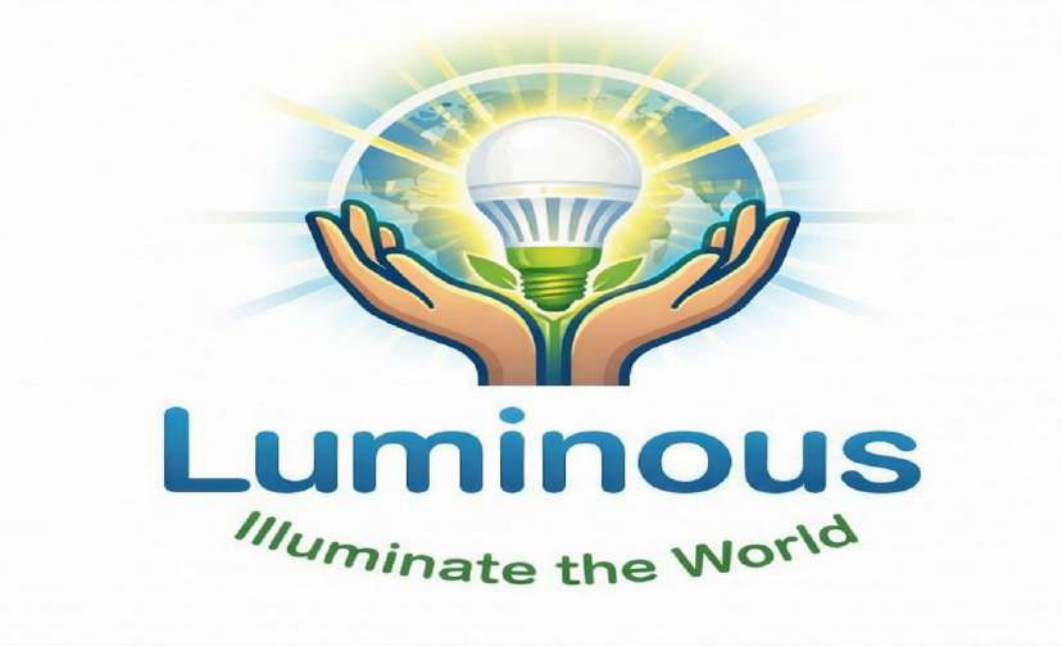

A MAGAZINE PUBLISHED BY DEPARTMENT

OF ELECTRICAL ENGINEERING

DR. BAPUJI SALUNKHE INSTITUTE OF ENGINEERING &

TECHNOLOGY, KOLHAPUR.

BSIET

Academic Year 2024-25

Institute Vision

To be the institute of quality engineering education and research for producing capable industry professionals with responsibilities towards nation building

Institute Mission

M1 – To imbibe and implement outcome-based education for effective teaching-learning process.
M2 – To upbring critical thinking, research aptitude and problem-solving attitude among the students & teachers.
M3 – To strengthen industry interactions for upskilling and solving real world problems towards better internship & job opportunities.
M4 – To sensitize all the stakeholders towards ethics, values, harmony, humanity & environment and lifelong learning.

Department Vision

To be the reputed department imparting quality and skill-based education for producing competent and responsible electrical engineers towards safer and energy efficient society.

Department Mission

M1 – To empower students with sound technical knowledge imparted through activity and project-based learning.
M2 – To Infuse critical thinking and aptitude for undertaking and solving real world energy problems.
M3 – To illuminate students for implanting professional skills and service attitude through industry internships and interactions.
M4 – To Permeate electrical safety norms, ethics and values among students and teachers towards sustainable development of society.

Program Educational Objectives (PEOs)

PEO-1 –Domain knowledge – Diploma graduates will exhibit their technical and practical skills in serving industries and society.
PEO-2 –Professionalism – Diploma graduates will apply standard safety norms, ethics, professional & soft skills for the growth of their organization.
PEO-3 -Lifelong learning – Diploma graduates will utilize their lifelong learning abilities to upgrade their knowledge & skills for accelerating their career growth.

Committee

CHIEF EDITOR'S DESK

It gives me immense pleasure to present this departmental magazine, which serves as a platform to showcase the academic achievements, technical creativity, and co-curricular excellence of our students and faculty members.

The Electrical Engineering Department continuously strives to impart quality technical education while nurturing innovation, discipline, and professional ethics among students. This magazine reflects the collective efforts of our students, who have actively contributed technical articles, project work, event reports, and creative ideas, demonstrating their enthusiasm for learning beyond the classroom.

I sincerely appreciate the dedication of the editorial team, faculty coordinators, and student contributors who worked tirelessly to bring out this publication. Their commitment and teamwork are truly commendable. I am confident that this magazine will inspire students to explore emerging technologies, enhance their technical skills, and develop a research-oriented mindset. I wish all the contributors great success in their academic and professional journey.

Best Wishes,

Mr. P. P. Bhat
Head of Department & Chief Editor,
"Luminous" – Department of Electrical Engineering

Academic Achievements

Winter 2024

"The remarkable success of our students in the recent MSBTE examinations is a powerful affirmation of the rigorous standards maintained within our department"

Class	Rank	Name	Percentage
FY	FIRST	MANE PRANAV JITENDRA	83.53
	SECOND	MEHTA KHUSHI MANIKLAL	80.47
	THIRD	PATIL RAJVIR PRATAP	80.24
SY	FIRST	SHAIKH BUSHRA IRFAN	91.06
	SECOND	PAWAR VIDHYA AVINASH	89.65
	THIRD	ZORE BAJIRAV BABU	87.41
TY	FIRST	JADHAV SRUSHTI CHANDRAKANT	94.90
	SECOND	PATIL DIKSHA SUDAM	93.30
	THIRD	DEWARDEKAR DEEYA NAGESH	89.80

Summer 2025

Class	Rank	Name	Percentage
FY	FIRST	MANE PRANAV JITENDRA	84.82
	SECOND	PATIL RAJVEER PRATAP	83.77
	THIRD	PATIL GURUNATH SANTOSH	81.77
SY	FIRST	JAKATE NIDA TABAREJKHAN	82.12
	SECOND	PAWAR VIDYA AVINASH	80.59
	THIRD	PARADHI PRANAV DATTATRAY	77.77
TY	FIRST	JADHAV SRUSHTI SANTOSH	91.50
	SECOND	PATIL DIKSHA SUDAM	90.63
	THIRD	DEWARDEKAR DEEYA NAGESH	84.75

Industrial Visit

1) Industrial Visit is arranged for Third Year electrical engineering student at Sakhalkar Electricals, Kolhapur to understand the all about the Electrical Motors, AC machine etc. with the under the guidance of Mr. S. I. Naik- Visit Coordinator, Mr. P.P. Bhat- Head Department of Electrical Engg. & we are thankful to our respected Principal Dr. S. G. Sapate sir & Our Director Mr. V. D. Bhirdi sir for consistent support with us.

2) Industrial Visit is arranged for Second Year electrical engineering student at R. M. Mohite Power House, Radhanagri to understand the all about the Hydro project with the under the guidance of Mr. S. I. Naik- Visit Coordinator, Mr. V. R. Mullani, Mrs. S. P. Relekar, Mr. P.P. Bhat- Head Department of Electrical Engg. & we are thankful to our respected Principal Dr. S. G. Sapate sir & Our Director Mr. V. D. Bhirdi sir for consistent support with us.

3) Industrial Visit is arranged for Second Year electrical engineering student at 33/11 KV Solar connected Substation located at Kumbhoj village, block- Hatkanangle, Kolhapur to understand the Grid Management under Electrical Power Generation & Distribution network with the under the guidance of Mr. S. I. Naik- Visit Coordinator, Mr. V. R. Mullani, Mrs. S. P. Relekar, Mr. P.P. Bhat- Head Department of Electrical Engg. & we are thankful to our alumni Mr. Shahrukh Desai for arranging this visit under the of guidance of respected Principal Dr. S. G. Sapate sir & Our Director Mr. V. D. Bhirdi sir for consistent support with us.

4) Industrial Visit is arranged for Third Year electrical engineering student at Suzlon Wind Power plant at Sadawaghapur, Satara & Hoshang Tech solution, Chiplun to understand the all about the renewable energy generation, Solar Panel manufacturing etc. with the under the guidance of Mr. S. I. Naik- Visit Coordinator, Mr. P.P. Bhat- Head Department of Electrical Engg. & we are thankful to our respected Principal Dr. S. G. Sapate sir & Our Director Mr. V. D. Bhirdi sir for consistent support with us.

5) Industrial Visit is arranged for second Year electrical engineering student at Renutron, Power Solution India Pvt. Ltd., Kolhapur to understand the all about the Inverter, online UPS, rectifier,Power Electronics equipment with the under the guidance of Mr. S. I. Naik- Visit Coordinator, Mrs. S. P. Relekar- Faculty member, Mr. P.P. Bhat- Head Department of Electrical Engg. & we are thankful to our respected Principal, Dr. S. G. Sapate sir & Our Director Mr. V. D. Bhirdi sir for consistent support with us.

6) Industrial Visit is arranged for Second- & Third-Year electrical engineering student at Anand Sagar Electrical & MASS Engineers PVT LTD, Sangli to understand the all about the Control Panel, Utilization of Electrical Engg. etc with the under the guidance of Mr. S. I. Naik- Visit Coordinator, Mr. V. R. Mullani, Mrs. S. P. Relekar, Mr. P.P. Bhat- Head Department of Electrical Engg. & we are thankful to our respected Principal Dr. S. G. Sapate sir & Our Director Mr. V. D. Bhirdi sir for consistent support with us.

7) Industrial Visit is arranged for Third Year electrical engineering student at 765 KV Switching Substation located at Kalamba, Kolhapur to understand the Grid Management under Electrical Power Generation & Distribution network, Gas insulated Substation, switchgear & Protection with the under the guidance of Mr. S. I. Naik- Visit Coordinator, Mr. B. N. Randive, Faculty member, Mr. P.P. Bhat- Head Department of Electrical Engg. we are thankful to our Principal Dr. S. G. Sapate sir & Our Director Mr. V. D. Bhirdi sir for consistent support with us.

Industrial Visit at Hoshang Tech Center, Chiplun

Industrial Visit at 33/11 kv Substation, kumbhoj

Industrial Visit at Suzlon Wind Power Plant, Sadawaghapur, Satara.

Industrial Visit at R. M. Mohite Power House, Radhanagri

Industrial visit arranged at "Renutron Power Solution India PVT. LTD., Kolhapur." for S.Y.E.E Students

Date: 17/02/2025

Industrial visit at Powergrid corporation ltd

Industrial visit at Anandsagar Electricals & Mass Engineers, Sangli.

Expert Lectures

1) Expert lectures are arranged for Second & Third-Year electrical engineering student for Opportunities in Government Sector by Mr. Balaram Madkar sir. He had shared such a wonderful experience & knowledge with our students, this lecture is arranged with the under the guidance of Mrs. R. B. Bodekar - Expert lecture Coordinator, Mr. P.P. Bhat- Head Department of Electrical Engg. & we are thankful to our respected Principal Dr. S. G. Sapate sir & Our Director Mr. V. D. Bhirdi sir for consistent support with us.

2) Expert lecture is arranged for Second & Third-Year electrical engineering student for Electrical Power Generation, Transmission & Distribution & Electrical Safety In Power sector by Mr. Pramod Sangar sir- Deputy Executive Engineer, MSETCL, Kolhapur. He had shared such a wonderful experience & knowledge with our students regarding Electrical Substation, Gas Insulated substation this lecture is arranged under the guidance of Mrs. R. B. Bodekar - Expert lecture Coordinator, Mr. S. I. Naik- Faculty Member, Mr. P. P. Bhat- Head Department of Electrical Engg. & we are thankful to our respected Principal, Dr. S. G. Sapate sir & Our Director Mr. V. D. Bhirdi sir for consistent support with us.

3) Expert lecture is arranged for Second & Third-Year electrical engineering student for Carrier Opportunities abroad for Engineers by Mr. Vijay Navale sir. He had shared such a wonderful experience & knowledge with our students, this lecture is arranged under the guidance of Mrs. R. B. Bodekar - Expert lecture Coordinator, Mr. P. P. Bhat- Head Department of Electrical Engg. & we are thankful to our respected Principal, Dr. S. G. Sapate sir & Our Director Mr. V. D. Bhirdi sir for consistent support with us.

4) Expert lecture is arranged for Second & Third-Year electrical engineering student for Importance of 5s in Electrical Industries by Mr. Sourabh Khanawale sir. He had shared such a wonderful experience & knowledge with our students. this lecture is arranged under the guidance of Mrs. R. B. Bodekar - Expert lecture Coordinator, Mr. P. P. Bhat- Head Department of Electrical Engg. & we are thankful to our respected Principal, Dr. S. G. Sapate sir & Our Director Mr. V. D. Bhirdi sir for consistent support with us.

5) Expert lecture is arranged for Second & Third-Year electrical engineering student for Switchgear & Protection by Mr.Vivek jadhav sir. He had shared such a wonderful experience & knowledge with our students. this lecture is arranged under the guidance of Mrs. R. B. Bodekar - Expert lecture Coordinator, Mr. P. P. Bhat- Head Department of Electrical Engg. & we are thankful to our respected Principal, Dr. S. G. Sapate sir & Our Director Mr. V. D. Bhirdi sir for consistent support with us.

6) Expert lecture is arranged for Second & Third-Year electrical engineering students under Electrical wiring on Autocad by Mr. Mukhtar Mullani sir. He had shared such a wonderful experience & knowledge with our students regarding AUTOCAD, this lecture is arranged with the under the guidance of Mrs. R. B. Bodekar - Expert lecture Coordinator, Mr. P.P. Bhat- Head Department of Electrical Engg. & we are thankful to our respected principal Mr. V. D. Bhirdi sir for consistent support with us.

7) Expert lecture is arranged for Second & Third-Year electrical engineering student under Industrial Automation and Embedded System Technology and Carrer Opportunities by Mr. Vivek Vishnu Sardal sir. He had shared such a wonderful experience & knowledge with our students this lecture is arranged under the guidance of Mrs. R. B. Bodekar - Expert lecture Coordinator, Mr. S. I. Naik- Faculty Member, Mr. P. P. Bhat- Head Department of Electrical Engg. & we are thankful to our respected principal Mr. V. D. Bhirdi sir for consistent support with us.

8) Expert lectures are arranged for Second & Third-Year electrical engineering student under Career Guidance on Industrial Revolution 4.0 by Mr. Sachin Sawant sir. He had shared such a wonderful experience & knowledge with our students this lecture is arranged under the guidance of Mrs. R. B. Bodekar - Expert lecture Coordinator, Mr. S. I. Naik- Faculty Member, Mr. P. P. Bhat- Head Department of Electrical Engg. & we are thankful to our respected principal Mr. V. D. Bhirdi sir for consistent support with us.

Highlights

- Our Department of Electrical engineering awarded “Very Good” Category by MSBTE external monitoring committee consistently during last 2 year.

हॅलो प्रभात

डॉ.बापूजी साळुंखे इंजिनिअरिंग इन्स्टिट्यूट ‘एक्सलंट’ श्रेणीत

कोल्हापूर : हॅलो प्रभात

श्री स्वामी विवेकानंद शिक्षण संस्थेच्या डॉ. बापूजी साळुंखे इन्स्टिट्यूट ऑफ इंजिनिअरिंग अँड टेक्नॉलॉजी (पॉलिटेक्निक) ला महाराष्ट्र राज्य तंत्र शिक्षण मंडळ, मुंबई यांचेकडून एक्सलंट तसेच व्हेरी गुड श्रेणी प्राप्त झाली असून इन्स्टिट्यूटच्या उत्कृष्ट शैक्षणिक गुणवत्ता परंपरेवर पुन्हा मोहर उमटवली गेली आहे. मंडळाच्या शैक्षणिक आढावा (मॉनिटरिंग) समितीने डॉ. बापूजी साळुंखे इन्स्टिट्यूट मध्ये तपासणी भेट देऊन शैक्षणिक सुविधा – संसाधने, विद्यार्थी केंद्रित उपक्रम, परीक्षांचे निकाल, प्रयोगशाळांची आधुनिकता, इन्स्टिट्यूटचे दैनंदिन कामकाज आणि प्रशासन, विद्यार्थ्यांच्या प्लेसमेंटस,अध्ययन प्रक्रियेची पूर्तता, उद्योगस्नेही उपक्रमांद्वारे सामाजिक बांधिलकी, उद्योग क्षेत्राशी सामंजस्य करार, गुणवत्ता सुधारणा उपक्रम, संशोधन क्षेत्रातील सहभाग, इन्स्टिट्यूट मधील वेगवेगळ्या समित्यांचे कामकाज आणि गुणवत्ता, विद्यार्थी व्यक्तिमत्व विकास उपक्रम, तक्रारी व्यवस्थापन, प्रकल्प सादरीकरण अशा अनेक निकषांवर इन्स्टिट्यूटची तपासणी केली.

उत्कृष्ट शैक्षणिक गुणवत्तेवर मोहर

या सर्व निकषांवर इन्स्टिट्यूट उत्तम कामगिरी करत असल्याचे समितीस दिसून आले. यावेळी इन्स्टिट्यूटमधील सर्व अधिविभागांना समितीने भेट देऊन कामकाजाची पाहणी केली. परिणामी, इन्स्टिट्यूटला वरील श्रेणी प्राप्त झाल्या, अशी माहिती संस्थेच्या सचिव प्राचार्या सौ. शुभांगी गायकवाड, मुख्य कार्यकारी अधिकारी कौस्तुभ गायकवाड यांचे इन्स्टिट्यूटमधील सर्व उपक्रम शिक्षण समूहाचे संचालक आणि इन्स्टिट्यूटचे प्राचार्य विरेन भिडी यांनी दिली. शिक्षण क्षेत्रातील नवनवीन प्रवाह, आउटकम बेस्ड एज्युकेशन, कौशल्य विकास यांच्या अनुषंगाने विद्यार्थी केंद्रित उपक्रम राबविण्यासाठी इन्स्टिट्यूट तत्परतेने कार्य करीत राहील असे त्यांनी यावेळी केले.

श्री स्वामी विवेकानंद शिक्षण संस्थेचे कार्याध्यक्ष प्राचार्य अभयकुमार साळुंखे, संस्थेच्या सचिव प्राचार्या सौ. शुभांगी गायकवाड, मुख्य कार्यकारी अधिकारी कौस्तुभ गायकवाड यांचे इन्स्टिट्यूटमधील सर्व उपक्रम तसेच मार्गदर्शन लाभले. प्राचार्य डॉ. सुहास सपकाळे यांनी गुणवत्ता मूल्यमापन प्रक्रियेविषयी विशेष ध्यान दिले. इन्स्टिट्यूटला मिळालेल्या या गौरवाबद्दल सर्व विभागप्रमुख, शिक्षक शिक्षकेतर कर्मचारी, विद्यार्थी यांचे अभिनंदन होत आहे.

epaper.helloprabhat.in

- Our Electrical Engineering Student Association celebrates teachers' day & conducts a one-day program also felicitate all the faculty members of our institute in the presence of our Principal, Dr. Suhas Sapate sir, all the Hod's, faculty members of our department.

- Our Training & Placement cell organized Life Skill development program on the date of 25th & 27th September 2025. In this program Mr. Mohasin Fakir sir share wonderful knowledge regarding Professional Skills, SWOT analysis, aptitude test, resume building, etc. this program organizes under guidance Mrs. P. T. Pansare madam, our director sir, Mr. V. D. Bhirdi, Principal Sir, Dr. Suhas G. Sapate, & all the faculty members.

- **“Jallosh 2025” an annual social event was organized in institute on 25th Jan.2025.** The 2-day festival of college that include various events where in student get the chances to think, step forward and showcase their talent. Various events had organized like face painting, Photography competition, rangoli competition, Mehandi competition, singing and dancing competition, fashion-show etc. more than 20 students from Electrical department had participated in event. Hon. Shri Abhaykumar Salunkhe Sir (Chairman- Shri Vivekanand Shiksan Sanstha, Kolhapur) had inaugurated all events and wished best luck to all participants.

- **“Annual Sports”** an annual sports event was organized by institute on 04th Jan.2025 to 08th Jan. 2025 was 4 days that include various events where in student get the chances to think, step forward and showcase their talent. Various events had organized like Cricket, Football, Carrom, Badminton Chess, etc. more than 30 students from Electrical department had participated in event. Hon. Shri Sharas Bansode sir (Physical Director Shivaji University), Mr. Viren Bhirdi Sir (Principal-BSiET) had inaugurated all events and wished best luck to all participants.

“Traditional Day celebrates the beauty of our heritage, culture, and timeless values.”

- Our team BSiET winner in **IEDSSA KHO-KHO (Girls**) & we are proudful for our TY Electrical student Diksha patil in this team.

- Our TY electrical Student Ayush Ghatage **won** the Zonal & Interzonal IEDSSA weightlifting competition under 125 KG & He is continuously winner at last 3 Years.

- Our Whistling Words club organizes “वाचन महाराष्ट्राचा संकल्प **2025**” on the date of 1st January to 15th January 2025

Co-Curricular Achievements

1) More than 35 students from SY and TY Electrical has participated in National level technical event “Anwensha Tech Fest- 2K25” at Shri Anandrao Abitkar College of Engineering, Pal. and won various prizes as well.
2) More than 12 students from SY and TY Electrical has participated in National level technical event “Impulse 2K25” at our BSIET.
3) More than 5 students from SY and TY Electrical has participated in National level technical event “Technova 2K25” at GP, Kolhapur and won various prizes as well.

Extra-Curricular Achievements

1) Diksha Patil from TY Electrical had participated in Inter Zonal Kho-Kho tournament at GP,Latur and participated in Zonal Kho-Kho tournament winner held at BSIET,Kolhapur.
2) Ayush Udagatti from TY Electrical had participated in Inter Zonal Wrestling Championship at Rajgad Dyanpith, Pune.
3) Ayush Udagatti from TY Electrical participated in Zonal Wrestling Championship at Tatyasaheb Kore Institute of technology, Warnanagar. And winner under 125 KG category
4) More than 12 Student from FY, SY & TY Electrical had participated in various Zonal tournament like Athletics, Cricket, Football, Kabbadi, Kho-Kho,Vollyball, Basketball etc Sports organized by IEDSSA, Maharashtra.

PLACEMENT DETAILS

"Excellent placement achievements were recorded in the Academic Year 2024-25."

Sr. No.	Name of Industry	No of Students placed	Salary offered
1	Cummins India LTD.	4	2.4 LPA
2	TE Connectivity	1	2 LPA
3	Tennco PVT, LTD	3	1.8 LPA
4	Cipla Limited, Goa	3	2.5 LPA
5	RDC, Concrete	1	3 LPA
6	Bharat Forge,Pune	3	2 LPA

Participation in various Faculty Development Programs

Sr.no	Name of faculty	Name of FDP
1	MR.P.P. BHAT	1.Design of solar pv system using pvsyst
		2.Hybrid electric vehicle
		3.software for solar simulation
		4. software tools for power system engineers.
2	MR K.B. NARKE	1.Design of solar pv system using pvsyst
		2.Hybrid electric vehicle
		3.software for solar simulation
		4. software tools for power system engineers.
3	MR.S.I. NAIK	1.Design of solar pv system using pvsyst
		2.Hybrid electric vehical
		3.software for solar simulation
		4. software tools for power system engineers.
4	MRS.S.P. RELEKAR	1.Design of solar pv system using pvsyst
		2.Hybrid electric vehical
		3.software for solar simulation
		4. software tools for power system engineers.
5	MRS. R.B. BODEKAR	1.Design of solar pv system using pvsyst
		2.Hybrid electric vehical
		3.software for solar simulation
		4. software tools for power system engineers.
6	MR.V.R. MULLANI	1.Design of solar pv system using pvsyst
		2.Hybrid electric vehical
		3.software for solar simulation
		4. software tools for power system engineers.
		5.Indian electricity market.
7	MRS.P.P. THORAT	1.Design of solar pv system using pvsyst
		2.Hybrid electric vehical
		3.software for solar simulation
		4. software tools for power system engineers.
		5.Indian electricity market.
8	MR.D.N. GOSAVI	1.Design of solar pv system using pvsyst
		2.Hybrid electric vehical
		3.software for solar simulation
		4. software tools for power system engineers.
9	MR.B.R. RANDIVE	1. software tools for power system engineers.
		2.practical insight and use of artificial intelligence in substation design.
		3.Design and challenges of electric vehical and energy storage system.
10	MS.E.A. PAWAR	1.Software tools for power system engineers.

Publication of papers in various journals by Faculty Members

Sr.no	Name of faculty	Name of the paper	Publication Date	Name of journals
1	Mr.P.P.Bhat	Temperature based exhaust fan speed control	24/03/2025	MAT JOURNALS
2	Mr.K.B.Narake	Transmission Line fault detection and protection system	15/02/2025	MAT JOURNALS
3	Mr.S.I.Naik	Application of solar grid system for excisting building	14/02/2025	IJIRT JOURNALS
4	Mr.V.R.Mullani	Solar power grass cutter	20/03/2025	IJARSCT JOURNALS
		Large scrolling text display	8/04/2025	IJARSCT JOURNALS
5	Mrs.R.B.Bodekar	Sensor operated distributor machine	8/04/2025	IJSDR JOURNALS
		A Blood group determination using fingerprint	1/04/2025	IJARSCT JOURNALS
6	Mrs. S.P.Relekar	Musical tesala coil	7/05/ 2025	MAT JOURNALS
		Temperature monitoring system	8/02/2025	IJARSCT JOURNALS
7	Mrs.P.P.Thorat	Electric vehical charger with interleaved converter	27/10/2025	JES
		Solar power inverter	1/04/2025	IJARSCT JOURNALS
8	Mr.D.N.Gosavi	Energy generation using conveyor belt	3/04/2025	IJARSCT JOURNALS

Faculty Article

Electric Vehicles: Driving the Future of Sustainable Transportation

By Mrs. P.P. Thorat

Electric Vehicles (EVs) are emerging as one of the most promising solutions to address the environmental, economic, and energy challenges posed by conventional internal combustion engine vehicles. With rapid urbanization, rising fuel costs, and growing concerns about climate change, the global focus has shifted toward sustainable transportation solutions. EVs, which rely on electric motors powered by rechargeable batteries, offer a significant reduction in greenhouse gas emissions, air pollution, and dependence on fossil fuels.

EVs can be broadly categorized based on their energy sources and powertrains. Battery Electric Vehicles (BEVs) are fully electric and rely solely on rechargeable batteries, producing zero tailpipe emissions and making them ideal for urban commuting and medium-range travel. Hybrid Electric Vehicles (HEVs) combine an internal combustion engine with an electric motor, allowing the vehicle to optimize energy use without the need for external charging. Plug-in Hybrid Electric Vehicles (PHEVs) are similar to HEVs but can also be charged externally, allowing them to operate longer distances on electricity while using fuel for extended range. Fuel Cell Electric Vehicles (FCEVs) generate electricity through hydrogen fuel cells, emitting only water and heat, although their adoption is limited due to infrastructure challenges.

The performance and efficiency of an EV are determined by its core components. The battery pack stores energy, usually in the form of lithium-ion cells, while the electric motor converts this energy into mechanical motion. Power electronics controllers manage the flow of electricity between the battery and the motor, ensuring optimal performance. Onboard chargers and DC-DC converters allow the vehicle to charge from external sources and supply low-voltage power to auxiliary systems. Thermal management systems maintain optimal operating temperatures for batteries and electronics, improving efficiency and safety. Most EVs use a single-speed transmission because electric motors deliver high torque even at low speeds, simplifying the drivetrain.

Electric vehicles offer several advantages compared to conventional vehicles. They produce zero tailpipe emissions, which helps reduce air pollution and carbon footprint. Electric motors are highly energy-efficient, converting more energy into motion than traditional engines. EVs generally have lower operating and maintenance costs because they have

fewer moving parts and use electricity, which is often cheaper than fuel. Their quiet operation reduces noise pollution, and EVs can also be integrated with renewable energy sources, supporting broader sustainability initiatives.

Despite their advantages, electric vehicles face several challenges. The initial purchase cost is higher than conventional vehicles due to the expense of batteries. Driving range is still limited compared to fuel-powered cars, leading to concerns commonly referred to as range anxiety. Charging infrastructure is still developing in many regions, which can restrict adoption. Additionally, over time, battery performance degrades, affecting vehicle range and efficiency.

In India, electric mobility is being promoted through government initiatives such as the FAME (Faster Adoption and Manufacturing of Electric Vehicles) scheme, which provides subsidies and incentives for both manufacturers and consumers. Companies like Tata Motors, Mahindra Electric, Ather Energy, and Ola Electric are leading the development and adoption of electric vehicles. Investments in battery manufacturing, charging stations, and related infrastructure are also increasing to support long-term adoption of EVs.

The future of electric vehicles is promising due to continuous research and technological advancement. Improvements in battery technology, including solid-state batteries with higher energy density, are expected to overcome current limitations such as range and charging time. Wireless charging, fast charging, and vehicle-to-grid integration will further enhance convenience and efficiency. Coupled with the growing use of renewable energy, EVs are expected to play a crucial role in reducing greenhouse gas emissions and achieving sustainable development goals worldwide.

Electric vehicles represent a paradigm shift in transportation, energy consumption, and environmental protection. With technological innovation, policy support, and public awareness, EVs are set to dominate the future of mobility. Their widespread adoption will not only minimize environmental impact but also support energy independence, economic growth, and sustainable urban development, making them a cornerstone of a cleaner and smarter transportation ecosystem.
Electric Vehicles (EVs) are transforming the global transportation sector by offering a cleaner and more energy-efficient alternative to conventional internal combustion engine vehicles. With growing concerns about air pollution, climate change, and the depletion of fossil fuels, electric vehicles have emerged as a sustainable solution for future mobility.

Students Article

Wind Energy: A Clean and Sustainable Power Source

By Ms. Diksha Sudam Patil
T. Y. Electrical

Renewable energy plays a vital role in meeting the growing demand for electricity while protecting the environment. Among various renewable sources, **wind energy** has emerged as one of the most reliable and eco-friendly solutions. Wind energy converts the kinetic energy of moving air into electrical energy using wind turbines.

A wind power system mainly consists of **wind turbine blades, a generator, a gearbox, and a control system**. When wind blows, the blades rotate and drive the generator to produce electricity. Modern wind turbines are highly efficient and can generate power even at moderate wind speeds. Wind farms are commonly installed in coastal regions, open plains, and hilly areas where wind availability is high.

One of the major advantages of wind energy is that it is **pollution-free and renewable**. It does not emit greenhouse gases and helps reduce dependence on fossil fuels. Wind energy also supports sustainable development by creating employment opportunities and promoting energy security.

In recent years, advancements in electrical engineering have improved **power electronics, grid integration, and energy storage systems** for wind power. Smart controllers and improved generators help maintain power quality and ensure stable operation of wind farms. Wind energy can also be effectively integrated with solar power to provide continuous electricity supply.

In conclusion, wind renewable energy is a promising solution for a greener future. With continuous research and technological development, wind energy will play a crucial role in achieving clean and sustainable power generation.

As we conclude ***Luminous – Volume 3*****,** I feel a deep sense of pride and satisfaction in presenting this collective effort of the Department of Electrical Engineering. This magazine stands as a true reflection of the academic excellence, technical competence, creativity, and holistic development of our students and faculty during the Academic Year 2024–25.

The diverse content showcased in this issue—ranging from academic achievements, industrial visits, expert lectures, research publications, technical articles, co-curricular and extra-curricular accomplishments—highlights the department's continuous efforts toward outcome-based education and industry-oriented learning. Each contribution embodies curiosity, innovation, teamwork, and a strong commitment to professional growth.

I sincerely appreciate the unwavering guidance and support of our respected management, Director, and Principal. I extend my heartfelt gratitude to our Head of Department and Chief Editor, faculty members, and student editorial team for their dedication, coordination, and hard work in bringing this magazine to life. Special appreciation goes to all contributors whose enthusiasm and commitment made this publication meaningful and inspiring.

I am confident that *Luminous* will serve not only as a record of achievements but also as a source of motivation for future batches to strive for excellence, embrace lifelong learning, and contribute responsibly to society and the engineering profession.

Wishing all our students and readers continued success and a bright, enlightened future.

Best Regards,
Mr. S. I. Naik
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