AIC had a very hectic passage of six months tenure of the present BOG. Number of activities happened during the period covering conferences, DL visits, Student Chapters organized events on Specific topics, Training Programs etc. All Ashrae Chapters co-ordination meeting happened in August at Bangalore to discuss, various activities and selection of office bearers and planning for CRC. This time a record number 18 members (including spouses) attended CRC meeting at Antalya. There was a lecture by Dr. Om Taneja at CRC amongst the selected few. A series of lectures under the banner ‘Myths and Reality of HVAC’ was organized, which had lots of interest from participants. A mega event titled ‘Emerging Trends in Green & Efficient Rail Transit Systems’ was organized partnering DMRC, attended by a large number of delegates. We will have further events coming up in the period January to June 2019. Dr. Ahmed Aloa, DRC, RAL ASHRAE had visited the Chapter in December. Members will be attending 2019 ASHRAE Winter Conference & AHR Expo Atlanta, GA, January 12–16, 2019.
ASHRAE India Chapter (AIC) and Indian Chamber of Commerce jointly organized “Refrigeration Tech Conclave 2018” on 24th August 2018 at Hotel NOVOTEL, Kolkata. The theme of the conference was ‘Energy Efficient and Green Technology of Air Conditioning and Refrigeration’. Mr. Indrajit Bhattacharya, President, AIC, Mr. Priyank Garg, Immediate Past President, AIC and Mr. Nirjar Chakraborty, President ASHRAE Kolkata Section addressed the delegates. The speakers deliberated on the topics of Energy Conservation Building Code (ECBC), indoor air quality, cold chain and use of envelope insulation. The programme was attended by more than 100 participants from state government departments, refrigeration industry and academia. AIC members organized an interactive session with young minds of new student chapter from Trident Academy of Technology, Bhubaneswar.

MoU to be signed between ASSOCHAM GEM and ASHRAE India Chapter on 29th Aug., 2018 at Hotel Le Meridien, New Delhi

The ASHRAE India Chapters Coordination meeting was held on Aug 3 & 4, 2018 at The Chancery, Bangalore

AGM 2018
The Annual General Meeting was held on 6th July, 2018 at Magnolia, India Habitat Center, Lodhi Road New Delhi. The installation of New BOG was also held during the function. Grundfos Pumps India Pvt Ltd. supported the event as Co-principal partners.

ASHRAE Distinguish Lecture
ASHRAE Distinguish Lecture on “Facing the Realities and Challenges of Urbanization, Smart Cities, Smart Infrastructure & Smart Buildings for Greater Sustainability & Resilience’ by Dr. Om Taneja at Sharda University was held on 7th Aug., 2018. The programme was attended by over 50 student and faculty members. Participants were also encouraged to become ASHRAE members and benefits of membership was explained to the students.

Workshop on ‘Overview of 90.1 Energy Modeling” by Mr. Sam Mason, PE, LEED® AP BD+C, BEMP , ASHRAE Course Instructor was held on 28th Aug., 2018 at Saidullajab, New Delhi. and on Aug, 23, 2018 at Hotel Leisure Inn Grand Chankya, Jaipur. The events were well attended and appreciated by the participants.

Seminar on Green Building was conducted at Poornima College of Engineering, Jaipur on Sep 3, 2018

Lecture on Scope of Refrigeration & Air-Conditioning in India and various benefits to students to become ASHRAE Student Members and also to faculty members was given by Dr. Rajinder Singh on 5th Sept., 2018 at DAV University, Jalandhar.
Trident Academy of Technology, Bhubaneswar.

An interactive session with young minds of new student chapter from refrigeration industry and academia. AIC members organized an event by more than 100 participants from state government departments, academia, and industry. The programme was attended by Mr. Nirjhar Chakraborty, President ASHRAE Kolkata Section, Mr. Priyank Garg, Immediate Past President, AIC, and Mr. Indrajit Bhattacharya. The speakers deliberated on the topics of Green Technology of Air Conditioning, Energy Efficient Innovations, and the Future of Refrigeration and Air Conditioning Technologies.

The conference was 'Energy Efficient Innovations' held on 24th August 2018 at Hotel NOVOTEL, Kolkata. The theme of the conference was 'Energy Efficient Innovations'. The ASHRAE India Chapters Coordination meeting was held on August 3, 2018 at The Chancery, Bangalore. The Annual General Meeting (AGM) 2018 was held on 21st Dec., 2018 at Le Meridien, New Delhi. The Regional Chair, Region At Large, Mr. Sam Mason, PE, LEED® AP BD+C, BEMP, ASHRAE Distinguish Lecture on 'Operations & Maintenance Measures for Improving Performance of HVAC Systems & Chiller plants' by Dr. Om Taneja held on 10th and 11th Sept., 2018 at DAV Engineering & Technology college and Lovely Professional University, Jalandhar.

Meeting with Dr. Ahmed Alaa Eldin Mohamed, Director & Regional Chair, Region At Large, with ASHRAE India Chapters on 21st Dec., 2018 at Le Meridien Hotel, New Delhi. The industrial visit of students of Delhi Technological University student branch was organized at Johnson Control Hitachi Excellence Center.

The industrial visit of students of Delhi Technological University student branch was organized at Johnson Control Hitachi Excellence Center is scheduled on 27th Oct., 2018. The student appreciated the visit. The 2018 RAL CRC was hosted by Turkey at Antalya between the dates of 4th – 7th October. The programme was attended by over 50 student and faculty members. Participants were also encouraged to become ASHRAE members and benefits of membership was explained to the students. A new student chapter was formed at the institute.

Upcoming Mega Event:
• AIC Tech Conference, Conference Date: 18th Jan., 2019, Conference Venue: India Habitat Center, Theme: 'Operations & Maintenance Measures for Improving Performance of HVAC Systems & Chiller plants'.

*ASHRAE India Jaipur Sub-chapter participated in URJAVARAN Jaipur on 15/12/2018 and a Technical lecture was given by Mr. K.K. Mitra.
Conference on Emerging Trends in Green and Efficient Rail Transit Systems

ASHRAE India Chapter in association with Delhi Metro Rail Corporation (DMRC) and in collaboration with Ventconf (Delhi Chapter of ISHRAE) had organized this versatile and unique 2 days conference on December 20-21, 2018 at hotel Le Meridien, New Delhi. The Conference was mainly targeted for the Railway Industry and Metro Rail in particular. The conference attempted to bring together experts from all sectors with sessions covering topics like Railway Station Design, Ventilation of Building & Stations, Railway Tunnels, Environmental Control System, IAQ Solution in Metro Stations, O&M in Metro Stations etc. In the 2 days conference there were approximately 39 presentations including International speakers. The program was inaugurated with 3 key note addresses by Dr. Mangu Singh-MD, DMRC, Sh. Sanjeev Kumar Lohia-MD & CEO, IRSDC & Sh. Abhay Bakre-DG, BEE. The program was graced by Dr. Ahmad Alaa- DRC, ASHRAE RAL and Mr. Nitin Naik, SRC.

There was a key note address by motivational master speaker Poojya Sukhabodhananda on Sustainability and Life. It was a very interesting and energetic lecture. This lecture was attended by houseful audience.

There was a vibrant panel discussion on VRF Vs. Chilled Water Systems in Mass Transit System Moderated by Mr. Ashish Rakheja. The panelists were from the Manufacturing Industry, Contractor, Metro Services, There were record number of 365 delegates from all over the country. There was specific participation from Metro Rail Corporation all over India. The program was supported by various Industry Partners, Associates Media Partners like Hitachi, Blue Star, EdgeTech, Air Flow, Humidin, Daikin, LG, Lloyd Insulations, Advance Valves, Mandev Tubes, Greenheck, Sterling Wilson, Nicotra India, Voltas, Witt India, Rajnigandha, Honeywell, Kelley, AIACRA, IGBC, ICC, TERI-GRIHA, CCSI, IAPMO, FSAI, IPA, DIPM, BEE, Metro Rail News and Rail Analysis.

Another unique feature of this conference was Research Promotion fund collection from all delegates. There was a record collection of Rs. 63,500.00 from the audience and a lucky draw for 3 prizes. Out of this 750 US $ was deposited to Ashrae US Research Promotion fund.

We are sure that there will be lot of intakes from this 2 day conference and will build the roadmap for the next level of conference of Mass Transit System in the coming years.
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In September we lost ASHRAE India Chapter founder Dr. Prem C. Jain, who left for heaven. We convey our sincere respect to the departed soul. AIC will participate in Prem Jain Memorial Trust (PJMT) program titled ‘Harit Prem Bharat Week’ from 21 to 28 January by organizing Painting competition, Planting tree saplings and initiating a sustainable program.

We also lost some more respected professionals in the HVAC and Building Industry – Sh. Anil Maheshwari, Prof. P.L. Ballaney and Sh. A.K. Gupta. We convey our sincere respect to the departed soul.

Pre-Insulated Duct System is an innovative technology for ACMV or Air Conditioning and Mechanical Ventilation System ductwork. Rigid Polyisocyanurate panel is used as an alternative of traditional GI ducts with insulation for operation such as fresh air, supply, return and exhaust air ductwork for ACMV system.

These panels feature a unique sandwich construction that is the result of Rigid polyisocyanurate (PIR) foam slabs as the core material laminated with aluminum facing on both sides. These panels are suitable for the construction of air distribution ducts in air-conditioning and heating systems.

The material’s main characteristics are superior thermal conductivity K value of 0.21 W/mK at 10°C mean temperature, a high level of rigidity (40-45 kg/m³ density), environmentally friendly aspects being CFC, HCFC free and Zero ODP category, lightness, antimicrobial treatment surface, extremely easy to handle and install. The panel also conforms to class 0 rating and protects the surface from the spread of flames and limits the amount of heat released from the surface during a fire.

Pre-insulated ducts are specially developed for use in residential, commercial and industrial units of ACMV duct system to satisfy the thermal, airflow, fire and easy to installation requirement. GI makes greater demands in terms of transportation to site, site storage facilities and requires the use of service lifts, hoists and heavy scaffolding. Pre-insulated ductwork – being site fabricated and installed – minimizes storage area requirements and only calls for lightweight handling equipment. Panels and accessories are moved and fabricated into ducts at the actual workplace itself (such as at various floors of a multi-storey building). Installation of GI ductwork also require a bigger workforce and a longer time frame for completion compared to its polyisocyanurate counterpart that offer faster completion with a smaller workforce. A large workforce translates into added costs.

When installed, PIR ductwork is almost 50 per cent lighter than its GI counterpart. When in place, PIR ductwork offer the advantages of reduced heat losses as it has low ‘U’ value as compared to GI ductwork. Thanks to the reduced energy losses, pre-insulated panels offer energy savings and supports energy conservation programme/environmental protection.

In the case of GI ductwork, the slightest damage to the aluminium foil vapour barrier over insulation results in condensation on the duct surface and consequential damages to ceilings/finishes with the damp areas being susceptible to mildew/fungal growth. In PIR, being a (>90%) closed cell product minimizes water absorption as confirmed by a water immersion test. If the aluminium laminate of PIR panels is damaged, it can be locally repaired. Hence the chances of vapour condensation and water drip-off are practically nonexistent, thereby eliminating the risk of consequential damages to ceilings/finishes.

Pre-insulated panels also scores in terms of its longevity. The joints of Preinsulated ducts have scientifically designed plastic fixtures ensuring air tight jointing arrangements. All the fixtures are fixed efficiently.

Polyisocyanurate foam panels technology is set to revolutionize the fabrication of ducts given its numerous advantages over galvanized iron duct work.
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CASE STUDY ON BORLAUG INSTITUTE OF SOUTH ASIA, LUDHIANA

Borlaug Institute for South Asia is an upcoming administrative and research building at BISA Farm, Ladhowal, Ludhiana. The total plot area is 512 acres. Total built-up area of the project is around 58,901 ft2. The building is of two floors i.e. G+1 type and conditioned area 33,320 ft2.

The building has a simple yet efficient architectural design and the shape is rectangular shape with two floors. The wall, roof and fenestration are designed so as to comply Punjab ECBC.

ECBC Prescribed HVAC of the building is with VRF Air Conditioners for ECBC building with size greater than 23.59% WWR which is adequate. SHGC and 3 W/m2K U- value, which is lower. The building has wall area. The actual fenestration followed with glass has 0.24 fenestration area is limited to a maximum of 60% of the gross wall area and maximum SHGC of 0.25. Vertical fenestration area is limited to a maximum of 60% of the gross wall area. The actual fenestration followed with glass has 0.24 SHGC and 3 W/m2K U-value, which is lower. The building has 23.59% WWR which is adequate.

ECBC Prescribed HVAC Minimum efficiency requirements for VRF Air Conditioners for ECBC building with size greater than 70 KWR is 3.02 EER. The actual HVAC of the building is with highly efficient VRF Systems of EER 3.9 with some Fan coil Units, Cassette Units and a Treated Fresh Air Unit. The total cooling capacity of the VRF systems is 170 Tons.

VRF units shall be Heat Pump type and shall be capable of providing both cooling/heating as per specifications installed in both the floors.

Outdoor Supply units equipped with highly efficient scroll/Rotary compressors, with all Inverter Scroll/rotary type compressors, special acryl precoated heat exchanger, low noise condenser fan, auto check function for connection error etc., centralize controller for individual control complete as per OEM specifications. The EER at AHRI conditions shall be 3.9 and the maximum operating temperature would be 48°C.

Indoor units shall be either ceiling mounted cassette type or Hi wall unit. The indoor unit shall have independent electronic control valve to control the refrigerant flow rate respond to variations of the air-conditioning load of the room. The fan shall be aerodynamically designed turbo multiblade type. Statically and dynamically balanced to ensure lowest noise. The cooling
70 KWR is 3.02 EER. The actual HVAC of the building is with VRF Air Conditioners for ECBC building with size greater than ECBC Prescribed HVAC Minimum efficiency requirements for 23.59% WWR which is adequate.

The building has wall area. The actual fenestration followed with glass has 0.24 fenestration area is limited to a maximum of 60% of the gross shall be with maximum U-value of 3.3 W/m2.K ECBC Prescribed Fenestration with glass lower than the prescribed requirement.

The actual proposed roof maximum U-value of the overall roof assembly ECBC Prescribed Roof should be of which is quite high.

The building has a simple yet efficient architectural design and fenestration are designed so as to comply Punjab ECBC.

The Project is using energy efficient LED fixtures in the whole building. The lighting power density has been taken as 9.7 W/m2.

The average energy load for equipments shall be 2.7 W/m2 and no savings have been claimed in the equipments load.

The building is having a roof area of 32568 ft2 which is exposed to sun and a 160 kW solar rooftop plant is installed on the roof surface producing 267.688*1000 kWh per year. Therefore the building is generating a very good amount of solar power through its solar rooftop plant which is ultimately reducing the load of electricity requirement of the building.

The major power consumption of the building is lighting which is consuming approximately 145.72*1000 kWh and the second major consumption of the building is in space cooling which is 115.64*1000 kWh. The third major consumption is of ventilation fans which is 66.85*1000 kWh.

Conclusion

The building is a Punjab ECBC Compliance Building. The total investment cost of the building has increased as compared to the conventional case to Rs 4,64,56,620 from Rs 2,89,50,180. Extra Rs 1,75,06,440 has been invested in the project for energy efficient Products and systems. Though, after energy efficiency interventions there has been a total saving of 8,10,200 kWh per year. Taking electricity tariff at Rs. 7.3 per unit for Ludhiana city, there will be a saving of Rs 59,14,460 per year. As a result, there will be 445 tones reduction in the CO2 emission. From the savings in electricity bills, the project will be able to get the return of investment within 2.3 years of operation.
International Conference on Sustainability in Practice

Upcoming Events:

- AIC TECH 2019 conference on Sustainability in Practice – Building Sustainable Hospitals : 18th Jan., 2019
- Conference on Integrating Solar Energy with Chilled Beams : Feb., 2019
- Conference on Cold storage : March, 2019

Panel Discussion among all Stakeholders

Participation Fee
₹1500/-
ASHRAE members FREE

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A/c No. 00921000029767, IFSC: HDFC0000092
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KEY SPEAKERS

Dr. Stephanie H. Taylor, MD
CEO, Taylor Healthcare Consulting
And ASHRAE Distinguished Lecturer

Ms. Maita Virta
Founder and Director of Sanrupti Engineers Pvt Ltd

Prof. (Dr.) R. CHANDRASHEKHAR
Chairman IGBC Green Healthcare Rating Consultant - World Bank
Consultant - UIH (India UK Institute of Health)
Former Chief Architect with Ministry of Health & F W, Govt. of India, Vice President IFDMA
(Research Foundation of Hospital & Healthcare Administration)

Mr. Sandeep Goel
Founder Director of Proton Consultants

AIC Tech 2019
Full Day Conference
9.30 AM to 6.00 PM
on 18th Jan., 2019
at India Habitat Centre,
Lodi Road, New Delhi