JB INSTITUTE OF ENGINEERING AND TECHNOLOGY

(UGC Autonomous)
(Accredited by NAAC & NBA, Approved by AICTE & permanently affiliated to JNTUH)
(Bhasker Nagar, Yenkepally, Moinabad Mandal, R.R Dist, Hyderabad-75)

GENEREX

QUATERLY NEWSLETTER

VOLUME 5 DEC 2020 ISSUE 1

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

Mail Id: hodeee.jbiet.edu.in www.jbiet.edu.in

GENEREX

QUATERLY NEWSLETTER

VOLUME 5 DEC 2020 ISSUE 1

DEPARTMENT OF
ELECTRICAL AND ELECTRONICS ENGINEERING

LATE SHRI J.BHASKAR RAO GARU

B.Com, L.L.B

FOUNDER CHAIRMAN

J.B. EDUCATIONAL SOCIETY

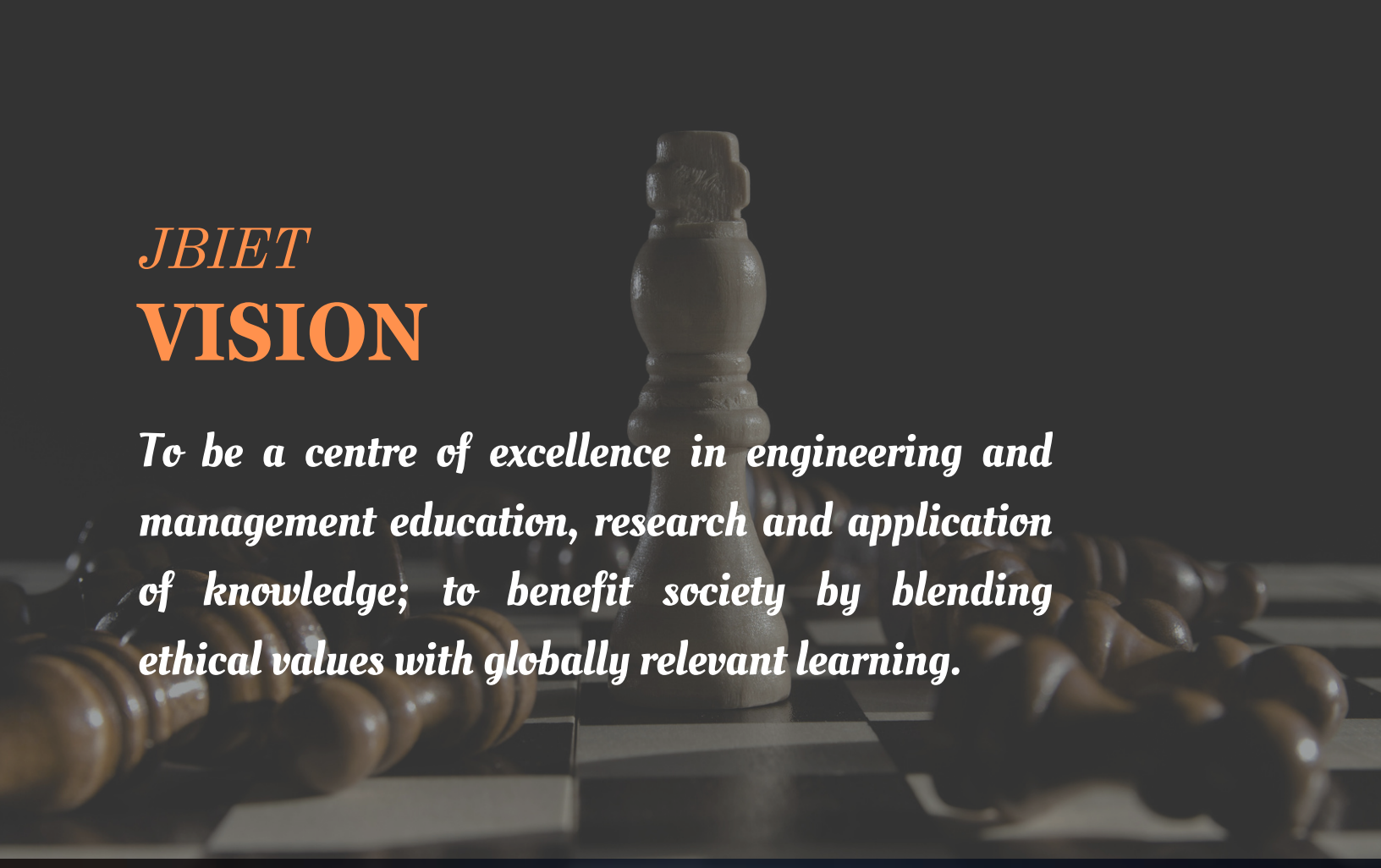
SMT J.VASUMATI DEVI GARU

CHAIRPERSON

J.B. EDUCATIONAL SOCIETY

ABOUT JBIET

- As one of the top ten most preferred institutions in Telangana, JBIET continues to strive to impart technical (engineering) and professional education of very high standards.
- The aim of JBIET is to mould young learners into globally competitive professionals who are professionally deft, intellectually adept and socially responsible.
- The expert faculty at JBIET inculcate the best values and principles, ascribing to a modern curriculum; while the students imbibe pragmatic perception and a pro-active nature, which spurs them towards exploration and advanced inquiry, resulting in valuable insights.
- The Placement record of JBIET over the years is proof of our right efforts in enabling the best in class engineering, technical and professional education to aspirants



JBIET

VISION

To be a centre of excellence in engineering and management education, research and application of knowledge; to benefit society by blending ethical values with globally relevant learning.

JBIET

MISSION

- ***To provide world class engineering education, encourage research and development.***
- ***To evolve innovative applications of technology and develop entrepreneurship***
- ***To mould the students into socially responsible and capable leaders.***

ABOUT THE DEPARTMENT

The Department of Electrical and Electronics Engineering was incepted in the academic year 1998–1999. In the long haul, with a vision of providing the finest postgraduate program, the department introduced the M.Tech. in Electrical Power Systems in the academic year 2004–2005. To add jewel in the crown, the department inaugurated the IEEE students' chapter in 2017 and the IEI students' chapter in 2020 to promote research attitude among the young aspirants. In the quality check of NBA, the department has been accredited under Tier-I.

The department is unique in its ways by promoting excellence in Electrical Engineering fulfilling its role in the era of the new millennium, and meeting the needs and demands of various industrial sectors. With the intent of instilling a research approach among students, the department is heedful in Research & Development projects. In its augmentation, the department is involved in collaborative research with industries. Coupled with its gradual proliferation, the department has signed MoUs with leading industries. The Department has established a Center of Excellence in Renewable Energy Sources for carrying out advanced research.

With determined hope and optimism, the department has dedicated and well-qualified faculty members who manifested to be specialized in Power Systems, Power Electronics, Electrical Drives and controls, Control Systems, Electrical Machines, Renewable Energy, etc. The curriculum is developed in such a way as to meet the industry requirements from time to time, also in synchronization with the AICTE model curriculum by covering emerging areas like Renewable Energy Systems, Embedded Systems, Electric Hybrid vehicles, Industrial Automation and Control, Artificial intelligence, etc. Besides, the students are replenished with advanced courses for enhancing their technical skills and programming abilities to get acquainted with new trends in technology and develop their overall potential in diversified aspects.

Department

VISION

To be a Centre for State-of-the-art learning and research in the area of Electrical and Electronics Engineering, where the stakeholders could explore, experiment and exhibit their expertise with an industrial outlook.

Department

MISSION

- ***To EQUIP the student with advanced learning skills in the field of Electrical and Electronics Engineering as well as the professional skills necessary to face the challenges of the future.***
- ***To ENGINEER the student to engage in research activities leading to innovative applications of technology for the benefit of society.***
- ***To ENABLE the student with the qualities of leadership and social responsibility.***

Secretary's Message

SHRI J V KRISHNA RAO
MBA HR-USA
SECRETARY, JBES

Education is the passport to the future, for tomorrow belongs to those who prepare for it today.". JB Institute of Engineering & Technology was established in 1997 under the aegis of the JB Group of Educational Institutions, Hyderabad. At present, JBIET is a UGC Autonomous Institution and is permanently affiliated with JNTU Hyderabad. The speedy development in the field of information & Technology has accelerated the demand for value-based education in the stream of Engineering, Technology and Management which is qualitative, progressive, and multidimensional in a competitive global environment. We provide quality education beyond the four walls of the classroom to cope with the corporate world. The aim of JBIET is not only to produce mere degree holders but also bright, talented men and women equipped with all-round personality development. Our vision of the institute is to impart quality education with Life Skills in all core disciplines of knowledge by developing global leaders who are passionate, committed, and confident to take initiative in nation-building and create a peaceful environment for work, workers, and the workplace.

Cheif Executive Officer's Message

MAJ.GEN.DR S S DASAKA
SM , VSM(RETD).

I welcome you all to the portals of the J.B. Institute of Engineering and Technology (JBIET), a great institution by all standards. Engineering continues to be a lucrative career for bright minds, as it is only through engineers that the inventions of science can reach the masses, for the overall development and welfare of society. JBIET has been one of the best engineering colleges in the two states of Telangana and Andhra Pradesh. It has been striving hard to not only maintain its standards but also to continuously improve them, to benefit the students in particular and the society at large. The college boasts of well-qualified and self-motivated faculty who have rich experience in academics, industry and research. The curriculum is regularly revised to keep pace with the industry requirements so that the students pass out as industry-ready graduates. The institute has excellent infrastructure, laboratories and workshops. The calm and quiet environment on the lush green campus, away from the hustle-bustle of the city, provides a tranquil environment, so conducive to quality Teaching - Learning. At JBIET, we are very focused on the same and ensure that all students are put through "Life Skills and Employability Skills Training" right from the first semester itself. The college not only inculcates a Creative and innovative spirit in the minds of our students but also actively encourages them through the Group's JB Institute of Inventors Association of India (JBIIAI). This body provides intellectual support, logistics support, and financial support, right from ideation to commercialisation. I would like to wish you all a studious, satisfying and enjoyable journey in this institute. Remember what Swami Vivekananda said "Arise, Awake and Stop not, till the goal is reached". Looking forward to moving along with you in your beautiful journey ahead. Come, join us! Wishing you All the Best!

Principal's Message

DR. NIRAJ UPADAHYA

JBIET has its strength in its Faculty and infrastructure of Laboratories. We are constantly striving to transform the student's aspirations into reality. We enable this with dedication and commitment to imparting the right education and creating the most conducive environment for learning, research, innovation, and growth. Over the years, we have ensured many a dream has come true for both students and parents: with our keen focus on career-oriented education. We continue to strive towards our goals with purpose as Education is a never-ending mission in these increasingly competitive times.

At JBIET, our commitment to excellence shines through our dedicated faculty members and state-of-the-art laboratories. We take great pride in nurturing our students' dreams, turning aspirations into tangible achievements. Through a blend of quality education, research opportunities, and an innovative learning environment, we empower our students to reach their full potential. Our focus on career-oriented education has equipped countless students to succeed in their chosen fields, making us a beacon of hope for both students and parents alike. As we navigate the ever-evolving landscape of education, we remain steadfast in our mission to provide a nurturing space for growth, innovation, and success. Join us on this journey of lifelong learning and discovery at JBIET.

Head of Department's Message

DR P. DURAIPANDY
M.E , Ph.D

It gives me immense pride in saying that we are highly proud of your achievements and accomplishments that you have established over these years. The dedication you showed throughout your graduate life is unimaginable. The great walk into your career and life as a whole begins now. In this era of nerve-racking global competition, the choices you have are too many and will leave you perplexed. My sincere advice to all of you is that you need to be thoughtful, and creative and choose a very right path that may lead you to the right destination.

I am very sure that you will be successful there too, as you have been successful here. We truly, believe in you and your potential. Never stop learning and never stop winning! Learn from every one, may it be great or mediocre. Be prepared in such a manner that no matter, how forceful or critical the challenges are; always encounter those with full strength and vigour.

I would like to appeal to my dear students to project you as good ambassadors of our college and never let self-centred motives malign the honesty and ethics you have acquired here over the years. It is your time to earn your name, make your career and make your Parents and Mentors proud. I am sure your poised character will earn your accolades.

Always keep up the dedication and sincerity and hold your head high –without losing sight of self-respect, integrity, human values and ethics. Render dedicated service to humanity and lived a happy and peaceful life.

May the Almighty always guide you on your path and bless you. Wish you all the very best in life. Stay connected!

PROGRAM EDUCATIONAL OBJECTIVES(PEOS)

PEO 1: To Create an excellent academic learning environment by providing awareness on lifelong learning, apply the technical knowledge in the field of Electrical and Electronics Engineering to pursue higher studies or in their professional career.

PEO 2: To demonstrate technical knowledge to analyze, design, develop, optimize, and implement complex electrical systems. Also gain multidisciplinary knowledge through projects and industrial training, providing a sustainable competitive edge in R&D and meeting industrial needs in the field of Electrical and Electronics Engineering.

PEO 3: To possess professional and ethical attitudes with effective communication skills, entrepreneurial thinking and an ability to relate engineering issues to the broader social context. Also develop requisite skills to excel in their chosen profession with an awareness of contemporary issues and the need for life -long learning.

PROGRAM OUTCOMES (POS)

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

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

PO 3: 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 the cultural, societal, and environmental considerations.

PO 4: 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 the cultural, societal, and environmental considerations.

PO 5: 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 6: 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 7: 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 electrical and electronics engineering practice.

PO 8: 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 9: Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO 10: Individual and teamwork: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO 11: 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.

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EDUCATION IS NOT THE FILLING OF PAIL,
BUT THE LIGHTING OF A FIRE

---SWAMI VIVEKANADA

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Faculty Articles

THE NEW GEN POWER HUB

Mr. GORTHI RAJA SEKHAR
Assistant Professor

The piezoelectric effect is the induction of an electric charge in response to an applied mechanical strain. It is a reversible process that results from the linear electromechanical interaction between the mechanical and electrical states in crystalline materials with no inversion symmetry. Lead Zirconium Titanate sensors, or PZT sensors, are the most common and economical man-made materials used for energy conversion processes, and the use of the HX711 transducer has enhanced the efficiency. Research has been conducted on energy scavenging techniques, such as a focused spring action between two tiles, which converts mechanical input onto the transducers and converts this input into electrical output. Results showed 600μW harvested from the 10Hz frequency and 10cm amplitude linear motion.

The piezoelectric pre-stressed bending mechanism for the driven Energy Harvester is designed to increase the output wattage and maximize the output voltage. A 3D model with a middle hole has been designed to give space and support to the piezoelectric transducer during the bending process, which increases the electrical energy that has been generated. The output voltage for the 3D model without the middle hole or 0 mm in diameter only produces 5.40V in AC form. The author tried to increase the impact by using a spring retention action to increase the frequency to improve its efficiency.

The scope of this testing is to enhance the voltage output of the piezoelectric transducer before it is further used for footstep application. After the use of the device, the output voltage is 34.4V. The idea of energy harvesting has caught many people's interest, with ideas such as shoes that convert walking movements into heat, cell phones that charge themselves from body movements, roads that power streetlights, contact lenses that capture energy when you blink, and even gadgets that make energy from the pressure of falling rain. However, the amount of energy you could recover and the efficiency gain you would make for the money spent are minuscule. To save energy from cars, it is important to address the inefficiencies of car transportation much earlier in the process.

THE IMPACT OF IOT ON THE MODERN WORLD

Mr. GUDIMALLA UPENDRA RAO
Assistant Professor

The Internet of Things (IoT) is a rapidly growing technology that has transformed the way we live and work. This brief thesis explores the impact of IoT on the modern world by examining the various applications of this technology in industries such as healthcare, agriculture, transportation, and manufacturing.

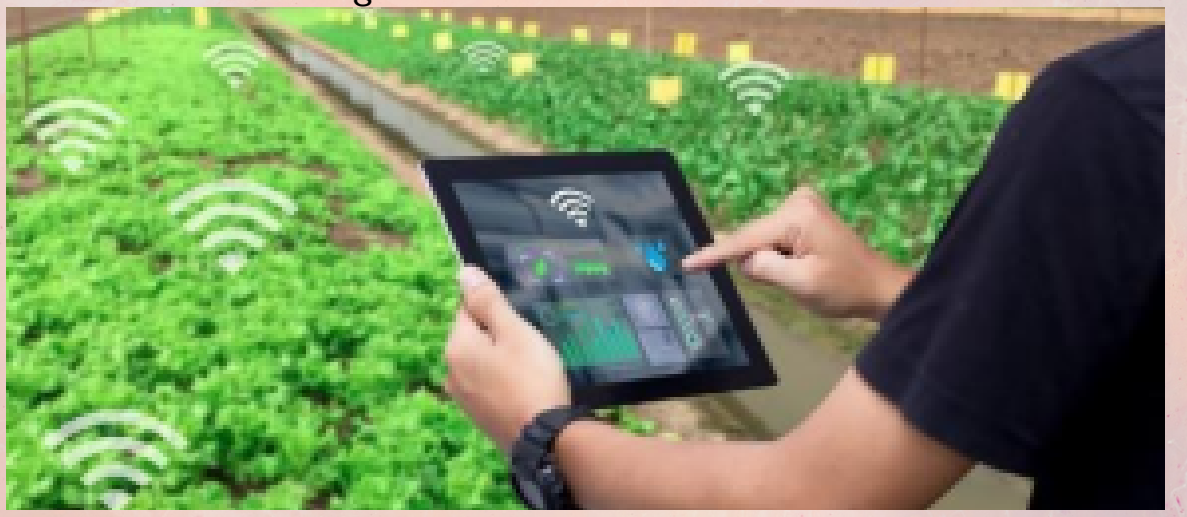
IoT has found applications in various industries, such as healthcare, agriculture, transportation, and manufacturing. In healthcare, IoT devices are used to monitor patient health remotely, track medication adherence, and manage chronic conditions. In agriculture, IoT sensors are used to monitor crop growth, soil moisture levels, and weather patterns to optimize crop yields. In transportation, IoT is used to monitor vehicle performance, improve traffic flow, and reduce accidents. In healthcare, IoT devices are used to collect data on patient health and provide personalized care. IoT-enabled devices, such as wearable health trackers, smart beds, and smart inhalers, are used to monitor vital signs, track medication adherence, and manage chronic conditions. IoT devices are also used to monitor the health of elderly patients and improve their quality of life by assisting with daily tasks. IoT is also used in the development of smart hospitals, where sensors and devices are used to optimize patient flow, manage resources, and reduce the risk of infection. In agriculture, IoT sensors and devices are used to collect data on soil moisture levels, weather patterns, and crop growth to optimize crop yields. IoT devices are also used to monitor the health of livestock, track the movement of machinery, and manage the use of water and fertilizers. IoT technologies such as precision agriculture and smart irrigation systems are transforming the way farmers work and are leading to more sustainable farming practices. In transportation, IoT technologies are used to monitor vehicle performance, improve traffic flow, and reduce accidents. IoT-enabled devices such as connected cars and intelligent transportation systems are used to collect data on vehicle location, speed, and fuel efficiency. This data can be used to optimize routes, reduce emissions, and improve safety. IoT is also used in the development of autonomous vehicles, where sensors and devices are used to navigate roads and avoid obstacles.

SMART AUTONOMOUS REMOTE MONITORING SYSTEM FOR HORTICULTURE

A SHIVA RAMAKRISHNA
Assistant Professor

Despite people's perceptions of the agricultural process, the reality is that today's agriculture industry is data-centred, precise, and smarter than ever. The rapid emergence of Internet-of-Things (IoT)-based technologies redesigned almost every industry, including "smart agriculture", which moved the industry from statistical to quantitative approaches. Such revolutionary changes are shaking the existing agriculture methods and creating new opportunities along a range of challenges.

This highlights the potential of wireless sensors and IoT in agriculture, as well as the challenges expected to be faced when integrating this technology with traditional farming practices. IoT devices and communication techniques associated with wireless sensors encountered in agriculture applications are analyzed in detail. Sensors are available for specific agriculture applications, like soil preparation, crop status, irrigation, and temperature. This technology helps the growers throughout the crop stages, from sowing to harvesting. State-of-the-art IoT-based architectures and platforms used in agriculture are also highlighted wherever suitable. Finally, based on this thorough review, the current and future trends of IoT in agriculture will be highlighted, along with potential research challenges.



Student Articles

WIRELESS CHARGING FOR ELECTRIC VEHICLES

P. SAHAJA
17671A0265

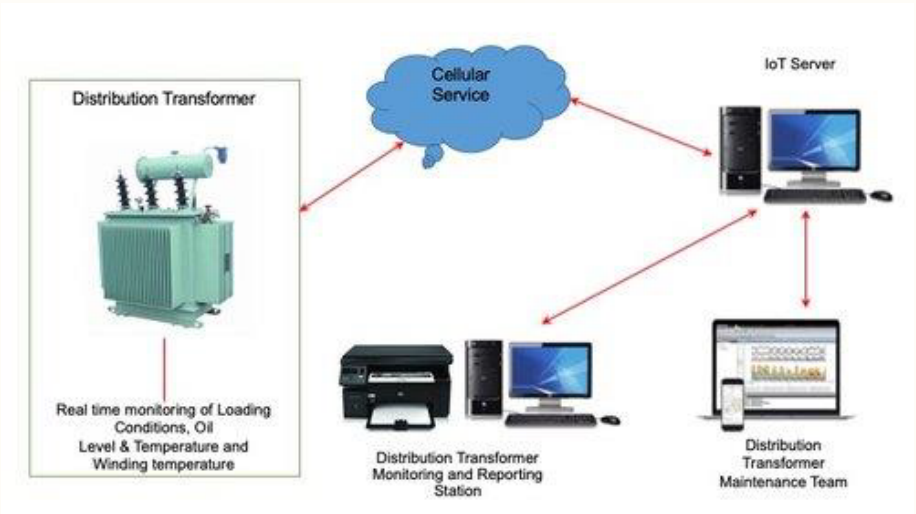
In recent years with the rapid development of the electrical vehicle (EV) of new energy industry, higher requirements are put forward for convenience, safety and reliability of the charging of electric vehicles. Wireless power charging is done by inductive coupling. Inductive coupling can done in both stationary and dynamic conditions. By reconfiguring the transformer and altering high frequency, energy is being transferred with low energy loss and fewer demands on the primary circuit.

Sufficient power for the battery can be transferred by the primary to the secondary without sufficient energy loss. Electric power is then transmitted to the chargeable battery which is electrically coupled to the secondary circuit through the air core transformer. In case of shuttle bus services, buses can be charged when it waits at bus station. It can also be implemented in rental taxi parking. Thus the battery in electric buses only needs enough charge to go to the next stop.

This decreases the battery size and promotes significant cost saving in electric vehicles. This technology enables efficient opportunities in charging stations, for predefined routes and planned stops reducing down the time of charging. The dynamic charging will promote the use of electric vehicles and reduce petroleum fuel consumption. Delays in traffic signals can now be provided with longer periods of charging and even when the electric vehicle is in movement. Bad weather conditions like rain and snow do not affect the charging capabilities of electric vehicles.

WIRELESS TRANSFORMER MONITORINGAND CONTROLLING SYSTEM

N. AKHILESH
17671A0261



Transformers play an important role in the efficient transmission of electricity. Regular monitoring and maintenance can make it possible to detect new flaws before much damage has been done. Current systems can provide information about the state of a transformer, but they are either offline or very expensive to implement. This monitoring system is primarily health monitoring equipment that can acquire, process, analyze & communicates the critical parameters to the concerned official who is at a remote place with the help of Auto dialing unit. Not only the conventional technical data, such as current, voltage, etc., but also other critical information such as frequency, oil temperature, oil level etc of transformers is required by the operators to ensure reliable power delivery and to assist the day-to-day decision making activities. Thus, the system increases the reliability of distribution network.

MITIGATION OF SOLAR PV GRID POWER LOSS USING QUASI -Z SOURCE INVERTER

G. MAHATHI REDDY
17671A0256

Transformers play an important role in the efficient transmission of electricity. Regular monitoring and maintenance can make it possible to detect new flaws before much damage has been done. Current systems can provide information about the state of a transformer, but they are either offline or costly to implement.

This monitoring system is primarily health monitoring equipment that can acquire, process, analyze, & communicate the critical parameters to the concerned official at a remote place with the help of an auto-dialling unit.

Not only conventional technical data, such as current, voltage, etc. but also other critical information, such as frequency, oil temperature, oil level, etc., of transformers is required by the operators to ensure reliable power delivery and to assist the day-to-day decision-making activities. Thus, the system increases the reliability of the distribution network

RFID BASED SOLAR CHARGER FOR ELECTRIC VEHICLE

A.HEMANTH
18675A0201

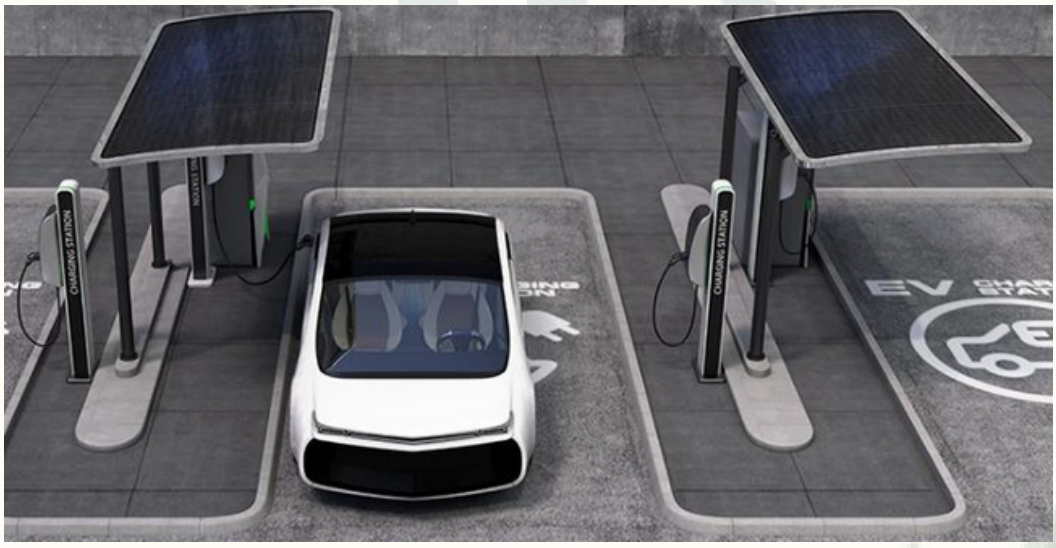
According to the Society of Manufacturers of Electric Vehicles (SMEV), 3,400 electric cars and 1.52 lakh electric two-wheelers were sold in India in the financial year (FY) 19-20. The total sales grew by 20% compared to the previous financial year. Electric vehicles are the future of the automobile industry. As the use of electric vehicles is increasing rapidly, the need for charging stations are also increasing. Existing charging facilities are Trickle charge, AC charge, and DC charge.

All electric cars that are currently on the market can be slow-charged using AC charging equipment. Fast charging methods are currently available at a high cost and also slow charging takes up to 8 hours for charging a EV. DC chargers also ensure a much more efficient. The goal is to lay out a method for efficient EV charging with a renewable strength supply.The development of previous charging stations has limitations such as high cost and is less compact in size. The available methods are less in count when compared to gasoline stations due to the complexity of the structure. As most of the available methods depend upon direct grid connection, constant and uninterrupted power supply is not acquired.

To surpass such limitations a layout for efficient EV charging with renewable strength supply is proposed. Solar power is utilized in this layout which gives a renewable and uninterrupted charging can be acquired. A GSM-based technology is also introduced which helps to make the system user friendly

In this work, the arrangement will help charge the electric vehicles with more efficiency and can also be user user-friendly system. In this prototype, a layout of an electric vehicle charging station connected to a solar panel is presented. The solar power derived from the solar panel is used as an uninterrupted clean renewable source of energy.

The proposed prototype will utilize solar power to charge the electric vehicles. The main aim of the prototype is to lay out a method that will be user-friendly to the consumers. The GSM technology is introduced in this prototype to make the prototype user-friendly. The complexity of the prototype is less when compared to the existing methods. This is done with the use of the Arduino controller.



IEEE CLUB

IEEE SB aims to foster technical knowledge among students from all walks of life. "Does not matter what degree are they pursuing, all the students are eligible to join IEEE as a student members so long as they are pursuing a degree with 50% of the Full-time. It's a worldwide established technical society, not to mention it's the biggest of course" To have an IEEE student branch in an institution brings credit to the institution, since IEEE is the top most professional body in the world. Students of the first batch have taken the initiative in forming the IEEE students branch in the year 2001-2002, with 45 members. the students of the subsequent batches have taken the initiative in getting the branch recognized by IEEE in 2002-2003 and in increasing the membership. Provision is made for IEEE members to access the IEEE Digital library and weekly meetings of IEEE students Members Achievements include Debates, Group Discussions, Paper Presentations, Guest Lectures, etc.

IEEE has more than 375,000 members in more than 160 countries; 45 percent of whom are from outside the United States more than 80,000 student members 329 sections in ten geographic regions worldwide 1,860 chapters that unite local members with similar technical interests 1,789 student branches in 80 countries 483 student branch chapters at colleges and universities 390 affinity groups - IEEE Affinity Groups are non-technical sub-units of one or more Sections or a Council. The Affinity Group patent entities are Consultants' Network, Graduates of the Last Decade (GOLD), Women in Engineering (WIE), and Life Members (LM)

IEEE has a total of 45 societies and councils - 38 societies and 7 technical councils representing a wide range of technical interests has more than 2 million documents in the IEEE/IET Electronic Library has nearly 1,300 standards and projects under development publishes a total of 144 transactions, journals and magazines sponsors more than 900 conferences annually.


J.B. INSTITUTE OF ENGINEERING & TECHNOLOGY
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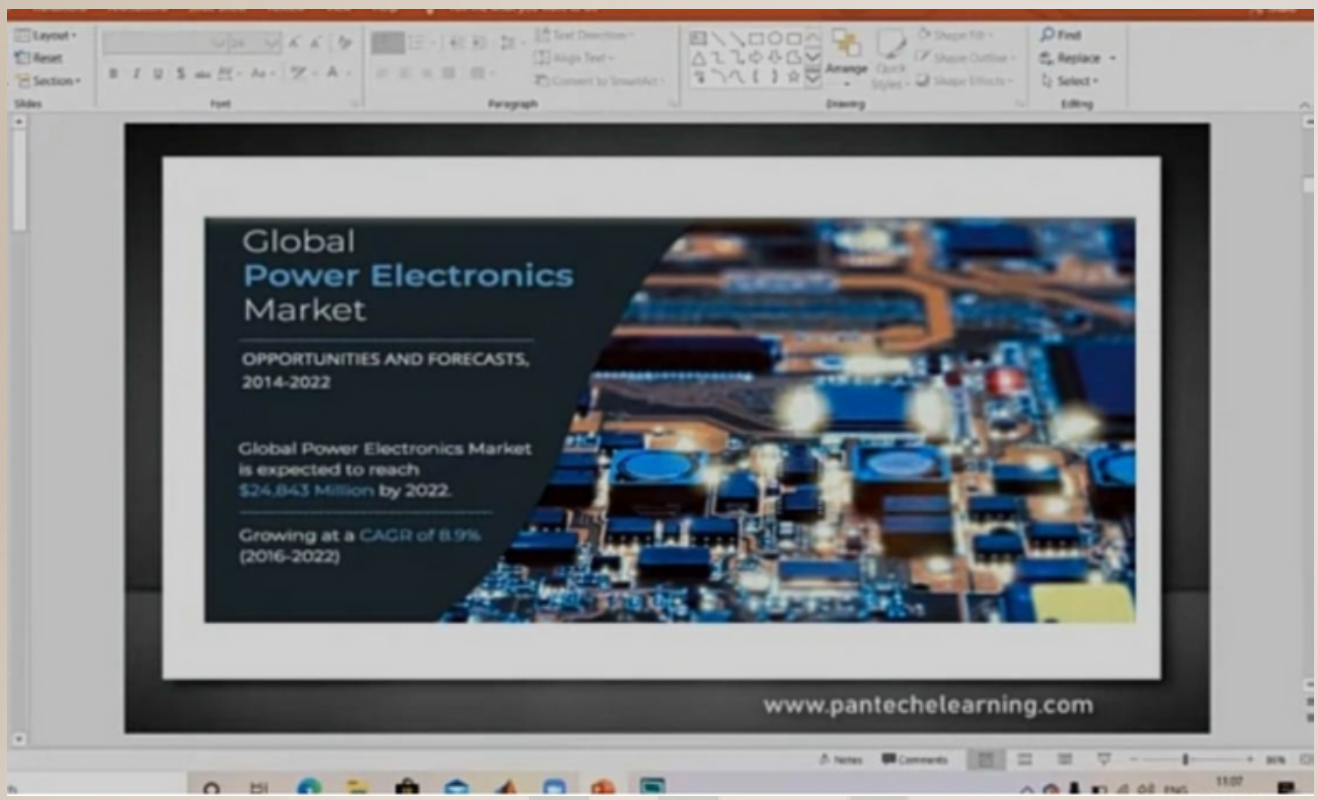
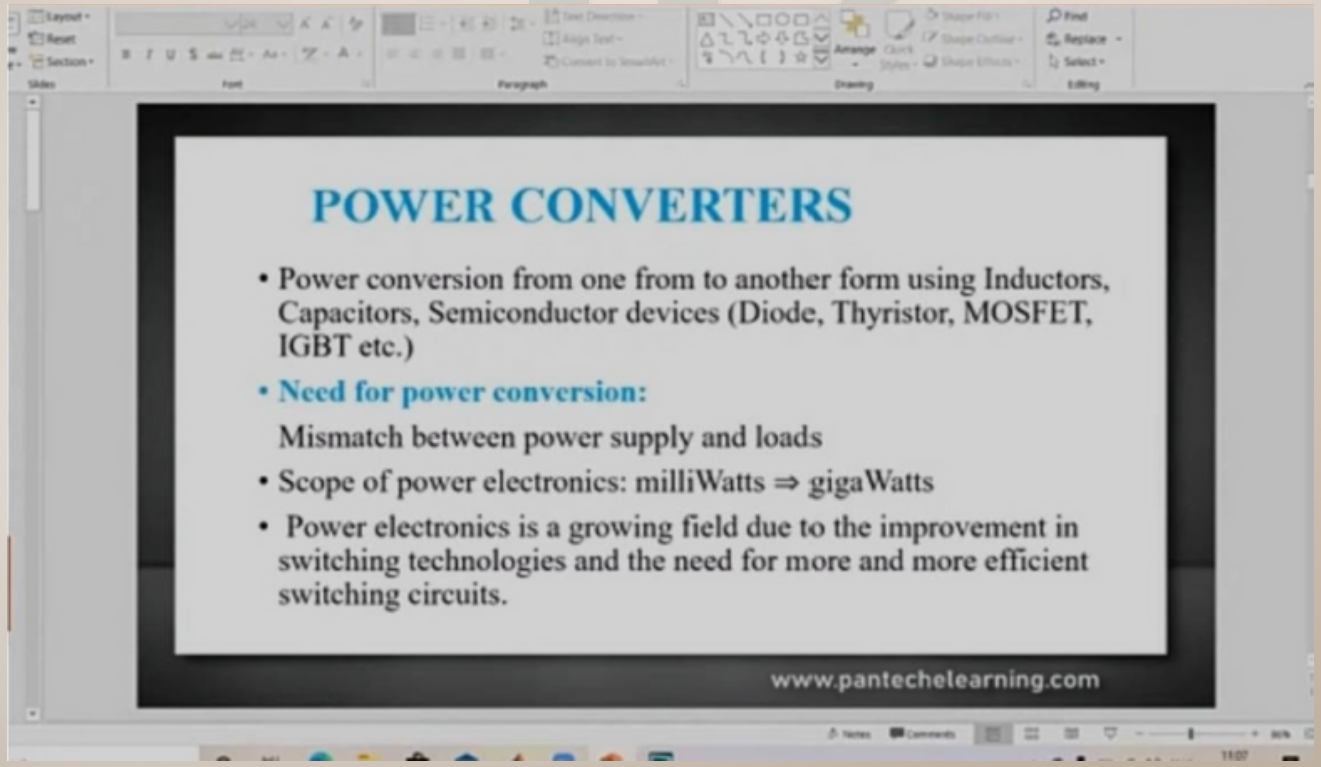
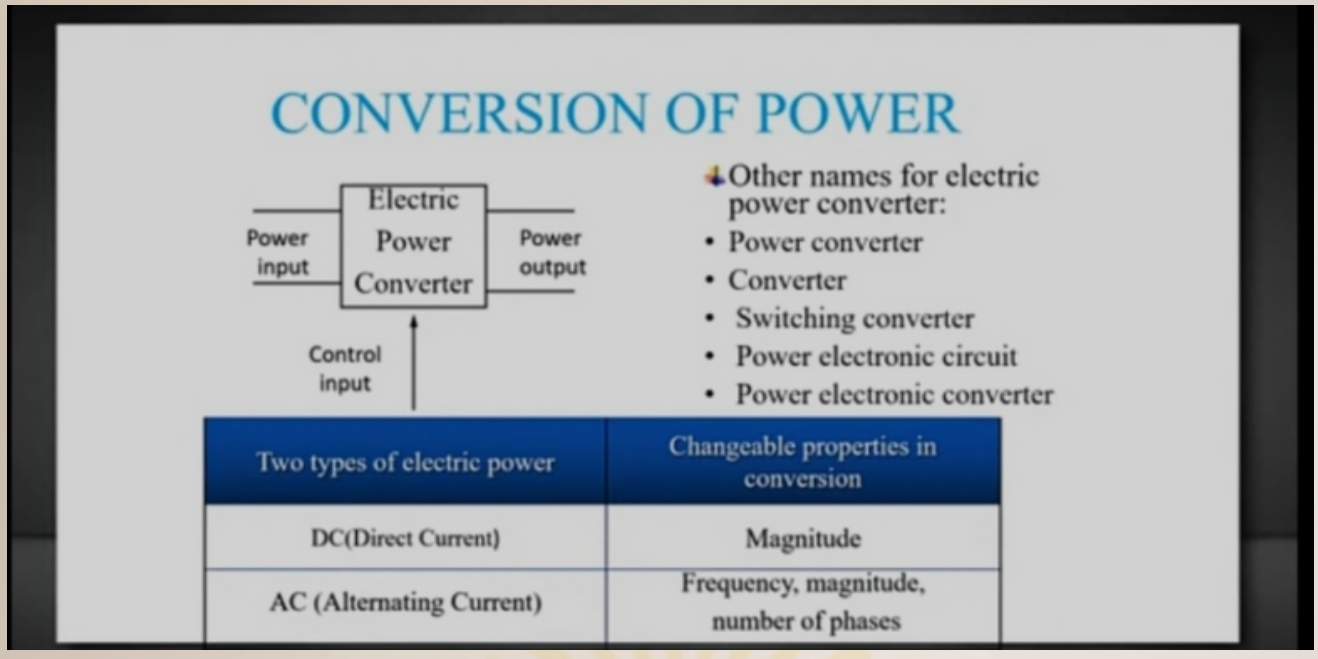
IEEE

Events Organized

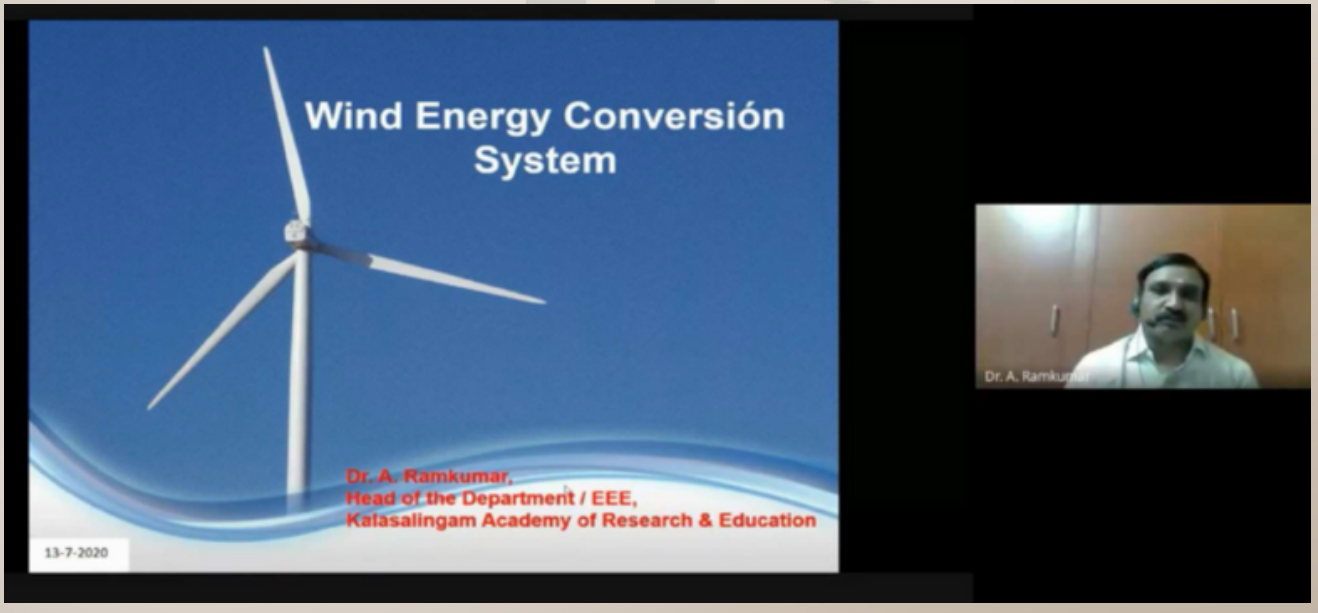
WEBINAR ON "LATEST TRENDS IN POWER ELECTRONICS USING MATLAB"







SOFTWARE TOOLS FOR ELECTRIC POWER SYSTEM ANALYSIS -STEPSA 2021



INDUSTRIAL VISIT

VISIT TO SRISALAM PROJECT

SRISAILAM DAM VISIT REPORT

SRISAILAM DAM AND POWER HOUSE
SUBMITTED TO:
ELECTRICAL ENGINEERING DEPARTMENT
J B INSTITUTE OF ENGINEERING AND TECHNOLOGY

Power generation at the dam Every portion of the report is explained in detail with relevant pictures wherever necessary.

I thank TSGENCO for allowing us to make a visit to the project for the final-year students.

SRISAILAM DAM AND POWERHOUSE HISTORY

It is a holy town and mandal, situated in the Nallamala Hills of Kurnool district, Telangana, India. It is on the banks of River Krishna, about 212 km south of Hyderabad. Bhramaramba Mallikarjunaswamy Temple dedicated to Lord Mallikarjuna Swamy(a form of Shiva)and Devi Bhramaramba (a form of Parvathi) is located here and it is one of the 12 Jyotirlinga temples dedicated to Lord Shiva. Srisailam Dam, located about 212 km from Hyderabad and 132 km from Nandyal, is a multipurpose dam built across River Krishna and caters to the irrigation and power needs of the state.

The Srisailam Dam is an important Dam project in the state of Telangana across the Krishna River at Srisailam in the Kurnool district. The Srisailam Dam is one of the 12 largest hydroelectric projects in the country. The dam is built in a deep gorge in the Nallamala hills, which is 300 m or 980 feet above sea level. The Srisailam Dam is 512 m or 1,680 feet long,240.79 m or 790.0 feet high, and features 12 radial crest gates.

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LAY OUT OF 6x150MW SRISAILAM LEFT BANK POWER PLANT

PROJECT CONSTRUCTION

The Srisailam project began in 1960, initially as a power project, across the Krishna, near Srisailam in Telangana. After several delays, the main dam was finally completed twenty years later in 1981. In the meantime, the project was converted into a multipurpose facility with a generating capacity of 770 MW by its second stage which was expected to be completed in 1987. The dam is to provide water for an estimated 2,000 km2 (770 sq mi) with its catchment area of 206,040 km2 (79,552 sq mi) and water spread of 1,595 km2 (616 sq mi). Under the right branch canal, 790 km2 (310 sq mi) in the Kurnool and Kadapa districts will have assured irrigation. From the initial modest estimate of Rs.384.7 million for a power project the total cost of the multipurpose project was estimated to cross Rs.10 billion in its enlarged form. The 143 m (469 ft) high and 512 m (1,680 ft) wide dam alone cost Rs.4.04 billion together with the installation of four generating sets of 110 MW each. The right branch canal is estimated to cost Rs.4.49 billion and the initial investment of Rs.1.4 billion has been provided by the World Bank. The projected cost-benefit ratio of the project has been worked out at 1:1.91 at 10% interest on capital outlay. On 2 October 2009, Srisailam Dam experienced a record inflow which threatened the dam. Due to the construction of the Srisailam Hydro Electric Project across river Krishna, nearly 102 villages in Kurnool and Mahboobnagar districts along the banks of the rivers Krishna, Tungabhadra, Bhavanasi and their tributaries were submerged. The Srisailam Dam is a dam constructed across the Krishna River at Srisailam in the Kurnool district in the state of Telangana in India and is the 2nd largest capacity hydroelectric project in the country. The dam was constructed in a deep gorge in the Nallamala Hills, 300 m (980 ft) above sea level. It is 512 m (1,680 ft) long, 240.79 m (790.0 ft) high, and has 12 radial crest gates. It has a huge reservoir of 800 km2 (310sq mi). The left bank hydroelectric power station generates 6 × 150 MW of power and the right bank generates 7 × 110MW of power. the dam is also surrounded by thick forests and beautiful scenery.

SRISAILAM LEFT BANK POWER STATION

Salient Features Of Hydroelectric Project

1. Location : Srisailam Dam West, Kurnool/MBNR Dist. A.P.
2. Category: Underground Hydel Power House, Pumped Storage
3. Capacity : 6 x 150 MW = 900 MW
4. Designed capacity : 6 x 153 MW = 918 MW
5. River: KRISHNA
6. Dam: Srisailam Dam, across Krishna River in Nandi Kotkur.
7. No. of Units: SIX
8. Design Energy (in Mu): 1200 MU

II. Hydrology:

1. Catchment Area : 2,03,597 Sq. K.M (79,530 Sq. Miles)
2. Max. flood discharge: 30,316 Cumecs
3. Live Storage: 247.79 TMC Ft.
4. Gross Storage: 308.06 TMC Ft.
5. Dead Storage: 60.3 TMC Ft. (2122 MCM) at 805 Ft.
6. Generation per TMC: 5.5 MU
7. Design Head: 91 M (Turbine Mode)
8. Max. gross head: 375 Ft. (114.3 M) Turbine Mode
9. Design Net Head: 82.8 M (153 MW)
10. Net Head Max/Min: 107.1 M (176 MW) / 65.3 M (106 MW) (Turbine Mode)
11. Full Reservoir level (FRL): 885 Ft. (269.75 M)
12. Min. Draw Down Level (MDDL): 805 Ft. (245.37 M)
13. Tail Race water level fora) Max. Discharge: 590 Ft.b) Min. Discharge: 535 Ft.
14. Design Disch. through Machine: 7484 Cusecs (211.9 Cumecs)

2. GENERATOR - MOTOR:

a) Type: Synchronous Generator, Semi Umbrella
b)Make: M/s. Mitsubishi Electric Corporation (MELCO), Japan
c) Rated Voltage: 13.8 KV
d) Rated Output: 150 MW/ 190 MVA (Generating Mode) 175 MW
e) Current: 8,500 A
f) Speed: 136.4 RPM
g) Power Factor: 0.9 Lagging (GM) 0.95 Leading (MM)

3. GENERATOR TRANSFORMER :

a) Make: M/s. TELK, Kerala
b) Capacity: 190 MVA, 3 . Phase
c) Voltage Ratio: 13.8 KV/ 400 KV

4. TRANSMISSION LINE :

a) No. of Feeders: 5 Nos., 400 KV
b) Name of the Feeders: Vijayawada I & II (2 Nos.)Hyderabad I &II (2 Nos.)Kurnool. I (1 No.)

5. 400 KV GAS INSULATED SWITCHGEAR :

a) No. of Feeders: 5 Nos.
b) No. of generator Transformers: 6 Nos.
c) No. of Station Transformers: 2 Nos.
d) Bus coupler: 1 No

SRISAILAM LEFT BANK POWER STATION PROJECT :

Top view of generator units at srisailam power plant

HYDROELETRICAL POWER HOW IT WORK

Hydroelectric and coal-fired power plants similarly produce electricity. In both cases, a power source is used to turn a propeller-like piece called a turbine, which then turns a metal shaft into an electric generator, which is the motor that produces electricity. A coal-fired power plant uses steam to turn the turbine blades; whereas a hydroelectric plant uses falling water to turn the turbine. The results are the same. The theory is to build a dam on a large river that has a large drop in elevation (there are not many hydroelectric plants in Kansas or Florida). The dam stores lots of water behind it in the reservoir. Near the bottom of the dam wall, there is the water intake. Gravity causes it to fall through the penstock inside the dam. At the end of the penstock, there is a turbine propeller, which is turned by the moving water. The shaft from the turbine goes up into the generator, which produces the power.

Power lines are connected to the generator that carries electricity to your home and mine. The water continues past the propeller through the tail races into the river past the dam. By the way, it is not a good idea to be playing in the water right below a dam when water is released As to how this generator works, the Corps of Engineers explains it this way"A hydraulic turbine converts the energy of flowing water into mechanical energy. A hydroelectric generator converts this mechanical energy into electricity. The operation of a generator is based on the principles discovered by Faraday. He found that when a magnet is moved past a conductor, it causes electricity to flow. In a large generator, electromagnets are made by circulating direct current through loops of wire wound around stacks of magnetic steel laminations. These are called field poles and are mounted on the perimeter of the rotor. The rotor is attached to the turbine shaft and rotates at a fixed speed. When the rotor turns, it causes the field poles (the electromagnets) to move past the conductors mounted in the stator. This, in turn, causes electricity to flow and a voltage to develop at the generator output terminals."

CONCLUSION :

It was seen that the Srisailam power plant operates with 6 turbines each producing 150MW producing a total of 900MW. The power thus generated is fed to bus bars in the generating station. This power from bus bars is stepped up using a step-up transformer. The power from the secondary transformer is fed to transmission line conductors at high voltage and supplied to substations situated at Hyderabad, Kurnool, etc.

ANNUAL TECHNICAL MAGAZINE

JB

DECEMBER 2020

J.B.INSTITUTE OF ENGINEERING & TECHNOLOGY
UGC AUTONOMOUS

(Accredited by NBA & NAAC, Approved by AICTE & Permanently Affiliated to JNTUH)

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