AI-driven autonomous grids, blockchain-based energy markets, digital twins, advanced battery storage systems, and self-healing network architectures.

Conclusion

Smart grids represent the future of electrical power systems. Their ability to improve efficiency, reliability, sustainability, and consumer participation makes them a critical technology for modern societies. Continued research, policy support, and technological innovation will accelerate global adoption.

T. Geethu Anjali Krishna
I M.Tech,(HVE)
25021D0801

DEMAND SIDE MANAGEMENT OF GRID CONNECTED ENERGY STORAGE SYSTEM USING DNN

In today's rapidly evolving energy landscape, optimizing energy consumption and Ensuring efficient grid operations have become imperative. Demand-side management (DSM) is a proactive approach that aims to balance energy supply and demand by Influencing consumer behavior. On the other hand, GridConnected Energy Storage Systems (GCESS) play a crucial role in storing excess energy during low-demand Periods and supplying it during peak times. This article explores the integration of Deep Neural Networks (DNN) into DSM and GCESS to revolutionize energy management.

In a world increasingly reliant on renewable energy, this project introduces a smart Solution. It's all about using the brains of deep neural networks to predict when we'll Need power the most. Think of it like having a crystal ball for electricity demand. We Trained these networks on tons of data – weather, past energy use, you name it. And Guess what? They're great at predicting when we'll be thirsty for electricity. This means Our grid-connected energy storage systems can prepare in advance, reducing those Expensive peak moments. In tests and simulations, our system proved its worth. It Saved money and kept the grid happy by smoothing out energy use. Plus, it's flexible And can adapt to different situations.

Grid Instability:

The increase in renewable energy sources and decentralization has made the grid more unstable. To address this issue, it's crucial to balance electricity consumption and production.

Integration of Electric Vehicle Batteries:

Electric vehicle batteries can play a role in demand-side management. They can be integrated into the system and controlled using a deep neural network.

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Electric vehicle batteries can play a role in demand-side management. They can be integrated into the system and controlled using a deep neural network.

Peak Demand Management:

The deep neural network controller detects peak demand times and instructs the EV battery to supply a predetermined percentage of power to household appliances during these periods, which helps in power reduction.

Controller Inputs:

The controller takes two inputs: the time of day and the state of charge of the battery. This information is used to make decisions regarding power supply to household appliances.

Direct Communication Reduction:

By enabling direct communication between the grid and the battery, infrastructure requirements and data processing can be minimized, making the system more efficient.

Grid Operation Optimization:

The grid can operate efficiently during normal working hours and supply power to loads throughout the day. Operating the EV battery during peak hours can improve grid performance.

Battery Charging:

The drained battery is fully charged during periods of low grid loading to ensure it's ready for future operation. This approach optimizes the use of the battery's energy capacity.

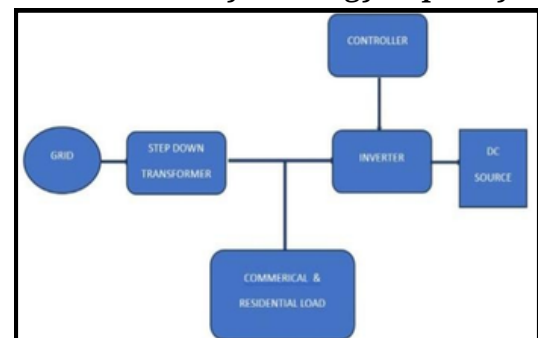


Fig.01: BLOCK DIAGRAM

1.Simulation Software Selection:

Establishing a robust virtual environment to accurately model grid behaviors.

2.Load Flow Analysis:

Studying existing distribution network configurations and identifying peak stress points.

3.Model Development:

Constructing the architectural framework of the Deep Neural Network.

4.Control Algorithm Design:

Programming the decision-making logic of the controller based on time and SoC inputs.

5.Cost-Benefit Analysis:

Evaluating economic viability, battery degradation costs, and overall energy savings.

S.N.V.S.R.S. Durga

I M.Tech, (HVE)

25021D0810

MY BHARAT BUDGET QUEST

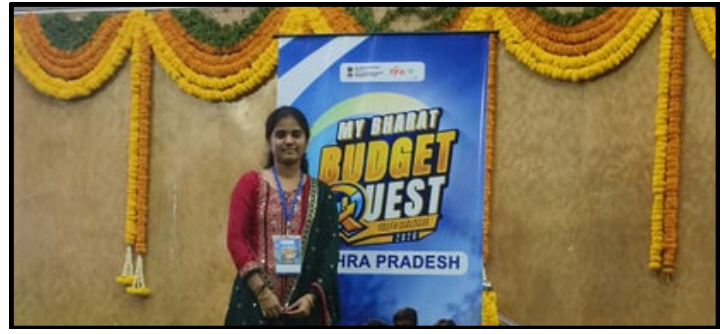
Youth Dialogue 2026

"The My Bharat Budget Quest 2026 stands as a remarkable national-level initiative aimed at engaging youth in understanding and contributing to India's economic vision. Aligned with the spirit of the Union Budget 2026, widely recognized as a Yuva Shakti-driven Budget, the program emphasizes empowering young minds through investments in education, skill development, entrepreneurship, innovation and sustainable growth. It serves as a powerful platform for students across the country to analyze budgetary policies, express their perspectives, and actively participate in discussions that shape the future of the nation.



The core objective of this initiative is to foster youth participation in economic and policy-related discussions while enhancing awareness about the Union Budget and its real-world implications. By encouraging innovative thinking and providing opportunities for interaction with policymakers and national leaders, the program plays a vital role in strengthening participatory governance in India.

The competition was structured into three rigorous phases designed to evaluate knowledge, analytical ability, and communication skills. The first phase consisted of a national-level online quiz focusing on budget highlights and economic concepts, which witnessed participation from over 12 lakh students across India. Based on performance, candidates were shortlisted for the second phase, where nearly 50,000 participants submitted essays ranging from 500 to 1000 words on various thematic areas. The final phase saw the selection of 14,000 participants across 17 zones, offering them an opportunity to engage in panel discussions, youth activities, and national-level interactions.



My journey in this prestigious competition began with successfully clearing the quiz round, followed by advancing to the essay phase. Among the nine themes "ViksitKrishi: Strengthening Agriculture, Rural Economy, and Farmer Welfare." This choice was deeply influenced by my agricultural background and my prior participation in the Viksit Bharat Young Leaders Dialogue 2025, where I explored the integration of technology into agriculture.

In India, nearly 59% of the population depends on agriculture, yet its contribution to GDP is only around 18%. This disparity highlights the urgent need for modernization and strategic investment in the agricultural sector. In my essay, I focused on bridging this gap through technological interventions such as smart irrigation, precision farming, and digital platforms for farmers. I also emphasized the importance of increased budget allocation for rural infrastructure to enhance productivity and improve farmer welfare. My ideas revolved around how effective utilization of budgetary resources can transform agriculture into a key driver of India's economic growth, thereby contributing to the vision of a Viksit Bharat.

Based on my performance, I was selected for the final phase, which was conducted on 12th and 13th April 2026 at Acharya Nagarjuna University, Andhra Pradesh. This stage of the program provided a dynamic and enriching experience through various interactive and participatory activities.



MY BHARAT BUDGET QUEST

Youth Dialogue 2026

The second day began with the inauguration session, which was initially planned to be led by the Hon'ble Chief Minister or Governor of Andhra Pradesh. However, due to unavoidable circumstances, the session was conducted by the State Director and NSS Nodal Officer. The day continued with insightful panel discussions on two significant themes: Human Capital: Investment in Education, Skill Development, and Employment and Developed India through Growth, Investment, and Infrastructure. Experts from various fields shared their perspectives, while participants actively contributed ideas and engaged in meaningful discussions through interactive question-and-answer sessions.



A key highlight of the event was the scheduled virtual national dialogue with the Hon'ble Prime Minister. Although he could not attend due to official commitments, a message from him was conveyed, appreciating the enthusiasm and participation of youth across the country. The session was led by Mansukh Mandaviya, who encouraged young participants to actively engage in nation-building and contribute innovative ideas for India's development.



The program concluded with the distribution of certificates and participation kits, recognizing the efforts and contributions of all participants. Special appreciation was extended to participants of the Viksit Bharat Young Leaders Dialogue 2025 and 2026. I take pride in having been part of the 2025 dialogue held in New Delhi during National Youth Day, where I had the opportunity to engage with national-level discussions and witness visionary leadership.



My participation in the My Bharat Budget Quest 2026 has been a transformative experience that significantly enhanced my understanding of national economic policies, budget planning, and the role of youth in governance. It provided me with a platform to present my ideas on technology-driven agricultural development and reinforced my commitment to contributing towards India's growth and development.

Being selected among thousands of participants and reaching the final stage marks an important milestone in my academic journey. It has motivated me to continue exploring innovative solutions and actively participate in initiatives that contribute to nation-building. As India progresses towards the vision of Viksit Bharat @2047, such platforms empower youth to become informed, responsible, and action-oriented citizens.

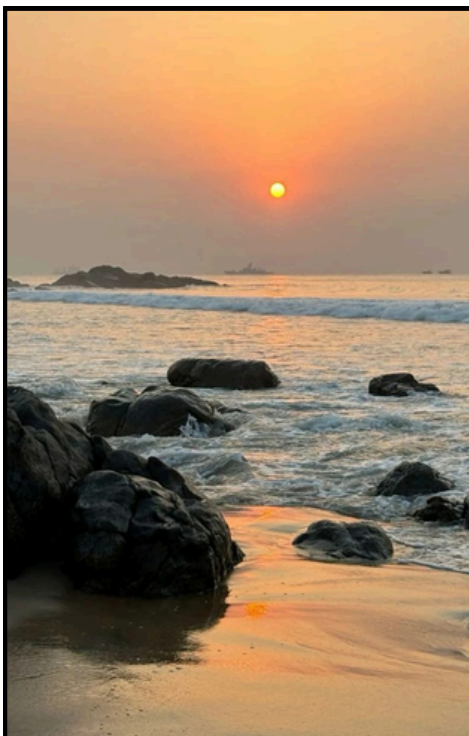
I sincerely express my gratitude to the organizers of the My Bharat Budget Quest 2026 for providing this invaluable opportunity. I also extend my thanks to my institution and faculty for their continuous support and encouragement throughout this journey.

Killana Kavya
III B.Tech, EEE

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G. Bhavya
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