VIDYUT

Voyage with Youth. . .

2023 Edition

Council of Electrical Engineers

WORDS OF WISDOM

I am happy & excited to see the magazine of the Electrical Engineering department. I congratulate the whole team of students for this achievement. Also, I give best wishes to all faculty & employees of EED for their contribution.

The magazine is a mirror of any department which reflects to the reader the quality & in-depth learning & the students in their branch with extra beyond syllabus learning. This also motivates the teachers to do more on academics & research with their students.

The facilities & infrastructure of the department also attract outsiders to interact with departmental students & staff in terms of collaborative research & consultancy.

I wish for a great successful publication of the departmental magazine.

Dr. Rakesh Saxena
Professor EED
SGSITS Indore

FROM THE EDITOR'S DESK

Greetings Readers,

May Republic Day infuse each and every heart with great spirits and love for the country. Best wishes to the country and you on this special occasion.

First I would like to extend my gratitude to all the editors, Authors, Mentors, Committee members, and the Department of EE for their contribution to the 2nd issue of Vidyut. The Magazine Committee (CEE) is thrilled and eager to publish the 2023 edition of **Vidyut** *Voyage with Youth*. With the first edition of Vidyut, we received a resounding response.

We improved the previous format and included some fresh material in this edition. Through the recently added Memorable Moments and Student area, we hope to give you a platform to showcase your artistic, literary, and educational abilities in addition to keeping you informed about the latest trends and advancements in the electrical world.

Electrical engineering is a constantly evolving and pervasive subject that offers a wealth of options and fuels the passion in many engineers. We strive to provide a glimpse of this flame and transmit it to the upcoming generation of engineers.

Respected alumni, we work to create a connection between you and your heyday in the department and humbly ask for your guidance.

The goal of CEE is to give students the abilities and characteristics they need to reach their maximum potential and overcome obstacles. We aspire to provide you with opportunities to shine and most importantly make your college years memorable.

We encourage everyone with criticism to offer suggestions so we can improve and give you all better content.

Please get in touch with us at *magazineclubeedept@gmail.com* and provide us your valuable feedback by scanning the QR code mentioned below.

Mahikshit Purohit
Joint Secretary (CEE)
Managing Editor (Vidyut)

WARM REGARDS FROM THE HEAD OF DEPARTMENT...

It gives me immense pleasure to express my views on the release of departmental magazine. As you go through the pages, you will find the important milestones that department has achieved this year. Besides, our young engineers have expressed their thoughts, ideas, hopes, feelings, aspirations and convictions in a creative way. This magazine should be a good source of guidance for faculty and coming batches of students in choosing activities of their choice in their future for building their carrier. It provide an abstract view of the department at glance. Reader will able to know about the interaction and vision of alumni about the department. Coverage on the various achievements of the faculty members, students and staff encouraged the stockholder to enhance the participation towards the department growth. One of the purpose of the magazine is to give a brief overview of the cutting edge technology to show the future of the branch and requirements of the interdisciplinary collaborations.

Dr. Arun Parakh
Prof & Head,
EED/SGSITS

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MEMORABLE MOMENTS

The Council of Electrical Engineers, CEE is delighted to work with Dr. Harish Verma, Dean (Academics) and learn from one of the best. We are glad to have a compassionate and effective leader and cannot wait to be more productive and skilled student under your guidance.

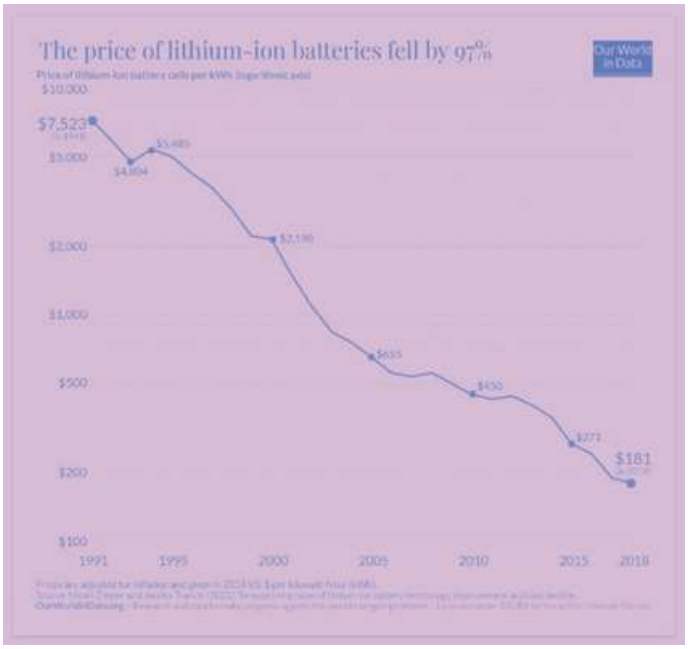
The Council of Electrical Engineers, CEE is honoured to have Dr. Arun Parakh at the helm of the Department of Electrical Engineering's ship. We look forward to the growth of our club as you navigate us towards further success. We'll accomplish great things together with your expertise and dedication.

EV SERIES 2.0

Hello readers, as in the last article the ev series mainly talked about the advantages of using more and more electric vehicles. now, in this article we mainly aims to give you more insights on the ev's. for the reader's convenience we have also provided a qr code of the first ev article.

LITHIUM-ION BATTERY:

Most electric vehicles use lithium-ion batteries (Li-Ions or LIBs). Lithium ion batteries have higher energy density, longer life span and higher power density than most other practical batteries. Complicating factors include safety, durability, thermal breakdown, its environmental impact and cost. Li-ion batteries should be used within safe temperature and voltage ranges in order to operate safely and efficiently.



Increasing the battery's lifespan decreases effective costs. One technique is to operate a subset of the battery cells at a time and switch these subsets.

In the past, nickel–metal hydride batteries were used in some electric cars, such as those made by General Motors. These battery types are considered outdated due to their tendencies to self-discharge in the heat. Furthermore, a patent for this type of battery was held by Chevron, which created a problem for their widespread development. These factors, coupled with their high cost, has led to lithium-ion batteries leading as the predominant battery for EV's.The prices of lithium-ion batteries are constantly decreasing, contributing to a reduction in price for electric vehicles.

ELECTRIC MOTOR:

The power of a vehicle's electric motor, as in other machines, is measured in kilowatts (kW). Electric motors can deliver their maximum torque over a wide RPM range. This means that the performance of a vehicle with a 100 kW electric motor exceeds that of a vehicle with a 100 kW internal combustion engine, which can only deliver its maximum torque within a limited range of engine speed.

Efficiency of charging varies considerably depending on the type of charger and energy is lost during the process of converting the electrical energy to mechanical energy.

Usually, direct current (DC) electricity is fed into a DC/AC inverter where it is converted to alternating current (AC) electricity and this AC electricity is connected to a 3-phase AC motor.

For electric trains, forklift trucks, and some electric cars, DC motors are often used. In some cases, universal motors are used, and then AC or DC may be employed.

ACHIEVERS' ARCHIVE

Mahendra G Kelkar

B.Tech 85'

Mahendra G Kelkar works as Associate Director for the Nuclear Power Corporation of India, he worked at NCPIL as an Engineer from 1992 to 2008, then assumed ACE post. He is an expert in nuclear reactor control. He led the installation & commissioning of reactor control systems for Indian nuclear power plants. Before joining NCPIL, he was a Trainee and Senior officer at the Department of Atomic Energy (DAE) from 1985 to 1988.

Debraj Saha

B.Tech 94'

He is currently working as Sr. Director(sales) at HCL Technologies, Copenhagen, Denmark. He undertakes Sales of Technology Services across the Nordics Region with a focus on Applications Services (Managed Services & SI) along with Digital Transformation Services (DevSecOps Services/Cloud Services/Intelligent Automation Services) and he is responsible for Deal origination/shaping and Sales Management function from inception to closure. He has more than 20 years of experience in the IT Industry, encompassing Sales & Account Management with a current focus on selling large and complex Digital/Application related Services in manufacturing/Consumer/Retail Client Organisations

Ramesh Chandra Vyas

B.Tech 72'

He Co-founded Enerco Energy Solutions LLP in 2009. He closely worked with manufacturers on advanced technologies to enhance their sustainability and digital quotient. He works on Solar Energy Consulting & Advisory, Digital Transformation, and Strategy, Industry 4.0 IoT projects, Solar Energy Projects, and Financing. Before founding Enerco Energy Solutions he worked in L&T (1972-1981) as GM, Al-Hassan Electrical (1999-2008) as General Manager, International Marketing Organization (2009-2020) as Director - Solar Power.

Guarang Singh

B.Tech 2008

He is an experienced Product Consultant with a demonstrated history of working in the RMB & CCB in Enterprise Billing Technology consulting/industry. He is skilled in Solutioning, Requirement & Business Analysis, Quality, and Documentation. He is also experienced in publishing (Journals & newsletters). He also has academic solid and Professional knowledge with a master of business Administration (MBA) focused on power Management from the Centre of Advanced Management & Power studies, NPTI.

Sourabh Goyal

B.Tech 2012

He is currently working at Bharat Heavy Electrical Limited as a Deputy Manager. He was responsible for the Electrical Design of HT induction Motors for applications such as Pumps, fans, compressors, and crushers for use in Power, Oil & Gas, Lift irrigation, Steel, and Cement sectors. He underwent training under a one-year course related to nuclear Science and Engineering at BARC, Mumbai (Aug 2012-Jan 2013).

KNOW YOUR MENTORS

Prof. M. P. S. Chawla
ASSOCIATE PROFESSOR

Prof. M. P. S. Chawla is currently an Associate Professor for the Department of Electrical Engineering .and PG coordinator at Shri G.S. Institute of Technology and Science, Indore, (MP). He received gold medals for his BE in Electrical and ME in Power Electronics from the Electrical Engineering Departments of Govt. Engineering College in Ujjain, India, and G.S. Institute of Technology and Science in Indore, India, respectively, in 1988 and 1992. He has also attended IEEE International Conference in USA and Singapore in 1992 and IEE International Conference MEDSIP-06, Glasgow, UK in 2006. His specialties include signal processing, image processing, soft computing, intelligent instrumentation, and smart & hybrid grid systems. He is currently a member of the IEEE, Elsevier, Springer, Indian Society of Technical Education, and System Society of India. He has been a professor for 33 years, with 30 of those years spent educating PG graduate students.

He was the "General Chair" in CSNT2022 IEEE Explore Conference. It was an International Conference of MP Section, which took place on 23 & 24th of April at SGSITS, Indore.

He is currently the "Treasurer" of IEEE MP Section from January 26,2022.In 2016 to 2018, he was appointed as the Chairman of IEEE MP Sub-Section. He was appointed as an Executive Editor of the Canadian journal, International Journal of Robotics and Artificial Intelligence in June 2012, for five years. He served as the conference chair for the 2018 IEEE Explore Core International Conference on Advanced Computation and Telecommunication (ICACAT-2018), which was formally sponsored by the IEEE Bombay Section and IEEE MP Sub-Section which was held at the LNCT in Bhopal on December 28 and 29, 2018.

His most recent studies and thesis, which covered topics like Cost Effective Analysis of Hybrid Energy System with Pumped Hydro Storage Using HOMER Pro and Zigbee & RF Module based Solar Panel Monitoring System, Short-Term Solar Forecasting Model Using Artificial Neural Networks, Design Analysis of PV-Wind Energy System with Pumped Hydro Storage Using HOMER Pro were entirely devoted to renewable resources. His other PG thesis concentrated on Patient Handling System & Switching Module with Lower Cost under the umbrella of Intelligent Instrumentation. Comparative Study of Lithium-Ion and Solid State Battery Systems for Electric Vehicles is one of his most recent research papers of August 2022.

IMPORTANT DATES

S. No.	EXAMS	DATES
1	GATE	4,5,11,12 Feb 2023
2	ESE (PRELIMS)	19th Feb 2023
3	IIT JAM	12th Feb 2023
4	CDS-1	16th April 2023
5	BARC	7th to 13th April 2023
6	Google CODE JAM	10th-12th March 2023
7	UPSC (Prelims)	28th May 2023
8	MPPSC (Prelims)	21st May 2023

IEEE

ELECTRON DEVICES SOCIETY®

The Electron Devices Society (EDS) is the largest forum in the world for exchanging the most recent technological advancements in the electronics sector, creating standards that direct the design and manufacture of equipment and systems, and educating both industry professionals and the general public. Members of the Electron Devices Society are leaders in this field, and they gain a great deal from belonging to this exceptional organization, as do their employers.

Through its members' contributions to translational research and development, manufacturing, and application of electronic and photonic devices and systems, EDS fosters excellence in the field of electron devices while also improving the quality of life for all people.

On April 22, 2022, Professor Shaibal Mukherjee served as the inaugural Chair of the Madhya Pradesh Section Chapter of the Electron Devices Society (EDS).

The IEEE EDS Madhya Pradesh (MP) Section Chapter is actively involved in the technical field by sponsoring/co-sponsoring conferences, webinars, workshops, membership drives, opportunities for networking with peers, the Resource Center, environmental awareness campaigns, and promotional activities with the goal of sustainable developmental growth. Technical events such as the Distinguished Lecturer Program and Mini Colloquia are just a couple of the technical events that the MP Section Chapter organizes.

The members of the IEEE MP Section EDS Chapter are working hard to develop an interactive forum for young professionals in the fields of academics, scientists, technologists, engineers, photonics, optoelectronics, photovoltaics, biomedical sensors, and memory devices to discuss, explore, and work together.

If someone wants to join IEEE, they should visit the IEEE website and register their name for student membership. Where fees of registration is Rs. 1000 only, for any further enquiry, students should visit the power electronics lab in Electrical Engineering department. Different competitions are organised by the IEEE. Some of them are listed below and are expected to be held soon:

Poster presentation in February,Experts talk in March,

Power converter competition in July,Quiz in August.

IIT, INDORE VISIT

An Advent towards Academic Excellence

The whole expedition to such a prestigious institute was aimed at notifying us regarding the development going on in the realm of our vocation. A plethora of pieces of equipment, ranging to a multitude of applications were present, paving a way for our curious minds to explore and examine. We had a peek into diverse facets of academic minds who were working on multiple research work ranging from human emotion monitoring instruments to a device for harnessing energy sources to their best efficiency.

We started the jaunt from the basic electrical engineering laboratory which was used for examining the basic theorems and getting hands-on experience in working with electrical and electronic devices. Next, we visited the electrical machine and power system lab where we analyzed an array of converters & machinery used in new-age industries.

For improvement in these controllers' performance, we also explored a smart grid lab that had high-cost real-time simulation machinery for designing such circuitry. Nano circuit and VLSI design lab were also visited, where we explored FPI boards and got a quality cognition regarding hardware security.

People never learn anything by being told, things have to be experienced and this experience was notable. We got a great opportunity to pick intellectuals' minds, have idiosyncratic discussions in a buoyant and healthy sense, and most importantly learned about new emerging domains in our own field of study.

Swayam Gaba, III Year (EED)

TECHNOLOGY UNDER SCOPE

Wireless Transmission of Electricity

Emrod, a startup, is working with a top power supply business to evaluate power transmission using a number of antennas. The antennas' proximity to one another must be in line of sight, which is the only restriction.

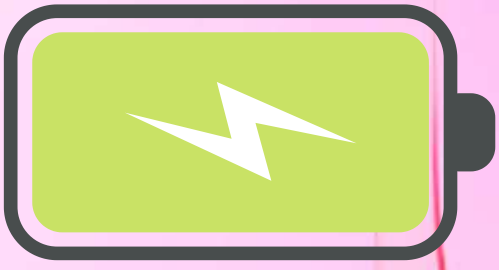
A power supply, a transmitting antenna, a number of relay stations, and a receiving antenna—often referred to as a "rectenna"—make up the system. Over a century ago, Nikola Tesla, an inventor, had an idea for a wireless electric system. Emrod creates microwaves from electric energy, which are then sent to relay stations via a cylinder-shaped beam. In the 1950s, telephone communications between Europe and America were made possible via transcontinental microwave relay networks.

Emrod's system uses many of the same elements as the common household microwave oven. Offshore facilities could transmit power to hard-to-reach destinations. Wireless power stations could be set up quickly after natural disasters. The same technology allows us to send 100 times more electricity across considerably greater distances, according to Kushnir. Emrod technology allows wireless systems to send any amount of power that current wired solutions can. Could the microwave beams zap nearby species like birds? Officials with Emrod claim that a shield of laser beams that serves as a bodyguard around the microwave broadcasts will turn the beams off when things like birds, other animals, or people get close. The brief outages shouldn't have an impact on power transmission in general. For the sporadic power outages where stops of even a few seconds could be crucial, facilities using sensitive equipment, such as medical devices, would need to have battery backups.

They will be attached to trucks and transported in a cost-effective, eco-friendly way. Innovative startup Emrod creates powerful beaming technology for business. The power beaming technique allows for the wireless transmission of large amounts of electricity over long distances. Emrod is attempting to develop a system that is reliable, efficient, and has all the qualities required for application in a range of circumstances, such as: linking renewable energy sites; supplying rural villages with electricity; Relief from disasters, space-based energy infrastructure, and field charging for large vehicles.

The true test is whether you can safely run at power levels that, based on actual efficiency, make financial sense. Frankly, 70% efficiency isn't all that great, and even that sounds like it would be challenging to achieve over long distances.

Sand Batteries



The first operational "sand battery" has been constructed by the Finnish energy company Vatajankoski, which stores heat in a tank of sand. The battery is installed at a power plant owned by an energy provider in the town of Kankaanpää and connects to the regional heating system. The Kankaanpää "sand battery" holds 100 tonnes of hot sand to store energy generated by solar and wind. The company behind the technology says it can store power for use in the coldest hours of the year without using any fossil fuels at all.

Sand batteries used by Polar Night Energy store heat for use over the course of weeks or even months. Utilizing an industrial variation of a typical resistive heating element, it produces hot air by converting renewable electricity. Sand is cheap; therefore, the procedure doesn't cost much, and the main expenses are for construction and equipment. 100 tonnes of sand are contained within the Kankaanpää battery, which is four metres in diameter and seven metres high. Future batteries, according to Ylönen, will be 20 metres wide and 10 metres tall. Each month, the typical UK home uses 240 kWh of electricity and 1,000 kWh of gas.The sand battery would most likely only be used to provide heat and not electricity due to the inefficiency of the conversion process, but according to Ylönen, the world's heating needs are great enough to justify having separate storage systems."The heating sector is something like one-quarter or one-third of the emissions in the world," said Ylönen.

Tampere city council has donated work space and funding to get the project off the ground. The challenge now is whether the technology can be scaled up to provide electricity as well as heat.

The Vatajankoski power plant in Finland has become the first in the world to be powered entirely by solar panels. "It's a bit crazy, if you wish, but I think it's going to be a success," says managing director Pekka Passi.

STUDENTS' CORNER

बस एक रात की बात है

–गौरव बड़गैयाँ

दादा कहते थे मेरे "बस एक रात की बात है"।
जब मूँछें तू मेरी खींचेगा, थक जाएगा हाँथ तेरा।
मेरे सीने पर तू सोएगा, सीना ना धड़केगा मेरा।
जब लाठी लाचार हो जाएगी, ऐनक भी धुंधला पड़ जाएगा,
बस एक रात की बात है, वह दिन भी जल्दी आएगा।

इन दीवारों पर हाँथों के केवल निशान रह जाएँगे,
आँगन जो अब तक हंसते थे, सब सुनसान रह जाएँगे।
चहल-पहल से भरा महल, मेरे संग बूढ़ा हो जाएगा,
यह धोती-कुर्ता, लाठी, कंबल, सब कूड़ा हो जाएगा।

निश्चित ही आऊँगा मिलने, आहट पहचान लेना तुम।
जाड़े की ठिठुरन में गर्माहट को मान लेना तुम।
यह मुर्झाता सा पुष्प जाने कब टूट गिर जाएगा।
बस एक रात की बात है, वह दिन भी जल्दी आएगा।

राहत तो भरपूर मिलेगी, ना रोना चाहत का रोना,
मुट्ठी-सा बंधकर रहना, रिश्तों के तार ना खोना।
होती जब मन में सोच बड़ी, पत्थर भी बन जाता सोना।
रहना सदैव ही कर्मठ, बीज अहंकार के ना बोना।

दादा कहते थे मेरे "बस एक रात की बात है"।
मिट जाए जिस दिन परछाई, दादी को सँभाल लेना तुम।
जो आया है वो जाएगा, इस बात को मान लेना तुम।
वसंत तो पीछे छूट गया, बाकी पतझड़ रह जाएगा,
बस एक रात की बात है, वह दिन भी जल्दी आएगा।

ELECTRICITY GENERATION

-Kunal Sharma

From ocean waves this is an era where the electricity demand is on great level. The level which can't be matched. There are various ways to generate electricity. But one of the ways for producing electricity on mass level is electricity generation from ocean waves. Wave energy is also known as ocean wave energy.

To read the full article, scan QR

THE NEED FOR ELECTRIC ROADS

-Deepika Mangrol

A road that supplies electric power to the moving vehicles that utilize it is known as a "electric road," "e-road," or "electric road system" (ERS).As well as overhead power wires that cross the road above ground level, common options include conductive rails or inductive coils buried in the road.

To read the full article, visit;

Aditi Kothari
III Year, EED

Sumit Kumar Gadore
III Year, EED

"Technical Poster Exhibition" was organized by Council Of Electrical Engineers, Department of Electrical Engineering, S.G.S.I.T.S Indore on October 29, 2022. The honorable judges for the competition were Dr. Arun Parakh (HOD EE) and Prof. Rinki Rajpal.

BEYOND STUDIES

NSS SGSITS National Service Scheme

"Not Me, But You"

ODC- One Day Camp... "The most awaited day for NSS Volunteers"

A one day camp was organized on 12th November 2022, in which all NSS Volunteers visited Badarkha Village near Yashwant Sagar Dam,Indore where they all interacted with school students by making them familiar with career guidance,sports,culture & Buddhik thoughts.

TRAFFIC MITRA MAHAABHIYAN

NSS Volunteers contributed to the District's biggest traffic management program organized by Municipal Corporation on 7th January 2023, in which our volunteers learned and managed traffic at high traffic areas for a day.

SGSITS ALUMNI ASSOCIATION

On the occasion of 70th Foundation Day of SGSITS,

A two day event was organized on 23rd & 24th of December 2022.All the Alumnis from all over the world along with students were invited.

First day started with a Morning session of a round table conference of Alumni followed by Mr. Kumar Vishwas's Show in the evening.

On the second day a series of events were put together.In the morning Marathon along with zumba and aerobics were organized succeeded by Expert Lectures on Entrepreneurship in the Afternoon.It all ended with a blissful Cultural Night accompanied by Bonfire, food stalls and fun for all the Alumni,Faculties and students.

OJASWA

The Official Personality Development club of SGSITS

"JUDICIA:it's all legal", a lawful expedition..
A two day event was conducted on 18th &19th November 2022. The event comprised of two stages. Stage one was "The Rouge Reveal: A treasure hunt" while Stage two was three leveled "The Trial Of Advocacy" which replicated an original courtroom in the form of moot court.
The winners were awarded with cash prizes
The organizers engaged the audience and made the event euphoric with bonfire,stand-up comedians and open mic for various talents.

PRATIBIMB

"The reflection of art is the official fine."

PIX-शाला:(Enhance the Esthetics)
A two day event held on 14th &15th of October 2022. On the first day a photography workshop in collaboration with Canon that included a seminar on professional camera operations by experts was conducted.
It was followed by an exciting photography competition for photography enthusiasts of the college on the second day.
Their participation and efforts were appreciated with goodies and cash prizes. The Event ended with joyful jamming and a good note by professionals of Canon.

KNOW OUR TEAM

Dr. H. K. Verma
Dean Academics
Faculty Coordinator

Dr. Arun Parakh
Head of Department
Faculty Coordinator

Prof. R.S. Mandloi
Assistant Professor
Faculty Coordinator

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Deepika Mangrol, Jinesh Sanghavi , Kirty Pandey, Simrah Sheikh, Dhruva Agrawal, Akshay Nayak, Vashnavi Ghosh.


S G S INSTITUTE OF TECH. AND SC.