ISHRAE

IEM
श्रद्धावान लभते ज्ञानम्
INSTITUTE OF ENGINEERING & MANAGEMENT
Good Education, Good Jobs

ISHRAE IEM STUDENT CHAPTER STUDENT ACTIVITY 2019-20

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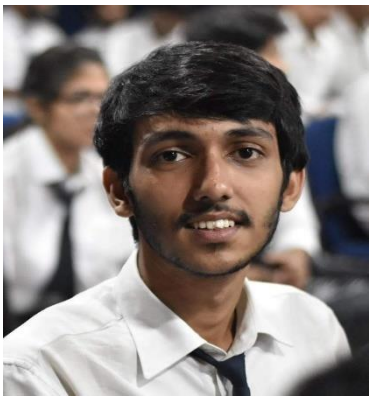
ISHRAE IEM Student Chapter – Core Working Committee (Session 2019-2020)

1. **Ramesh Kumar Karthick (President)**

2. **V. Aditya (Secretary)**

3. **Harsh K Shah (Treasurer)**



4. **Pooja Baheti (CWC Member & GWC President)**

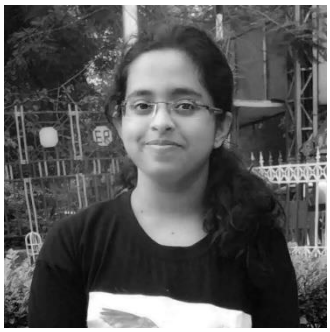
5. **Bidisha Bhattacharya (CWC Member)**

6. **Akshay Kumar(CWC Member)**

7. **Sagnik Dutta(CWC Member)**

8. **Rishav Raj(CWC Member)**

9. **Siddharth Ghosh(CWC Member)**



10. **Mahasweta Das (CWC Member)**

11. **Swetaleena Guha (GWC Member)**

12. **Sahil Sonkar(CS ME 4th Year)**

13. **Abhijeet Majee (CS EE 4th Year)**

14. **Kunal Saha(CS EE 3rd Year)**

15. **Biswayan Chattopadhyay(CS ME 3rd year)**

16. RATNESH BARNAWAL (CS EE 2ND Year)

17. RAUBINS SINGH (CS EEE 2ND Year)

TECHNICAL SESSION ON ENERGY CONSERVATION BUILDING CODE(ECBC)-

DAY 1:

Venue: Institute of Engineering and Management, Saltlake,Kolkata
Timing: 10th of April, 2019 from 4:00pm to 5:30 pm.

Gathering: The technical session was delivered by Mr. Kumar Biplab BEE Certified ECBC master trainer, a regular ISHRAE Member and associated with **Green Tree and WBSEDCL**. He was assisted by **Mr. Irfan Ayas, Mr. Subhrajit and Mr. Tapas Mandal from Green tree.** The Talk was attended by **Prof. Gunjan Kumar** (Asst Prof, Mechanical Engineering), **Prof. Tapas Kumar Dutta** (HOD, Electrical Engineering) and 35 students from Electrical Engineering Department, Institute of Engineering and Management.

Learning from the technical talk:

The technical talk on basics of electrical in ECBC applications was based on various small areas where improvement was done and yet has a scope of reducing power consumption thereby, increasing the efficiency of the system.

The successful implementation of the code requires development of compliance procedures (compliance forms and development of field-test compliance forms and procedures), in addition to building capacity of architects/designers/builders/contractors and government official in States and Urban and Local Bodies (ULBs). It is also dependent on availability of materials and equipment that meet or exceed performance specifications specified in ECBC.There is an app related to this learning namely **ECBC 2017.** This app gives us an overview of how much energy conservation can be done in cobuilding with the use of optimum manstructing a terials.

CONCLUSION FOR THE FIRST DAY OF THE TECHNICAL TALK:

The first day of the technical talk ended with Mr Kumar Biplab giving us an overview of the topic: **"Energy Conservation Building Code"**. An interactive session also took place, where the queries of the students regarding the topic was cleared.

The Technical Talk was graced by HOD sir,EE dept.

The Technical talk on progress

TECHNICAL SESSION ON –

ENERGY CONSERVATION BUILDING CODE (ECBC) - DAY 2:

Venue: Institute of Engineering and Management, Saltlake,Kolkata
Timing: 11th of April, 2019 from 4:00pm to 5:30 pm.

Gathering: The technical session was delivered by Mr. Kumar Biplab BEE Certified ECBC master trainer, a regular ISHRAE Member and associated with **Green Tree and WBSEDCL**. He was assisted by **Mr. Irfan Ayas, Mr. Subhrajit and Mr. Tapas Mandal from Green tree.** The Talk was attended by **Prof. Gunjan Kumar** (Asst Prof, Mechanical Engineering), **Prof. Tapas Kumar Dutta** (HOD, Electrical Engineering) and 35 students from Electrical Engineering Department, Institute of Engineering and Management.

Learning from the technical talk:

At first the session began with brief discussions on the topics covered on day 1.Later on, the speaker went through different aspects of air conditioning and how to conserve power consumption only by changing the mode of use. The comfort conditions of Air conditioners-temperature, pressure and humidity were mentioned. The basic refrigeration cycle was demonstrated with the help of power point slides. Now it can be modified in order to conserve power by installing VRF systems. If we set temperature of air conditioner at 24 degree Celsius and switch on fan then power can be conserved roughly up to 720 W. Besides “Dialux” - the software used by engineers for designing lights was introduced. Throughout the session, students actively participated and interacted with the speaker.

TECHNICAL SESSION ON INSULATION, MODULAR SUPPORTS & TECHNOLOGY UPGRADATION:

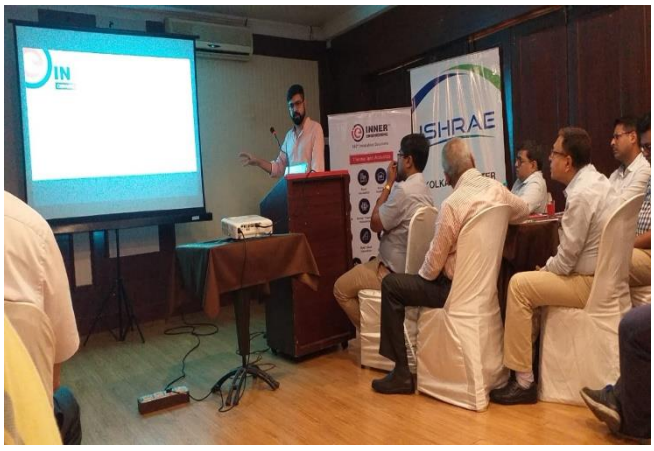
DATE : 29th June - 2019, Saturday

TIME : 3:00 PM to 5:00 PM

Venue : The Circle Club (VIP Road, Airport, Teghoria, Rajarhat, Kolkata-700052) Opp. Charnock Hospital

The technical session visited a good number of participants. Few students of IEM also went to witness the talk. This helped to learn a lot of new things about insulation and the advancement in technologies. The talk had two eminent speakers Mr. Raushan Jha and Mrs. Amisha Madan.

The session also helped to get familiar with some of new products.



Technical Talk on Psychometry:

Venue- IEM Management House.

ISHRAE-Kolkata organised a Technical talk on Heat Load calculations at IEM, Kolkata. The sole purpose of the event was to make our student members aware of the major skill in HVAC industry. Active participation from 2nd, 3rd and 4th years members was observed and over 45 student student members showed interest. A guest lecture from a renowned HVAC Consultant of industry was witnessed. Mr. P.K Sen, His presentation was student friendly with an understanding developed for students from all academic years.

P.K.Sen Sir interacting with student members

Prof. Gunjan Kumar felicitating our guest

Summary of the Technical Session

The session started off with a brief introduction about the theoretical parameters of psychrometry. Our guest briefed us upon the topics and terminologies that relates psychrometry and heat load calculations. Members were told about the importance of psychrometry in our daily life and how this affects human comfort. Terms such as DBT, WBT, RH%, ADP, Cooling load, latent heat, sensible heat were discussed. Furthermore the speaker enlightened students on the air conditioning and various components of it. Everything was taught keeping in mind the basics of heat load calculations that assist in determining the tonnage of refrigeration required for a particular cooling space. Members were taught about the dry bulb and wet bulb temperatures and their significance along with ways to measure them simultaneously.

Students were then briefed upon cooling load and the sources of infiltrated heat into the cooling space, also the significance of psychrometry chart was made known to the student members. The significance of various lines on psychrometry chart and the ways to extract data from the chart was lighted upon ,Finally our guest ended the session with an introduction to air purification processes and how fresh air intake could be possible in Split Air Conditioners using ducting.

At last the session ended interactively with a short doubt clearing session for students,.

Technical talk on Heat Load Calculation:

ISHRAE-Kolkata organised a Technical talk on Heat Load calculations at IEM, Kolkata. The day 2 of the session was addressed by Mr. UTTAM BAG (Sr. Manager-Project sales ,VOLTAS. LTD.). The interaction was focused on basic concepts and logic behind heat load calculations and hands on practice on formulation when performing a heat load calculation of a particular space.

Mr. Uttam Bag Interacting with students

Prof.Gunjan Kumar felicitating the guest

Summary of the Technical Session

The talk started off with a brief introduction about the heating load. we were told about how external environment (heat) affects the interior condition. Our guest briefed us upon the topics and terminologies related to heat load and told us about the importance of cooling a certain living space. Students were also about how a proper calculation of heat load can be proved cost effective to the designer. The discussion further focussed on gathering data from ASHRAE handbooks for ensuring the authorised calculation. Furthermore the speaker enlightened students on the air conditioning and various components of it. Uttam bag sir taught us about the assumptions and considerations one must keep in mind before starting off . Members were also made familiar with the units and conversions required for heat load calculations which is a significant part before starting off.

Students were then briefed upon future scope and innovations in HVAC industry. .Sir also told us how the use of excel sheet has been proved efficient while calculating heat load. The formulas and thumb rules one must remember for proper results were thoroughly discussed, The significance of various data from ASHRAE handbooks and their relationships was lighted upon .

At last the session ended with a short doubt clearing session for students.

Technical Talk on Heat Load Calculation:

ISHRAE-Kolkata organised a Technical talk on Heat Load calculations at IEM, Kolkata. The day 3 of the talk was addressed by Mr. Shuvam Kangsabanik (Sr. Electrical Engineer,VOLTAS. LTD.). The interaction was focused on hands on practice of the use of excel sheet while performing heat load calculation while understanding concepts and logic behind the factors taken into consideration.

Summary of the Technical Session:

The session boosted off with a brief explanation of the problem statement where the students had to perform the heat load call of a given school building. Shuvam sir told us about the various data we will need and their significance. Sir also explained to us the use of ASHRAE handbook the kind of data one might need to perform further calculations.we were explained about the formulas which are required. Our guest briefed us upon the topics such as tonnage , ADP , U- Factor , ESHF and Fresh air changes required per CFM. Students were also guided about how a proper calculation of heat load can be done with precision by the use of proper selection of input data. The discussion also focussed on gathering data from ASHRAE handbooks for ensuring the authorised calculation.

Furthermore the speaker enlightened students while clearing their doubts by demonstrating them on the spreadsheet. Student members were made familiar with the unit conversions required. Furthermore the speaker shared his experiences in the industry which made students aware of the importance of this domain.

At last the session ended with an interactive doubt clearing session for students.

TECHNICAL TALK SESSION ON BUILDING AUTOMATION

Venue:

CII auditorium, Institute of Engineering & Management, Kolkata-700091

Timing:

22nd August,2019 (3:30pm – 5:30pm)

Gathering:

The technical talk session was delivered by Mr. Sushant Mahapatra from Siemens. Among the other guests were Prof. Tapas Kumar Dutta (HOD Department of Electrical Engineering, IEM), Prof. Gunjan Kumar (Department of Mechanical Engineering and faculty advisor of ISHRAE-IEM Student Chapter) and faculty members of IEM.

Topics discussed in the technical talk:

The technical talk delivered was mainly around home automation and utilisation of various sensors and devices by Siemens to make a monitoring system that will provide updates to the user during any irregularities. There was a detailed discussion about Air Handling Units (AHU) and various other devices that help to automatically maintain the air quality of the circulated air by the smart arrangements of sensors like Carbon dioxide sensor and humidity sensor and many others. There was also a hands-on demonstration of the of the various devices and how they work and how they are installed.

Conclusion:

The technical talk session was very interesting because of it's relation to actually what is being done in the current world and also involved a lot of discussion from all the fields of Electrical, Mechanical and Electronics Engineering.

INDUSTRIAL VISIT TO HITACHI –CENTER OF EXCELLENCE

VENUE- JOHNSON CONTROL HITACHI-CENTER OF EXCELLENCE.

DATE- 18TH JUNE, 2019.

A One Day Industrial Visit was arranged by ISHRAE to HITACHI on 18th June, 2019.A group of students of the Department of Mechanical Engineering (ME) and Electrical Engineering (EE) attended the visit.

Classroom Session:

The session was introduced by Ms. Sagarika Mukherjee and later on the session was conducted by Mr. Gauranga Baruah and Mr. Mohan Babu.

- In the four hour long interactive session basic conditions and fundamentals of air conditioner were discussed. The definitions of heat, temperature, specific heat, latent heat etc were mentioned.
- **Air conditioning and Refrigeration are not same.** Refrigeration is maintaining low temperature for mainly preservation purpose whereas Air conditioning means conditioning of air in an enclosed space for maintaining specific conditions of (1) Temperature (2) Humidity (3) Air purity (4) Air circulation. The deciding factors regarding selection of an air conditioner lies on ton rating, indoor air quality, purifying technology, indoor and outdoor unit, C.O.P and power consumption. Engineers have to design air conditioner to meet the requirements in the most possible cost effective way.
- **Humidity**-The volume of moisture content in air. It is of three types; absolute humidity, relative humidity and specific humidity.
- **Psychrometer**-It is the instrument which measures humidity of air. There are two scales in the instrument. One of them measures Wet Bulb Temperature and the other one indicate Dry Bulb Temperature. Humidity is measured by the difference of these two scale readings which is called Wet Bulb Depression. A live demonstration of how to use psychrometer was given by Mohan sir.
- The basic refrigeration cycle and the functions and classifications of each unit like compressor, filter, evaporator, condenser and expansion devices were mentioned.
- There are different types of air conditioning systems as for example Direct Expansion AC, Window AC, Split Ac, Ductable AC, VRF, Precision Air Conditioning etc.
- The refrigerants used in industries, their properties, comparative studies between their ozone depleting potential-these were the topics of discussion.

Patent holding products of HITACHI:

- **ifresh**
- **iclean**: Has special purifying technology.
- **isee**: **Intelligent Image Sensor Technology**-works on capturing triangular image of human and other bigger objects and automatically switches off in absence of human.
- **isense: Activity Sensor Technology**-based on PIR sensor tracks the activity of human inside a room and automatically switches on only when no activity is recorded that is when the user is sleeping.
- **Soft Dry Technology**
- **Expandable Inverter AC**

Laboratory Session:

We were taken to different laboratories of HITACHI by Baruah sir and Mohan sir. There products and their special features were demonstrated. We also got an exposure to the various complex units of VRF system, different ducting systems, indoor and outdoor units, their advantages and disadvantages. Students actively participated and this session was an interactive one as well.

Ending Session:

A short test was taken by the authority. The Industrial visit was quite beneficial for us. Students learned about how industrials deal with manufacturing and designing of user friendly products and came out with a lot of knowledge at the end of the day.

SITE VISIT TO COOLING SYSTEM AT G-CENTRE MALL

ISHRAE, Kolkata organised a site visit at **plan room** for the **G-CENTRE MALL** for the ISHRAE IEM student members on **28th JUNE, 2019**. The talk was conducted by **Mr. Manas Sengupta**, Sr. Manager(projects). **10** of the student members from **Institute of Engineering & Management (IEM), Salt Lake** actively participated.

Students exploring the various equipments

Students with Mr. Manas Sengupta inside the chiller room

Summary of the Technical Session

The session started off with a brief introduction of the HVAC domain, Students were briefed about various components of refrigeration cycle and there types, the floor wise plan and ducting maps was shown to the members explaining the **methods of ducting** and significance of **cassette type system**.The system at site works on **two chiller based** air conditioning units of **260TR** each, supported by **two cooling towers**. Student members were told about the significance of comfort in a public place like the shopping complex itself and the parameters deciding them. Members were also exposed to the theoretical parameters of various components such as compressors, pumps, evaporator, insulation, etc and the type of system suitable on the basis of application . Members were then shown the **cooling towers** and the concepts behind the working of it were explained. students were then taken to the pump control room were various attachments such as strainer, damper, etc and there need were briefed on. Also the combination of the pumps were shown so as to control the flow of refrigerant

Mr. Manas Sengupta then led us to the control centre of the building where the electrical aspects and control system were told. After the visit at the plan room, students were led to the cooling area inside mall were they explored the **duct design** inside the complex.

Cooling towers used at site

solar energy contributing load consumption

The students followed the floor plan noticing the flow of ducts in the entire building ,we were told about the importance of proper **system selection** and duct design and the degree to which it affects the **comfort** of people inside the area.

Finally we were taken to the terrace and were shown the use of solar panels in supporting the electric consumption of the entire system. we were told about the significance of use of such a non- conventional source of energy and the favouring difference it leads to .

Mr. Manas Sengupta also told us about the various challenges one may face while designing air conditioning for such projects and the ways to deal with them .The overall objective of the visit was to make students aware of the control parameters and exposing them to the handling and propagation of such a major HVAC project.

Internal Events

CWC INSTALLATION CEREMONY:

The annual CWC installation ceremony of **ISHRAE IEM student chapter** was organised on **27th, April 2019** at Institute of Engineering & Management, Kolkata. The event began with the National Anthem followed by video presentation by Mr. Gaurav Kumar Jha, President and Ms. Ridhi Lakhotia, GWC President of ISHRAE IEM Student Chapter, exhibiting the glories of ISHRAE from its very inception to its phenomenal journey till date.

The event was graced by the presence of, **Mr. Utpal Biswas** (National Chair, ISHRAE Kolkata), **Mr. Arka Majumder** (Student Committee Member, ISHRAE Kolkata), **Mr. Arun Kumar Bar** (Dean of Engineering, IEM). The gathering was addressed by all the delegates.

Mr. Utpal Biswas announced the names of the newly selected CWC for the year 2018-19. This was succeeded by the oath taking and installation ceremony which was presided by Mr. Utpal Biswas along with the assistance of Mr. Arka Majumder**. Mr. Ramesh Kumar Karthick** was elected as the new President with **Mr. V. Aditya** and **Mr. Harsh K Shah** as the new Secretary and Treasurer respectively. They took the oath to abide by their assigned responsibilities and give their fullest in best possible manner. The other CWC Members who have taken the oath of office included **Ms Pooja Baheti, Ms. Bidisha Bhattacharya, Mr. Rishav Raj, Mr. Siddharth Ghosh, Mr. Sagnik Dutta, Mr.Akshay Kumar and Ms. Mahasweta Das. Ms. Pooja Baheti** holding the dual responsibility of the President of the Girls' Working Committee (GWC) as well along with the GWC Members **Ms. Swetaleena Guha.** The Class Spokespersons for different classes were **Mr**. Sahil Sonkar **(ME - 4th year),Mr. Abhijit Majee (EE-4th year),Mr. Biswayan Chattopadhay(ME - 3rd year), Mr. Kunal Saha(EE 3rd Year).**

CWC Members of the Society Year 2019-20.

Core Working Team for the year 2019-20.

MENTORING SESSION

VENUE: INSTITUTE OF ENGINEERING & MANAGEMENT

TIMING: 2nd August, 2019 from 2 p.m. to 3 p.m.

GATHERING: The mentoring session was delivered by Mr. Sourav Sarkar, RBI Manager (also cracked 10+ public service job), Mr. Riazul Hoque, Columbia University. The session was attended by Prof. Gunjan Kumar (Asst Prof. , Mechanical Engineering), Prof. Arun Kumar Bar (HOD, Mechanical Engineering) and 40 students from 2nd and 3rd year Mechanical Engineering students, Institute of Engineering & Management.

LEARNING FROM MENTORING SESSION:

The mentoring session was basically on how to get preparation for future career, motivational lecture from renowned seniors and question-answering session for doubts regarding study and career.

Mr. Sourav Sarkar told us astonishing journey from Cognizant to RBI Manager and the importance of IEM education and culture in his life and the necessary of being a human. He gave a speech on how having a growth mindset (the belief that you are in control of your own ability, and can learn and improve) is the key to success. Hard work, effort, and persistence are all important, but not as important as having that underlying belief that you are in control of your own destiny. Also if you practice good manners, you are showing those around you that you are considerate of their feelings and respectful. You are also setting standards for others' behaviour and encouraging them to treat you with similar respect.

Mr. Riazul Hoque gave a brief introduction on his aspiring journey which started in IEM with a handful of achievements and ended with by getting a golden opportunity in Columbia University. We got to know about many facts of writing research paper, how to make a research paper. We can summarize his speech by saying that every dream require some debt from society and asset can be developed over intellect. Education and intellect not only provide opportunity for development in numeral sphere but contributes to the standard of living.

The question answer session on progress

IEM glaring team

MOTIVATIONAL TALK ON INDUSTRY REQUIREMENTS FROM A FRESH ENGINEERING GRADUATE

Venue: IEM Management House, Salt Lake , Kolkata,

Timing- 8th of August from 2:30 pm to 3:30 pm

Gathering : Miss. Nilanjana Mukherjee is an **Electrical Engineer** by qualification, currently pursuing Post Graduate Certificate program in Business Management **from IIM Calcutta**. Her company, **THE UNIVERSAL GROUP**, is workforce of 200 people. Universal is a Consultancy & engineering project company & is one of the biggest names in the HVAC Sector of Eastern India. Apart from being a **young & dynamic Entrepreneur,** she is also the youngest member of ISHRAE.

Learning from talk: The talk was basically on the requirements or expectations what an industry wants from a fresh graduate. She inspired us in many ways starting from the basic things that to work as a team and achieve the success. Then she moved into the present scenario of industry.

Keynote: Prof.(Dr.) Koyel Ganguly addressed the speaker.

Conclusion: From her talk and personality, Miss Nilanjana had became an inspiration for all the young engineers. They were obliged to attend her talk and good learning from her lecture.