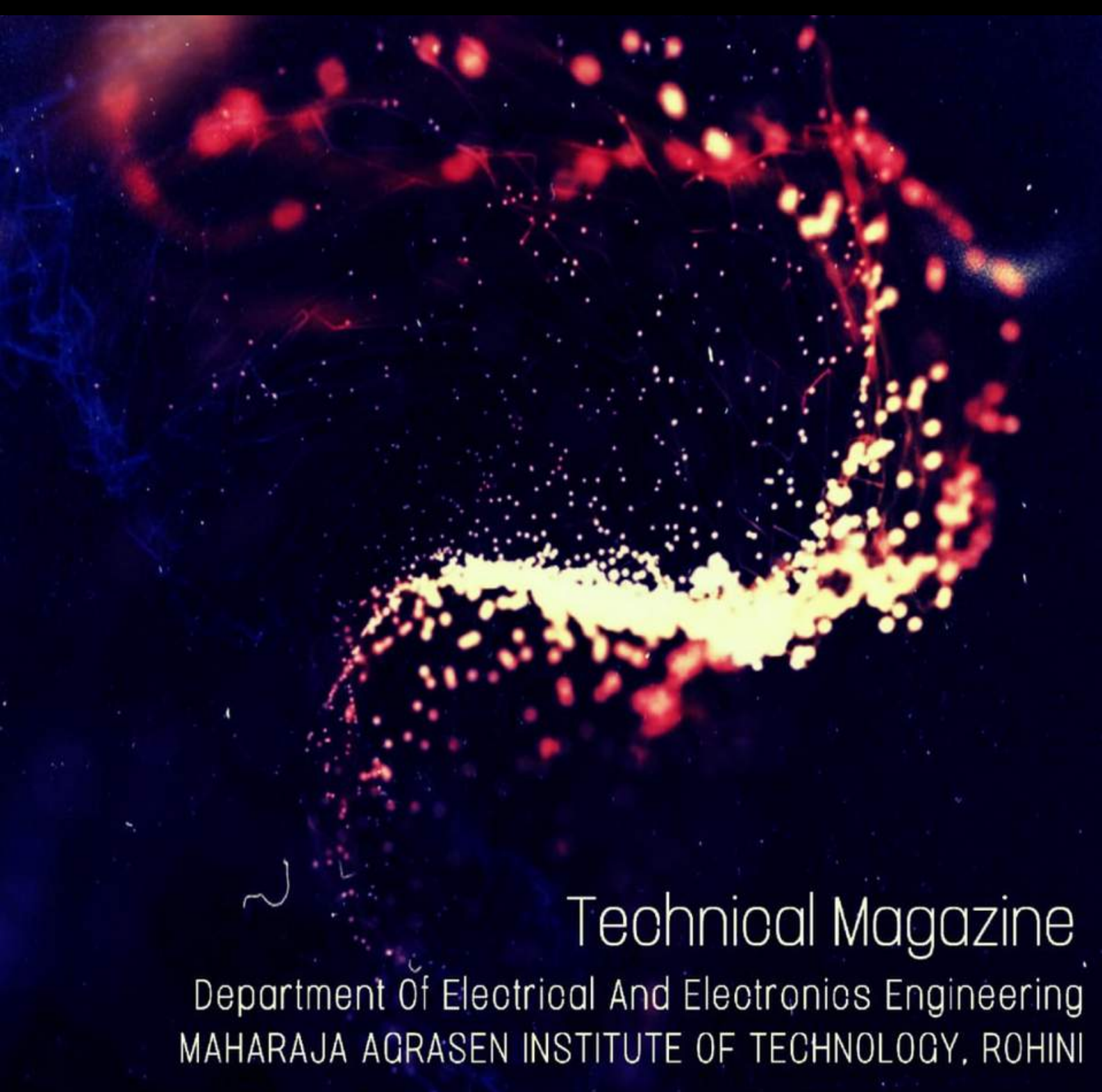


आविष्कार

Sept 2023



Technical Magazine

Department Of Electrical And Electronics Engineering
MAHARAJA AGRASEN INSTITUTE OF TECHNOLOGY, ROHINI

VISION

To attain global excellence through education, innovation, research, and spiritual ethics with the commitment to serve humanity.

MISSION

- M1. To promote diversification by adopting advancement in science, technology, management, and allied discipline through continuous learning**
- M2. To foster moral values in students and equip them for developing sustainable solutions to serve both national and global needs in society and industry.**
- M3. To digitize educational resources and process for enhanced teaching and effective learning.**
- M4. To cultivate an environment supporting incubation, product development, technology transfer, capacity building and entrepreneurship.**
- M5. To encourage faculty-student interaction and foster networking with alumni, industry, institutions, and other stakeholders for collective engagement.**

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Message From Founder and Chief Advisor's Desk



Dr. Nand Kishore Garg
Founder & Chief
Advisor, MATES

**" I am extremely happy to release the LIVE WIRE
Technical Magazine of the Electrical and Electronics
Engineering Department, MAIT for the session between
August 2021- September 2022.**

**This magazine, I understand has been designed to
provide a broad range of information that focuses on
the application of current technologies, research,
developments through the latest technology
innovations through the existing students and faculty
members, and their practical explanations through
industry experts.**

**I acknowledge the efforts of Prof. (Dr.) Rajveer Mittal,
Head of the Department, and his Editorial Board
Members in getting the magazine published.**

**I wish all the faculty members success and zeal to
continuously work for the betterment of society. "**

Message From Chairman's Desk



Sh. Vineet Kumar Gupta
Chairman, MATES

" I am gratified to know that the Department of Electrical and Electronics Engineering, MAIT has taken an initiative to publish the Technical Magazine in the month of September 2021.

This is productive as well as a great platform for the students, researchers, faculty members and industry experts to disseminate achievements in research and developments in computer science and technology.

I acknowledge the efforts of Prof. (Dr.) Rajveer Mittal, HOD. EEE, the Editorial Team, faculty members and the students of the departments for their efforts in publishing the Technical Magazine.

I also applaud the coordination and efforts by the editorial team to bring up the issue.

I wish them all a great success."

Message From Vice Chairman's Desk



**Prof. (Dr.) M.L.. Goyal
Vice Chairman(Academics),
MATES.**

" I am very happy that the Department of Electrical and Electronics Engineering, MAIT is releasing its Technical Magazine to commemorate technical publications and articles of faculties, Industry experts, alumni, and students for the academic year 2021-2022.

This Technical Magazine is a forum that could aptly be used to record the technical articles and research papers published by the students and faculty members. I am sure that this magazine will be informative and resourceful.

I owe my hearty appreciation to Prof. (Dr.) Rajveer Mittal, Head of the Department EEE, and her team for their sincere efforts to make the release of this magazine a reality. I wish them "The Very Best" in all their future endeavors. "

Message From Director's Desk



**Prof. (Dr.) Neelam
Sharma
Director, MAIT**

" It gives me immense pleasure to know that a LIVE WIRE Magazine September 2021 is being published by the Department of Electrical and Electronics Engineering, MAIT. It is a platform to combine the efforts of Faculty, students and the editorial team to publish their technical work going on in the department.

Industrial and productive technical material forming the contents of the magazine will definitely be a developing a tool to the readers.

I applaud the efforts of Prof. (Dr.) Rajveer Mittal, Head of the Department EEE, Editorial team members and Co-ordinators of the team to publish this issue. I wish them success for future publications. "

Message From Head Of The Department



**Prof.(Dr.)Monika Gupta
Head of Department (EEE)**

Electrical and Electronics Engineering Department has always been at the forefront of innovation, research, and education in the field of electrical engineering. We take immense pride in nurturing young minds and providing them with a platform to explore and excel in this dynamic discipline. In the past years, our department has continued to make remarkable strides. Our students are achieving remarkable success, securing excellent placements, and pursuing higher studies at prestigious foreign universities. Our faculty members have been instrumental in not only imparting knowledge but also in conducting cutting-edge research that has the potential to transform industries and improve lives. As we confront global challenges related to energy conservation and environmental preservation, it is our responsibility as electrical engineers to find innovative solutions that contribute to a more sustainable world. As we move forward, let us continue to embrace the spirit of collaboration, innovation, and lifelong learning. Our department legacy is built upon the collective efforts of each member, and together, we will continue to reach new heights. I encourage all of you to make the most of the opportunities presented to you during your time at our esteemed institution.

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FACULTY CORNER

Technological Advancements in EEE Mr. Sheersh Kumar Garg , Asst. Professor, EEE Department



Although the electric vehicle industry as a whole opened more options for people with entrepreneurial mindsets, the same may be true for the battery shortage issue. After all, most businesspeople know the importance of coming up with ideas that solve identified problems.

One of the options is to build more battery factories in the United States. That would reduce dependence on China, which currently dominates the lithium-ion battery market. According to one industry source, only 23% of the world's raw battery materials come from China. However, the Asian nation still accounts for 80% of overall production due to its success in chemically producing battery-grade materials. Setting up factories in the United States makes sense, but it's also not straightforward. Dr. Francis Wang, CEO of battery technology company NanoGraf, admitted, "We don't have a supply chain in the United States. I think we're trailing behind." He continued, "The battery business is a tough business. It's incredibly capital-intensive. It costs millions, if not billions, of dollars to get a factory off the ground. The margins are pretty tight. Razor-thin. And there is a tremendous amount of risk."

Making Old Batteries Into New Ones

A new startup called Redwood Materials could provide an alternative until more U.S. factories get built. Rather than creating batteries, this business model focuses on recycling them. Company leaders envision a closed-loop battery supply chain that supports sustainability while addressing the materials shortage. One challenge is that there are not enough EVs in junkyards yet to source the company's needs. For now, one of its workarounds is to get batteries from consumers. That makes sense, especially since most people have at least a few lithium-ion phone batteries associated with smartphones they no longer use. The Redwood Materials process involves heating the batteries to 2,700 degrees Fahrenheit to turn the metal into a hot liquid. Then, supplementary chemical processes reduce the metal into ultra-concentrated forms of lithium, cobalt, and nickel. It's too early to say how much pioneering approaches like that one could address the battery shortage, but that's an example of what's possible.



Tactile Sensations: Sense of Touch

Dr.Laxya,Assistant Professor,EEE Department

Haptic technology is the use of tactile sensations to stimulate the sense of touch in a user experience. For example, direct applications of haptic solutions frequently include phone and game controller vibrations. Haptic science also involves any tactile feedback such as air pressure or sound waves.

Also known as 3D touch or kinaesthetic communication, this technology creates experiences using vibrations, motions, and other forces. Since touch is the most fundamental method of interaction, leveraging sensation within your products is fast becoming the newest approach for creating memorable brand experiences. It is helpful to distinguish between haptic technology and two similar terms—haptics and haptic feedback.

- Haptic technology refers to the technical applications (virtual or physical) that create tactile stimulations.
- Haptic feedback comprises the methods in which haptic technology communicates tactile information to users.
- Haptics is the overarching umbrella term that describes the science of haptic feedback and haptic technology, in addition to neuroscience and physiology of touch.

Immersion Corporation is a pioneer in haptic technology that powers over 3 billion devices worldwide. One study on haptics demonstrated that participants could recall objects purely through touch 94% of the time. As the global user base grows, haptics will continue to expand across multiple applications.

The four primary haptic modalities—vibration, button stimulation, thermal, and kinesthetic. Ø Vibration

Most haptic experiences focus on vibration-centric feedback. Technology such as linear resonant actuators (LRA) and eccentric rotating mass (ERM) create much of the haptic experiences you encounter for mobile and wearable devices (think of the vibration included with a game controller).

Ø Button stimulation

Smart screens don't naturally offer tactical feedback and versatility like mechanical buttons. And so, we can expect simulated buttons to become more popular, like the technology in the Apple Force Touch trackpad. Buttons can use haptic and audio feedback to mimic the feeling of a mechanical pressure pad under your finger.

USES OF HAPTIC TECHNOLOGY

Haptic technology offers numerous potential advantages. Here are several use cases for touch- based solutions that can tap into the benefits of haptics to offer a better user experience.

Product design

Through touch optimization, haptic technology can improve the user experience in many ways. Haptics will also play a prominent role in automotive infotainment systems. Touch screens can become more responsive and provide multiple settings based on the driver's preference. Other additional automotive applications include pedal feedback and steering wheel enhancement.

Wellness

The advances in wearable haptics offer great opportunities within the healthtech industry. Real-time haptics gathers biometric data and can adjust the user experience to suit the user. Better feedback and data collection will make it possible for enhanced user experiences and improved health outcomes. Touch Points reports that its wearable devices can reduce stress by 74% in 30 seconds. Companies involved with posture correction, such as ergonomic furniture makers, app creators, or chiropractors, can take advantage of these improvements in the technology.

Industrial training

With haptic feedback, your training environments can simulate real work environments and labor conditions with improved accuracy. Users can partake in virtual training scenarios, using haptics to get a lifelike experience in a safe, offline environment. From training in maintenance, safety procedures, assembly line usage, and machinery operation and product testing, there are many uses for haptics that can allow users to train without any risks to themselves or company property.

Accessibility

You can improve the accessibility of your products and services for the visually disabled. Haptic technology allows users to create virtual objects, interact with products, and approximate the appearance of an object via touch-based sensory input. For example, the 2.5D display from a Stanford team helps visually impaired people accomplish visual tasks. Not only will these solutions open up new potential markets and aid those with restricted accessibility, but they will ensure your company stays compliant with access regulations.

Digital applications of Grid

**Mr. Rahul Garg, Assistant Professor,
EEE Department**



The smart grid is called as one of the best utilization in the computer intelligence sector that also proves the ability for networking. There are many features that discriminate against the conventional electricity distribution system. Since the invention of the smart grid electricity system, operation and maintenance have been drastically easy for the companies. Although, each component of the smart grid is able to listen and talk that provides an efficient operation during the distribution of the electricity. Apart, it also plays a vital role in accomplishing automation purposes. The utilization of smart grid technology has been increased in the contemporary scenario when everyone enjoys uninterrupted services all the time so there are a lot of companies that are implementing the same technology for efficient operation. If any user is inconvenient during the operation, the electricity company knows instantly the affected area through the smart meter assistance. Although, the smart grid technology also enables the transformers from the IP address that helps companies for two-way communication. Here, through smart grid technology, the company can manage the distribution of electricity efficiently. A company in the United States also provides the various types of technologies for the advancement in the smart grid sector so the world can take benefit from the same in a great manner. After the advancement of the SmartGrid, companies will be benefitted from the integrated and automated transmission between the various elements of the electric grid. Besides, sensing and computations will also be made by the electricity companies drastically with the automated controls. Management of the dashboard with the decision support software will also be improved after the improvisation in smart grid technologies. Unique Identifier (UID) is the vital thing that can be used for the identification of any entity and the smart grid is enabled with the Internet of Things (IoT) that makes it able to communicate over the system all the time.

It is vital to know about the Smart Grid technology before starting the importance of it. The smart grid is the smart electrical network that is also known as the combination of the electrical network as well as smart digital transmission technology. Nowadays, various companies are implementing the technology which is proficient in producing an electrical network through various distributed sources to the customers. These sources may be turbines, solar power systems, and others. During the composition of the smart grid technology, various components like intelligent appliances, smart substations, smart power meters, and super-conducting cables are being used with a wide range of technologies that help in organizing it as a smart tool for the companies.

STUDENT CORNER

Transformers

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Student, Department of Electrical & Electronics Engg

Transformer, device that transfers electric energy from one alternating-current circuit to one or more other circuits, either increasing (stepping up) or reducing (stepping down) the voltage. Transformers are employed for widely varying purposes; e.g., to reduce the voltage of conventional power circuits to operate low-voltage devices, such as doorbells and toy electric trains, and to raise the voltage from electric generators so that electric power can be transmitted over long distances. It is beneficial to power electrical gadgets that are inconvenient, or no longer possible, as is the case of body-embedded sensors, actuators, and communication devices. Most of these functions transfer low amounts of power, in the vary of microwatts to milliwatts, for data transfer.

WPT has lately been the centre of attention of industrial traits for higher-power applications, from a few watts to countless kilowatts, over average distances. The most frequent approach of high power. It is inductive coupling which was once invented by Nikola Tesla more than a century ago. The current developments in the semiconductor industry for high frequency and high-power applications have paved the route for high-power inductive WPT improvements. Inductive WPT presents various advantages over the wired connection and is utilized for several purposes such as wearable electronics, health care, and the car industry. This chapter begins by way of reviewing more than a few techniques of WPT, accompanied by the sketch and evaluation of inductive WPT.

The overall inductive WPT is studied step by step and

Transformer, device that transfers electric energy from one alternating-current circuit to one or more other circuits, either increasing (stepping up) or reducing (stepping down) the voltage. Transformers are employed for widely varying purposes; e.g., to reduce the voltage of conventional power circuits to operate low-voltage devices, such as doorbells and toy electric trains, and to raise the voltage from electric generators so that electric power can be transmitted over long distances.

See aers change voltage through electromagnetic induction; i.e., as the magnetic lines of force (flux lines) build up and collapse with the changes in current passing through the primary coil, current is induced in another coil, called the secondary. The secondary voltage is calculated by multiplying the primary voltage by the ratio of the number of turns in the secondary coil to the number of turns in the primary coil, a quantity called the turns ratio.

Air-core transformers are designed to transfer radio-frequency currents—i.e., the currents used for radio transmission; they consist of two or more coils wound around a solid insulating substance or on an insulating coil form. Iron-core transformers serve analogous functions in the audio-frequency range.

WIRELESS POWER TRANSFER

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Student, Department of Electrical & Electronics Engg

The magnetic resonant coupling wireless power transfer (MRCWPT) system has distinctly high transfer efficiency over relatively long distances, and the MRCWPT system has received a lot of attention.

. And the MRCWPT system is much promising in the field of charging, which has been applied in potential functions such as scientific implants, electric powered automobile charging, sensor networks and client electronics.

For conventional MRCWPT systems, each the transmitter and the receiver have the equal resonant frequency to preserve relatively high power transfer efficiency (PTE).

The receiver and the transmitter work at a single resonant frequency. When the electrical energy is transmitted from the transmitter to the receiver at exceptional working frequencies and malfunctions may additionally be brought on regardless of the receivers' demands. The so, PTE of the system recorder to resolve the problem, the frequency reconfigurable MRCWPT system with extra manipulate circuits is proposed in through altering the resonant capacitance value. An efficient and reconfigurable rectifier circuit, with the capability of automatically switching from low- power to high-power operation mode, is presented. The new topology lets in the rectifier to convert RF power to DC power efficaciously over an prolonged input power range. The frequency reconfigurable science is achieved by means of varying the distance between the receiver and the transmitter of the MRCWPT system. A shape-reconfigurable MRCWPT system achieves frequency reconfigurability via exceptional constructions of resonant coils. A novel planar-spiral transmitter coil (TX-coil) with an outer-tight and inner-sparse configuration is proposed to attain a extraordinary factor and uniform magnetic field, which ensures high efficiency and improves the misalignment tolerance for several-megahertz WPT systems.

The above MRCWPT structures have the frequency reconfigurable property, however the volume and complexity of the system increase. To gain higher PTE and power receivers at different frequencies, a frequency reconfigurable MRCWPT system is introduced by adjusting the capacitance price of the adjustable capacitor related to the coil of the system.

. At present, many researchers proposed MRCWPT systems to further enhance PTE and lengthen the distance of the system. A kind of technique in which adding relay resonators is proposed.

The distance and PTE of the system are extended. Intermediate resonators arranged between the transmitter and the receiver are used to transmit the magnetic field. This approach is used to enhance the PTE of the system to maximize the advantages of magnetic field repeaters. MRCWPT systems with the metamaterial are proposed. Some MRCWPT systems with repeaters and metamaterial are analyzed for applications. The analysis indicates that the PTE of MRCWPT systems with repeaters and metamaterial is elevated in one-of-a-kind ways. The metamaterial can provide the MRCWPT system with more than a few tunable functions.

And the MRCWPT system with nonidentical coils using metamaterial is proposed.

However, further investigation should be carried out about its systems using metamaterial to improve the PTE and the distance. Investigations about the metamaterial are mainly in the far field, however the metamaterial used in the MRCWPT system in the near area is lacking. Theoretical analysis and experimental investigation about using metamaterial to improve the PTE of the machine are shown. The PTE of the gadget increases from 17 to 35% by using metamaterial at the working frequency of 27.12 MHz. A maximum 25.4% efficiency enhancement is achieved when the distance between Tx and Rx coils is 15 cm, and in standard distance variation cases, the proposed two-stack hybrid metamaterial slab makes the power transfer efficiency increase. The metamaterial is used in the MRCWPT system, and the more advantageous PTE is 54.3% at a distance of 1.0 m. The overall performance of the MRCWPT system is improved by using metamaterial in the above work. However, the metamaterial is so thick and large that it limits the application of the system. The conventional metamaterial used for the system to improve the efficiency just works at only a single frequency. Also, the research about it used for frequency reconfigurable magnetic resonant coupling wi-fi electricity switch structures is lacking. This paper provides a method for enhancing the efficiency of the frequency reconfigurable wireless power transfer system dynamically by using the frequency reconfigurable metamaterial at different working frequencies. The reconfigurability is achieved by adjusting the capacitance value of the adjustable capacitor connected to the coil of the system. The conventional structures of the coil and the metamaterial are used in the system, so the universality of this method is further illustrated

RESEACH PUBLICATION

Optical Communication

Anmol Dureja¹ , Anshita Pandit² , Sagar Bharti³ ,Poonam Juneja⁴

A conversation between two or more airplanes is referred to as aviation communication. The design of aircraft makes it exceedingly challenging for them to see anything beyond what is right in front of them. Aircraft can effectively connect with the required employees using communication techniques like wireless radio since safety is the aviation industry's top priority. Since the aviation sector is global, many different languages are used. The

International Civil Aviation Organization (ICAO) has determined that English is the aviation industry's official language. Pilots are required to take an English proficiency exam since the business recognizes that some pilots may not be native English speakers. In the early days of flying, it was believed that the sky was too vast and empty for two planes to collide. However, the catastrophic accident of two aircraft over the Grand Canyon in 1956 led to the establishment of the Federal Aviation Administration (FAA).

The Jet Age saw a boom in aviation, necessitating the development of communication technology. To communicate with pilots in the air, ground controls employed visual aids, which was once thought to be a highly challenging operation. Pilots could connect with people on the ground thanks to the development of portable radios that were tiny enough to be stored in aircraft .

Pilots could then communicate both air-to-air and air-to-ground thanks to subsequent advances. Today, a lot of different methods are used in aviation communication. Modern radio, GPS, Internet, and video systems are all standard equipment on airplanes. Air-to-ground communication greatly improved with the invention of radar in the middle of the 1930s. Radar may be used to follow aircraft in the sky and detect their location, direction, speed, and even kind. This made it possible for pilot navigational aids and better air traffic control. It was then widely used during World War 2 for targeting for bombers. Two different radar beams might be pointed in the direction of Germany from radar sites along the British coast.

An aircraft might track one radar signal until it crossed with the other, at which point it would know to drop bombs, by aligning the two radar beams to intersect over the targeted target, such as a town or industrial.

Currently aviation communication is used to reduce the risk of mishappenings by telling the pilots the latest weather conditions or the availability of runways. Sometimes flights are even redirected to some other airports. It has saved many lives till date and the engineers are still trying to improve the current technology to meet the future needs. Aviation has truly been the forefront of innovation to become one of the safest and most reliable modes of transportation in the world today and a major part of this is because of the communication system which helps in planning and getting ready for every situation.

Acoustic transmission

An autonomous underwater vehicle (AUV) is a robot that travels underwater without requiring input from an operator. AUVs are a smaller subset of the wider class of underwater systems known as unmanned underwater vehicles, a classification that includes non-autonomous remotely operated underwater vehicles (ROVs) – controlled and powered from the surface by an operator/pilot via an umbilical or using remote control. An AUV is more frequently referred to as an unmanned underwater vehicle in military contexts (UUV). AUVs include underwater gliders as a subtype. The first AUV was developed at the Applied Physics Laboratory at the University of Washington as early as 1957 by Stan Murphy, Bob Francois and later on, Terry Ewart. The "Special Purpose Underwater Research Vehicle", or SPURV, was used to study diffusion, acoustic transmission, and submarine wakes. Other early AUVs were developed at the Massachusetts Institute of Technology in the 1970s. One of these is on display in the Hart Nautical Gallery in MIT. At the same time, AUVs were also developed in the Soviet Union. The ocean is an environment that is saturated with seawater. Seawater has a high degree of viscosity, making it more difficult for the ocean to move than the atmosphere. The ocean's environment, where air pressure rises by one per ten metres of depth, is another amazing feature. When a result, as objects are destroyed, the water pressure increases to a point that it may be felt in the deep sea.

So many factors come in account in designing AUVs. It includes Solid pressure vessels to contain the electronics underwater as well handling the pressure from water. It contains sensors some of which are compasses, depth sensors, side-scan and other sonars, magnetometers, thermistors and conductivity probes. Some AUVs are outfitted with biological sensors including fluorometers (also known as chlorophyll sensors), turbidity sensors, and sensors to measure pH, and amounts of dissolved oxygen. Some of the uses of AUVs are for research work, commercial work like for oil and gas industries uses AUVs to make detailed maps of the seafloor before they start building subsea infrastructure; pipelines and subsea completions can be installed in the most cost-effective manner with minimum disruption to the environment, air crash investigations, military applications etc.

PUSHING REASERCHERS TO DIFFERENT POWERSOURCES

As people become more concerned about the reality that a lithium-ion battery does not represent a limitless resource, that could cause researchers to prioritize coming up with newer, better batteries that don't rely on materials facing shortages. Selecting a battery as a safe and effective candidate starts with understanding its characteristics during all types of use.

For example, lithium-ion batteries have an exothermic reaction during charging that produces heat. Engineers must develop temperature management devices to stop them from overheating. Thus, finding a battery alternative is only part of the goal. Other efforts center on ensuring it performs as expected without creating hazards. However, progress is underway. In one example, researchers from the University of Texas at Austin developed a lithium-ion battery without cobalt, which they said was its least abundant material. A battery's cathode typically contains all of its cobalt.

However, the option developed in this research was 89% nickel, along with manganese and aluminum. The primary use of nickel for the cathode should lead to longer driving distances, the researchers said. They also noted that cobalt is the most expensive material used for a cathode. It's costlier than the combined costs of nickel, manganese, and aluminum and can account for nearly a third of many lithium-ion battery cathodes, they said. Thus, this achievement could pave the way for battery alternatives with superior performance and reasonable production costs. If so, that's a mutually beneficial situation for EV owners and manufacturers.

LIST OF EVENTS ORGANISED

S.No.	Date Of The Event	Name Of The Event	No. Of Participants
1.	4th January,2023	Ui/Ux Competition	45
2.	5th April,2023	Technomind	30
3.	28th April,2023	Industrial Visit to Narora Nuclear Power plant	42
4.	1st&2nd June ,2023	Hardware Project Competition	50+
5.	29th September,2023	Electrical Quiz- Electrialla 2.0	39
6.	22nd September,2023	Earthing	45
7.	16-17th October,2023	Smart'O'Hack 2.0	30+
8.	29th November,2023	Industrial Visit to Coca-Cola Happiness Factory	40
9.	1st December,2023	Circuit-Citrine	33

DESIGNITOUT- UI/UX COMPETITION

On 04 January 2023, MAIT's EEE Department, through its official society Electrotech, hosted "DesignItOut," a Ui/Ux competition. Aimed at spotlighting students' design prowess, the event, commencing at 11:30 am, revolved around Ui/Ux design themes. Under Mr. Rahul Garg's guidance and coordinated by Ms. Poonam Juneja and Prof. Rajveer Mittal, participants showcased their innovative design capabilities, emphasizing the department's commitment to diverse skill development.

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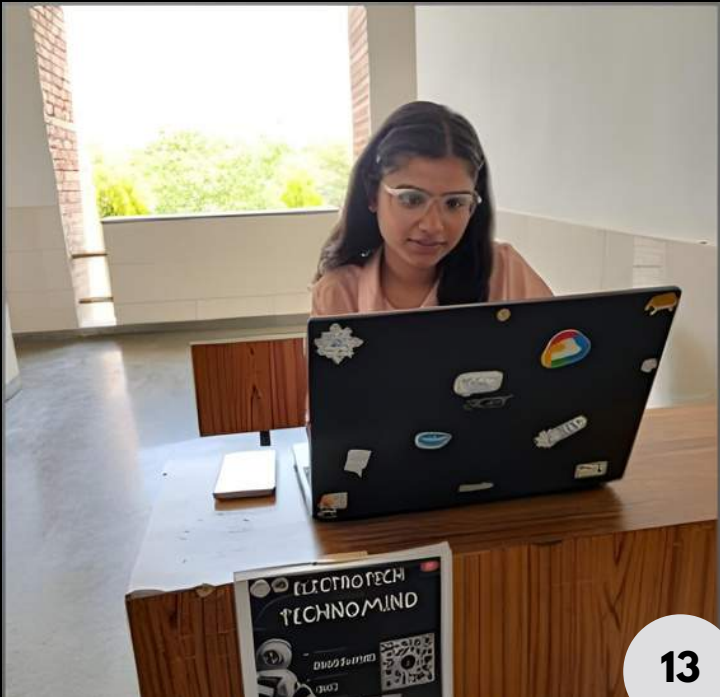
★ **UI/UX** ★

Competition

Design It Out!

Date : 4th January, 2023
Time : 10 a.m.
Venue : Mini Auditorium, MAIT

TECHSURGE & MRIDANG EVENT -TECHNOMIND



Electrotech conducted this Technical Extravaganza □ TechnoMind on 5th April. It was a 3 round competition comprising of a quiz, a crossword, and finally an ambitious problem solving session. Students participated with zeal and passion, and out of 35, just 8 reached the final round! There was an extensive discussion on E-waste management with our professor Mr. Ravi, and the participants came up with great electrical, technical, and even social remedies for the issue. Choosing the winners was a real nip and tuck affair because of how well everybody performed. Finally, Ashutosh and Vishwajeet of 3rd year emerged as the winners of this competition. This competition helped the students to hone their electrical skills and build up their confidence. It provided them a platform to discuss issues and solutions with like-minded people. Poonam ma'am & Ravi Sir gave trophies, appreciation certificates and cash prizes to the winners And after the final round we got our two winners Overall the event was a great success, everyone had fun and learnt new things and Electrotech will be back with more events like this



Industrial Visit to Narora Nuclear Powerplant



A Report on Industrial Visit to “Nuclear Power Corporation of India Limited (NPCIL)”, NARORA



About Visit

An industrial visit to Narora Nuclear Power Plant (a unit of NPCIL, Govt of India) was organized by **Electro Tech** society of EEE Department on 18th April 2023 for 6th Semester students. The visit was coordinated by Prof.(Dr) Rajveer Mittal(HOD), Ms Poonam Juneja and Ms. Supriya Sharma. Total 42 students along with Faculty members of EEE Department visited the plant. Narora Nuclear Power Station is located at Bulandshahar in Uttar Pradesh. The power plant is one of the Nuclear based power plants of NPCIL .

Students visited the Unit No.1&2 of each 220 MW, and understood various technical factors which would be very

helpful for their understanding of various theoretical aspects studied in their curriculum. All the students were divided into six groups and sent for

visit of various sub-systems of the plant, like Reactors, Turbo Generator, Switch Yard Control Room, Switch Yard and Cooling Tower. The visit was very successful and it was a learning experience for the students.

Narora Nuclear Power Plant has a total installed generation capacity of 440 MW comprising of Two Units of 220 MW each respectively. It consists of two 220 MW pressurized water reactors with heavy water as moderator (PHWR). The construction costs originally were estimated to be 12.65 billion USD (APPROX). Construction of units 1&2 started in 1 November 1977.



Technical Data

Type of reactor	PHWR
Gross electricity generation	2* 200 MWe
Type of Fuel	Natural Uranium
Primary coolant	Heavy water
Number of bundles	3672
Number of coolant channel	306
Length of bundle	49.5 cm
Diameter of bundle	8.15 cm
Weight of bundle	16.5 kg
Weight of uranium oxide cell	15 kg

Schedule:

Date	Branch , Semester	No. of Students	Faculties /Coordinator
18-04-2023	EEE, 6th Sem.	42	Ms. Poonam Juneja (Assistant. Prof.) Ms. Supriya Sharma (Assistant. Prof.) & Mr. Ashok (Assistant. Prof.)

HARDWARE PROJECT COMPETITION

IEEEMAIT AND Department of Electrical & Electronics Engineering organized a two day Hardware Project Competition from 1-2 June 2023 for students of MAIT from all branches. The event was hosted by HOD (EEE) Prof.(Dr.) Rajveer Mittal and Dr Monika Gupta (IEEEMAIT counselor) The event started with ribbon cutting ceremony by Director (MAIT) Prof.(Dr.) Neelam Sharma, Dean (MAIT) Prof.(Dr.) SS Deswal, CFO(MAIT) Mr Jai Mani Tripathi. It was followed by a briefing of the event by HOD (EEE) Prof. (Dr.) Rajveer Mittal. On day 1 twelve teams showcased their hardware and a poster. The judges of round one were Mr U K Jha, Dr L P Singh, Dr Neelu Nagpal, Dr Neelam Kesarwani, Dr S K Pndey and Dr Laxya. Five teams were shortlisted on day 1 by them. On Day 2, 2nd June shortlisted five teams came with their improvised hardware, poster and a power point presentation. Judges for round 2 were Prof.(Dr.) Namita Gupta(HOD CSE), Prof.(Dr.) M L Sharma(HODIT), Prof.(Dr.) Sunil Mathur (HOD ECE), Prof.(Dr.) Amita Goel (HOD ITE), Dr Neeraj Garg(HOD AIML) Dr Vinay Saini (HOD AIDS) , Dr Pooja Gupta (HOD CST). Positions were allotted to these teams based on their judgment. Team Helix won first prize and was given a cash prize of Rs 5000/, Team Solar won 2nd prize and won cash prize of Rs 3000/ while team Vayu won third prize of Rs 2000/- .Day 2 of the event concluded by distribution of certificates and cash prizes by by Director (MAIT) Prof.(Dr.) Neelam Sharma, Dean (MAIT), Dean (MAIT) Prof.(Dr.) SS Deswal, CFO(MAIT), Mr Jai Mani Tripathi.



Electrical Quiz-Electrilla 2.0

Electrotech, a dynamic organization dedicated to promoting knowledge and innovation in the field of electrical engineering, successfully organized "Electrilla2.0" - The Electrical Quiz on 29th september ,2023 at Maharaja Agrasen Institute Of Technology. The event aimed to test and celebrate the electrical prowess of the students.

Enthusiastic participants, both individuals and teams, flocked to showcase their electrical knowledge. The quiz attracted students from various disciplines, creating a diverse and competitive environment.

Quiz Structure:

The quiz, meticulously crafted by Electrotech experts, consisted of challenging questions covering a spectrum of electrical engineering topics. The participants were tested on their understanding of circuits, theories, and real-world applications.

Winners and Prizes:

The winners were announced amidst cheers and applause. Electrotech awarded prizes to the top-scoring participants and teams, recognizing their exceptional knowledge and quick thinking in the world of electrical engineering.

Conclusion:

"Electrilla2.0" proved to be a successful and engaging event, underscoring the commitment of Electrotech to promote knowledge and camaraderie among students. The quiz not only challenged participants but also fostered a sense of community and shared enthusiasm for electrical engineering at Maharaja Agrasen Institute Of Technology.

Earthing

Society Electrotech of Maharaja Agrasen Institute of Technology proudly presents "Earthing 2024," an enlightening symposium aimed at delving into the importance of earthing and exploring its fundamental concepts. As we navigate the dynamic world of electrical engineering, understanding the crucial role of earthing is paramount for safety, reliability, and optimal performance of electrical systems.

 L&T Electrical & Automation

Switchgear Training Centre

Free Webinar on "Importance of Earthing & fundamental Concepts"



Date & Time

22nd September 2023
15:00 to 16:00 (IST)

Prg. Venue

Online
Microsoft Teams

Useful for

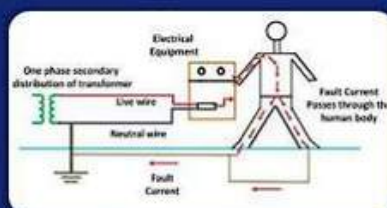
Consultants, Panel Builders, End users,
Design Engineers, Contractors, O&M Team

We look forward to your Participation.
This is free webinar but pre-registration is mandatory. Kindly click on the tab below & register yourself for the session

[Register Now](#)

KEY TAKEAWAYS FROM THIS TRAINING

- Importance of Earthing
- Earthing vs Grounding
- Types & Classification,
- Myth and Fact of Earthing
- Understanding of System & Equipment Earthing
- Earth Fault & Earth Leakage protection Devices
- Overview of Residual Current Device (RCCB, RCBO)
- Importance of Earthing in Residences & Industries



Smart'O'Hack 2.0

✨ **Smart'o'Hack (Series 2) - Unleash Innovation!** ✨

📣 We are thrilled to unveil "Smart'o'Hack (Series 2)," a pinnacle of technological prowess ✨ in collaboration with esteemed partners: Electrotech, Swadeshi Civil Infrastructure, and Maharaja Agrasen Institute of Technology.

📅 **Event Details:**

- **Date:** October 16th-17th, 2023

- **Registration Deadline:** October 12th, 2023

🎯 **Embark on a Journey Through Eight Distinguished Tracks:**

- 💡 *Smart Mobility and Pollution Control*
- 🚦 *Smart Safety Protocols*
- 🕵️ *Advanced Security and Surveillance*
- 🗑️ *Efficient Smart Waste Management*
- 💊 *Revolutionary Smart Health and Hygiene Solutions*
- 📖 *Next-Gen Smart Education Initiatives*
- ⚡ *Cutting-Edge Smart Energy Solutions*
- 🌍 *Global Smart Citizen Facilities and Amenities*

Report

On the 16th and 17th of October, ElectroTech (the official society of the EEE department) in collaboration with IEEE Smart Cities, orchestrated a remarkable event known as "Smart 'O' Hack." This two-day extravaganza attracted an impressive total of 120 teams who eagerly registered to participate.

On the first day, October 16th, the competition commenced with 11 teams, comprising 44 dedicated members, taking the stage to present their innovative project ideas. This initial round was characterized by in-depth presentations, followed by extensive discussions and a stimulating question-and-answer session, involving both the participating teams and the esteemed panel of judges. After this rigorous evaluation, only the top 6 teams, totaling 24 members, advanced to the highly anticipated final round.

The grand finale, held on October 17th, saw these final teams showcasing their fully developed project prototypes. These initiatives were designed to enhance the quality of life in urban and rural settings through the implementation of cutting-edge practices, the dissemination of valuable information, and the integration of digital technology.

In the end, "The Healthtech Coders" emerged as the victors, claiming the first prize for their outstanding efforts. "Unicron" secured the second prize, and the distinction of joint third prize went to two remarkable teams, "Aimers" and "Solar Wireless EV Charging." This fiercely competitive event not only recognized exceptional talent but also provided a platform for students to refine their electrical engineering skills and bolster their self-confidence.





Industrial Visit to Coca-Cola Happiness Factory

A group of 45 students of 5th semester EEE were taken for an Industrial Visit at the Coca-Cola Happiness Factory in Greater Noida on 29th Nov '23. The group was accompanied by faculties Ms. Shashibala Agarwal, Ms. Neha Aggarwal & Dr. Laxya. Ms. Richa was there to escort and explained the working of manufacturing process, quality control measures, and sustainability initiatives. The bottlers produce the final drink by mixing the syrup with filtered water and sweeteners, putting the mixture into cans and bottles, and carbonating it, which the bottlers then sell and distribute to retail stores, vending machines, restaurants, and foodservice distributors. The students learned about different types of motors, tankers, conveyor belts used in the process of manufacturing. Interactive sessions with industry experts deepened our understanding of Coca-Cola's history and market strategies. The tour was conducted successfully under the guidance of HOD, EEE, Dr. Monika Gupta. The day was a journey of discovery, revealing the magic behind the iconic Coca-Cola brand



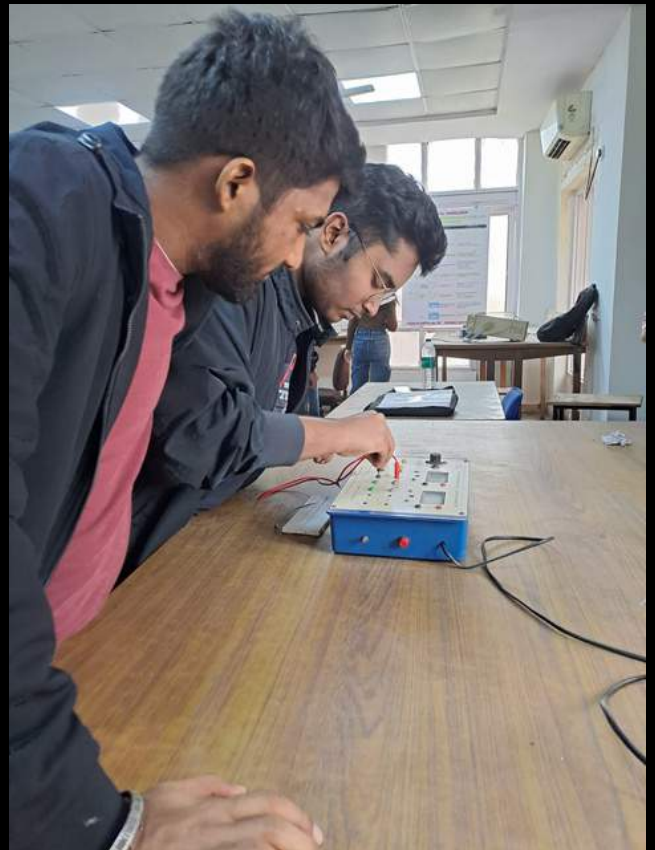




CIRCUIT-CITRINE

Electrotech, the Official Society of the EEE Department at Maharaja Agrasen Institute of Technology, hosted the electrifying circuit-making competition, Circuit-Citrine, under the adept supervision of Dr. Monika Gupta (HOD-EEE Department) and Ms. Poonam Juneja (Society Coordinator). The event showcased the technical prowess of budding engineers as they navigated through challenging circuit design tasks. With enthusiastic participation, teams engaged in collaborative problem-solving, emphasizing both creativity and functionality. The competition, marked by its inauguration and inspiring words, unfolded a series of intricate circuit challenges. The competition witnessed participation from 14 teams out of which a total of 7 teams qualified for the final round. The winning teams were recognized for their excellence, receiving certificates and tokens of appreciation. Circuit-Citrine not only celebrated technical proficiency but also promoted teamwork and innovation, leaving an indelible mark on the EEE community at Maharaja Agrasen Institute of Technology.







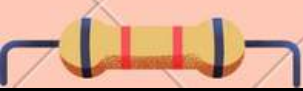


CIRCUIT CITRINE WINNERS



#1 1.Siddhant Yadav 2.Moksh Gupta 3.Abhinav Kumar Team 1	#2 1.Pooja Negi 2.Vanshika Poojari 3.Devansh Bansal Team 2	#3 1.Saksham Aggarwal 2.Sarthak Rawat 3.Aryan Dutta Team 3
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Thank you for participating.



MAHARAJA AGRASEN INSTITUTE OF TECHNOLOGY
ELECTROTECH
(THE OFFICIAL SOCIETY OF EEE DEPARTMENT)

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आविष्कार



FACULTY OF EEE DEPARTMENT

VISION

**TO PRODUCE TECHNICALLY COMPETENT
HUMAN RESOURCES FOR THE ELECTRICAL AND
ELECTRONICS INDUSTRY WITH HIGH MORALS AND
ETHICAL VALUES**

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING
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