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ELECTRO-MOTTO

Magazine of

ELECTRICAL AND ELECTRONICS ENGINEERING DEPARTMENT

R.V.R. & J.C.COLLEGE OF ENGINEERING
(AUTONOMOUS)
Chandramoulipuram, Chowdavaram, GUNTUR – 522 019.

From the Principal

It is always a pleasure to be a part of a team which strives to bring out the talents of students and staff. Electrical and Electronics department of RVR&JC College of Engineering has always been striving to keep itself ahead of the competition. The essential purpose of a magazine is to inform, engage, inspire and entertain a diverse readership including alumni, parents, students, faculty, staff and other friends of the college by telling powerful stories that present a compelling, timely and honest portrait of the college and its extended family. This magazine has made an earnest attempt in this direction and brought out certain aspects to the eyes of the public so that they may understand and know the EEE department even better.

Dr.K.Ravindra

From the HOD of EEE

I am happy to note that the magazine brought out in our EEE department is of good quality and taste. Hearty congratulations to the editorial team. It is a matter of great pleasure for me to go through the wonderful contributions made by the students. This magazine is intended to bring out the hidden literary talents in the students and to inculcate leadership skills among them. The outside world will come to know about the caliber of our students through this magazine. I extend my thanks to all the contributors for their articles, poems and drawings.

Dr.K.Chandrasekhar

ABOUT THE DEPARTMENT:

The Department of Electrical and Electronics Engineering has been established during the academic year 1994 - 1995 with an intake of 60 students. The intake has been enhanced to 120 from the academic year 2004 -2005 and 180 from the academic year 2013-2014. The intake from academic year 2021 -2022 is 120. Department was accredited twice by National Board of Accreditation of AICTE first in the year 2002 with A-Grade for five years, in the year 2007 for three years and in 2012 for two years. Accreditation by NBA for 5th time in 2017 and 6th time in 2021.We have over 10 laboratories with advanced equipment and facilities for supporting our teaching and research. It is envisioned to strengthen the quality of its faculty, research and teaching facilities, as well as student's academic performance.

Our vision:

The vision of the department of Electrical & Electronics Engineering is "To impart education leading to highly competent professionals in the field of Engineering who are globally competent and to make the Department a Centre for Excellence".

Our Mission:

The mission of the department of Electrical & Electronics Engineering is "The Integrated development of professionals with knowledge and skills in the fields of specialization, ethics and values needed to be employable in the fields of Electrical Engineering and contribute to the economic growth of the employing organization and pursue lifelong learning**".**

Achievements:

The Department of Electrical & Electronics Engineering standing among all the other branches of our college.

- Accredited "A" grade for two years by NBA, AICTE New Delhi in the year 2012 for two years.

- Accredited "A" grade for three years by NBA, AICTE New Delhi in the year 2007 for three years.
- Accredited "A" grade for five years by NBA, AICTE New Delhi in the year 2002 for five years.
- College Accredited by APSCHE, Hyderabad in academic Audit Grade. It is informed that it is the Second best among the private Engineering Colleges in Andhra Pradesh.
- P.G. Course M.Tech. In Power Systems Engineering was started in 2004 with an intake of 18 students.
- The Students of the department excels in the University Examinations by being University I Rank Every Year.
- The Department is the winner of CZARS Title (Overall Championship) thrice in the years 2008, 2014, 2016 within the college.
- Accreditation by NBA for 5th time in 2017 and 6th time in 2021.

Program Educational Objectives:

I. To facilitate the students to become Electrical & Electronics Engineers who able to competent, innovative and productive in addressing the broader interests of the organizations & society.

II. To prepare the students to grow professionally with proficient soft skills.

III. To make our graduates to engage and excel in activities to enhance knowledge in their professional works with ethical codes of life & profession.

Program Outcomes:

Engineering Graduates will be able to:

PO1. **Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

PO2. **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.

PO3. **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.

PO4. **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.

PO5. **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.

PO6. **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.

PO7. **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.

PO8. **Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9. **Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO10. **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.

PO11. **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.

PO12**. 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.

Program Specific Outcomes (PSOs) of EEE Department:

PSO 1: Graduates of the program must demonstrate knowledge and hands on competence in developing, Testing, Operation and Maintenance of Electrical & Electronics systems.

PSO 2: Graduates of the program must demonstrate knowledge and hands on competence in Modern Engineering tools to engage in life-long learning and to successfully adapt in multi disciplinary environments.

PSO 3: Graduates of the program must demonstrate knowledge in Project Management techniques, environmental issues and Green technologies.

TOP 4 STUDENTS of Y16 Batch up to IV B.Tech II Semester

Regd No.	Name	CGPA	Rank
Y16EE960	Tallapaneni Chandana	9.60	First
Y16EE912	Nagineni Parameswari	9.57	Second
Y16EE926	Pattaswamy Santoshi Nikitaprasad	9.31	Third
Y16EE910	Nagaboina Likhitha	9.31	Fourth

TOP 4 STUDENTS of Y17 Batch up to III B.Tech II Semester

Regd No.	Name	CGPA	Rank
Y17EE079	Kollimarla Sesha Sireesha	9.47	First
Y17EE148	Sivangula Rama Krishna Prasad	9.44	Second
Y17EE112	Nalluri Sri Varsha	9.40	Third
Y17EE147	Shaik Riyaz Baji	9.38	Fourth

TOP 4 STUDENTS of Y18 Batch up to II B.Tech II Semester

Regd No.	Name	CGPA	Rank
Y18EE045	Ila Kalyani	9.74	First
Y18EE002	Alapati Akhilesh	9.70	Second
L19EE192	Ganjerupalli Sai Sumanth	9.62	Third
Y18EE086	Meduri Dhanalakshmi	9.49	Fourth

TOP 4 STUDENTS of Y19 Batch up to I B.Tech II Semester

Regd No.	Name	CGPA	Rank
Y19EE131	Thanikonda Richitha	9.62	First
Y19EE069	Kumbha Prem Kumar	9.55	Second
Y19EE027	Chinthoti Mohini Priya	9.49	Third
Y19EE044	Goddu Chinnarayudu	9.47	Fourth

TOP 4 STUDENTS of Y18 Batch up to II M.Tech II Semester

Regd No.	Name	CGPA	Rank
Y18MPS04	Podili Manisha	9.24	First
Y18MPS01	Atmakuri V N Durga Harika	8.95	Second
Y18MPS08	Shaik Yalavarthi Hussain	8.57	Third
Y18MPS05	Prathipati Manisha	8.41	Fourth

Artificial Intelligence in Power Systems

Artificial Intelligence (AI) has been increasingly applied to power systems to enhance efficiency, reliability, and sustainability. Here are several aspects where AI is making an impact in power systems.

Grid Optimization: AI algorithms help in optimizing the operation of power grids by predicting electricity demand and managing the distribution of energy.Smart grids with AI capabilities enable real-time monitoring and control of energy flow, improving overall grid reliability.

Energy Forecasting: AI is utilized for accurate short-term and long-term energy forecasting. Machine learning models can analyze historical data, weather patterns, and other variables to predict energy demand and supply.

Fault Detection and Diagnostics: AI systems can detect faults and anomalies in power systems by analyzing data from sensors and devices. This helps in identifying and addressing issues before they lead to outages.

Predictive Maintenance: AI algorithms predict equipment failures and recommend maintenance schedules based on the condition of power system components. This approach minimizes downtime and extends the lifespan of equipment.

Energy Management Systems: AI is employed in energy management systems to optimize the scheduling and dispatch of energy resources, including renewable sources and energy storage.

Demand Response: AI facilitates demand response programs by predicting peak demand periods and adjusting energy consumption accordingly. This helps in balancing the grid and avoiding overloads.

Renewable Energy Integration: AI algorithms help integrate renewable energy sources like solar and wind into the power grid more efficiently by forecasting energy production and adapting to their variable nature.

Cybersecurity: AI is used for enhancing cybersecurity in power systems by detecting and preventing cyber threats. It can identify unusual patterns in network traffic and prevent unauthorized access.

Voltage and Reactive Power Control: AI algorithms optimize voltage and reactive power control, ensuring that the power system operates within specified limits and minimizing losses.

Energy Trading: AI is applied in energy trading platforms to analyze market trends, predict prices, and optimize trading strategies.

Decentralized Energy Systems: AI plays a crucial role in managing decentralized energy systems, including microgrids and distributed energy resources, to balance supply and demand locally.

Load Forecasting: AI models predict the future electricity consumption patterns, helping utilities plan for capacity expansion and optimize resource allocation.

The integration of AI into power systems brings about a transformation in the way electricity is generated, distributed, and consumed. It contributes to the development of smarter, more resilient, and sustainable energy infrastructure.

Facts about Electricity

Understanding these facts can give you a deeper appreciation for the role electricity plays in our lives and the fascinating phenomena associated with it.

- Benjamin Franklin Didn't Discover Electricity: He conducted experiments and proved that lightning is a form of electricity, but he didn't "discover" electricity. Electricity was known long before Franklin's kite experiment.

- Electricity Travels at the Speed of Light: In a vacuum, the speed of electricity, or the flow of electrons, travels at the speed of light, which is about 186,000 miles per second (299,792 kilometers per second).

- The First Power Plant: The first centralized power plant was built in 1882 by Thomas Edison in New York City. It used a direct current (DC) system to power around 85 customers.

- Electricity and Magnetism are Connected: They are two aspects of the same fundamental force called electromagnetism. Changing magnetic fields create electrical currents and vice versa.

- AC vs. DC: Nikola Tesla and Thomas Edison had a famous debate about alternating current (AC) and direct current (DC). AC won out due to its ability to be transmitted over long distances more efficiently.

- Human Body Conducts Electricity: The human body is a conductor of electricity. That's why it's essential to be careful around live electrical circuits to avoid electric shock.

- Electric Eels Generate Electricity: Electric eels can generate electric shocks of up to 600 volts to stun prey or defend themselves. They have specialized cells that act as tiny batteries.

- Lightning Strikes: Lightning is a discharge of electricity in the atmosphere. A typical lightning bolt can release enough energy to light a 100-watt bulb for more than three months.

- Power Grids are Interconnected: Power grids connect multiple power plants to users. These grids ensure a continuous flow of electricity and provide backup in case of outages.

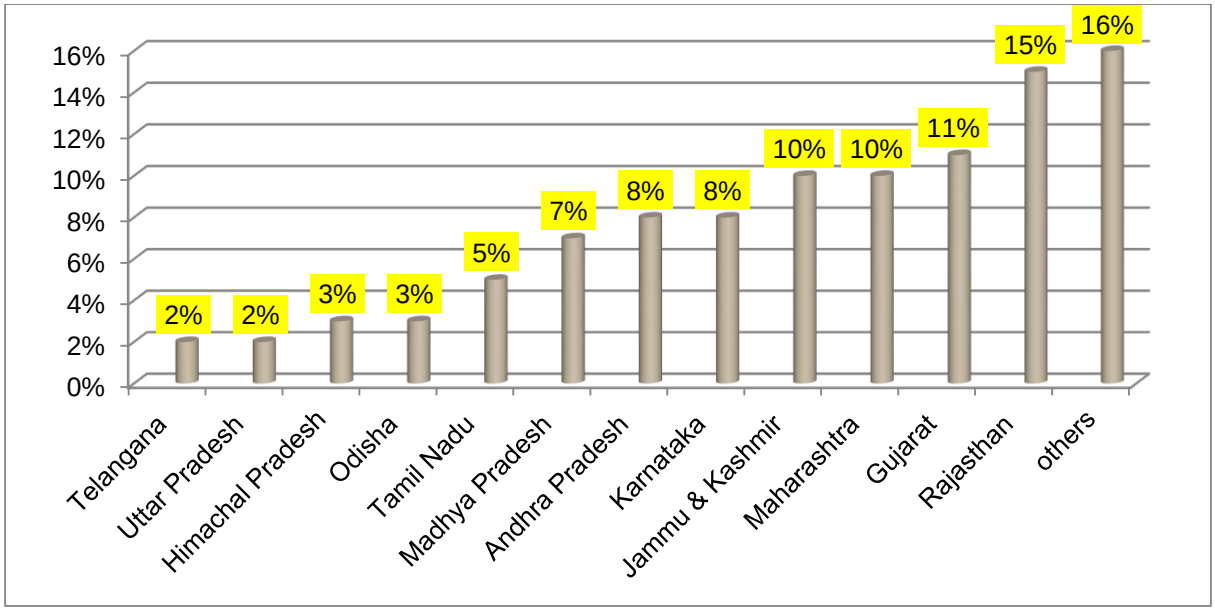
- Electrical Resistance Generates Heat: When electricity encounters resistance in a wire, it generates heat. This principle is used in many electrical appliances like toasters and electric heaters.

Renewable Energy Sources Scenario

India is one among the maximum renewable energy utilizing country. It secures fourth position in renewable energy market all over the world. From the records as of 2018, in wind Power India ranked fourth and fifth in both solar as well as renewable power installed capacity. To reach 15,820 TWh by 2040, Indian government in-creased support to investors in renewable energy generation. By 2022, India has an aim to reach renewable energy of 225 Giga Watt with solar

contribution of 114 Giga Watt and wind power contribution of 67Giga Watt. By 2030, India has a goal to increase the same to 500 Giga Watt.

At present the total capacity of installed renewable energy is 88.79 GW out of which, 35.73 GW from solar and 37.97GW from wind. With good policies introduced by Government of India the energy contribution from non-conventional sources in India touched 127.01 billion units. The estimated state wise power generation from renewable sources in India in 2019 is as shown in below figure. It can be observed that the highest contribution by Rajasthan with 15% and next by Gujarat with 11%.

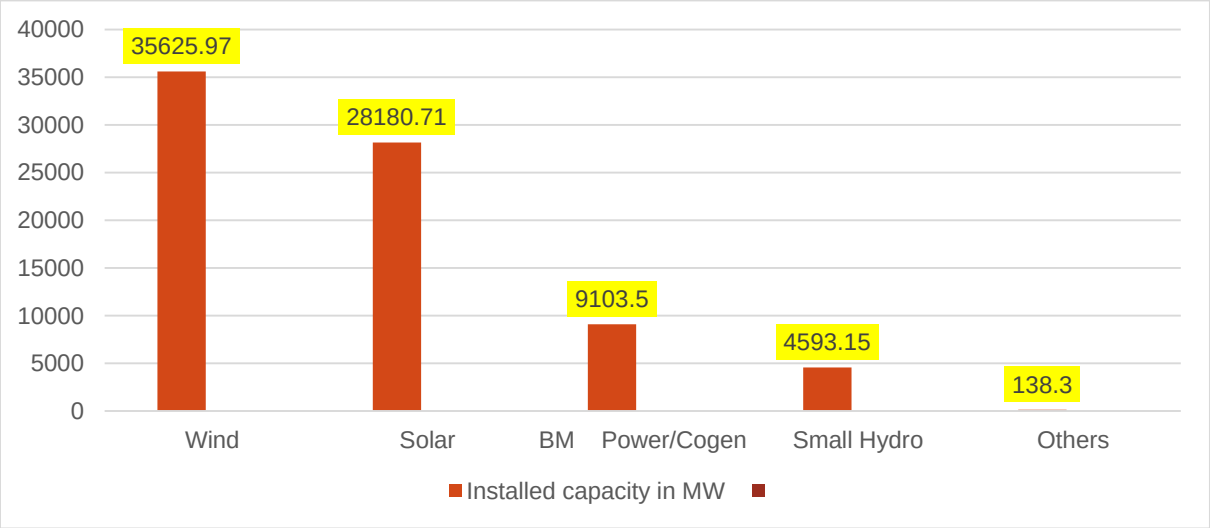


Renewable Power Generation in India

The growth in generation of power by renewable energy sources from 2014-15 to 2018-19 is given in Table. The installed capacity of renewable energy sources in megawatt in terms of wind, solar, biomass, small hydro and others till March 2019 can be visualized in below Figure. It can be seen in the figure that, with 35625.97MW wind contribution is maximum among other sources.

Years	Generation from RES (BU)	Year-wise growth (%)
2014-15	61.72	
2015-16	65.78	6.58
2016-17	81.55	23.97
2017-18	101.84	24.88
2018-19	126.76	24.47

Growth in generation of power by renewable energy sources from 2014-15 to 2018-19.



Renewable Installed Capacity till March 2019

Energy is very important aspect for development of any country. Reliable availability of energy is one of the measures in the growth of the country. This paper gives a brief analysis on conventional and non-conventional energy generation situation in India. The present situation of energy generation in India needs some improvements to overcome the difficulties like unreliability, Shortages and more charges for industrial consumers. To meet the present and future needs, India should have clear Strategy for the use of best possible options available in

terms of short term and long term goals. To promote renewable power generation, both central and state governments are attracting the users by giving best policy. This paper provides some policies and initiations from the government to raise the growth rate of renewable power generation in India. These policies also help in providing employment opportunities along with cleaner energy. This momentum need to be maintained by India to attain a target of reaching 70% energy generation from renewable sources by 2050.

GOVERNMENT INITIATIVES & GROWTH OF RENEWABLE ENERGY

To support to renewable energy sector, government of India launches some initiatives as given below:

- Solar equipment factories are offered land near its ports to companies by the government of India in August 2020.
- By exempting solar energy from electricity duty, Rajasthan government promoting usage of renewable power in farming and various sectors. The same is Placed in Budget 2019-20 bill.
- Delhi government took initiation to establish 5,000 KW solar park by shutting down thermal power station in Rajghat.
- Indian Government also desires to establish 30 Giga Watt solar energy Plant beside the deserts in Gujarat and Rajasthan.
- To decrease the cost of setup and increase the usage of solar power, the minis-try of India give benefits to solar roof top sector by reducing custom and excise duty.

- By 2030, the government of India plans to establish 500 Giga Watt renewable energy plants.

- The developers of energy by solar cells and modules are provided solar power tariff cap at 2.5Rs and 2.68Rs for domestic and imported by MNRE in August 2018.

- Solar Energy Corporation of India (SECI) promotes large auctions for solar parks and granted 47 parks with a capacity of 25GW.

- Under Central Public Sector Undertaking (CPSU)-II phase scheme, vikram solar taken a 300 MW solar plant development with cost of Rs 1,750 crore from NTPC, India.

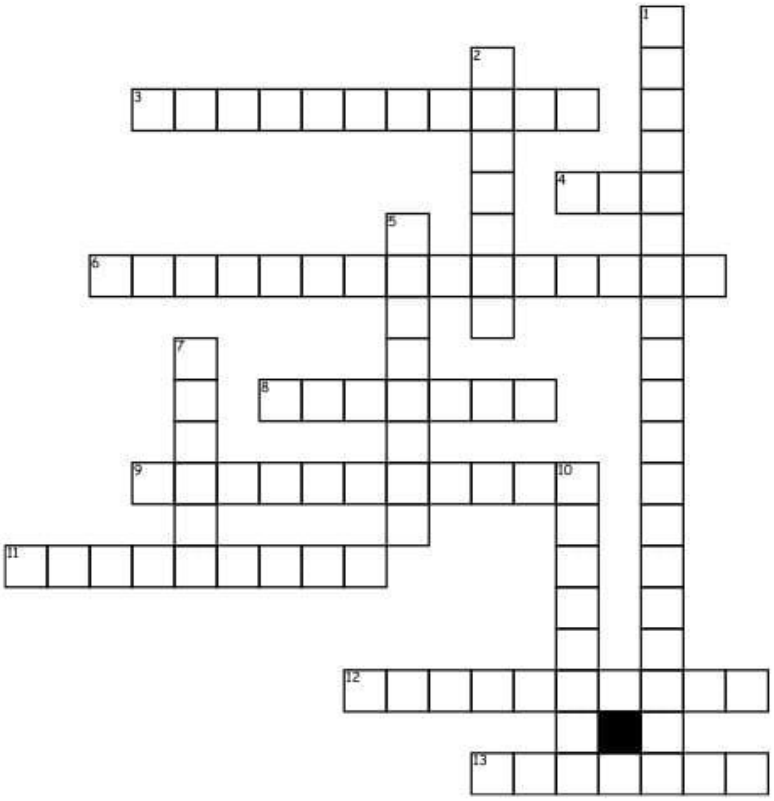
- By 2025, Adani Group from India aims to reach the world's largest renewable energy firm.

- From private companies, about Rs 36,729.49 cr. investments are recorded in India from April-Dec 2019 by in renewable energy sector.

- NTPC announced to invest Rs 50,000 crore on solar energy to increase the capacity of solar power generation by 10 GW in December 2019.

- In Uttar Pradesh, ReNew Power and ShapoorjiPallonji wish to invest nearly 750 crore for 150 MW floating solar power project.

Puzzle



Across

3. a form of energy resulting from the existence of charged particles

4. an atom or molecule with a net electric charge due to the loss or gain of one or more electrons

6. a closed circuit in which the current divides into two or more paths before recombining to complete the circuit

8. an electromotive force or potential difference expressed in volts

9. A device used to transfer electrical energy from one circuit to another

11. a force that acts at a distance due to a magnetic field

12. a hindrance to the flow of a charge

13. a flow of electric charge

Down

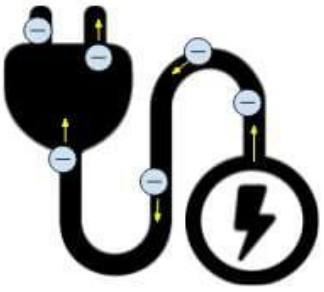
1. the difference of electrical potential between two points

2. the complete path around which an electric current flows

5. a stable subatomic particle that is found in atoms with a charge of negative electricity

7. is a characteristic of a unit of matter that expresses the extent to which it has more or fewer electrons than protons

10. an electronic component that is designed to offer a desired amount of resistance to the flow



First place with the theme : glowing traditionally in tune with nature " in view of "Karthika pournami" during 2021-2022

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