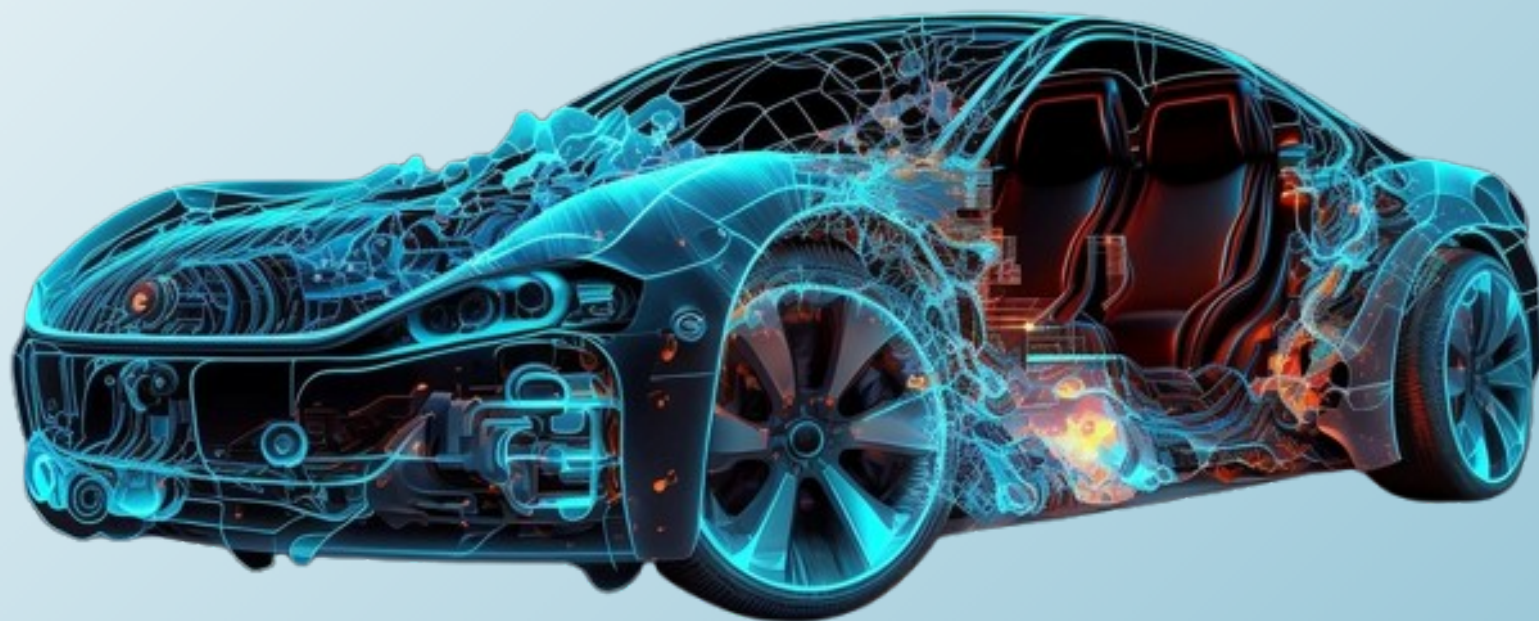




MECH MIRROR

INSTITUTE OF ENGINEERING & MANAGEMENT
SCHOOL OF UNIVERSITY OF ENGINEERING & MANAGEMENT
DEPARTMENT OF MECHANICAL ENGINEERING



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DEPARTMENT OF MECHANICAL ENGINEERING
IEM, SALT LAKE CAMPUS, KOLKATA

JAN-JUN 2026



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DEPARTMENT OF MECHANICAL ENGINEERING

Editor's Note

WELCOME TO THIS ISSUE OF MECH MIRROR. OUR AIM IS TO PROVIDE A VIBRANT PLATFORM FOR SHARING INNOVATIVE IDEAS, EMERGING TECHNOLOGIES, AND IMPACTFUL RESEARCH IN MECHANICAL ENGINEERING AND ALLIED FIELDS. THIS EDITION FEATURES VALUABLE CONTRIBUTIONS THAT REFLECT SCIENTIFIC EXCELLENCE, PRACTICAL RELEVANCE, AND A COMMITMENT TO SUSTAINABLE ENGINEERING SOLUTIONS. I SINCERELY THANK OUR AUTHORS, REVIEWERS, AND EDITORIAL TEAM FOR THEIR DEDICATION AND SUPPORT. I HOPE THIS ISSUE INSPIRES READERS TO EXPLORE NEW PERSPECTIVES, FOSTER COLLABORATION, AND CONTRIBUTE TO THE ADVANCEMENT OF ENGINEERING RESEARCH AND PRACTICE. YOUR CONTINUED ENCOURAGEMENT WILL STRENGTHEN THE JOURNAL'S PURSUIT OF ACADEMIC EXCELLENCE.



Joydip Ray
Assistant Professor, ME Department



MECH MIRROR

INSTITUTE OF ENGINEERING & MANAGEMENT
SCHOOL OF UNIVERSITY OF ENGINEERING & MANAGEMENT
DEPARTMENT OF MECHANICAL ENGINEERING

Editor's Note

Welcome to MECH MIRROR, the official monthly journal of the Department of Mechanical Engineering, Institute of Engineering & Management (IEM), Kolkata. This journal celebrates our department's achievements in academics, research, innovation, industry collaboration, and student excellence. Each issue highlights significant milestones, technical events, publications, workshops, and success stories that reflect our commitment to quality engineering education and sustainable development. We sincerely thank our faculty, students, alumni, and industry partners for their invaluable contributions. We hope this edition inspires learning, innovation, and collaboration across our academic community.



Ranit Karmakar
Associate Professor, ME Department



MECH MIRROR

INSTITUTE OF ENGINEERING & MANAGEMENT
SCHOOL OF UNIVERSITY OF ENGINEERING & MANAGEMENT
DEPARTMENT OF MECHANICAL ENGINEERING

Editor's Note

I truly feel fortunate to be a part of the Mechanical Engineering Department at IEM. The atmosphere and culture here are precisely what one needs for both personal and professional development. Here, each individual's potential is recognized and nurtured, because our strength lies not in quantity but in the quality. Being a part of this department has been an enriching experience, and through this newsletter, I am excited to take you on a journey through student life here.



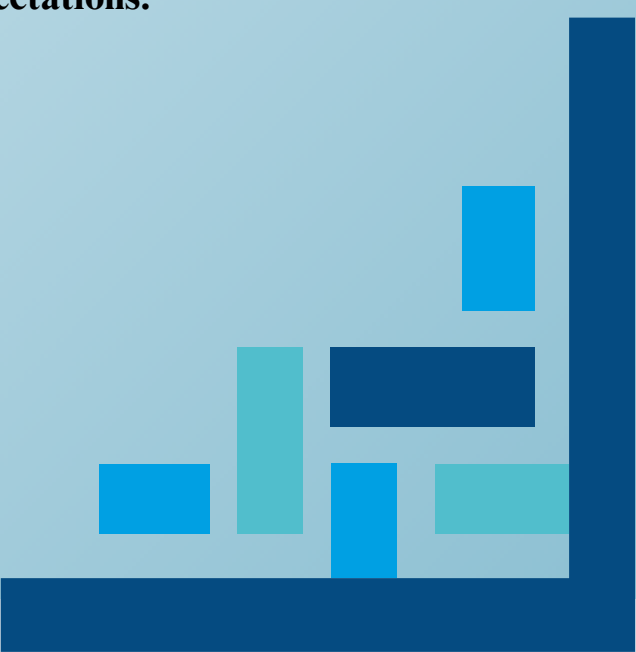
Akashlina Bhowmick
4th Year, ME Department



Vision of Institute

To be a globally recognized educational institution known for outcome education application research.

Mission of Institute

- **To assist students to understand and enjoy seamless nature of knowledge and encourage them to apply the acquired knowledge to practical use, so that they become worthy, socially responsible good human beings sought after for their leadership qualities.**
 - **To foster creativity, innovation, and excellence through example based teaching-learning process imparted in the most simple and easily comprehensible way.**
 - **To continuously inuously upgrade knowledge base of our manpower, improve infrastructure and use of latest technology/pedagogical tools, and update curriculum through periodic feedback from stakeholders to enable students to meet professional requirements and their expectations.**
- 



Vision of Department

To excel in education and research in the field of Mechanical Engineering through Innovation and skills to meet the challenges

Mission of Department

M1: To offer state-of-art learning in Mechanical Engineering, by creating thirst of knowledge among the students through outcome based teaching and learning process.

M2: To build a research capability that is recognized globally as a leading source of technological innovation for benefit of mankind.

M3: To create opportunities to meet the industry requirements and to develop a mind entrepreneurship by institute partnership.



AQUEST – THE ULTIMATE ENGINEERING FACE-OFF (KOLKATA CHAPTER LEVEL)

The ISHRAE Kolkata Chapter organized aQuest – The Ultimate Engineering Face-Off, a prestigious technical competition aimed at testing students' engineering aptitude, technical knowledge, analytical thinking, and problem-solving skills. The Kolkata Chapter Level (Round 1) was held on 13th December 2025 at Novotel, Kolkata, with Carrier as the event's title sponsor. Students from various engineering institutions participated enthusiastically, making the event a competitive platform for aspiring HVAC&R professionals.

The ISHRAE IEM Model Student Chapter actively participated in the competition by sending five teams, comprising a total of ten students. Each team represented the institute with enthusiasm, determination, and a strong technical foundation while competing against teams from different colleges across the Kolkata Chapter.

Participant Name

1. Akashlina Bhowmick
2. Anirban Mondal
3. Aritra Das
4. Vinayak Mishra
5. Sudip Chowdhury
6. Raunak Mitra
7. Ankesh Kumar
8. Lisa Ghosh
9. Abhirup Chakraborty
10. M. Aditya Varma

The competition began with a written technical assessment, designed to evaluate participants' understanding of engineering fundamentals, HVAC&R concepts, logical reasoning, and analytical abilities. The written examination served as the qualifying round for the subsequent stage of the competition.

Among the five participating teams from IEM, one team comprising Akashlina Bhowmick & Anirban Mondal of 3rd Year ME Dept. successfully qualified for the next stage by clearing the written round. The qualified team advanced to the Quiz Round, where participants demonstrated their technical knowledge, quick thinking, teamwork, and problem-solving abilities while competing with other shortlisted teams.

Although the team did not progress beyond the quiz round, their qualification for the second stage reflected their strong technical competence and effective preparation. The achievement brought recognition to the ISHRAE IEM Model Student Chapter and encouraged greater student participation in future technical competitions.

AQUEST – THE ULTIMATE ENGINEERING FACE-OFF (KOLKATA CHAPTER LEVEL)







aQUEST
The ultimate engineering face-off
Brought to you by ISHRAE

ROUND 1: KOLKATA CHAPTER LEVEL

Powered by:



13th December 2025 | Saturday | Novotel, Kolkata

Reporting Time
02:30 pm

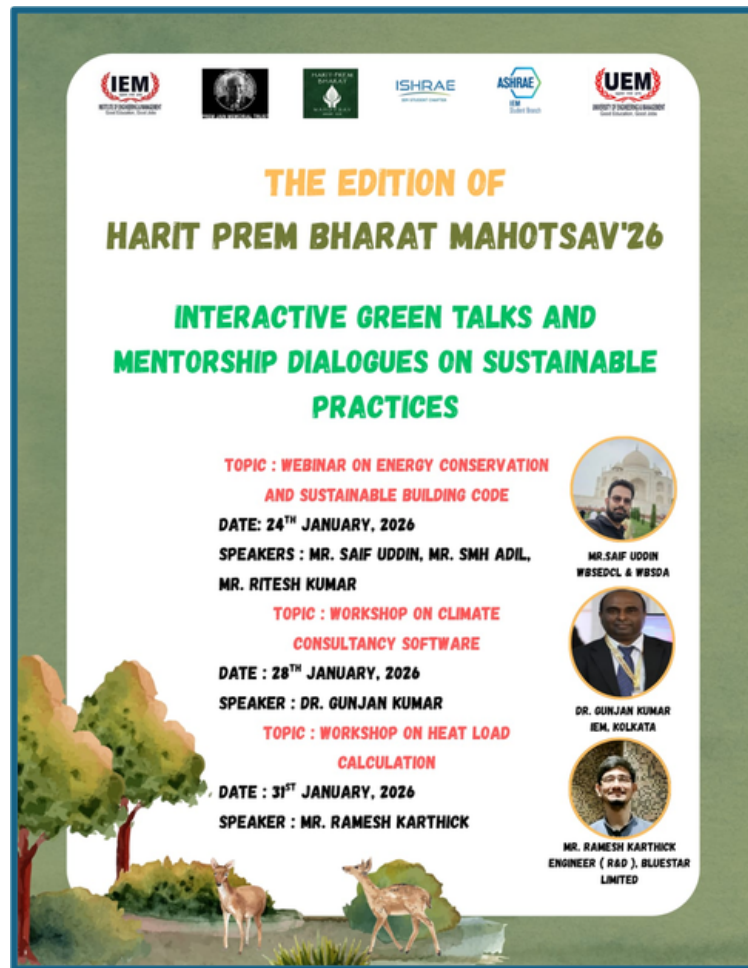


SCAN TO REGISTER
Both participants should register & share their team details with Chapter President or Faculty

For further details, Please contact:

Mr. Sumitava Dutta
Student Chair, Kolkata Chapter
8017391938

INTERACTIVE GREEN TALKS AND MENTORSHIP DIALOGUES ON SUSTAINABLE PRACTICES



SESSION 1: WEBINAR ON ENERGY CONSERVATION AND SUSTAINABLE BUILDING CODE

DATE: 24TH JANUARY 2026

The first session focused on the significance of energy conservation and the implementation of Sustainable Building Codes in creating energy-efficient buildings. The webinar was delivered by Mr. Saif Uddin (WBSedCL & WBSDA), Mr. SMH Adil, and Mr. Ritesh Kumar, who shared their expertise on national energy efficiency initiatives and sustainable building practices. The speakers discussed the growing need for energy-efficient infrastructure to address increasing energy demands and environmental challenges. They introduced students to the objectives and implementation of sustainable building codes, emphasizing their role in reducing energy consumption while improving occupant comfort.

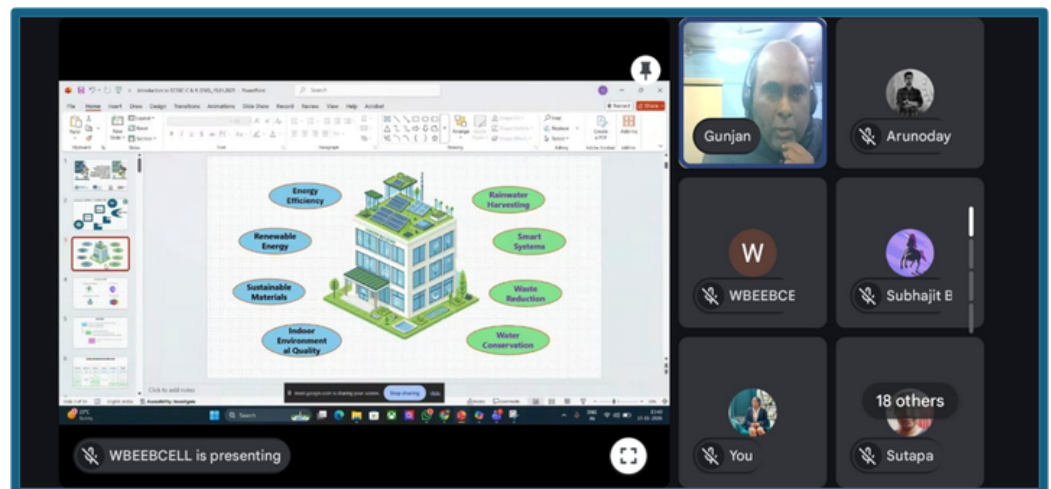
The session also covered:

- Principles of energy conservation in buildings.
- Energy-efficient building envelope design.
- Efficient lighting and HVAC systems.
- Government initiatives promoting sustainable construction.
- Integration of renewable energy and green technologies.
- The importance of adopting sustainable practices to achieve long-term environmental and economic benefits.

INTERACTIVE GREEN TALKS AND MENTORSHIP DIALOGUES ON SUSTAINABLE PRACTICES

SESSION 1: WEBINAR ON ENERGY CONSERVATION AND SUSTAINABLE BUILDING CODE

DATE: 24TH JANUARY 2026



INTERACTIVE GREEN TALKS AND MENTORSHIP DIALOGUES ON SUSTAINABLE PRACTICES

SESSION 2: WORKSHOP ON CLIMATE CONSULTANCY SOFTWARE

DATE: 28TH JANUARY 2026

Overview

The second session was conducted by Dr. Gunjan Kumar, focusing on the application of climate consultancy software in sustainable building design. The workshop demonstrated how climate analysis supports informed architectural and HVAC design decisions during the early stages of building development.

Key Highlights

Students were introduced to various climatic parameters that influence building performance, including temperature, humidity, solar radiation, wind patterns, and seasonal variations. The speaker demonstrated how climate consultancy software can analyze weather data to optimize passive building design and improve energy efficiency.

Major topics included:

Climate-responsive building design.

Interpretation of psychrometric charts.

Passive heating and cooling strategies.

Building orientation and shading analysis.

Natural ventilation techniques.

Climate-based decision-making for sustainable buildings.

Learning Outcomes

The workshop enabled students to understand the importance of climate analysis in achieving energy-efficient building designs. Participants developed awareness of how software-based climatic assessments can improve occupant comfort while minimizing energy consumption.

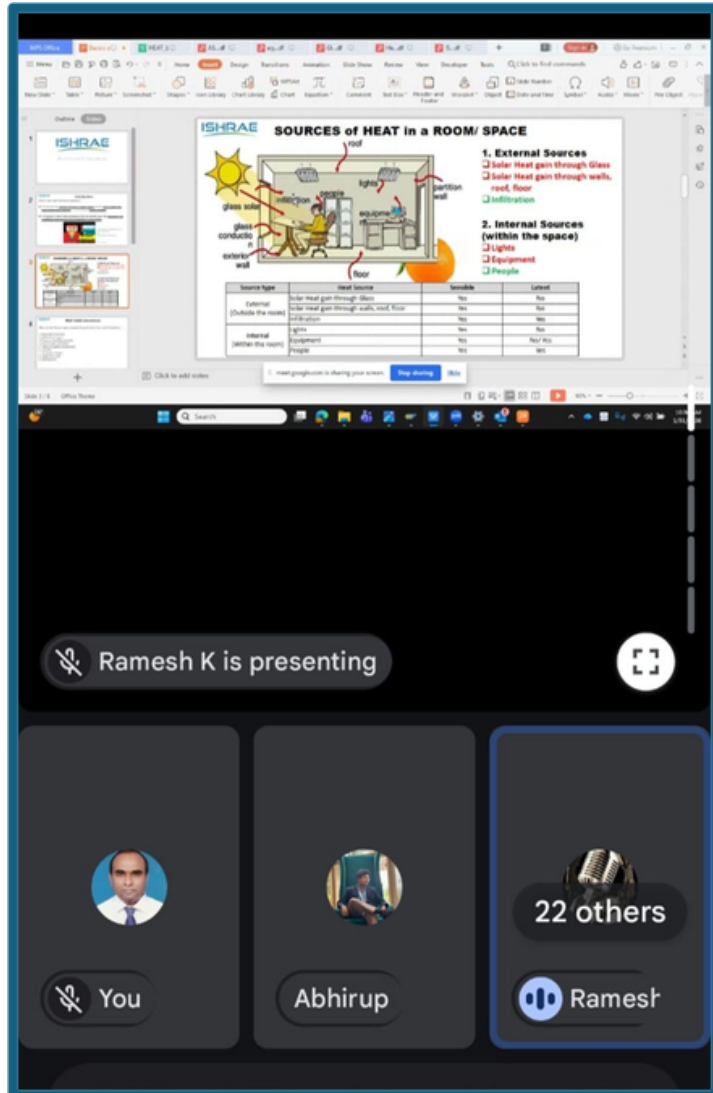
SESSION 3: WORKSHOP ON HEAT LOAD CALCULATION

DATE: 31ST JANUARY 2026

The final session was conducted by Mr. Ramesh Karthick, Engineer (R&D), Blue Star Limited. The workshop focused on Heat Load Calculation, one of the most fundamental aspects of HVAC system design and equipment selection.

The speaker explained the methodology for determining cooling loads in residential and commercial buildings. Students learned how accurate heat load calculations directly influence HVAC equipment sizing, energy efficiency, operational costs, and indoor comfort.

INTERACTIVE GREEN TALKS AND MENTORSHIP DIALOGUES ON SUSTAINABLE PRACTICES



The session covered:

- Fundamentals of sensible and latent heat loads.
- External and internal heat gain calculations.
- Occupancy, lighting, equipment, and ventilation loads.
- Building envelope heat transfer.
- HVAC equipment selection based on calculated loads.
- The impact of incorrect sizing on system performance and energy consumption

Industry examples and practical design scenarios were presented to illustrate the importance of precise calculations in real-world HVAC applications.

Learning Outcomes

Participants developed a strong understanding of heat load estimation techniques and their significance in designing efficient HVAC systems. The workshop strengthened students' practical knowledge of cooling load calculations and reinforced the importance of accurate engineering analysis in sustainable building design.

ETES25

HEAT LOAD SUMMARY

FLOOR	SPACE PARTICULARS	TONNAGE	DEHUMIDIFIER CFM
GROUND FLOOR	CLASSROOM 1	5.08	911
	CLASSROOM 2	5.25	1035
	CLASSROOM 3	6.26	1731
	CLASSROOM 4	6.05	1608
	CLASSROOM 5	5.86	1383
	CLASSROOM 6	5.78	977
	CLASSROOM 7	6.32	1646
	LAB 1	5.44	952
	LAB 2	7.92	2184
	LAB 3	6.62	854
	LAB 4	6.39	624
	OFFICE 1	1.52	504
	OFFICE 2	1.56	541
	FACULTY ROOM 1	2.05	614
	FACULTY ROOM 2	2.06	640
	PRAYER ROOM	27.34	4184
	CORRIDOR	4.96	687
FIRST FLOOR	CLASSROOM 8	5.76	1129
	CLASSROOM 9	6.02	1533
	CLASSROOM 10	5.92	1419
	CLASSROOM 11	5.81	1408
	SEMINAR HALL	24.5	6299
	SITTING ROOM	17.58	3143
BOYS ROOM	2.67	982	
	LADIES ROOM	2.67	982
CORRIDOR	3.4	1301	
FLOOR	TOTAL TONNAGE		
GROUND FLOOR	106.26 TR		
FIRST FLOOR	74.13 TR		
TOTAL TONNAGE	180.39 TR		

❖ ASSUMPTIONS AND CONSIDERATIONS:

- All areas are treated as no smoking zones.
- Areas of spaces and building plans will be considered as per given reference in the problem statement.
- Return air in all spaces would be through ducted return.
- The system design for summer would efficiently cater to the needs in other seasons.

The screenshot shows a 'DESIGN INPUTS' table. The table lists various design parameters for a school building, including location, climate type, floor area, and room details. The 'DESIGN INPUTS' section includes School Building Location (Kolkata), Climate Type (Warm & Humid), Ground Floor Built Up Area (11978 square feet), First Floor Built Up Area (5785 square feet), and Total no. of floors (G+ 1). The 'ROOM DETAILS' section includes a table with columns for No. of Students, No. of Classrooms, No. of Offices + Staff rooms, No. of Labs, Seminar Hall (1 No.) Capacity, Floor, Conditioned Area (square feet), and % of Total Conditioned Floor Area.

No. of Students	No. of Classrooms	No. of Offices + Staff rooms	No. of Labs	Seminar Hall (1 No.) Capacity	Floor	Conditioned Area (square feet)	% of Total Conditioned Floor Area
500	10	2 + 2	4	300	1	7735	65%
					2	4798	82%

CHILLER SITE VISIT



VENUE: GODREJ WATERSIDE BUILDING

DATE: 21ST FEBRUARY 2026

PARTICIPANTS:

- RAUNAK MITRA
- SUDIP CHOWDHURY
- ANIKET SAHU
- AYUSH RAJ
- ANKESH KUMAR
- AKASHLINA BHOWMICK
- ABHIRUP CHAKROBORTY

The ISHRAE Kolkata Chapter organized an exclusive Chiller Site Visit for engineering student members on 21st February 2026 at the Godrej Waterside Building, Sector V, Bidhannagar, Kolkata. The visit aimed to provide students with practical exposure to large-scale chilled water air-conditioning systems used in commercial buildings. By observing the operation of a centralized HVAC plant in a real-world environment, participants gained valuable insights into system components, plant operation, and energy-efficient cooling technologies.

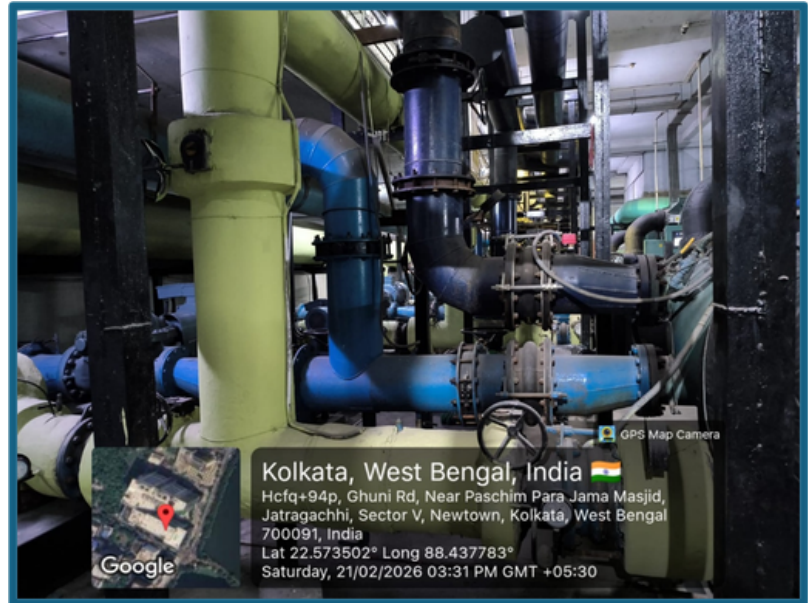
The visit focused on the centralized chiller plant serving the Godrej Waterside Building. Students observed the complete chilled water air-conditioning system, including the production, circulation, and distribution of chilled water throughout the building. Industry professionals explained the working principles of the plant, equipment layout, operational sequence, and control mechanisms that ensure efficient cooling and energy management.

The site visit enabled participants to:

- Develop a practical understanding of large-scale HVAC systems.
- Relate theoretical concepts of refrigeration and air conditioning to real industrial applications.
- Understand plant operation, maintenance, and energy management techniques.
- Appreciate the importance of automation and Building Management Systems in modern HVAC facilities.

Strengthen their technical knowledge and industry readiness through direct observation and interaction with professionals.

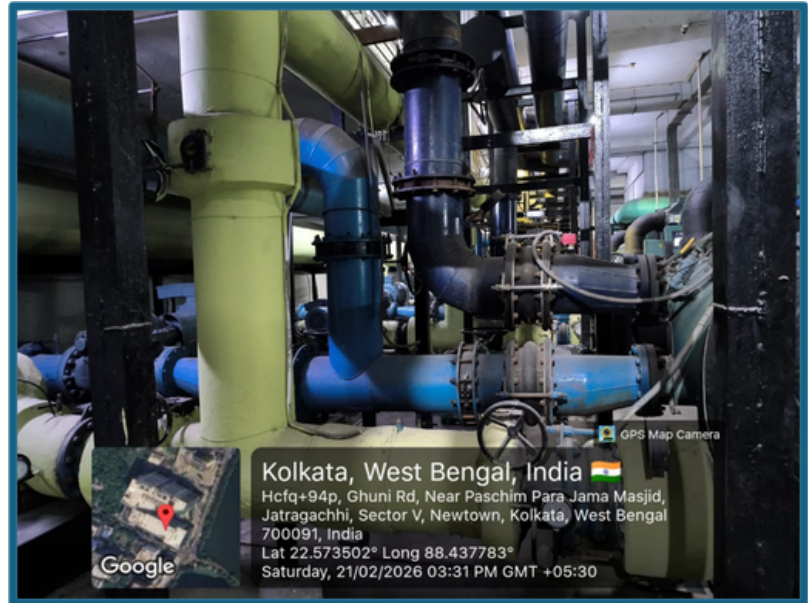
CHILLER SITE VISIT



The Chiller Site Visit to the Godrej Waterside Building proved to be an enriching learning experience for the student members of the ISHRAE Kolkata Chapter. The visit successfully bridged the gap between academic learning and industrial practice by providing firsthand exposure to centralized chilled water systems and modern HVAC technologies. It enhanced students' understanding of commercial building services, energy-efficient cooling solutions, and professional engineering practices, motivating them to pursue further learning in the field of HVAC&R and sustainable building engineering.



CHILLER SITE VISIT



The Chiller Site Visit to the Godrej Waterside Building proved to be an enriching learning experience for the student members of the ISHRAE Kolkata Chapter. The visit successfully bridged the gap between academic learning and industrial practice by providing firsthand exposure to centralized chilled water systems and modern HVAC technologies. It enhanced students' understanding of commercial building services, energy-efficient cooling solutions, and professional engineering practices, motivating them to pursue further learning in the field of HVAC&R and sustainable building engineering.



ENGINEIOUS

Engineious,” organized by the The Institution of Engineers (India) IEM Students’ Chapter, was conducted with great enthusiasm and participation from students across different disciplines. The event was further enriched by the presence of distinguished speakers from IEI Headquarters, who inspired students with their valuable insights and guidance. During the program, membership certificates were officially distributed to the newly enrolled IEI student members. The occasion also included a felicitation ceremony to honor respected faculty members, the Head of the Department, and the Principal for their continuous support and encouragement towards student activities and technical development.



ENGINEIOUS

Technical Segment:

1. Code Yudh
2. Ganitagya
3. Tech Tantra
4. Vichar Frame
5. Idea Manthan
6. Yantra Kick
7. Chitrakala

The Institution of Engineers (India) IEM Students' Chapter successfully organized the technical segment of "Engineious," featuring seven engaging events — Code Yudh, Ganitagya, Idea Manthan, Tech Tantra, Vichar Frame, Yantra Kick, and Chitrakala. The events were designed to encourage innovation, technical knowledge, creativity, and teamwork among students from various engineering disciplines. More than 100 participants enthusiastically took part in the competitions, making the event highly energetic and competitive. The technical segment provided a platform for students to showcase their problem-solving abilities, technical skills, and innovative ideas while promoting collaborative learning and professional development.



ENGINEIOUS



“ENGINEIOUS” aims to empower students by giving them a platform to display their technical prowess, creative thinking, and leadership skills.

The event will serve as a hub of innovation, encouraging peer learning, teamwork, and industry-academia interaction.

It will also promote the vision of The Institution of Engineers (India) — to nurture young engineers as future innovators and leaders.

INDUSTRIAL VISIT TO MSF ISHAPORE

The Institution of Engineers (India) IEM ME Students' Chapter organized an industrial visit to Metal & Steel Factory Ishapore on 13 March 2025 with a group of 30 students. The visit was arranged to provide practical exposure to modern metallurgical and manufacturing processes used in the defence and engineering industries. Metal & Steel Factory (MSF), Ishapore, is one of India's oldest and most significant defence manufacturing units, operating under the Ministry of Defence. The factory is well known for producing high-grade alloy steel, gun barrels, steel forgings, railway axles, cartridge cases, and various ferrous and non-ferrous metal products used in defence applications and heavy industries. During the visit, students observed several advanced manufacturing sections of the factory, including forging units, rolling mills, machining sections, and heat treatment plants. The officials explained the working principles of heavy industrial machines such as hydraulic forging presses, rolling machines, CNC machining systems, heat treatment furnaces, and quality testing equipment. Students also learned about material testing, precision manufacturing, safety protocols, and quality control procedures followed in large-scale industrial production. The industrial visit proved to be highly informative and beneficial for the students. It helped them understand real-life industrial applications of metallurgy, manufacturing, and mechanical engineering concepts beyond classroom studies. The visit also enhanced their technical knowledge and encouraged them to explore future opportunities in the manufacturing and defence sectors.



INDUSTRIAL VISIT TO JAMSHEDPUR

The first phase of the visit was conducted at National Institute of Technology Jamshedpur. Students had the opportunity to explore various laboratories of the Mechanical Engineering Department. The visit included exposure to manufacturing, thermal engineering, fluid mechanics, material testing, and machine design laboratories. Faculty members and research scholars explained the working principles of different experimental setups and testing equipment. The visit helped students understand how theoretical engineering concepts are applied in practical education and research environments.



The second destination was CSIR–National Metallurgical Laboratory, one of India's premier research institutions in the field of metallurgy and materials engineering. Students visited several advanced research laboratories and observed modern equipment used for material characterization, metallurgical testing, and industrial research. The visit provided insights into ongoing research activities related to metals, alloys, and advanced materials.



Students also visited Tata Steel SLRD (Steel Long Products Division). During the visit, they gained knowledge about steel manufacturing processes, quality control measures, and industrial management practices. Engineers explained the importance of process optimization, safety standards, and technological advancements in modern steel production. The visit provided a practical understanding of how steel products are manufactured and utilized in various engineering applications.



On the third day, students visited Tata Motors. The visit offered firsthand exposure to large-scale automobile manufacturing operations. Students observed the production and assembly processes of truck and commercial vehicle components, including engine radiators, engine covers, and vehicle body structures. They witnessed various manufacturing techniques such as fabrication, welding, assembly, and quality inspection procedures. The visit demonstrated how modern automotive industries maintain efficiency, precision, and product quality throughout the manufacturing process.



INDUSTRIAL VISIT REPORT ON VARIABLE ENERGY CYCLOTRON CENTRE (VECC), KOLKATA

An industrial visit to the Variable Energy Cyclotron Centre (VECC), Kolkata was organized on 2 January 2026 by the IIW-IEM Students' Chapter. VECC is a premier research institute under the Department of Atomic Energy (DAE), Government of India, engaged in advanced research in nuclear physics and particle accelerator technology. The main objective of the visit was to provide practical exposure to cyclotron systems, particle acceleration, beam transport mechanisms, and particle detection techniques. Students were introduced to the major cyclotron facilities at VECC, namely the Room Temperature Cyclotron, Superconducting Cyclotron, and Medical Cyclotron.

The visit included a tour of the control room, where important operating parameters such as RF frequency, magnetic field strength, and ultra-high vacuum systems were demonstrated. Students also gained knowledge about beam transport systems, quadrupole magnets, and various experimental applications such as Rutherford scattering and gamma spectroscopy. The session on particle detection introduced advanced techniques including charged-particle detectors and Gas Electron Multiplier (GEM) detectors. VECC officials also emphasized the importance of radiation safety, restricted access zones, monitoring systems, and emergency shutdown mechanisms. The VECC industry visit was a highly informative and enriching experience. It helped students understand the practical applications of cyclotron technology, accelerator systems, and nuclear research, thereby bridging the gap between classroom learning and real-world scientific research.



ONE-DAY SKILL DEVELOPMENT WORKSHOP REPORT

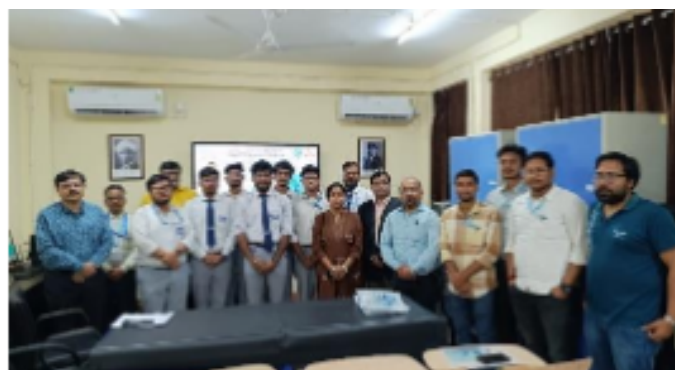
ON CSIR - CENTRAL GLASS & CERAMIC RESEARCH INSTITUTE (CGCRI), JADAVPUR, KOLKATA

The industrial visit was organized by the IIW-IEM Students' Chapter and the Department of Mechanical Engineering (IEM) at the CSIR - Central Glass & Ceramic Research Institute (CGCRI), Jadavpur, Kolkata, on Friday, 20th February 2026. The primary objective of the visit was to bridge the gap between classroom learning and real-world industrial applications by providing students with practical exposure to advanced analytical instrumentation, research methodologies.



The first technical session was conducted by the Membrane and Separation Technology Division (MSTD), where students gained valuable insights into advanced separation processes, environmental testing, and chemical analysis techniques. During the session, students observed and practiced various water quality testing methods, including the determination of Chemical Oxygen Demand (COD) through reflux digestion and Biological Oxygen Demand (BOD) using the five-day incubation method. They were also introduced to essential water quality parameters such as pH, conductivity, and Total Dissolved Solids (TDS). The session further included live demonstrations of Gas Chromatography (GC) and Ion Chromatography (IC), which showcased the separation, detection, and quantification of complex gaseous mixtures and ionic species for applications in pharmaceutical, environmental.

The second technical session was conducted by the Instrumentation Section and focused on industrial automation and process control systems. Students were introduced to the fundamentals of open-loop and closed-loop temperature control systems and learned how industrial sensors such as RTDs and thermocouples work in conjunction with actuators to maintain process stability. The session also included a walkthrough of industrial control panels, where students observed wiring systems, safety alarm mechanisms, and real-time thermal monitoring systems that play a crucial role in glass and ceramic manufacturing operations.



The visit concluded with a tour of the CSIR archives, where students explored the historical development of CGCRI, its patented technologies, major research achievements, and indigenous contributions to India's industrial growth. Overall, the industrial visit successfully enhanced students

WEBINAR ON: LASER–MATERIAL INTERACTION AND ADDITIVE MANUFACTURING OF METALS: FUNDAMENTALS AND APPLICATIONS

The IIW-IEM Student Chapter (2025–2026), Department of Mechanical Engineering, Institute of Engineering & Management (IEM), Salt Lake, successfully organized a technical webinar on 3rd February 2026 from 4:00 PM to 5:00 PM via Google Meet.

The session was delivered by Dr. Pradyut Sengupta, Principal Scientist, CSIR–Institute of Minerals and Materials Technology (IMMT). He shared valuable insights into the fundamentals of laser–material interaction and discussed the latest developments in metal additive manufacturing. The speaker explained the working principles of laser-based manufacturing processes, their industrial applications, advantages, challenges, and future prospects in modern engineering. The webinar witnessed enthusiastic participation from students, faculty members, and research scholars. The interactive session encouraged participants to ask questions related to laser processing, additive manufacturing technologies, and career opportunities in advanced manufacturing. Dr. Sengupta addressed the queries with practical examples and industry-oriented perspectives, making the session highly informative and engaging.

The webinar concluded with a vote of thanks to the speaker for his enlightening presentation and to all the participants for their active involvement. The event proved to be a valuable learning experience, enhancing participants' understanding of emerging manufacturing technologies and their applications in research and industry.

Laser-Material Interaction

- Interaction of intense laser beam with material
- Energy absorption → heating → melting/vaporization
- Key parameters:
 - Laser power, wavelength, pulse duration
 - Scan speed
 - Material properties (thermal conductivity, reflectivity, etc.)

Outcomes:

- Melting
- Vaporization
- Plasma formation
- Microstructural changes

Diagram labels: Laser beam, Shielding gas, Melt pool, Solid material.

Outcome images: Melting, Keyhole formation, Plasma phase.

CSIR - Institute of Minerals and Materials Technology

4:07 PM | Webinar on Laser-Material Interaction and Additive Manufa...

WORKSHOP ON SOLIDCAM

On 12th February 2026, the Department of Mechanical Engineering, Institute of Engineering & Management (IEM), Kolkata, in association with the ASME IEM Student Chapter, successfully organized a workshop on SolidCAM at the IEM Management House. The session was conducted by Mr. Jishnu Banerjee, Application Engineer, ELMAX Systems and Solutions, who introduced participants to the fundamentals and industrial applications of SolidCAM, a leading Computer-Aided Manufacturing (CAM) software used for CNC machining and digital manufacturing. The workshop covered key topics including CAM workflow, toolpath generation, machining strategies, CNC programming, simulation, and optimization of manufacturing processes. Through live demonstrations and practical examples, students gained valuable insights into integrating CAD models with CNC machining operations, enhancing productivity, accuracy, and manufacturing efficiency. The interactive session enabled participants to develop practical knowledge of modern manufacturing technologies and strengthened their understanding of digital manufacturing, preparing them for industry-oriented engineering applications.

IEM
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Good Education. Good Jobs.

ASME
SETTING THE STANDARD
IEM STUDENT SECTION

UEM
UNIVERSITY OF ENGINEERING & MANAGEMENT
Good Education. Good Jobs.

WORKSHOP ON

SolidCAM
The Ecosystem for Digital Manufacturing

Organized by Department of Mechanical Engineering and ASME IEM Students Chapter

12 FEBRUARY 2026
02:00 PM

IEM MANAGEMENT HOUSE

REGISTER NOW

JISHNU BANERJEE
APPLICATION ENGINEER
ELMAX SYSTEMS AND SOLUTIONS

+ 91 9073833447
asmeiem
IEM – College of Management Management House, D-1, Sector-V, Saltlake Electronics Complex Kolkata – 700 091



TECHNICAL TALK ON "ULTRASONICS: FROM NATURE TO MANUFACTURING" BY DR. SAMIR CHANDRA ROY, IIT ROPAR

On 20th February 2026, the Department of Mechanical Engineering, Institute of Engineering & Management (IEM), Kolkata, in collaboration with the ASME IEM Student Chapter, successfully organized an online technical talk titled "Ultrasonics: From Nature to Manufacturing." The session was delivered by Dr. Samir Chandra Roy, Faculty, Department of Mechanical Engineering, IIT Ropar, an expert in creep, fatigue, fracture, activation erosion, and advanced material characterization. The lecture provided participants with a comprehensive understanding of ultrasonic technology, covering its natural inspirations, fundamental principles, and diverse applications in modern manufacturing processes such as non-destructive testing, precision machining, material processing, defect detection, and quality assurance. Dr. Roy also shared insights from his research on material deformation, microstructural characterization, and finite element analysis, highlighting the role of ultrasonics in improving manufacturing efficiency, product reliability, and industrial innovation. The interactive session encouraged students to engage with advanced concepts in manufacturing engineering, enabling them to bridge theoretical knowledge with practical industrial applications while inspiring them to explore research opportunities in advanced manufacturing technologies.

The poster is for a technical talk titled "Ultrasonics: From Nature to Manufacturing" by Dr. Samir Chandra Roy. It is organized by the Department of Mechanical Engineering and the ASME IEM Student Chapter at the Institute of Engineering & Management (IEM). The event is scheduled for February 20, 2026, from 08:00 PM to 09:00 PM, and will be held online. A QR code is provided for registration. The poster also includes a portrait of Dr. Roy and a list of faculty advisors.

Logos: UEM (University of Engineering & Management), ASME (American Society of Mechanical Engineers), IEM (Institute of Engineering & Management).

DEPARTMENT OF MECHANICAL ENGINEERING & ASME IEM STUDENT CHAPTER

Ultrasonics : From Nature to Manufacturing

TECHNICAL TALK ON ADVANCED MANUFACTURING

Dr. Samir Chandra Roy is an esteemed faculty at ME Dept. IIT Ropar, specialized in creep, fatigue, fracture, and cavitation erosion. He earned his PhD from University Grenoble Alpes, France (2015). His research focuses on experimental and numerical studies of material deformation, damage, microstructural characterization, and finite element analysis at elevated temperatures.

**FEBRUARY 20, 2026
08:00 PM - 09:00 PM
MODE: ONLINE**

REGISTER NOW

REGISTER HERE:

DR. SAMIR CHANDRA ROY
DEPT. OF MECHANICAL ENGG
IIT ROPAR

FACULTY ADVISORS

- Prof. Joydip Ray
- Dr. Tamonash Jana
- Dr. Bikash Chowdhury
- Dr. Anubhav Sinha

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asmeiem

INDUSTRIAL VISIT REPORT – BUDGE BUDGE PETROCHEMICAL LTD.

On 20th March 2026, the students of the Department of Mechanical Engineering, Institute of Engineering & Management (IEM), Kolkata, participated in an industrial visit to Budge Budge Petrochemical Ltd., Subhas Udyan, Budge Budge, organized by the ASME IEM Kolkata Student Chapter. The visit provided valuable exposure to the complete manufacturing process of jute bags, beginning with the selection and processing of raw jute fibres, followed by carding, drawing, spinning, weaving, cutting, stitching, printing, and final quality inspection before packaging and dispatch. Students observed the operation of various industrial machines, material handling systems, and quality control procedures while gaining insights into production planning, process optimization, workplace safety, maintenance practices, and sustainable manufacturing. The visit also highlighted the importance of jute as an eco-friendly and biodegradable alternative to plastic packaging, demonstrating its growing significance in environmental conservation and industrial applications. The interactive session with plant engineers enabled students to connect theoretical mechanical engineering concepts with real-world manufacturing practices, making the visit an enriching learning experience that enhanced their understanding of industrial production systems and sustainable engineering.



ACTIVITIES OF 3D PRINTING

The 3D Printing Laboratory under the Department of Mechanical Engineering, Institute of Engineering & Management (IEM), provides students with practical exposure to additive manufacturing, rapid prototyping, and product development. The laboratory is associated with the Centre of Excellence (CoE) in Additive Manufacturing, directed by Dr. Subho Mukherjee, further strengthening the department's efforts in advanced manufacturing research and innovation. The laboratory has been actively supporting academic projects while encouraging students to apply engineering concepts to real-world applications.

As an outcome of this initiative, Promethix3D was established in February 2026 as a startup initiative of the Department of Mechanical Engineering under the IEM Research Foundation (IEMRF). The startup is mentored by Ms. Rimjhim Majumdar and Dr. Tamonash Jana and is operated by Nirban Roy (Alumnus), Arghya Majumdar (3rd Year, Mechanical Engineering), Arnab Namata (3rd Year, Mechanical Engineering), and Souratya Mukherjee (3rd Year, Mechanical Engineering).

Within five months of its inception, Promethix3D recorded a revenue of over ₹1.60 lakh (up to July 2026). One of the major contributors to this achievement was the startup's participation in Innovacion Techfest, where its exhibition stall received an encouraging response from visitors and generated significant sales. In addition, the startup has fulfilled orders from external customers through direct enquiries and social media platforms.

The team has designed and manufactured a wide variety of products using 3D printing technology. These include 3D-printed drones, mechanical components for engineering projects, statues, architectural models of temples, AI-assisted personalised miniature models, and customised products developed according to customer requirements. The startup has also supported students by manufacturing prototypes and components required for academic and research projects.

The work of Promethix3D has received recognition beyond the institute. The startup was appreciated by Mr. Babul Supriyo, former Cabinet Minister, Government of West Bengal, during his visit, and its activities were also featured on DD Bangla, highlighting the growing impact of student-led innovation in additive manufacturing.

The Department expresses its sincere appreciation to Prof. Dr. Dwaipayan De, Head of the Department of Mechanical Engineering, for his continuous encouragement and support in promoting innovation and entrepreneurship among students. The team also gratefully acknowledges the guidance of Ms. Rimjhim Majumdar, Dr. Tamonash Jana, and Dr. Subho Mukherjee, Director of the Centre of Excellence in Additive Manufacturing, whose mentorship and support have been instrumental in the growth of the startup.

Promethix3D demonstrates how the facilities and opportunities provided by the Department of Mechanical Engineering can be translated into practical applications and entrepreneurial initiatives. The startup continues to expand its work in customised manufacturing while providing students with valuable experience in design, prototyping, manufacturing, and product development.

ACTIVITIES OF 3D PRINTING

