Sanjivani College Of Engineering

Department Of Electrical Engineering

VIDYUTLATA

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"Powering Progress, Connecting Circuits."

MISSION

M1: TO IMPART QUALITY EDUCATION THROUGH TEACHING LEARNING PROCESS.

M2: TO ESTABLISH WELL-EQUIPPED LABORATORIES TO DEVELOP R&D CULTURE IN CONTEMPORARY AND SUSTAINABLE TECHNOLOGIES IN ELECTRICAL ENGINEERING.

M3: TO PRODUCE ELECTRICAL ENGINEERING GRADUATES WITH QUEST FOR EXCELLENCE, ENTHUSIASM FOR CONTINUOUS LEARNING, ETHICAL BEHAVIOR, INTEGRITY AND NURTURE LEADERSHIP

VISION

TO PRODUCE QUALITY ELECTRICAL ENGINEERS WITH THE KNOWLEDGE OF LATEST TRENDS, RESEARCH TECHNOLOGIES TO MEET THE DEVELOPING NEEDS OF INDUSTRY & SOCIETY

MEET OUR STAFF

DR. D.B. PARDESHI
Professor and HOD

DR. G.VIJAYAKUMAR
Professor

DR. M.SUJITH
Assistant Professor

PROF.P.V. THOKAL
Assistant Professor

PROF.R.N.HAJARE
Assistant Professor

PROF.A.M.DEULKAR
Assistant Professor

PROF.R.R.BIBAVE
Assistant Professor

PROF.S.S.GONDKAR
Assistant Professor

PROF.D.A.NARAYANE
Assistant Professor

PROF.S.R.MAURYA
Assistant Professor

PROF.P.S.CHOBE
Assistant Professor

PROF.D.BHOWMICK
Assistant Professor

PROF.S.K.AGRAWAL
Assistant Professor

PROF.P.B.BHUJBALE
Assistant Professor

PROF.P.R.LOKHANDE
Assistant Professor

PROF.B.B.KADAM
Assistant Professor

PROF.DEEPAK PORWAL
Assistant Professor

PROF.V.C.WABALE
Assistant Professor

FROM THE HOD DESK

As the Head of the Department of Electrical Engineering, I am proud to share the numerous achievements and strides our department has made in both academic and extracurricular domains. At our institution, we firmly believe in fostering a holistic educational environment that not only prioritizes academic excellence but also encourages our students to excel in various fields outside the classroom. Our students consistently demonstrate outstanding academic performance, securing top ranks in university examinations and earning accolades for their innovative projects and research contributions. This success is a testament to the rigorous curriculum and the dedicated efforts of our esteemed faculty members who continually strive to provide the best educational experiences. Beyond academics, our students are shining examples of versatility and talent. They actively participate in national and international competitions, showcasing their skills in robotics, circuit design, and renewable energy projects. Their innovative solutions and dedication have earned them numerous awards and recognitions, making us immensely proud. We also place a strong emphasis on developing soft skills and leadership qualities among our students.

Through various workshops, seminars, and training programs, we ensure that our students are well-prepared to tackle the challenges of the professional world. Our alumni network is a testament to this, with many of our graduates holding prestigious positions in top companies and research institutions worldwide. In addition to their technical prowess, our students are also actively involved in social initiatives, demonstrating a strong sense of community and responsibility.

FROM THE Editorial Desk

As the Editor of our departmental magazine, I am delighted to share that we are committed to providing comprehensive coverage of all activities, both academic and non-academic, throughout the year. Our aim is to highlight the diverse achievements and events that define our vibrant community.

From academic milestones and innovative projects to extracurricular successes and social initiatives, our newsletter captures the essence of our department's dynamic spirit. We take pride in showcasing the hard work, creativity, and dedication of our students and faculty, ensuring that every accomplishment is celebrated and recognized.

We also seek to capture the personal narratives and unique contributions of our community members. Whether it's a groundbreaking research project, a community outreach initiative, or an inspiring personal journey, our magazine is here to tell these stories and celebrate the diverse talents within our department. Your voices and experiences are central to our magazine, and we encourage you to share your perspectives and achievements with us.

Moreover, we invite you to actively participate in this collaborative endeavor. Your stories, achievements, and feedback are vital in making our magazine a true reflection of our community's diverse voices and accomplishments. Together, let us continue to celebrate our shared successes, inspire one another, and advance toward new heights as we build upon the rich tapestry of our department's legacy.

List of Publications

National Journal (UGC Care)

1. Anuj Aher, Vishal K, S Maurya, D.B.Pardeshi, “Improved PQ on board integrated with reduced switching stress” Vol.No.IX, Issue- 5 (VII), Shodhasamhita, pp. 1-13, Jan-June 2022, UGC Care Group I, ISSN 2277-7067.

2. Shantanu Gaware, Pratik Gore, R.N.Hajare, D.B.Pardeshi, “Design and fabrication of load carrying electrical vehicle”, Shodhasamhita, Vol.No.IX, Issue- 5 (VII), pp. 14-21, Jan-June 2022, UGC Care Group I, ISSN 2277-7067.

3. Surade Komal, D.B.Pardeshi, “Dialux software to calculate the illumination levels”, Shodhasamhita, Vol.No.IX, Issue- 5 (VII), pp. 22-27, Jan-June 2022, UGC Care Group I, ISSN 2277-7067.

4. Mahesh kale, Ravinder kumar, S.Maurya, D.B.Pardeshi, “A Review of bidirectional board chargers for electric vehicles” , Shodhasamhita, Vol.No.IX, Issue- 5 (VII), pp. 29-45,Jan-June 2022, UGC Care Group I, ISSN 2277-7067.

5. Ramesh J Butte, Dadasaheb D Aher, G. Vijayakumar, D.B.Pardeshi, “ Arduino based bore well monitoring system for agricultural land” Shodhasamhita, Vol.No.IX, Issue- 5 (VII), pp. 46-52, Jan-June 2022, UGC Care Group I, ISSN 2277-7067.

6. Rohit R.Chandgule, Manoj S.Dolas, G.Vijayakumar, D.B.Pardeshi, “IOT Based Borewell and Water well Monitoring System”, Shodhasamhita, Vol.No.IX, Issue- 5 (VII), pp. 53-59, Jan-June 2022, UGC Care Group I, ISSN 2277-7067.

7. Ashish Sanvatsarkar, Ram Hajare, Rahul Bibave, Nikesh Agwan, Shantanu Gavare, D.B.Pardeshi, “Design and Fabrication of load Carrying Electric Vehicle”, Journal of the Oriental Institute, M.S.University of Baroda. Pp.59-64, UGC Care Group I, ISSN 0030-5324.

8. Shubham Gadakh, Prathamesh H.Kadam, Snehal Sunit Gondkar, D.B.Pardeshi, P.Willian, “Monitoring and Protection of Earthing System using Arudino”, Journal of the Oriental Institute, M.S.University of Baroda, Pp.65-70, UGC Care Group I, ISSN 0022-3301.

List of Publications

9.Pooja Santhosh Jagtap, D.B.Pardeshi, Rutuja Dilip , A.M.Deulkar, " Modelling and Control of D-STATCOM using IRP theory based control algorithm in three phase four wire distribution system", Journal of the Oriental Research Madras, pp.43-50, UGC Care Group I, ISSN 0022- 3301.

10. Swapnil Balasheb, D.B.Pardeshi, Ganesh Ashok , A.M.Deulkar, " Performance Analysis and control of D-Statcom using Instantaneous reactive power theory based control algorithm in Page 3 of 6 distributed system", Journal of the Oriental Research Madras, pp.51-59, UGC Care Group I, ISSN 0022-3301.

11. K.S.Gaikwad, T.B.Chinke, D.B.Pardeshi, P.V.Thokal, "Intruder Detetion for defence application using raspberry PI", Journal of the Oriental Research Madras, pp.60-67, UGC Care Group I, ISSN 0022-3301.

12. K.K.Gudade, A.V.Gaikwad, D.B.Pardeshi, P.V.Thokal, "Intruder Detetion for defence application using raspberry PI", Journal of the Oriental Research Madras, pp.68-73, UGC Care Group I, ISSN 0022-3301.

13. Gaurav B.Agwan, Sachin V.Dhat, D.A.Narayane, D.B.Pardeshi, " Monitoring and Protection of Earthing System Using Ardunio", Journal of the Oriental Research Madras, pp.70-78, UGC Care Group I, ISSN 0022-3301.

14. Siddhant Pund, R.Bibave, Rohan Barge, D.B.Pardeshi, "Sanjivani College of Engineering on Grid Solar Photovoltaic system: An overview", Journal of the Oriental Research Madras, pp.75- 82, UGC Care Group I, ISSN 0022-3301.

15. Dipak N Chaudhari, Prathmesh B Chaudhari, S.Maurya, D.B.Pardeshi, P.William, " Implementation of Arduino based ROBO CAR with Bomb detector", Journal of the Oriental Research Madras, pp.78-85, UGC Care Group I, ISSN 0022-3301.

16. Siddhant Pund, Bunge Vikas Sunderrao, R.Bibave, Aksh Dengale, D.B.Pardeshi, " Efficiency Calculations Based on Improvement over solar power plant", Journal of the Oriental Research Madras, pp.79-87, UGC Care Group I, ISSN 0022-3301

17. Kalpesh Sarode, D.B.Pardeshi, S.S.Gondkar, William P "Energy Management System in Luxury building apartments using dynamic electric load with smart grid strategies", Journal of the Oriental Research Madras, pp.86-97, UGC Care Group I, ISSN 0022-3301.

18. Harpreet Singh Matharu, D.B.Pardeshi, Siddhant A.Shivsharan, “Design of Two Wheeler Hybrid Electric Vehicle Using Series Parallel Configuration”, Journal of the Oriental Research Madras, pp.88-97, UGC Care Group I, ISSN 0022-3301.

19. Pooja Sarode, Manjusha Vidhate, S.S.Gondkar D.B.Pardeshi, P.William, “Automatic Power Factor Compensation in low and high voltage capacitors”, Journal of the Oriental Research Madras, pp.98-111, UGC Care Group I, ISSN 0022-3301.

20. Rutuja Bramhankar, D.B.Pardeshi, S.S.Gondkar, William P, “Design and development of lake view apartment project design of electrical system”, Journal of the Oriental Research Madras, pp.112-123, UGC Care Group I, ISSN 0022-3301.

International Conference (Scopus)

1. D. S. Navare, Y. R. Kapde, S. Maurya, D. B. Pardeshi and P. William, "Robotic Bomb Detection and Disposal: Application using Arduino," 2022 7th International Conference on Communication and Electronics Systems (ICCES), Coimbatore, India, 2022, pp. 479-483, doi: 10.1109/ICCES54183.2022.9836011.

2. S. L. Bhoi, S. Shantilal Salve, D. V. Kumar, D. B. Pardeshi and P. William, "Deployment of Slow power Hybrid Electric Vehicle based on Combustion Engine," 2022 3rd International Conference on Electronics and Sustainable Communication Systems (ICESC), Coimbatore, India, 2022, pp. 231-235, doi: 10.1109/ICESC54411.2022.9885402.

3. R. B. Ghoderao, S. Raosaheb Balwe, P. S. Chobe, D. B. Pardeshi and P. William, "Smart Charging Station for Electric Vehicle with Different Topologies," 2022 6th International Conference on Intelligent Computing and Control Systems (ICICCS), Madurai, India, 2022, pp. 243-246, doi: 10.1109/ICICCS53718.2022.9788143.

4. Y. B. Najgad, S. Namdev Munde, P. S. Chobe, D. B. Pardeshi and P. William, "Advancement of Hybrid Energy Storage System with PWM Technique for Electric Vehicles," 2022 6th International Conference on Intelligent Computing and Control Systems (ICICCS), Madurai, India, 2022, pp. 238-242

5. S. S. Gondkar, D. B. Pardeshi and P. William, "Innovative System for Water Level Management using IoT to prevent Water Wastage," 2022 International Conference on Applied Artificial Intelligence and Computing (ICAAIC), Salem, India, 2022, pp. 1555-1558, doi: 10.1109/ICAAIC53929.2022.9792746.

6.B. Bornare, S. B. Naikwadi, D. B. Pardeshi and P. William, "Preventive Measures to Secure Arc Fault using Active and Passive Protection," 2022 International Conference on Electronics and Renewable Systems (ICEARS), Tuticorin, India, 2022, pp. 934-938, doi: 10.1109/ICEARS53579.2022.9751968.

7.K. P. Pagare, R. W. Ingale, D. B. Pardeshi and P. William, "Simulation and Performance Analysis of Arc Guard Systems," 2022 International Conference on Electronics and Renewable Systems (ICEARS), Tuticorin, India, 2022, pp. 205-211, doi: 10.1109/ICEARS53579.2022.9751924.

8.A. Batt, R. Ahmad Bhat, D. B. Pardeshi, P. William, S. S. Gondkar and H. Singh Matharu, "Design and Optimization of Solar using MPPT Algorithm in Electric Vehicle," 2022 6th International Conference on Intelligent Computing and Control Systems (ICICCS), Madurai, India, 2022, pp. 226-230, doi: 10.1109/ICICCS53718.2022.9787988.

9.S. S. Gondkar, P. William and D. B. Pardeshi, "Design of a Novel IoT Framework for Home Automation using Google Assistant," 2022 6th International Conference on Intelligent Computing and Control Systems (ICICCS), Madurai, India, 2022, pp. 451-454, doi: 10.1109/ICICCS53718.2022.9788284.

10.H. S. Matharu, V. Girase, D. B. Pardeshi and P. William, "Design and Deployment of Hybrid Electric Vehicle," 2022 International Conference on Electronics and Renewable Systems (ICEARS), Tuticorin, India, 2022, pp. 331-334, doi: 10.1109/ICEARS53579.2022.9752094.

11.G. Vijayakumar, M. Sujith, S. Saravanan, D. B. Pardeshi and M. A. Inayathullaah, "An optimized MPPT method for PV system with fast convergence under rapidly changing of irradiation," 2022 International Virtual Conference on Power Engineering Computing and Control: Developments in Electric Vehicles and Energy Sector for Sustainable Future (PECCON), Chennai, India, 2022, pp. 1-4, doi: 10.1109/PECCON55017.2022.9851107.

International Conference (Non-Scopus)

1. Mohini R.Gunjal, S.S.Gondkar, D.B.Pardeshi, “Transmission line fault detection using IoT”, International Conference of Emerging technologies, Sep 6-7, 2021.

International Journal (Non-Scopus)

1. Poonam A .Thorat, Pawan C.T, D.B.Pardeshi, Ganesh V.Gavhane, “ Sorts of Electric Vehicle-An overview”, International Journal of Advanced research in science, communication and technology, vo.2, no.2, pp.404- 409, Feb 2022.

2. Amarjeet S. Pandey, Komal H. Gaikwad, Prerana Y. Kadam , “ENERGY AUDIT OF ON GRID 480kW SOLAR PV SYSTEM” International Journal of Advance Scientific Research and Engineering Trends (IJASRET), Vol. 5, Issue 12, June 2021

3. Amarjeet S. Pandey, Komal H. Gaikwad, Prerana Y. Kadam, “ Energy Audit of institutions with load 430kW”, International Journal of Advance Scientific Research and Engineering Trends (IJASRET), Vol.6 , Issue 7, July 2021

4.Dipesh B. Pardeshi, Shraddha Maurya, Renuka S. Rasal, Dhanshri A. Narayane, “Energy optimization of industrial drive at Sanjivani sugar factory”, International Journal of Engineering, Science and Technology, Vol.14, No.3, pp.29-37, 2023.

5.Dipesh B. Pardeshi, Mahadev G. Unde, Shraddha Maurya, Dhanshri A. Narayane, “Condition monitoring of induction motor-vibration analysis technique”, International Journal of Engineering, Science and Technology, Vol.14, No.3, pp.38-46, 2023.

Placements:-

S.NO	Name of the Student placed	Name of the Employer	Salary Per Annum in Lacs
1	Komal Haushiram Gaikwad	Aakit Solution	3
2	Abhishek Namdeo Bhalekar	Atos Syntel	3.4
3	Nandini Balnath Salve	Atos Syntel	3.4
4	Pramod Anil Khodpe	Dhoot Transmission	1.4
5	Moin Apsar Sayyad	Capgemini	3.8
6	Sachin Madhukar Wable	Capgemini	4
7	Sainath Rajendra Mhaske	Carigar Power Tools	4.25
8	Snehal Sudam Gaikwad	Cognizant	4.1
9	Mahesh Shivaji Shinde	Cognizant	4
10	Anil Ramesh Ghagre	Cognizant	4.1
11	Pratiksha Ravindra Mokal	Cognizant	4
12	Sachin Balasaheb Mandude	Dhoot Transmission	1.4
13	Aniket Mukesh Gaikwad	Epitome	1.38
14	Gauri Rajendra Kadam	HCL	3.6
15	Prerna Yashwant Kadam	HCL	4.25
16	Pragati Vijay Singar	Highbar Technocrats	3
17	Akshay Kishor Bairagi	Highbar Technocrats	3
18	Vaibhav Narayan Chavan	Infosys	3
19	Janardhan Kisan Jundhare	Infosys	3
20	Rohini Gangadhar Bachkar	Infosys	3
21	Shreyas Ravindra Gosavi	Infosys	3
22	Dhanashree Chandrakant Wagh	Infosys	3

23	Hrushikesh Dattatray Kote	Lumen Technologies	5.5
24	Aditya Anand Rugle	Monocept	4
25	Aakash Arun Tupe	Mphasis	3.25
26	Sagar sanjay patil	TATA Technologies	4.65
27	Vishal Ramesh Wagh	TCS	3.36
28	Rohit Satish Boob	TCS	3.36
29	Priyanka Balasaheb Chandar	TCS	3.36
30	Ganesh Rangnath Jadhav	TCS	3.36
31	Bhagvan Ashok Shinde	TCS	3.36
32	Sanket Vijay Walzade	TCS	3.36
33	Shubham Bhaginath Gadekar	TCS	3.36
34	Rafik Musa Sayyad	TCS	3.36
35	Yogesh Sanjay Mhaske	TCS	3.36
36	Kunal Rajendra Jambhulkar	Tech-Mahindra	3.25
37	Ojaswini Sandip Thoke	Wipro	3.5
38	Shubham Laxman Ushir	Wipro	3.5
39	Shubham Gokul Tambe	Wipro	3.5
40	Vaishnavi Babasaheb Malik	Wipro	3.5
41	Pratiksha Shrikrishna Hande	Wipro	3.5
42	Shamal Sanjay Dhanke	Wipro	3.5
43	Archana Keshav Khairnar	Wipro	3.5
44	Vaishnavi Govind Achari	Wipro	3.5
45	Rushikesh Rajendra Kankate	Wipro	3.5
46	Mulay Satyam Uttam	Higher Studies	--
47	Prathmesh Dhaygude	Higher Studies	--

TECHNICAL ARTICLES

AUTOMATION AND GEN AI-DO THEY NOT DISPLACE WORKERS..?

Imagine a day when intelligent robots and robots replace humans in some tasks. Yes, that does imply that some jobs may alter or maybe perish. AI has the potential to improve many aspects of human life, including healthcare, transportation, and manufacturing.For example, AI could help doctors diagnose diseases more quickly and accurately, and transport people and goods more efficiently. On the other hand, these devices can potentially generate new jobs. Like, those robots need to be built, programmed, and maintained by someone, right? They're also quite helpful for the monotonous, dull tasks, allowing up humans to engage on more engaging, innovative, and interpersonal projects.The work which is done in 7-8 days days now same work can be possible to do within 2 days . Intelligent robot doesn't need to be paid ,they can work up to 24x7 with more efficiency.AI may be used in a variety of sectors and has a large market potential.

Artificial Intelligence speeds up and improves decision-making. Now robots has take place in agricultural and Structural field too ,where the work of 5 labour can be done using only one robot . Yes, there is some balance involved. We may need to adjust our work habits or pick up some new abilities. Consider it as an enhancement of your superhuman abilities.However, considering the replacement of jobs Artificial Intelligence always lacks in Emotional Intelligence , Human Creativity and Soft skills.But is some cases like self driving vehicles where whole vehicle is control by using AI there is no use of Humans.There are some jobs which will be diminish after few era like Computer programmer, factory and agricultural workers , data analyzer ,etc. Yep, there is chances of some jobs which can be replace by AI and Automation, but there is certain limitation made for Humans and Robots. Humans cannot work for 24 hours while as Robot can' t think out of there data feed. So , we can say that although some of jobs are in trouble but if machines and humans will perform the work together the straight of both may be used to each other's advantage.

-Atul Gangurde
S.Y. B.tech

TECHNICAL ARTICLES

AUTOMATION AND GEN AI-DO THEY NOT DISPLACE WORKERS..?

As the world grapples with the challenges posed by climate change, the need for sustainable and renewable sources of energy has never been more pressing. The transition to renewable energy sources, such as solar and wind power, is essential in mitigating the adverse effects of climate change and ensuring a sustainable future for our planet. One of the key strategies in promoting renewable energy adoption is through incentivizing solar and wind power installations. Governments and organizations around the world are offering financial incentives, such as tax credits and subsidies, to encourage individuals and businesses to invest in renewable energy systems. These incentives help offset the initial costs of installation and make renewable energy more accessible and affordable for everyone.

Another important aspect of promoting renewable energy adoption is investing in green infrastructure. This involves developing the necessary infrastructure to support the generation and distribution of renewable energy. By investing in these infrastructural projects, governments and organizations are creating the foundation for a renewable energy future. In conclusion, promoting the adoption of renewable energy sources is crucial in addressing the challenges posed by climate change and ensuring a sustainable future for our planet. Through incentivizing solar and wind power installations, investing in green infrastructure, and implementing energy efficiency measures, we can accelerate the transition to clean and sustainable energy sources. The benefits of renewable energy are far-reaching, from reducing greenhouse gas emissions to creating new job opportunities. By embracing renewable energy, we can pave the way for a greener, healthier, and more prosperous future for all.

-Gaurav Pangavhane
S.Y. B.tech

TECHNICAL ARTICLES

SOLAR MOBILE CHARGER

As the world shifts towards renewable energy sources, solar mobile chargers have emerged as a game-changer for keeping our devices charged on-the-go. These innovative chargers harness the suns energy to power our smartphones, tablets, and other devices, reducing our reliance on traditional power sources.

How Solar Mobile Chargers Work:
Solar mobile chargers use photovoltaic (PV) panels to convert sunlight into electrical energy. This energy is then stored in a battery or used directly to charge devices via USB ports. The panels are designed to be portable, compact, and durable, making them perfect for outdoor enthusiasts, travelers, and environmentally conscious consumers.

Benefits of Solar Mobile Chargers:

- Renewable energy source
- Portable and compact design
- Zero emissions or pollution
- Cost-effective and energy-efficient
- Perfect for off-grid or emergency situations

Features to Consider:

- Panel efficiency and wattage
- Battery capacity and charging speed
- Durability and water resistance
- Multiple USB ports and device compatibility
- Weight and compactness

Conclusion:
Solar mobile chargers offer a sustainable and convenient solution for keeping our devices charged. With their eco-friendly design, portability, and cost-effectiveness, they are perfect for anyone looking to reduce their carbon footprint. As technology advances, we can expect even more efficient and innovative solar mobile chargers to hit the market.

-Sanket Mali
S.Y. B.tech

TECHNICAL ARTICLES

SMART CITY

A smart city is an urban area that uses advanced technology and data to improve the quality of life for its citizens, enhance sustainability, and streamline public services. Some key features of a smart city include:
1. IoT sensors and devices: Collecting data on traffic, energy usage, waste management, and more.
2. Data analytics: Using data to make informed decisions and optimize city operations.
3. Smart transportation: Intelligent traffic management, public transit systems, and bike-sharing programs.
4. Energy efficiency: Smart grids, renewable energy sources, and energy-efficient buildings.
5. Smart buildings: Energy-efficient, automated, and connected buildings.
6. Public Wi-Fi and connectivity: Ensuring citizens have access to reliable internet.
7. Citizen engagement: Online platforms for citizens to participate in decision-making and report issues.
8. Smart healthcare: Telemedicine, health analytics, and personalized healthcare services.
9. Waste management: Smart waste collection, recycling programs, and minimized landfill usage.
10. Public safety: Intelligent surveillance, emergency response systems, and crime analytics.

Here are some futuristic concepts that might shape the world of smart cities:
1. Quantum Computing: Enables complex simulations, optimizing energy grids, traffic flow, and resource allocation.
2. Artificial General Intelligence (AGI) Autonomous decision-making, predictive maintenance, and personalized services.
3.Internet of Bodies (IoB) Wearable/implantable devices monitoring health, emotions, and biometrics.
4. Extended Reality (XR): Immersive experiences for education, entertainment, and urban planning.
5. 5G/6G Networks: Ultra-high-speed connectivity for seamless communication and data transfer.
These futuristic concepts will transform urban living, making cities more efficient, sustainable, and responsive to citizens' needs. Keep in mind that these ideas are constantly evolving, and their implementation will depend on technological advancements, societal acceptance, and ethical considerations.

-Dipali Brahmane
S.Y. B.tech

TECHNICAL ARTICLES

ELECTRICAL VEHICLES: A SUSTAINABLE TRANSPORTATION SOLUTION

Electrical vehicles (EVs) are gaining popularity as a sustainable alternative to traditional internal combustion engine vehicles. With growing concerns about climate change, air pollution, and energy security, EVs offer a promising solution for the transportation sector.

Principles of Electrical Vehicles:
EVs use electric motors powered by rechargeable batteries, eliminating the need for fossil fuels. The batteries can be charged from various sources, including:

1. Wall Charging: Level 1 (120V) and Level 2 (240V) charging from a dedicated charging station.

2. DC Fast Charging: High-power charging for rapid replenishment of battery energy.

3. Regenerative Braking: Capturing kinetic energy during braking to recharge the battery.
Challenges and Future Directions:

1. Charging Infrastructure: Expansion of charging networks to support widespread adoption.
2. Battery Technology: Advancements in battery energy density, cost, and charging speed.
3. Grid Capacity: Integration of EVs into the electrical grid to ensure reliable and efficient energy supply.

Conclusion:
Electrical vehicles offer a sustainable solution for the transportation sector, with benefits including zero emissions, performance. As technology continues to evolve, addressing challenges and expanding infrastructure will be crucial for widespread adoption.

-Ishwari Bothe
S.Y. B.tech

TECHNICAL ARTICLES

CHALLENGES IN INTEGRATING DISTRIBUTED ENERGY RESOURCES INTO THE GRID

As the demand for cleaner and more sustainable energy sources continues to rise, the integration of Distributed Energy Resources (DERs) into the grid has become a crucial focus for the energy sector. DERs, which include technologies such as solar panels, wind turbines, and energy storage systems, offer a decentralized and environmentally friendly approach to energy generation. However, despite their numerous benefits, the integration of DERs into the traditional grid is not without its challenges. One of the primary obstacles in integrating DERs into the grid is the variability and intermittency of renewable energy sources. Unlike conventional power plants, which can be dispatched as needed, solar and wind energy generation depends on weather conditions and can fluctuate throughout the day. This variability poses a challenge for grid operators in maintaining a stable and reliable electricity supply. To address this issue, grid operators must develop new strategies for managing the variability of DERs, such as implementing advanced forecasting techniques and investing in flexible grid infrastructure.

Another challenge in integrating DERs into the grid is the lack of standardized communication and control systems. DERs are typically connected to the grid through inverters and other devices that allow for bidirectional power flow. However, without standardized communication protocols, grid operators may struggle to effectively monitor and control DERs in real-time. To overcome this challenge, industry stakeholders must work towards developing interoperable communication standards that enable seamless integration of DERs into the grid.

Furthermore, the aging grid infrastructure in many regions presents a significant barrier to the seamless integration of DERs. The traditional grid was not designed to accommodate two-way power flows and decentralized energy generation. As a result, upgrades and investments in grid modernization are necessary to enable the grid to effectively manage DERs. This includes the deployment of smart grid technologies, grid automation, and distributed energy management systems.

-Sanket Kadu
S.Y. B.tech

TECHNICAL ARTICLES

SMART GRIDS ARE REVOLUTIONIZING ENERGY DISTRIBUTION

Wireless power transfer (WPT) has emerged as a transformative technology that promises to revolutionize how we deliver and utilize electrical energy. By eliminating the need for physical connections, WPT offers a range of applications from consumer electronics to large scale industrial uses. This article explores the current technologies enabling wireless power transfer and examines future prospects and challenges in this burgeoning field.

Current Technologies in Wireless Power Transfer-

1.Inductive Coupling-Inductive coupling is the most widely used form of wireless power transfer, especially in consumer electronics. It works by using electromagnetic induction between two coils, a transmitter and a receiver, to transfer power.- Applications: Commonly used in charging devices like smartphones, electric toothbrushes, and smartwatches.

Advantages: High efficiency for short-range power transfer, easy to implement in small devices.

2. Resonant Inductive Coupling

Resonant inductive coupling extends the concept of inductive coupling by utilizing resonant circuits to enhance the range and efficiency of power transfer.

Applications: Used in larger applications such as electric vehicle charging stations and wireless power for medical implants.

Advantages: Greater range than simple inductive coupling, capable of powering devices through obstacles like walls or body tissue.

Limitations: Still requires relatively close proximity and precise alignment.

3. Laser Power Transfer

Laser power transfer utilizes laser beams to deliver energy to photovoltaic cells on a device.

Applications: Used in space applications and to power drones over large distances.

Advantages: High precision and potential for long-distance power transfer.

Conclusion

Wireless power transfer is poised to transform how we think about energy delivery and consumption. With advancements in technology and ongoing research, WPT has the potential to bring about a future where power is delivered seamlessly and efficiently, driving innovation across multiple industries. By addressing current challenges and exploring new applications, wireless power transfer can become a cornerstone of modern electrical engineering and energy systems.

-Pratik Kadu

S.Y. B.tech

TECHNICAL ARTICLES

WIRELESS POWER TRANSFER: CURRENT TECHNOLOGIES AND FUTURE PROSPECTS

The traditional grid has served us well, but it time for an upgrade. Smart grids are transforming the way we generate, distribute, and consume energy, making our power systems more efficient, sustainable, and resilient.

What is a Smart Grid?
A smart grid is an advanced electrical grid that uses real-time data, IoT sensors, and automation to optimize energy distribution. It integrates renewable energy sources, energy storage, and consumer engagement to create a more dynamic and responsive system.

Benefits of Smart Grids:
- Improved Energy Efficiency
- Enhanced Reliability and Resiliency
- Increased Renewable Energy Integration
- Better Demand Response and Load Management
- Reduced Energy Losses and Costs
- Enhanced Consumer Engagement and Education

Challenges and Solutions:
- Infrastructure Upgrades and Investment
- Cybersecurity Threats and Data Protection
- Workforce Training and Education
- Regulatory Frameworks and Standards
- Public Awareness and Acceptance

Conclusion:
Smart grids are the future of energy distribution, offering a more sustainable, efficient, and responsive system. As technology continues to evolve, we can expect even more innovative solutions to emerge, empowering consumers, reducing carbon footprints, and creating a more resilient energy infrastructure.

-Sanika Pandit
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TECHNICAL ARTICLES

STUDY AND ADVANCEMENT OF STEAM TURBINE

The heat strength of steam is transformed into useful paintings by a steam turbine. Momentum is imparted when steam jets strike the rotor's transferring rows of blades, causing trade in the steam. Thus, the kinetic electricity of steam is converted by blades into the shaft's rotational strength. Steam and centrifugal forces are used to load a turbine's shifting blades. Based on Centrifugal force may additionally increase tensile, compressive, or torsional stresses in materials depending on their design and operating circumstances. changing edge. During their lifetime, steam turbines are exposed to a wide range of starting conditions and shutdowns. This means that it is frequently exposed to cyclic loading conditions, which results in a fatigue failure in the blade transfer mechanism. This challenge encapsulates the blade's structural overall performance due to centrifugal loading at the blade caused by high angular speeds. Furthermore, it is expected that fatigue or blade provider lifestyles will occur. One of these methods is how the blades are made to provide the most rotational power by controlling the steam's drift along its surface. The blades are angled specifically to prevent steam from blowing over the internet when needed. The blades can be fixed, rotary, or moving. The shaft is made to withstand harsh environments; it must withstand the heat generated by steam and hundreds of weight and centrifugal pressure from the blade assembly and other assemblies.

Advancements in steam turbine technology have led to significant results, primarily focused on improved efficiency, durability, and sustainability. Enhanced materials and design innovations allow for higher operating temperatures and pressures, boosting overall efficiency and power generation. Integrating digitalization and predictive maintenance has minimized downtime, optimizing turbine performance. These advancements emphasize the importance of sustainability, aiming to reduce environmental impact by capturing waste heat and integrating renewable energy sources. Improved materials and design not only increase longevity but also contribute to a more reliable turbine operation. The discussion centers on achieving higher efficiency, reduced emissions, and aligning with global sustainability goals, emphasizing the need for environmentally friendly turbine practices and the integration of cleaner methodologies for a greener future.

-Abhijit Kopare
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TECHNICAL ARTICLES

INDUCTION MOTORS

Induction motors are widely used in industrial and commercial applications due to their simplicity, reliability, and efficiency. They account for approximately 50% of the world's electrical energy consumption.

Principles:
Induction motors operate on the principle of electromagnetic induction, where a rotating magnetic field induces a current in the rotor conductors.
Key Components:
1. Stator: Stationary part with windings
2. Rotor: Rotating part with conductors
3. Air gap: Space between stator and rotor
*Types
1. Squirrel Cage Induction Motor*: Most common type, uses a squirrel cage rotor
2. Wound Rotor Induction Motor*: Uses a wound rotor with slip rings
3. Single-Phase Induction Motor*: Used for low-power applications
4. Three-Phase Induction Motor*: Used for high-power applications
5. Slip Ring Induction Motor*: Used for high-torque applications
Characteristics:
1. Speed: Depends on supply frequency and pole number
2. Torque: Depends on rotor current and slip
3. Efficiency: High efficiency, typically 80-95%
4. Power Factor: Varies with load, typically 0.8-1.0
*Applications:
1. Industrial: Pumps, fans, compressors, conveyor systems
2. Commercial: HVAC systems, refrigeration, air conditioning
Conclusion:
Induction motors are versatile and widely used due to their simplicity, efficiency, and reliability. Understanding their principles, types, and applications is essential for effective design, selection, and operation in various industries.

-Vaishnavi Gadekar
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TECHNICAL ARTICLES

ELECTRONIC CIRCUIT BREAKER

The voltage drop across a series element proportional to the load current—typically a low value resistor—is the basis for an electronic circuit breaker. This voltage is detected, rectified to DC, and then compared to a predetermined voltage using a level comparator to produce an output that trips the load by driving a relay via a MOSFET. The unit overcomes the disadvantage of the thermal type and operates at a very high speed. A microcontroller from the 8051 family is used in it. The circuit breaker was created a century ago. Thomas Edison originally described it as a fuse used in his commercial power distribution in 1900. The circuit breaker was first created to guard against overload and impulse short circuit in the lighting circuit wiring (Isreal, 986). The development of general technology coincided with the advancement of circuit breaker technology. It was patented by Brown and Boveri more than ninety years ago (1924), and its advancements include the contemporary miniature circuit breakers that are comparable to these when used correctly. The introduction of thermal and thermal magnetic circuit breakers by Stotz (USER International Journal of Scientific & Engineering Research, Volume 6. Issue 7, July-20151108 2006) advanced low voltage circuit breakers and necessitated the creation of several other types over time. One such type is the thermal magnetic breaker, which is still in use today. By using this device, it is possible to achieve ultra fast acting electronic circuit breaking to prevent potential damage to expensive equipment. potential damage to expensive equipment.

The development of general technology coincided with the advancement of circuit breaker technology. It was patented by Brown and Boveri more than ninety years ago (1924), and its advancements include the contemporary miniature circuit breakers that are comparable to these when used correctly. The introduction of thermal and thermal magnetic circuit breakers by Stotz (USER International Journal of Scientific & Engineering Research, Volume 6. Issue 7, July-2015 1108 2006) advanced low voltage circuit breakers and necessitated the creation of several other types over time. One such type is the thermal magnetic breaker, which is still in use today. By using this device, it is possible to achieve ultra fast acting electronic circuit breaking to prevent potential damage to expensive equipment.

A microcontroller-based system for automatically monitoring circuit breakers is proposed. Circuit breakers are used for protection in any industry or power system. In any power system, it is an essential component. In a malfunctioning state, the circuit breaker trips. Phase failure may occur at the Circuit Breaker side, or the voltage required by the Circuit Breaker is not available on multiple occasions, i.e., the input and output voltage. It is suggested to monitor automatic circuit breakers in order to prevent abnormal conditions and ensure that they operate properly.

-Pramod Game
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TECHNICAL ARTICLES

FUTURE OF RENEWABLE ENERGY

Renewable energy refers to energy generated from natural resources that are replenished on a human timescale, such as sunlight, wind, rain, tides, waves, and geothermal heat. Unlike fossil fuels, which are finite and contribute to environmental degradation and climate change, renewable energy sources offer a sustainable and cleaner alternative for powering our world. Over the past few decades, the importance of renewable energy has grown significantly as countries around the globe seek to reduce their carbon footprints and transition towards more sustainable energy systems.

Solar, wind, hydroelectric, and biomass are among the most widely adopted forms of renewable energy, each offering unique advantages and challenges. The shift toward renewable energy is not only driven by environmental concerns but also by economic and technological advancements. Innovations in renewable energy technologies have made them more efficient ,affordable, and accessible, enabling widespread adoption. Electrical engineers play a crucial role in this transition by developing and optimizing systems that harness these energy sources, integrate them into existing grids, and overcome the challenges associated with their variability and storage. As the global demand for energy continues to rise, the need for sustainable and reliable energy solutions becomes more critical. Renewable energy, supported by ongoing innovations in electrical engineering, represents a key pillar in the pursuit of a cleaner and more resilient energy future.

Renewable energy has emerged as a critical component in the global effort to combat climate change and transition towards sustainable energy systems. This article explores the current state of renewable energy, focusing on the significant innovations in electrical engineering that are driving its future. It delves into advancements in solar and wind energy technologies, energy storage solutions, and smart grid integration, highlighting how these innovations are overcoming the inherent challenges of renewable energy sources. The article also examines the role of artificial intelligence in optimizing renewable energy systems and predicts future trends that could further transform the energy landscape. By providing a comprehensive overview of the intersection between electrical engineering and renewable energy, this article underscores the essential role engineers play in shaping a cleaner, more sustainable energy future.

The ongoing evolution of renewable energy technologies underscores a transformative shift towards a more sustainable and resilient energy future. Innovations in solar and wind energy, coupled with advancements in energy storage and smart grid technologies, are crucial in addressing the challenges associated with renewable energy's intermittent nature and integration into existing infrastructures. Electrical engineering plays a pivotal role in driving these advancements, from developing high-efficiency photovoltaic cells and flexible energy storage solutions to designing smart grids that enhance grid stability and reliability.

-Rohan Khale

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