

**7 AFFORDABLE AND
CLEAN ENERGY**



Jul 2023 - June 2024

Chitkara University has undertaken a series of innovative projects and educational programs focused on promoting sustainable and clean energy solutions, contributing to the achievement of SDG 7 (**Affordable and Clean Energy**). These initiatives are designed to promote sustainable energy solutions, foster awareness, and provide practical exposure to clean energy technologies.

Total Participants: - 664

Key Initiatives:

1. Publications: - 357
2. MOUs: - 1
3. Patents: - 13
4. Courses mapped: - 39
5. **Wheelchair cum Solar E-Tricycle Project:** Developed by the Department of Interdisciplinary Courses in Engineering (DICE) at Chitkara University, this project focuses on providing mobility solutions for people with disabilities.
6. **Retrofitted E-Bike Project:** This project involved converting a traditional petrol-powered bike into an electric bike, highlighting the potential of electric vehicles for sustainable transportation.
7. **E-Cycle Project:** The project aimed to develop a lightweight, cost-effective electric bicycle that operates on battery power. The initiative encourages embracing e-cycling to support sustainability efforts.
8. **Save Electricity Event:** Organized by the hostel team at Chitkara University, this event focused on raising awareness among students about energy conservation. The initiative involved interactive workshops and activities aimed at reducing the university's electricity footprint and cultivating energy-saving habits among students.
9. **Guru-Dakshta Training Session:** As part of the Guru-Dakshta Faculty Induction Program, this session educated new faculty members on the importance of SDGs, including SDG 7. The training emphasized the need for affordable, reliable, and sustainable energy, and how investments in clean energy technologies are crucial for combating climate change.
10. **Distribution Transformer Workshop:** An industrial visit was organized for electrical engineering students to the Transformer Repair Workshop in Patiala. The visit helped students understand transformer construction and operation, and the importance of innovations in

transformer design for enhancing energy efficiency, thus contributing to SDG 7.

- 11.Recent Trends in Manufacturing:** This industrial visit for mechanical engineering students exposed them to advancements in manufacturing processes that support SDG 7. The visit emphasized the use of renewable energy and energy-efficient practices in industries, particularly in the manufacturing of refrigerators.
- 12.Emerging Trends in the Automotive Sector:** Organized for mechanical engineering students, this visit to an automotive manufacturing facility focused on energy-efficient technologies like electric vehicles and solar-powered charging stations. The event highlighted the role of such innovations in achieving SDG 7 by reducing the carbon footprint in the automotive industry.
- 13.Agricultural Machinery Visit:** During this visit to Punjab Tractors Limited, students learned about modern agricultural machinery designed to improve energy efficiency. The advancements in precision agriculture and smart technologies are geared towards sustainable farming practices.
- 14.Navigating Harmonics in Micro grids:** This faculty development program focused on managing harmonics in energy systems, especially in micro grids.
- 15.National Energy Conservation Day:** This virtual program aimed to raise awareness about energy efficiency and conservation under the theme "Mission LIFE – A Low Carbon Pathway." It involved discussions on energy conservation strategies and their relevance to SDG 7, highlighting the role of individuals and institutions in reducing energy consumption.
- 16.BIM Module II Workshop:** This workshop covered the latest trends in Building Information Modeling (BIM) for civil engineering, focusing on renewable energy sources and energy-efficient building designs. The knowledge imparted during the event aligned with SDG 7 by promoting sustainable energy use in construction projects.

Chitkara University's commitment to SDG 7 is evident through its diverse initiatives and educational programs that emphasize clean, sustainable energy solutions. These efforts not only contribute to national and global sustainability goals but also empower students and faculty to actively participate in energy conservation and innovation.

S No.	Department	Date	Event	Page No.
1	WHEELCHAIR CUM SOLAR E-TRICYCLE			4-5
2	Project - Retrofitted E-Bike			6
3	E-Cycle			7-8
4	Residential Services	15-Jul-23	Save Electricity	9
5	OTM	19-Aug-23	Guru-Dakshata (Faculty Induction Program) Conduct of Training Session on Environment Consciousness and Sustainable Development Goals (Module - 9)	10
6	AE	6-Sep-23	Innovative Design Challenges in Distribution Transformer: A Case Study	11-12
7	AE	15-Sep-23	Recent Trends in Manufacturing	13-14
8	AE	29-Sep-23	BIM Module - I: Navigating the Cutting - Edge Trends and Tech in Civil Engineering	15-16
9	AE	5-Oct-23	Emerging Trends and Manufacturing Techniques Used in Automotive Sector	17-18
10	AE	10-Oct-23	Exploring Latest Trends in Agricultural Machinery at PTL: An Industrial Visit	19-20
11	AE	30-Oct-23	Navigating Harmonics in Variable Frequency Drives and Microgrids	21-22
12	CCE	15-Dec-23	National Energy Conservation Day" under the theme "MISSION LIFE- A LOW CARBON PATHWAY VIA ENERGY CONSERVATION	23-24
13	CBS	12-Jan-24	How IoTs were compromised to bring down the global Internet	25
14	AE	12-Feb-24	BIM Module II: Keeping Up with Emerging Trends and Technologies in Civil Engineering	26-27
15	CBS	11-Mar-24	Expert Talk - Innovation in Holistic Health and Nutrition	28
16	CBS	13-May-24	Exhibition: Chitkara Mandi	29

CHITKARA UNIVERSITY INSTITUTE OF ENGINEERING & TECHNOLOGY

DEPARTMENT OF INTERDISCIPLINARY COURSES IN ENGINEERING (DICE)

PROJECT NAME: - WHEELCHAIR CUM SOLAR E-TRICYCLE

People with disabilities who use wheelchairs face the primary challenge of limited mobility and increased reliance on others. Their independence in movement can be progressively more difficult. Traditional motorized wheelchairs require a significant amount of physical exertion, especially when navigating stairs or covering long distances. The Department of Interdisciplinary Courses in Engineering (DICE) has developed the "Wheelchair Cum Solar E-Tricycle" using repurposed materials. This project highlights the substantial potential of sustainable transportation solutions for everyday use. By repurposing scrap materials and utilizing solar power, we are not only reducing waste but also offering an intelligent, eco-friendly alternative for wheelchair mobility. A standout feature of our tricycle is the integration of solar power on the roof, which serves as both an environmentally friendly power source and a protective shelter for the rider. As the world seeks to minimize emissions, carbon footprints, and reliance on non-renewable resources, the "Wheelchair Cum Solar E-Tricycle" presents an ideal solution for individuals with disabilities.



Solar Wheelchair Tricycle for disability persons

CONCLUSION

Keywords: - solar, solar power, renewable energy, power, energy

The solar-powered wheelchair and E-Tricycle offer a revolutionary solution that supports SDG 7, guaranteeing access to affordable, reliable, sustainable, and modern energy for everyone. By meeting the mobility requirements of people with disabilities and utilizing renewable energy sources, this invention represents inclusivity and environmental sustainability. Its widespread use could greatly aid in reaching SDG 7 goals at the national and individual levels, promoting independence, economic opportunities, and environmental responsibility. Embracing these types of innovations is essential for advancing the worldwide goal of sustainable development and securing a fairer and greener future for everyone.

TECHNICAL DETAILS

Component	Type
Motor	Brushless DC (BLDC) 24 Volt/250-Watt, Hub Type
Controller	24 Volt/250 Watt
Solar Panel	Power- 100 Watt Operating Current: 5.89 A
Batteries	24 Volt LiPo Battery
Operation	Forward and Reverse Drive
Other Features	Heart Rate Monitoring, Fan, Roof Light, Charger, etc

TECHNICAL DETAILS

Material/Component	Specification
Hub Motor	BLDC (24 Volt/250 Watt) Three Phase
Controller	24 Volt three phase (Forward Reverse)
Solar Panel	OL Output 20 Volt
Batteries	12 Volt 30 mAh Lead Acid
Other Components	Arduino, Heart rate Sensor, DHT 22, etc

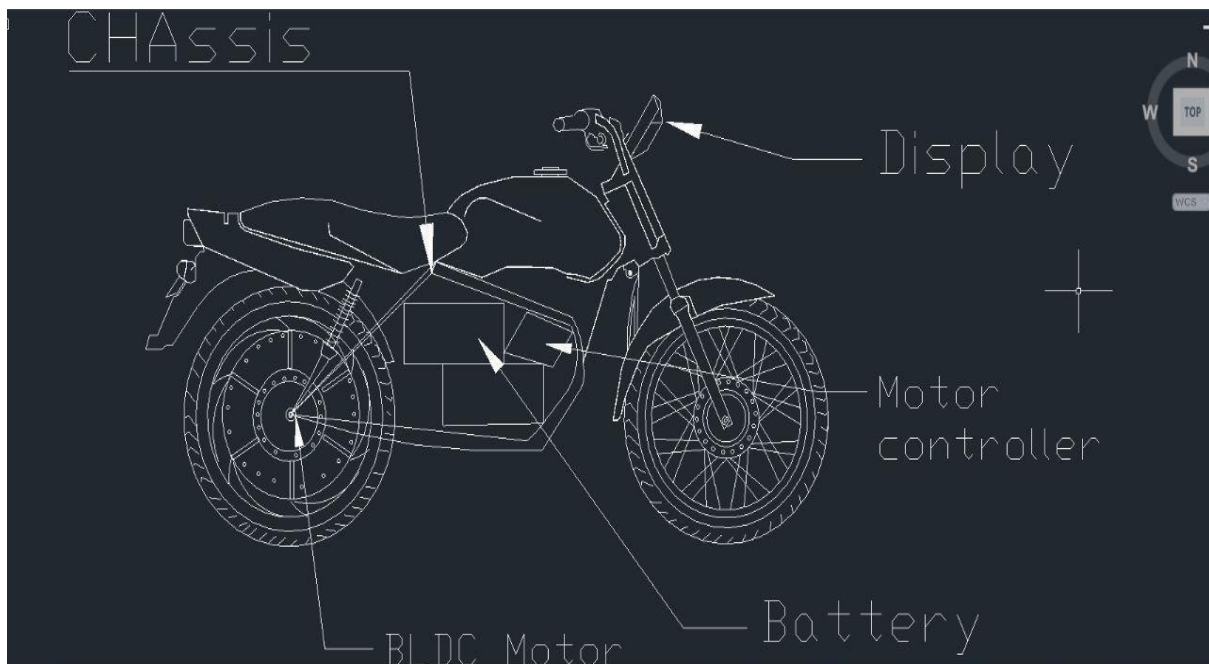
Project - Retrofitted E-Bike

The Project Retrofitted E-Bike was successfully carried out by a group of students from the DICE at Chitkara University, Rajpura, Punjab, under the expert guidance and mentorship of Dr. Rajneesh Talwar. The project was funded by a grant from NewGen IEDC, and it was recognized and awarded by the Governor of Haryana. The project also won the prestigious Future Award in the ISIE SIEP E-Bike Challenge 2022.

The conversion process involved the following steps:

1. The removal of the petrol engine and other parts from the old bike.
2. The installation of an electric motor, battery and controller.
3. Altering the bike within the permitted boundaries.
4. Introducing different functionalities to make it a modern-day vehicle.
5. Testing and debugging the modified bike.

The modified bike boasts a top speed of 75 km/h and a range of 120 km on a single charge. It comes with a reverse gear for easy manoeuvrability in tight spaces and a 3-speed mode for customizable assistance levels. Furthermore, the bike features remote ignition for keyless starting. The successful completion of the project means that the modified bike is now ready for use at Chitkara University, highlighting the potential of electric bikes as a sustainable mode of transportation.



COMPONENTS OF THE E-BIKE

- 1) BLDC Hub Motor (60/72V, 2000W, 17 inch, 80-90 kph)
- 2) Battery (59V-73V ,42 Ah Lithium-ion battery with bms control, 120 km range)
- 3) BLDC MOTOR CONTROLLER (60V/72V, 2000W)
- 4) Display (LED, Touch Screen)
- 5) Chassis

E-Cycle

Objective

The goal is to develop a cost-effective electric bicycle that operates on battery power, is lightweight, and is user-friendly for the general public.

Material USED

BLDC Motor or, BLDC (Brushless Direct Current):

The Motor is a state-of-the-art technology motor, offering a power range from 250W to 800W and voltage options from 24V to 36V. A 250W/24V motor should be sufficient for optimal performance for an electric cycle.

Lithium Battery

This lightweight battery has many uses in cycles, bikes, scooters, drones, cameras, buses, cars, and more. Due to their lightweight nature, these batteries can be quickly recharged within 2–3 hours. The voltage of the motor and battery must be compatible; for example, if the motor is 24V, the battery should also be 24V. Lithium batteries are currently offered in the market with capacities ranging from 6Ah to 100Ah and voltages of 12V, 24V, or 36V.

MPPT Charger Controller

The Maximum Power Point Tracking Charge Controller plays a crucial role in overseeing various systems, including charging, discharging, and controller devices

Lithium Battery Charger

Electric vehicles are powered by batteries rather than diesel or petrol, with the battery being recharged from the grid. Different types of lithium battery chargers are available, such as a quick charger that can recharge the battery in 2-3 hours and a normal charger that takes 7-8 hours. These chargers are designed based on battery capacity and voltage range, requiring a minimum of a 2 Amp/24V, 230V AC charger for lithium battery recharging. A solar panel can also be used for recharging, as long as its voltage is 24 volts.

Installation Accessories

Our inventory includes wiring accessories, nuts, bolts, and base plates suitable for the installation of motor, battery, controller, accelerator, horn, lights, LED screen, shock absorber, tires, throttle, dynamo, and other similar items.

Benefits

1. No tension of visiting Petrol Pump – Avoid the hassle of going to a petrol pump and waiting in line to refuel. Charge your vehicle overnight while you rest and wake up to a fully charged bike ready for your journey.
2. GPS tracking
3. Earning 1,000 Per Day - With no fuel expenses, there is a profit to be made each day. Nowadays, numerous residential areas, gas stations, shopping centers, and other establishments have recharge points where you can easily recharge your bikes at affordable rates.
4. If the cycle's battery runs out while on the road, it can still be ridden just like a normal cycle. Simply continue pedaling, as it will not stop functioning like a car that has run out of petrol.
5. If you have experience riding a traditional bicycle, you are aware that covering a distance of 20–30 miles can be considered quite a lengthy journey. However, with an electric bike, you can travel the same distance with significantly less effort. Typically, an electric bike can cover a range of 40–75 miles on a single battery charge, subject to factors such as battery capacity, terrain, and riding style.
6. One of the main benefits of an electric cycle is that it is much easier to ride on uneven terrain
7. Riding an electric cycle does not call for a license, and there are no taxes to be levied.
8. Riding an electric bicycle is currently considered fashionable. With the increasing popularity of the eco-movement, electric bicycles are being viewed as a practical and eco-friendly option that is gaining momentum every day.

Conclusion

Key words: energy, electric, battery, lithium, power, grid,

In conclusion, e-cycling is crucial for advancing SDG 7 in our country and for individuals, as it promotes energy efficiency, reduces environmental impact, and conserves valuable resources. Embracing e-cycling not only supports national sustainability efforts but also empowers individuals to contribute to a cleaner and greener future. By actively participating in e-cycling initiatives, we can collectively work towards achieving SDG 7, ensuring affordable and clean energy for all. Let's embrace e-cycling as a sustainable solution, making a positive impact on our environment and society as a whole.

Event Name	Save Electricity
Date	15 July 2023
Venue	Hostels
Organizer	Indira Sharma
Resource Person	
Number of Participants	100
SDGs Covered	SDG 7
Duration	1 Hour

About the Activity

The hostel Team organized an event on 15th July 2023 in the girls' Hostels including Pie A, C, B, IBN A, and IBN B, Nightingale A, Nightingale B on how to save electricity. To tackle the growing concern about electricity waste, we're launching a comprehensive awareness campaign designed to ignite student action. In collaboration with the University's Sustainability Squad, we'll be hosting quarterly sessions focused on empowering students to make informed choices about energy consumption. They will go beyond simply providing information. Our goal is to cultivate a sense of accountability and encourage thoughtful decision-making. Through interactive workshops and engaging activities, students will gain the knowledge and practical skills needed to become active participants in reducing our university's electricity footprint. By fostering a culture of energy conservation, we can collectively make a significant impact on the environment.



Event Name	Guru-Dakshta (Faculty Induction Program) Conduct of Training Session on Environment Consciousness and Sustainable Development Goals (Module - 9)
Date	19-Aug-23
Venue	Pierre Hall (Le Corbusier Block)
Organizer	Office of the Talent Management
Resource Person	Dr. Gurpreet Singh Saggu, Sustainability Manager
Number of Participants	56
SDGs Covered	SDG 6,7,11,12,13,15
Duration	4 hrs

Guru-Dakshta Program

To provide support to newly recruited faculty at the higher education level for the enhancement of their effectiveness as teachers, the University Grants Commission has provided guidelines to all the higher education institutes to conduct a faculty induction program named ‘GURU DAKSHTA’. The content of the ten modules of the program is multi-faceted and some of the modules directly relate to the achievement of SDGs. The details of the training activities conducted under this program have a direct bearing on the achievement of SDGs.

They apprised the faculty that Goal 7 of the Sustainable Development Goals (SDGs) focuses on ensuring access to affordable reliable sustainable and modern energy for all. This goal aims to address the issue of energy poverty and promote the use of renewable energy sources. By investing in clean energy technologies countries can reduce greenhouse gas emissions and combat climate change. Achieving SDG 7 is crucial for improving the quality of life for people around the world and promoting economic growth. Governments, businesses and individuals need to work together to achieve universal access to clean and sustainable energy.

The Learning and Development Cell of the Office of Talent Management conducts several training programs to educate and sensitize the staff members about the SDGs and to contribute to the achievement of these goals.

Title of the Event:	Innovative Design Challenges in Distribution Transformer: A Case Study		
Date of the Event:	06.09.2023	Department	Electrical Engineering, CUIET-AE
Venue:	Transformer Repair Workshop, Patiala	SDG No.	4,7,11
No. of Student Enrolled:	37	No. of Student Attended	30
Resource Person Name	Er. Surjit Singh	Designation	Assistant Engineer, PSPCL, Patiala

Outcomes

1. Students became familiar with the constructional features of transformers.
2. The student understood the winding connections of transformers (star and delta).
3. The student understood how polarity, frequency, and voltage tests have been performed on transformers.
4. The student became familiar with various parameters and ratings of transformers.



Transformers play a crucial role in delivering electricity from power plants to homes and businesses. Innovative design solutions are needed to improve the efficiency and reliability of distribution transformers making them more sustainable and cost-effective in the long run. By addressing these challenges, we can help create a more efficient and sustainable energy system that benefits everyone.

Description

On September 6, 2023, an industrial visit was organized for the BE 2022 batch EE and EE-CSE to the Transformer repair workshop at Patiala. In this visit, 30 students participated, along with one faculty member of DEE, Dr. Tajinderpal Singh, and lab instructor Mr. Ram Singh. An industrial visit to the Transformer Repair Workshop in Patiala was a successful one. Participants gained insights into the construction features of transformers (core, winding, oil tank, connection, etc.), repair, and testing of transformers. The visit provided a better understanding

of how polarity, frequency, and voltage tests have been performed on transformers. Overall, the industrial visit offered practical knowledge, real-world exposure, and challenges in the field.



Event Name	Recent Trends in Manufacturing
Date	2023 - 09 - 15 to 2023 - 09 - 15
Mode	Offline
Organizer Name	Mr. Mohit Bhayana & Mr. Nand Lal
No. of Participants	28
SDG No	SDG 4: Quality Education, SDG 7: Affordable and Clean Energy, SDG 8: Decent Work and Economic Growth, SDG 9: Industry, Innovation and Infrastructure

Objective

To provide BE- ME batch 2021 students with practical exposure to industrial processes and operations. To enhance students ' understanding of occupational safety threats and practices in a real-world setting.

To familiarize students with the manufacturing process of single-door refrigerators at Godrej & Boyce Mfg. Co. Ltd.

To facilitate interaction with industry professionals and gain insights into the application of engineering concepts in manufacturing. In recent years there have been significant advancements in manufacturing processes to align SDG goals 7. Companies are increasingly turning to renewable energy sources such as solar and wind power to reduce their carbon footprint. Additionally, there is a growing emphasis on energy efficiency and waste reduction in manufacturing facilities.



Description

On September 15, 2023, a notable industrial visit was organized for the BE- ME batch 2021 students to Godrej & Boyce Mfg. Co. Ltd. in Mohali, marking a valuable educational opportunity for 28 enthusiastic participants. Coordinated by Mr. Mohit Bhayana and Mr. Nand Lal, the visit was meticulously planned to offer insightful exposure to industrial processes and occupational safety practices. The program commenced with a captivating presentation by the safety officer, who illuminated the threats to occupational safety through a visually engaging PPT. This served as a foundational understanding for the students, setting the stage for the immersive experience ahead. Guided by Mr. Sanjay, the Plant Head, the students embarked on a comprehensive tour of the single-door refrigerator manufacturing plant. Every step of the manufacturing process was meticulously explained and demonstrated, providing invaluable

insights into the intricate workings of industrial production. Topics covered ranged from the composition of materials like HIPS (High-impact polystyrene) used in components to the foaming section, final assembly area, and testing stations. The visit culminated in an interactive session at various testing stations, where students witnessed firsthand the rigorous quality checks and inspections conducted to ensure the efficiency and safety of the products. This practical exposure deepened their understanding of industrial processes and quality standards.

Outcomes

Increased awareness and understanding of occupational safety measures and hazards in industrial environments. Enhanced knowledge of the manufacturing process of single-door refrigerators, including materials used and quality control procedures. Improved appreciation for the practical applications of engineering principles in industrial settings. Strengthened students' connection with the industry through networking opportunities and firsthand exposure to manufacturing operations.



Event Name	Workshop
Topic	BIM Module - I: Navigating the Cutting-Edge Trends and Tech in Civil Engineering
Date	2023 - 09 - 25 to 2023 - 09 - 29
Mode	Offline
Organizer Name	Mr. Manas Chatterjee & Mr. Himalaya Vidyarthi
Resource Person	Mr. Manas Chatterjee & Mr. Himalaya Vidyarthi Technical Expert
No. of Participants	29
SDG No	SDG 4: Quality Education, SDG 7: Affordable and Clean Energy, SDG 10: Reduced Inequalities

Objective

The beam module one navigating the cutting-edge trends and tech in the civil engineering workshop is a dynamic learning opportunity designed to immerse participants in the latest developments in building information modeling within the field of civil engineering. This workshop delves into all the forefront of technology advanced brands equipping attendees with the knowledge and skills required to Excel in modern construction projects

In the BIM Module - I: Navigating the Cutting-Edge Trends and Tech in Civil Engineering professionals are trained on the latest technologies and trends in the industry. By implementing Building Information Modeling (BIM) civil engineers can optimize energy efficiency in construction projects contributing to the achievement of SDG 7.

Description

The "BIM Module - I: Navigating the Cutting-Edge Trends and Tech in Civil Engineering " workshop is a dynamic learning opportunity designed to immerse participants in the latest developments in Building Information Modeling (BIM) within Civil Engineering. This workshop delves into the forefront of technological advancements, equipping attendees with the knowledge and skills required to excel in modern construction projects.

Participants will learn BIM's transformative impact on project efficiency, collaboration, and sustainability. Expert instructors will guide attendees through hands-on exercises and real-world case studies, ensuring a practical understanding of BIM's applications. Whether you're a seasoned professional or new to the field, this workshop promises to empower you with cutting-edge tools and strategies to thrive in the evolving landscape of civil engineering

Outcomes

This workshop entitled "BIM Module - I: Navigating the Cutting-Edge Trends and Tech in Civil Engineering " was a resounding success, bringing together

professionals and experts from civil engineering. Students gained valuable insights into the latest trends and technologies in Building Information Modeling (BIM).



Event Name	Innovation and Skill Development
Topic	Emerging Trends and Manufacturing Techniques Used in the Automotive Sector
Date	2023 - 10- 05 to 2023 - 10- 05
Mode	Offline
Organizer Name	Mr. Jaspreet Singh & Mr. Mohit Bhayana
No. of Participants	34
SDG No	SDG 4: Quality Education, SDG 7: Affordable and Clean Energy, SDG 8: Decent Work and Economic Growth, SDG 9: Industry, Innovation and Infrastructure

Objective

To provide 3rd-semester BE (ME) and BE (AE) students with exposure to emerging trends and manufacturing techniques in the automotive sector.

To familiarize students with the practical application of theoretical concepts learned in the classroom within an industrial setting.

To enhance students' understanding of automated control systems utilized in manufacturing processes.

To inspire students to envision potential advancements and innovations in the automotive engineering field through exposure.

In the automotive sector emerging trends and manufacturing techniques are being developed to align with SDG goal 7. Companies are investing in technologies such as electric vehicles, solar-powered charging stations and energy-efficient manufacturing processes to reduce their carbon footprint and promote sustainable practices. These advancements not only benefit the environment but also contribute to the overall efficiency and competitiveness of the automotive industry.



Description

On October 5, 2023, the Department of Mechanical Engineering at CUIET - AE orchestrated an insightful event titled " Emerging Trends and Manufacturing Techniques Used in Automotive Sector: An Industrial Visit " to SML ISUZU Limited in Ropar. This industrial visit was tailored for 3rd-semester BE (ME) and BE (AE) students, totaling 34 attendees, under the guidance of faculty members Mr. Mohit Bhayana and Mr. Krishan Kumar. The visit commenced with the distribution of precautionary safety helmets, ensuring the safety of all participants. Led by Mr. Balvinder, the Technical Supervisor at the facility, students embarked on a comprehensive tour of various processes within the company, ranging from sub-assembly lines to engine assembly lines and heavy-duty transmission line assemblies. A detailed session ensued, elucidating the functioning of the sophisticated automated control systems employed in the manufacturing processes.

Particularly captivating was the demonstration of the Marvel FANUC robot, a Japanese technology-enabled robot renowned for its precision, with an accuracy of 0.5 mm. The robot's capability to perform welding and assembly tasks swiftly, completing main assemblies within a minute, left a lasting impression on the students. The industrial visit provided students with a firsthand glimpse into the advanced manufacturing techniques and emerging trends in the automotive sector. It not only expanded their knowledge but also sparked their imagination.

Outcomes

Increased awareness and understanding of advanced manufacturing techniques employed in the automotive industry. Enhanced appreciation for the integration of theoretical knowledge with practical applications in industrial settings. Improved comprehension of automated control systems and their role in optimizing manufacturing processes. Stimulated curiosity and creativity among students, fostering a vision for future contributions to the automotive engineering domain.

Event Name	Innovation and Skill Development
Topic	Exploring Latest Trends in Agricultural Machinery at PTL: An Industrial Visit
Date	2023 - 10- 10 to 2023 - 10- 10
Mode	Offline
Venue	PTL, Mohali
Organizer Name	Mr. Jaspreet Singh
No. of Participants	41
SDG No	SDG 4: Quality Education, SDG 7: Affordable and Clean Energy, SDG 8: Decent Work and Economic Growth, SDG 9: Industry, Innovation and Infrastructure

Objective

To expose students to diverse manufacturing processes in agricultural machinery production, from design to assembly.

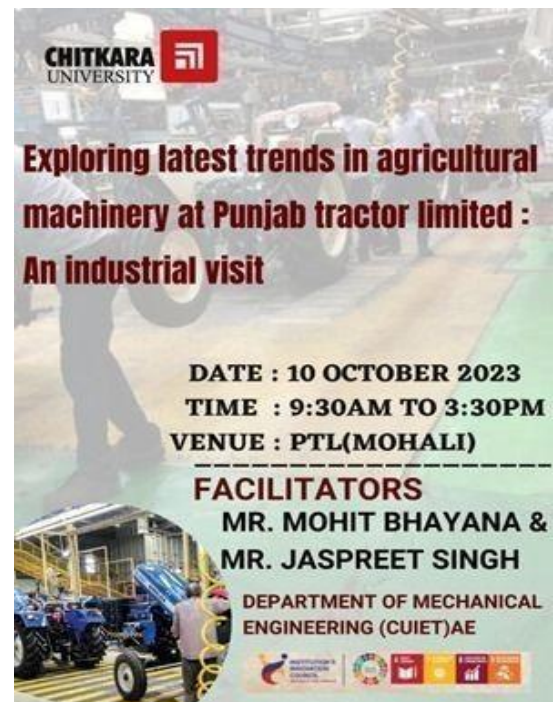
To provide students with a comprehensive understanding of the latest technological advancements in the agricultural machinery sector.

To facilitate networking opportunities with industry professionals, fostering potential career connections.

To inspire students to explore career opportunities and contribute to the innovation of agricultural machinery.

Description

The industrial visit to Punjab Tractors Limited (PTL) in Mohali, scheduled for October 10, 2023, presents an unparalleled opportunity for mechanical engineering students at CUIET- AE to delve into the latest trends in agricultural machinery. Coordinated by Mr. Mohit Bhayana and Mr. Jaspreet Singh, this visit promises to be both educational and insightful. PTL stands as a prominent name in the farm equipment industry, celebrated for its innovation and cutting-edge technology. For the participating students, the visit holds multiple aims and anticipated outcomes. Firstly, it aims to expose them to the diverse



manufacturing processes involved in producing agricultural equipment, spanning from design to assembly. This hands-on experience will offer invaluable insights into the practical application of theoretical concepts learned in the classroom. Moreover, the visit endeavors to provide students with a comprehensive understanding of the latest technological advancements in agricultural machinery. Witnessing these advancements firsthand will not only expand their knowledge but also inspire them to explore career opportunities in this dynamic sector. Furthermore, the visit offers students the chance to establish connections with industry professionals, fostering networking opportunities that could prove beneficial for their future careers. Engaging with professionals in the field will allow students to gain valuable insights and advice, potentially guiding their career trajectory.

Outcomes

Increased knowledge and understanding of manufacturing processes in agricultural machinery production. Expanded awareness of the latest technological advancements and trends in the agricultural machinery sector. In the agricultural sector, the latest trends in machinery are geared towards increasing energy efficiency and energy saving. New technologies such as precision agriculture, autonomous vehicles, and smart sensors are revolutionizing the way farmers work allowing for better crop management and resource utilization.

These advancements not only help farmers increase productivity but also contribute to achieving SDG 7 by promoting sustainable agriculture practices. Enhanced networking skills and potential career connections with industry professionals. Inspired motivation among students to pursue careers and contribute to innovation in the agricultural machinery industry.



Event Name	Faculty Development Program
Topic	Navigating Harmonics in Variable Frequency Drives and Microgrids
Date	2023 - 10- 30 to 2023 - 11- 03
Mode	Online
Organizer Name	Dr. Sumit Kumar
Resource Person	Mr. Martin Elvhage, Dr. Mamatha Sandhu, Mr. Sumit Kumar, Dr. Shimi Sudha Letha, Dr. Ritula Thakur, Mr. Avadhoot Ware, Mr. Prabaljeet Kalia Business Development Manager, Professor, Subject Matter Expert, Associate Professor, Associate Professor, Senior Manager– Product Development, General Manager – R & D Sales
No. of Participants	31
SDG No	SDG 4: Quality Education, SDG 7: Affordable and Clean Energy, SDG 17: Partnership for the Goals

Objective

Knowledge about harmonic impacts and solutions to mitigate the Impact of harmonics in microwaves and their solutions

Industry experts will share their case studies to enhance practical knowledge about harmonic solutions.

Navigating harmonics in variable frequency drives and microgrids is essential for achieving SDG goal 7. By managing harmonics effectively, we can improve the stability and efficiency of our energy systems leading to a more sustainable and reliable energy supply. This is crucial for meeting the energy needs of communities around the world, especially in remote or underserved areas. By addressing harmonics in these systems, we can work towards a future where everyone has access to clean and affordable energy.

Description

The Department of Electrical Engineering at CUIET organized an online 5-day Faculty Development Program on the topic of Navigating Harmonics in Variable Frequency Drives and Microgrids from 30.10.23 to 03.11.23. As the use of non-linear loads increases in the industry, understanding the fundamentals, harmful effects, and mitigation methods through

case studies of harmonics becomes most imminent. Experts from the industry as well as academics delivered sessions on different topics, transferring the crucial knowledge to the participants, which consisted of faculties, research scholars, industry professionals, and students from across India. The major focus was on the case studies, including the impact of newly emerging electric vehicles, which become a source of harmonics when getting charged from the main supply. Lots of discussions during each session helped participants in developing concepts as well as clearing their doubts about harmonics and mitigation methods.

Outcomes


1. Participants developed strong conceptual knowledge of the sources of harmonics, impacts of harmonics on the power quality, and mitigation methods, and understood the various challenges involved in handling harmonics.
2. The inclusion of case studies covered by academic and industry experts helped the participants understand this topic with more clarity.
3. Harmonics due to electric vehicle charging and ways to handle it were discussed with the sharing of research studies.



Event Name	National Energy Conservation Day" under the theme "MISSION LIFE- A LOW CARBON PATHWAY VIA ENERGY CONSERVATION
Date	15 th December 2023
Venue	Google Meet
Organizer	Chitkara College of Education
Resource Person	Mr. Bhavesh Swami, National Manager, Clean Energy, The Climate Reality Project India, Mr, Sunil Mysore, Civil Engineer, Expert Renewable Energy and Water Conservation
Number of Participants	63
SDGs Covered	4
Duration	Two hours

About the Activity

Chitkara College of Education(CCE) in collaboration with The Climate Reality Project, India(TCPI), Lifestyle for Environment, Association of Professional Social Workers and Development Practitioners(APSWDP), and Chitkara College of Psychology and Counseling observed "National Energy Conservation Day" under the theme "MISSION LIFE- A LOW CARBON PATHWAY VIA ENERGY CONSERVATION", aligned to the initiatives of TCPI to demand real climate action, CCE, CSPC and the Virtual Center of Excellence for Social Welfare Administration (VCoE-SWA) had conceived a dialogue/Virtual

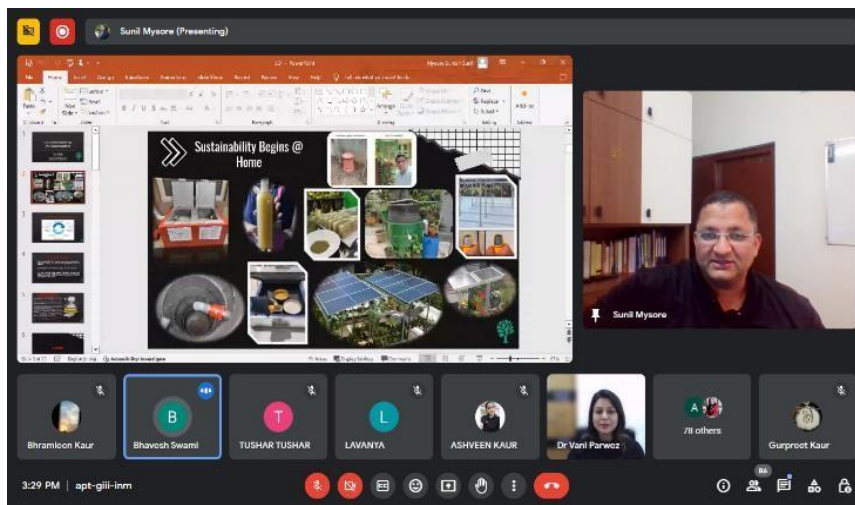


Program; to work together with academic institutions and organizations, government and communities, the private sector and all relevant stakeholders, for creating sustainable, carbon-neutral, inclusive cities and towns. The resource person was Mr. Bhavesh Swami, Lead-Clean Energy Policy and Engagements, The Climate Reality Project, India, and Mr. Sunil Mysore, Civil Engineer, Expert-Renewable Energy and Water conservation, Lifestyle for Environment who enlightened all about the mass awareness regarding the importance of energy efficiency and conservation in India, present and future trends as well as related relevant subject. It was an immense learning experience, highly informative, and illuminating by conserving energy we can reduce our reliance on fossil fuels and decrease

greenhouse gas emissions which contribute to climate change. This can be done through simple actions such as turning off lights when not in use using energy-efficient appliances and insulating homes to reduce energy consumption. By taking steps to conserve energy we can move towards a more sustainable future and help protect the planet for future generations.



Mr. Bhavesh Swami explains energy conservation



Mr. Sunil Mysore discussing about sustainability

Event Name	How IoTs were compromised to bring down the global Internet
Date	12 th January 2024
Venue	Rockefeller Block, 4th Floor - 401, Chitkara Business School, Chitkara University, Punjab
Organizer	Dr. Anurodh
Resource Person	Dr. P.K Khosla Pro Vice-Chancellor - Research
Number of Participants	50
SDGs Covered	4, 7, 9
Duration	1 day

About the Activity

The Department of SCM and General Management, Chitkara Business School, Chitkara University organized an expert talk on "How IoTs were compromised to bring down the global Internet" for MBA students of Logistics and Supply Chain Management on 12th Jan 2024. Dr. Praveen Kumar Khosla, Pro Vice-Chancellor (Research) at Chitkara University, delivered the talk, delving into IoT and cybersecurity's crucial intersection. He explained the importance of cyber security and IOT in business. He elaborated that in the present era, businesses of all sizes face a constant barrage of cyber threats. From data breaches and ransomware attacks to phishing scams and malware infiltration, the potential consequences of inadequate cyber security can be devastating. Also, he stated that the attackers exploited known vulnerabilities in various IoT devices, including weak passwords, outdated firmware, and insecure communication protocols. Moreover, he elaborated that the attackers used a combination of techniques such as botnet attacks, malware injection, and credential stuffing to gain access to a large number of devices. Furthermore, he discussed the economic losses, public safety concerns, and data breaches caused by the business. He elaborated that the disruptions caused significant economic losses due to damaged infrastructure, lost productivity, and financial disruptions. The compromised infrastructure posed potential risks to public safety, particularly in the healthcare and transportation sectors, and sensitive data was also compromised. The session underscored the importance of understanding Mirai's tactics to fortify cybersecurity against evolving IoT threats, offering a thought-provoking exploration of the tech-security landscape. The students asked queries related to safeguarding the devices from these cybercrimes and the various initiatives taken by the government, and they were answered by the expert properly.

The Internet of Things (IoT) was compromised by cyber attackers leading to a massive disruption in the global Internet. This attack highlighted the vulnerabilities in our interconnected systems and the need for stronger cybersecurity measures to protect critical infrastructure. As we rely more on technology for essential services it is crucial to prioritize cybersecurity to prevent such incidents from happening again in the future.



Event Name	Workshop
Topic	BIM Module II: Keeping Up with Emerging Trends and Technologies in Civil Engineering
Date	2024 - 02 - 12 to 2024 - 02 - 15
Mode	Offline
Organizer Name	Dr. Akhilesh Kumar
Resource Person	Mr. Manash Chatterjee & Ms.Sarika Technical Expert
No. of Participants	25
SDG No	SDG 4: Quality Education, SDG 9: Industry, Innovation and Infrastructure

Objective

Equip participants with advanced knowledge of emerging BIM trends in civil engineering. Enhance practical skills through hands-on exercises and real-world case studies. Foster an understanding of BIM's impact on project efficiency, collaboration, and sustainability. Empower attendees with tools and strategies to excel in modern construction projects. Emerging trends in civil engineering include the use of renewable energy sources, smart grids and energy-efficient building designs. These advancements are essential in creating a more sustainable and resilient energy infrastructure for the future.

Description

This workshop entitled "BIM Module II: Keeping Up with Emerging Trends and Technologies in Civil Engineering " was a resounding success, bringing together professionals and experts from civil engineering. Students gained valuable insights into the latest trends and technologies in Building Information Modeling (BIM). The event featured informative presentations and discussions on topics such as digital twins, augmented reality, and sustainable design, providing attendees with a comprehensive understanding of the cutting-edge tools and methodologies shaping the industry. Networking opportunities allowed participants to connect with peers and industry leaders, fostering collaboration and knowledge exchange. Overall, the event served as a crucial platform for

staying updated on the rapidly evolving landscape of civil engineering, empowering professionals to drive innovation and efficiency in their projects.

Outcomes

Participants gained a comprehensive understanding of digital twins, augmented reality, and sustainable design in BIM. The event facilitated valuable networking opportunities, fostering collaboration among peers and industry leaders. Attendees enhanced their knowledge of cutting - edge tools and methodologies shaping the civil engineering industry. The workshop empowered professionals to drive innovation and efficiency in their construction projects.



Event Name	Expert Talk - Innovation in Holistic Health and Nutrition
Date	11 th March, 2024
Venue	Chitkara University, Punjab
Organizer	Dr. Reena Malik
Resource Person	Dr. Sonika Bakshi
Number of Participants	90
SDGs Covered	3, 4, 7, 9
Duration	2 hours 30 Minutes

About the Activity

Dr. Sonika Bakshi emphasized holistic health and nutrition focusing on the interconnectedness of the mind, body, and spirit to achieve overall well-being. She also emphasizes the importance of nurturing not only physical health but also mental, emotional, and spiritual wellness. Holistic nutrition acknowledges that food is more than just fuel; it's medicine for the body and mind. It prioritizes whole, natural foods that provide essential nutrients while minimizing processed and artificial ingredients. By integrating holistic principles into daily life, individuals can cultivate resilience, vitality, and harmony within themselves and their environment, fostering a holistic approach to health that nourishes the body, mind, and soul. The session was indeed a value addition towards the formation of a healthy lifestyle. Innovation plays a crucial role in achieving SDG goal 7 by promoting the use of renewable energy sources such as solar and wind power. By adopting innovative technologies, we can reduce our reliance on fossil fuels and mitigate the harmful effects of climate change.



CHITKARA UNIVERSITY  **CHITKARA BUSINESS SCHOOL** 

An Expert Session on
Innovation in Holistic Health and Nutrition

Speaker

Dr. Sonika Bakshi
Professor & Dean
Chitkara School of Health Sciences

Date: 11th March, 2024
Timings: 2:00 PM Onwards
Venue: LH 505, Rockefeller Block

Mode: Offline

Organized by
BBA professional
Chitkara Business School



Event Name	Exhibition: Chitkara Mandi
Date	10-11 th May, 2024
Venue	VR Punjab, Mohali
Organizer	Dr. Rashmi Aggarwal
Resource Person	Mr. Siddaq Singh
Number of Participants	80
SDGs Covered	1 to 17
Duration	2 days

About the Activity

The "Chitkaramandi" summer Carnival 2024 was a well-run, interesting workshop with a social cause. Throughout the workshop, the students engaged in a variety of activities that demanded their complete focus and participation and produced a variety of learning outcomes. The students procured most of the material from villagers directly thus providing them with business opportunities. With the aid of various exercises, students defined all of the sustainable goals during the workshop. Students engaged in a variety of interesting activities, such as flash mob dances, bhangra, and *nukkadnatak*, to draw attention to the event in the PVR mall, Mohali. Overall, it was a thorough learning experience with lessons in collaboration and creativity.

