Counselling Code: **VBIT**

VIGNANA BHARATHI Institute of Technology®

(A UGC Autonomous Institution, Approved by AICTE, Accredited by NBA and NAAC-A Grade, Affiliated to JNTUH)

NEWS LETTER 2025

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

VIDYUT VIDHYA

-Enhancement of power

www.vbithyd.ac.in

CONTEXTS

ABOUT INSTITUTE

VBIT, Sponsored by Swami Vivekananda Educational Trust (SVET) is the place where opportunities are provided for students to realize their ambitions, where new ideas are born, where innovative projects materialize, and where students excel in learning. Founded in 2004 by highly qualified people, Vignana Bharathi Institute of Technology emerged as a hub for engineering excellence. At VBIT, students will discover engineering in a different light. Students will experience an engineering education that is on par with the industry requirement. The institute is recognized as one of the Top Engineering Colleges in Telangana with NAAC 'A' Grade and NBA Accreditation.

ACADEMIC LEADERS

Dr. N. Goutham Rao
Chairman VBIT

Dr. N. Goutham Rao, a highly accomplished sociologist, excels in academia and project management, bridging tradition with modernity while remaining accessible to diverse student and faculty populations.

Dr. G. Manohar Reddy
Secretary VBIT

Dr. G. Manohar Reddy, originating from a Nalgonda village, injects youthful energy into the Management Committee. With a stellar academic journey, he actively engages in teaching Chemistry.

Dr. P. V. S. Srinivas
Professor & Principal

Dr. P. V. S. Srinivas, an accomplished academic and administrator, serves as Principal and Professor in Computer Science Engineering. He holds a Ph.D., M.Tech, and AMIE with extensive experience.

VISION OF DEPARTMENT

To emerge as center of excellence in Electrical and Electronics Engineering to meet the industry and societal needs

MISSION OF DEPARTMENT

Impart high quality education in Electrical and Electronics Engineering through effective teaching learning process and facilities. Develop necessary skills for professionalism, career choices and lifelong learning to succeed in core and multidisciplinary fields.

Provide ambience for innovative research and societal needs by collaborations.

ACKNOWLEDGEMENT

We express our sincere gratitude to our esteemed Chief Patrons Dr. N. Goutham Rao, Chairman-VBIT and Dr. G. Manohar Reddy, Secretary-VBIT, for their immense support and guidance.

We would like to acknowledge our Patrons Dr. P.V.S. Srinivas, Principal-VBIT, Dr.Y.V.S.S.S.V. Prasada Rao, Director-VBIT, for their invaluable contribution and encouragement throughout the development of this Newsletter.

We extend our acknowledgement to our Convener, Dr.K.Neelima, Head of Department-EEE and Mr.V.Jeetender, Assistant Professor & Incharge, for their magnificent leadership and dedication which have been pivotal in guiding this project. Finally, we extend our sincere gratitude to our team for their dedicated supervision and steadfast assistance in managing the diverse elements of Newsletter production. We deeply appreciate all our readers for thoroughly exploring every page.

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

VISION

To emerge as centre of excellence in Electrical and Electronics Engineering to meet the industry and societal needs.

MISSION

M-1: Impart high quality education in Electrical and Electronics Engineering through effective teaching learning process and facilities.

M-2: Develop necessary skills for professionalism, career choices and lifelong learning to succeed in core and multidisciplinary fields.

M-3: Provide ambience for innovative research and societal needs by collaborations.

Program Educational Objectives (PEOs)

PEO-01: Domain Knowledge: Synthesize mathematics, science, engineering fundamentals, laboratory and attain practical experience to formulate and solve engineering problems in Electrical engineering domains by using appropriate tools and technologies.

PEO-02: Professional Employment: Contribute towards the growth of the industry, shine in government, entrepreneurship and R&D establishments.

PEO-03: Higher Degree: Succeed in the pursuit of higher degree in Electrical engineering or multidisciplinary fields by applying mathematics, science, and engineering concepts.

PEO-04: Engineering Citizenship: Practice professional and ethical attitude, effective communication skills and work in multidisciplinary teams to resolve engineering issues of social relevance.

PEO-05: Lifelong Learning: Pursue lifelong learning to expand technical and professional skills to become expert in chosen fields.

Program Specific Outcomes (PSOs)

PSO-01: Design, analyze and solve problems in the field of Electrical & Electronics Engineering by applying knowledge acquired from Electrical Power Systems, Electrical Machines, Control Systems, Power Electronics and Field theory.

PSO-02: Apply multidisciplinary concepts with emerging technologies to sustain with the dynamic industry challenges.

PSO-03: Excel in current and future technological advances for active contribution in the field of Electrical and Electronics Engineering for professional career progression.

PSO-04: Develop interpersonal skills that are in line with the industry requirements and societal needs.

Program Outcomes (POs)

Engineering graduates will be able to:

PO-01: Engineering Knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

PO-02: 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-03: Design/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 cultural, societal, and environmental considerations.

PO-04: Conduct investigations 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-05: 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-06: The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO-07: Environment and 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-08: Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO-09: Individual and team work: 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: Life-long 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.

ABOUT DEPARTMENT

The Electrical and Electronics Engineering department at Vignana Bharathi Institute of Technology. Harnessing electrical energy poses a significant challenge for electrical engineers. The dynamic EEE department endeavors to inspire budding Electrical Engineers by instilling the notion of constructing Generating Stations, Transmission Lines, and Distribution Systems at cost-effective rates. Furthermore, it emphasizes the design, testing, and supervision of manufacturing processes for Electrical and Electronic equipment employed in various domains including electrical utilities, buildings, automobiles, aircraft, radar, navigation systems, and broadcast and communication systems.

The Department upholds a high standard of teaching and learning, facilitated by highly qualified faculty members. It's well-equipped laboratories offer students ample opportunities to enhance their practical knowledge under the guidance of technically proficient instructors. Moreover, the Department is actively engaged in conducting research activities in the Electrical Power Sector, providing students with a platform to explore and innovate in this vital field.

MESSAGE FROM HOD

Dr.K.NEELIMA

Professor and HOD, Dept. of EEE, VBIT

Warm Welcome to the fourth Issue homepage of Vidyut Vidya.

This magazine speaks about the successful journey of EEE department in various aspects. I am proud to see that the students of our department have put an incredible effort in bringing up this magazine with useful information. Our department has a team of qualified and experienced faculty with which we are striving hard continuously to improve upon the quality of education and to maintain its position of leadership in Engineering and Technology. We always work with the motto "Nothing can be achieved without Genuine Effort." The core values of the department help the students to develop their overall personality and make them worthy technocrats to compete and work at global levels. Our department has been conducting Seminars, AV classes and Tutorials very efficiently and effectively since its beginning, this made the students abreast with the latest developments in the field of Technical Education.

Specialized knowledge is imparted regarding simulation of various processes using SCILAB, MATLAB, MI POWER etc by organizing Workshops, Guest Lectures and Technical Fests. Our Faculty and Students actively participated in various activities like R&D, Co-Curricular and Extra-Curricular. Industrial visits are regularly organized to enhance the practical knowledge of the students and to interact with the recent technologies used in the industries. I wanted to thank our Faculty and Students for all their Commitment and determination shown to get through NBA Accreditation which laid a good platform in focusing more Potential Technological Growth Opportunities. Before concluding I would say, the content in the Magazine has substantial knowledge repository which gives lot of learning growth to the readers.

RESEARCH HIGHLIGHTS

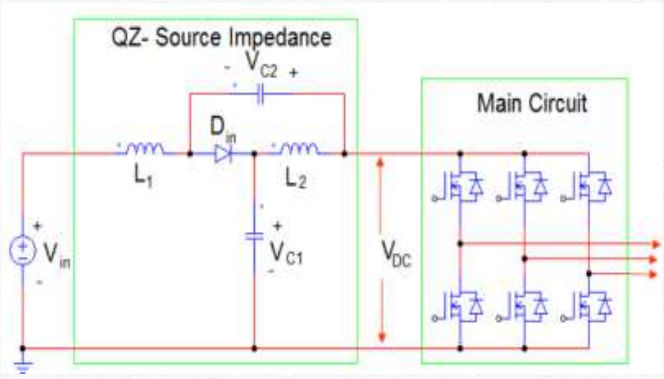
Fussy based method for improving the quality of a power in a grid connected system using a solar pv led multilevel inverter

Dr. K. Neelima's paper presents the combination of non-conventional sources, namely solar photovoltaic (PV) systems, into the power grid has received considerable recognition in recent years, mostly because of its environmental and economic advantages. Nevertheless, the incorporation of these systems presents difficulties with power quality, including issues with voltage variations, harmonics, and the control of reactive power. This work introduces a control approach based on fuzzy logic to improve the quality of electricity in grid-connected devices

-Dr.K.Neelima

Analysis design implementation of extreme boost quasi–Z Source inverter technologies

Dr. V. Jagan's paper presents the salient advantages of inverters based on impedance source networks have made them proper for renewable energy conversion applications that are required to increase input DC voltage and convert it to AC energy. Switched Boost Inverters (SBI) are single-stage DC-AC power converters utilizing an active switch in the impedance network whose output voltage can be greater or less than its input DC voltage.



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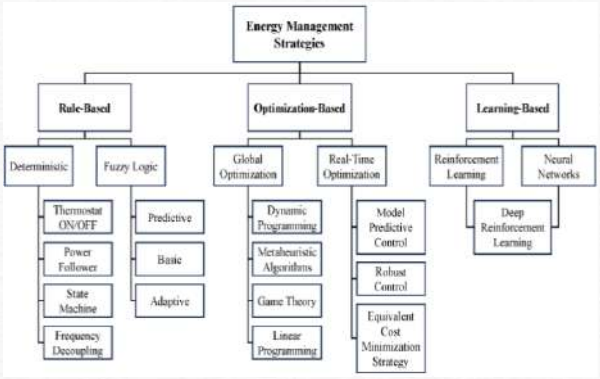
-Dr.V.Jagan

Enhancing electric vehicle efficiency through an ANFIS controller driven energy management system



Dr. S. Sundeep presents the exponential expansion of electric-vehicles (EVs) has emphasized the necessity for effective energy management systems to optimize their performance and overcome range constraints. This abstract delineates a proposition for an Energy Management System, founded upon a Neuro-Fuzzy System controller, meticulously crafted to enhance the efficacy of electrical energy utilization within electric vehicles.

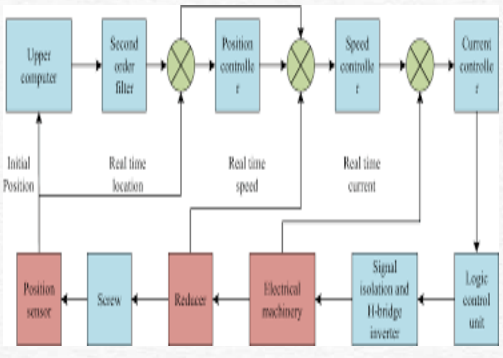
- Dr. S. Sundeep

Wind turbine with line inside PMSG fed dc- dc converters for voltage regulator

Dr. B. Nagireddy presents a novel study of the design and analysis of a wind turbine system that includes a line-side permanent magnet synchronous generator (PMSG) with an ultra-step-up DC-DC converter for voltage regulation. Integrating renewable energy sources such as wind power into the grid requires efficient and reliable power conversion systems to handle fluctuating power and ensure a stable power supply.

-Dr.B. Nagi Reddy

Fuzzy PI based speed control of sensorless permanent magnet synchronous motor

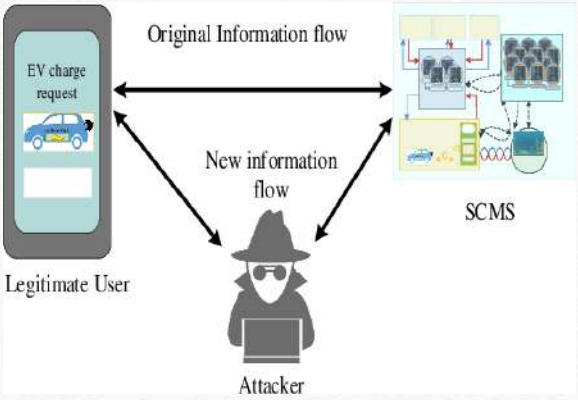


Dr. C.R.Edwin Selva Rex prensents the accuracy of control in permanent magnet synchronous motor system significantly affects overall mechanical structure safety. To satisfy high-performance control for the position servo of the electric steering engine, this study selects a suitable vector control model for permanent magnet synchronous motor. Additionally, an enhanced beetle antennae search algorithm is designed and employed to optimize the fuzzy proportional–integral–derivative controller.

-Dr.C.R. Edwin Selva Rex

Cyber security enabled electric vehicle charging and battery management system.

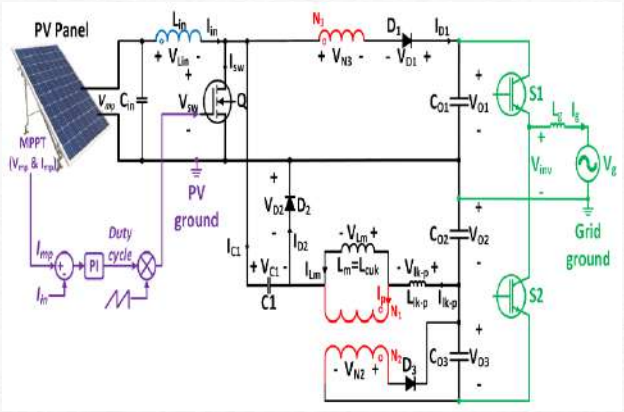
Dr. Y. Anil kumar presents Electric vehicles (EVs), which are become easier to get, are displacing conventional gasoline-powered cars. Because of this, there is a great demand for electric vehicle charging systems (EVCS), which has led to a major expansion of the public and private EVCS infrastructure. The threats related to cybersecurity have significantly increased as a result of the EVCS's growing network.



-Dr. Y. Anil Kumar

Simulation of hybrid boost converters with reduced switch stress for pv systems.

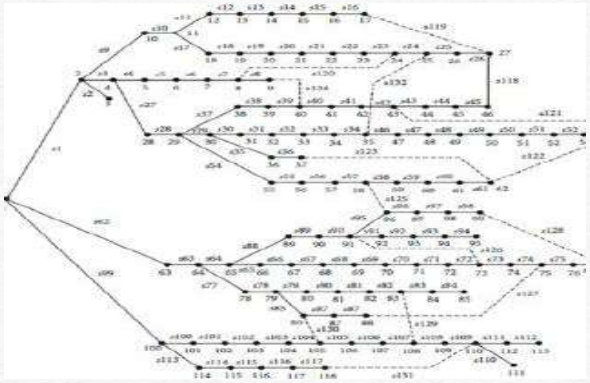
Dr. J. Sreedhar presents Currently, there is a growing prominence on using switched capacitor and switched inductor techniques in high-power boost converters to achieve higher voltages. This is accomplished by employing reactive elements, where the inductor discharges while the capacitor charges. The switched capacitor and switched inductor can extremely attain dc voltage obtain with require few quantities like inductors, capacitors,



-Dr. J. Sreedhar

Reconfiguration of radial distribution of network using of artificial rabbits optimization approach

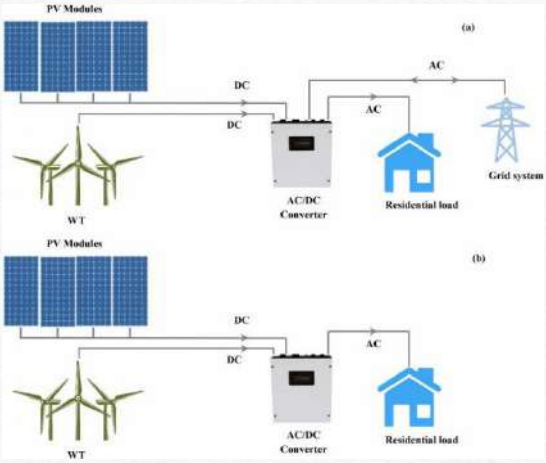
Dr. G. Poornachandra Rao presents Lowering system power losses along with improving voltage profile have been major concerns for researchers for the past few decades. The performance of an electrical distribution system (EDS) is dependent on these two factors. This work's main emphasis is on reconfiguring the radial distribution network (RDN) to diminish system power losses and strengthen the voltage profile.



-Dr. G. Poornachandra Rao

The study of solar and wind power system under different weather conditions

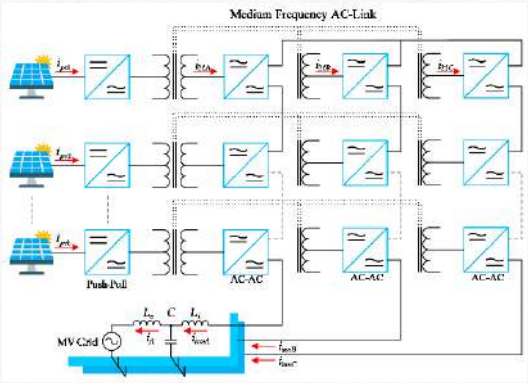
A. Gopala krushna presents the Hybrid power system integrates a PV station and wind park via an AC-bus to optimize overall attainment. Employing Maximum power point Tracking (MPPT) technology, both in PV systems and wind farms, ensures efficient operation of the hybrid system amid changing environmental conditions. Simulation using Simulink software allows for thorough assessment of the MPPT technology and control strategies in various environmental scenarios, encompassing solar effulgence and wind speed variations.



- Mr. A. Gopala Krushna

Modelling and analysis of cascaded DC-DC converters in medium voltage AC Grid-Connected PV-WIND power system

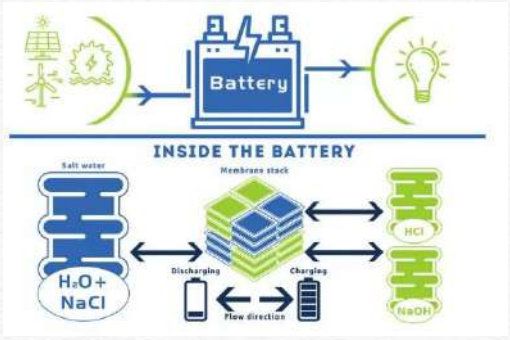
H. Kishan presents this paper proposes a vector controlled isolated source cascaded two-level inverter (CTLI), for grid connected photovoltaic (PV) system. The system is controlled to operate with variable solar irradiance, supplying different levels of active power. The PV systems are designed, modeled and tested with the proposed controller, to provide maximum power output. Additional operation as a reactive power supplier, in the absence of solar radiation, is also tested.



- Mr. H. Kishan

Revolutionizing renewable energy integration. the innovative granite energy storage solution

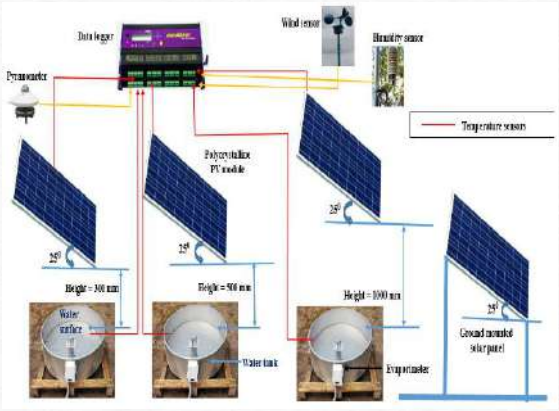
J. N. Bhanutej presents in recent times, energy storage has been a major concern in the renewable energy sector. Traditional batteries are becoming less effective and sustainable as the world is moving towards renewable energy. Gravity battery, also known as Gravitricity is a new energy storage technology that is gaining popularity in the renewable energy sector.



- Mr. J. N. Bhanutej

Analyzing the outdoor performance of different types of PV module technologies.

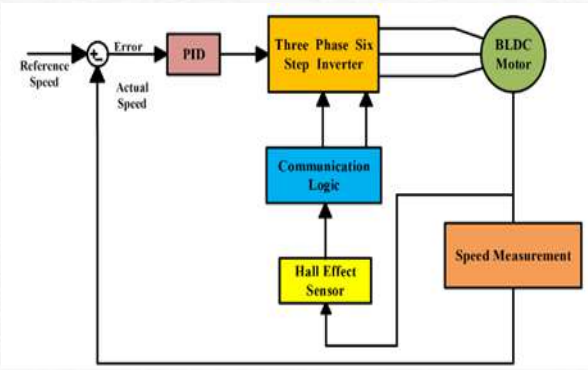
C.V. Vijay Kumar presents the purpose of the extension project is to find out the practical applicability and performance of various solar module innovations in real outdoor conditions. By systematically measuring voltage and monitoring electricity production, the research aims to produce valuable research data that can inform and guide local and global stakeholders in the optimization and implementation of various solar energy innovations.



- Mr. C.V. Vijay Kumar

Design of pv fed single-switch transformer less topology powered electric vehicle

V. Jeetender presents the increase in the availability of resources that were not harmful to the environment, solar energy applications shot to popularity. Photovoltaic cells power systems that necessitate DC-DC converters because of their low voltage output. This investigation uses photovoltaic cells (PV) to power a high-voltage gain design with just one switch and no transformer



- Mr. V. Jeetender

DEPARTMENTAL ACTIVITIES

Industrial visit to Lower Jurala Hydro Electric Power Generation Plant

Vignana Bharathi Institute of Technology arranged an industrial visit on February 15, 2025, to the Lower Jurala Hydro Electric Power Plant for students of Electrical and Electronics Engineering, overseen by Dr. K. Neelima, Head of the department. Forty students and two faculty coordinators participated.

Situated near Mulamalla Village, Atmakur Mandal, Jogulamba Gadwal district, Telangana, the Lower Jurala Hydro Electric Project is a significant ongoing venture.It comprises six units, generating 40 MW each, owned by Telangana State Power Generation. With a reservoir capacity of 14.2 million cubic meters and a net head of 20 meters, it has produced 534.43 GWh of electricity, offering valuable practical insights into hydroelectric power generation.

Industrial visit to PGCIL Power grid+6520

On January 23, 2025, Vignana Bharathi Institute of Technology organized an industrial visit to PGCIL, Annojiguda, for Electrical and Electronics Engineering students, led by Dr. K. Neelima, Head of the department.

Forty-five students and one faculty coordinator, including Mr. V. Jeethender, Dr. Nagi Reddy, participated, departing from the college at 9:00 AM. PGCIL, a significant industrial entity in Annojiguda, Hyderabad, provided first-hand insights into power sector operations.

DEPARTMENTAL ACTIVITIES

Industrial visit to Nagarjuna Sagar Hydro Electric Power Generation Plant

Vignana Bharathi Institute of Technology arranged an industrial visit on February 22, 2025, to the Nagarjuna Sagar Hydro Electric Power Plant for students of Electrical and Electronics Engineering, overseen by Dr. K. Neelima, Head of the department. Forty students and three faculty coordinators participated.

The Multipurpose Nagarjunasagar Project on River Krishna, near the then Nandikonda village, Peddavoora Mandal, Nalgonda District is the pride of Andhra Pradesh. The Project comprises of a 409 feet high Dam, a 810 MW main Power House at Dam, and two canals named Jawahar canal and Lal Bahadur canal taking off from the reservoir on right and left side respectively to irrigate about 22 lakh acres

Industrial visit to 210kw Solar Power Plant

Vignana Bharathi Institute of Technology arranged an industrial visit on August 29th, 2024 to the 210kw Solar Power Plant for students of Electrical and Electronics Engineering, overseen by D. k. Neelima, Head of the department. Forty students and three coordinator participated.

Situated in Vignana Bharathi institute of technology, Aushapur Village, Ghatkesar Mandal, Medchal District, Telangana. Solar Panels are mostly warrantied for 25 years (performance warranty) and have a useful life of about 30 years. For a 210kW Solar Plant about 609 qty of poly solar panels of 345wp would be required or 420 qty of mon-perc solar panels of 500wp.

STUDENT PUBLICATIONS

Y. Navya
L. Aishwarya

Smart Solar Energy System with IoT-Enabled Tracking

(Scopus Indexed) Guide - Dr. K. Neelima

B. Snehalatha
S. Deekshitha
P. V. R. Jayanth

Design and Analysis of Active Extreme Boost Quasi-Z Source Converter

(Scopus Indexed) Guide - Dr. V. Jagan

Vallala Yashwanth;
Bhavani Vadlakonda;
Chaithanya Kumar
Raju Pathi

Optimizing Electric Vehicle Efficiency-The Role of ANFIS Controller-Driven Energy Management

(Scopus Indexed) Guide - Dr. S. Sundeep

O. Rajeshwari
G. Sai Krishna
A. Kedarnath

Swiched Inductor and Capacitor Techniques for Efficient Power Conversion

(Scopus Indexed) Guide - Dr. B. Nagi Reddy

STUDENT PUBLICATIONS

Ravi Teja Javvaji
Anil Kethavath
Satvik Devaraju
Vinay Gandhari

Fuzzy PI Based Speed control of Sensorless Permanent Magnet Synchronous Moto

(Scopus Indexed) Guide – Dr. C.R. Edwin Selva Rex

Mahesh Sirimalla
Raviteja Shetapagula
Arun Kumar Anugu

Design of Efficient Single Switch DC-DC Converter for Electric Vehicles Charging

(Scopus Indexed) Guide – Dr. Y. Anil Kumar

Y. Shiva Kumar
M. Ramesh
B.Sai Ram

Dual Axis Solar Tracking System

(Scopus Indexed) Guide – Mr. J. Sreedhar

K. Sai Adithya
B. Sai Avinash

Protection and Monitoring of Smart Grids with IoT

(Scopus Indexed) Guide – Dr. G. Poorna Chandra Rao

STUDENT PUBLICATIONS

K. Panav
Wasiqur Rahman
B. Vijay Kumar

Speed Control of BLDC Motor using PWM and Arduino Uno

(Scopus Indexed) Guide – M. Sai Prasad Reddy

N. Nithin Nayak
B. Vishnu Vardhan

Power Smoothing Enhancement in Hybrid System using Neural Network Controller

(Scopus Indexed) Guide – A. Gopala Krushna

D.Anji Goud
B. Shiva Kumar
K. Naresh

Modelling and Analysis of Cascaded DC-DC Converters in Medium Voltage AC Grid-Connected PV-WIND Power Systems

(Scopus Indexed) Guide – H. Kishan

P Gnaneshwar
V Naresh
V Shravan

Effective Onboard Converter for Electric Vehicles using Reconfigured DC-Side Network

(Scopus Indexed) Guide –Mr. J.N. Bhanutej

STUDENT PUBLICATIONS

G. Sri Kavya
K. Pavan

Servo Control of Shunt-Active Power Filters Using Kalman Filter With DC-Link Reference

(Scopus Indexed)

Guide – Mr. C. Vijay Kumar

B. Renuka
G. Vamshi Krishna

A Comprehensive Review on Voltage Multiplier Cells for DC-DC Converters

(Scopus Indexed)

Guide – Mrs. B. Sravanthi

MAJOR ACHEIVEMENTS

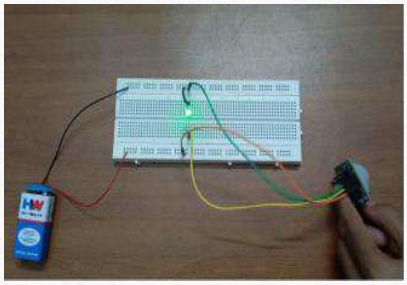
CIRCUITRY a technical event proposed by Power and Energy Society of IEEE VBIT - SB has received a grant of 500$ from IEEE Young Professionals STEP Funding

The Department of Electrical and Electronics Engineering has established as Research and Development Cell officially recognized by the All India Council for Technical Education (AICTE).

STUDENT ACTIVITIES

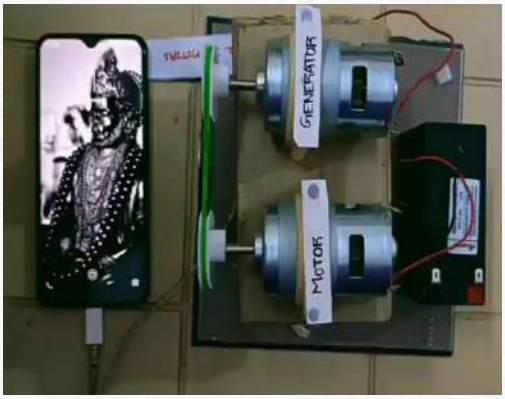
Home Automation Using PIR Sensor

N.BhanuPrakash and Rishikesh created a prototype for Home automation using a PIR (Passive Infrared) sensor is a simple and effective way to automate tasks like turning on lights or activating alarms based on motion detection. Home automation refers to the automatic and electronic control of household features, activities, and appliances.



- N.Bhanu Prakash
- Rishikesh

Mobile Charger Using Two DC Motors

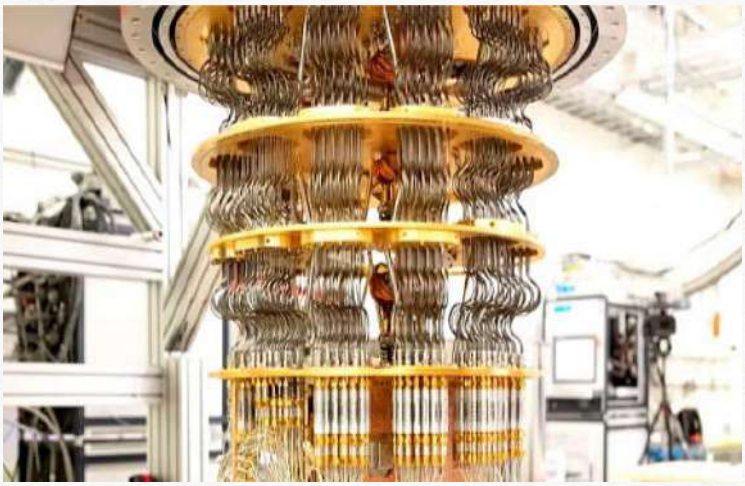


This is a simple and creative project where two DC motors are used to generate electricity and charge a mobile phone. The basic idea is to convert mechanical energy (like hand-cranking) into electrical energy using the motors, and then regulate that electricity to safely charge a phone. DC motors can work in reverse as generators. When you manually rotate the shaft of a DC motor, it produces a small DC voltage.

- Gujjari Swarnamai
- G. Sravanthi

NEW INVENTIONS IN TECH

Quantum Computing



- Quantum Computing is a new technology that employs quantum physics to solve problems that standard computers are unable to answer. Today, many firms attempt to make genuine quantum hardware available to thousands of developers, a tool that scientists only began to conceive three decades ago.

Aside Quantum computing is a branch of computing that focuses on the development of computer technology based on the notions of quantum theory. It utilizes the power of subatomic particles' unusual capacity to exist in many states, such as 0 and 1 at the same time.

Autonomous Vehicles

Smart Autonomous vehicle (AV) technology is set to become the biggest disruptor the automotive industry has seen in the past century. While some say the age of the AV is just around the corner, the consensus seems to be that Level 5 automation (that is, true driverless cars with no steering wheel or gas and brake pedals) is a long way off..

This Companies like Alphabet (Waymo), General Motors, Uber and Baidu are currently investing billions of dollars on developing AV technology as they rush to stake a claim on the market. As of February 2018, in the United States, 21 states have passed AV legislation,

INTRESTING FACTS

1) Electricity doesn't actually flow inside the wire — it flows around the surface of conductors in high-frequency situations (known as the "skin effect").
2) Electric vehicles (EVs) are growing fast — EVs now make up more than 15% of global new car sales
3) Solar energy is now cheaper than fossil fuels in many parts of the world, revolutionizing the grid
4) The first street in the world to be lit by electric lights was Mosley Street in Newcastle, UK, in 1879.
5) Alessandro Volta invented the first true battery, the voltaic pile, sparking the era of modern electricity.
6) The first electric car was built in the 1880s — long before gasoline-powered cars became popular.
7) Thomas Edison and Nikola Tesla had a rivalry known as the "War of Currents" — Edison supported DC (Direct Current), while Tesla backed AC (Alternating Current), which is what we use today.
8) The first power plant was built by Thomas Edison in 1882 in New York City — it powered only 85 houses.
9) Your brain runs on electricity! Neurons send electrical signals to communicate — your thoughts, movements, and senses all involve tiny electrical impulses.
10) Birds don't get electrocuted on power lines because they don’t create a path to the ground — unless they touch another wire or grounded object.

Mr.V.Jeethender
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Faculty Coordinator

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Co-Lead

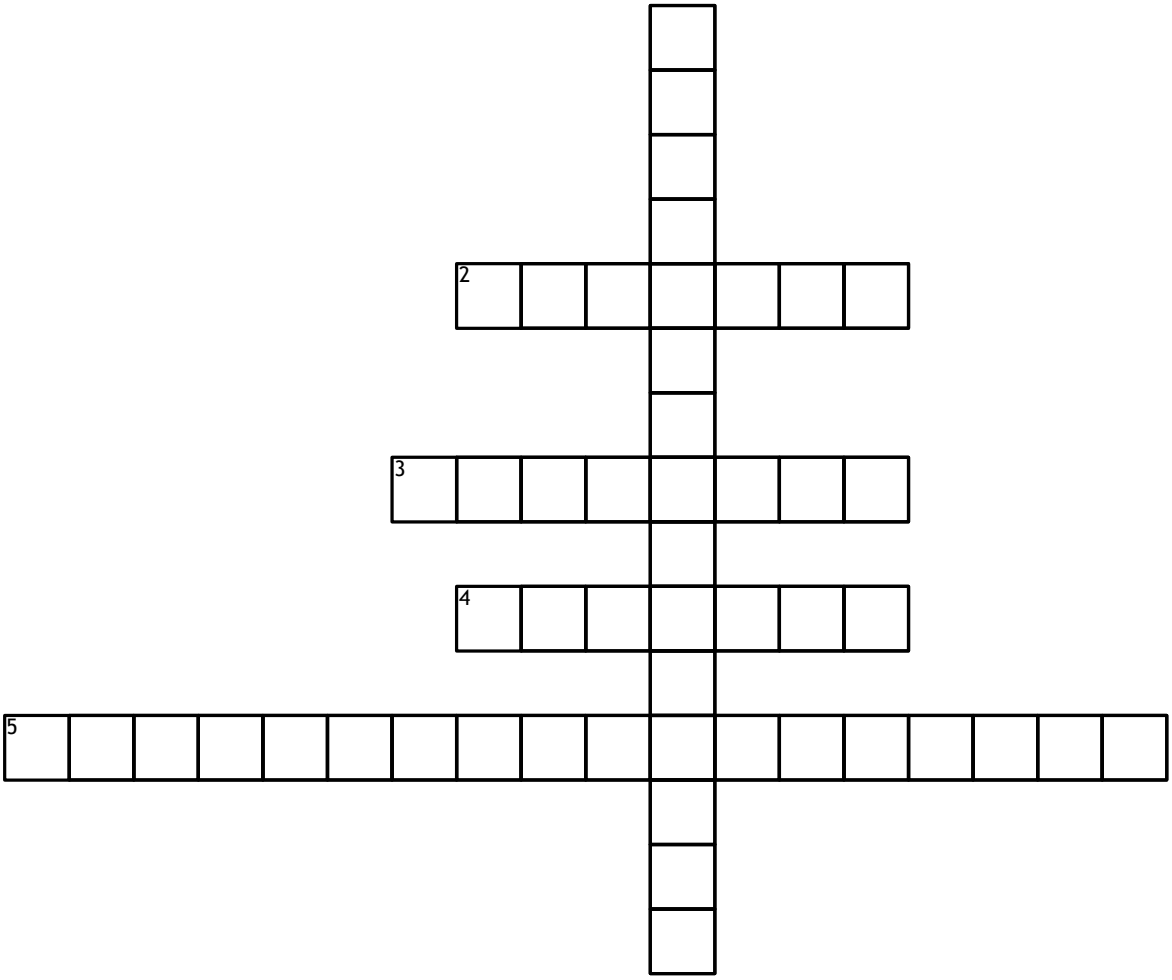
B.Rajashekar
21P61A0205
Designer

O.Saketh
22P61A0238
Marketing

P.Rathnakar Sai
22P61A0241
Documentation Coordinator

Name: _____ Date: _____

Untitled



Across

2. Appears across open circuit

3. An example of Passive element

4. current is measured in

5. abbreviation of EMF

Down

1. EV STANDS FOR

Department of
ELECTRICAL AND ELECTRONICS ENGINEERING

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