

DCI (Delhi Chapter of ISHRAE)
Indian Society of Heating Refrigerating & Air Conditioning Engineers



I-SHARE

by Delhi Chapter of ISHRAE

Vol. VIII Issue I, Edition: April - July 2017, Editor: Gaurav Vasudev Co-editor: Yatendra Malik

High Efficiency Motors MAKING BUILDINGS BREATHE EASY



Towards a cleaner and greener tomorrow

Presidential Address

Dear Members of DCI

Greetings

I am pleased and privileged to take over as the President of the Delhi Chapter of ISHRAE(DCI) for the society year 2017 -18. The mission of ISHRAE has always been the advancement of the HVAC industry, impart education, engage students and carry out scientific work related to HVAC& R. This society is one of the oldest engineering societies, established in 1981 and boasts over 12,000 + members as on date. The society has grown in stature and relevance during this period through the support of its members as well as the Industry. International and national HVAC events such as ACREX, ACRECONF, VENTCONF, RACON, URJAVARAN etc. as well as conferences, seminars and trainings are regularly conducted by ISHRAE for the benefit of their members and the industry stakeholders.

For this Society Year 2017-18, we have a Vision to be recognized as a leading body involved in meeting the Technical and Training requirements of the HVAC&R Industry & engage with the building services industry under the national theme "ICE" INSPIRE – CUSTOMIZE - ENERGISE

The DCI is the largest chapter in ISHRAE, thanks to many renowned senior Industry members in the capacity of Presidents, and I am honored to take this legacy forward for the coming society year under the theme of "COLLABORATE – CONTRIBUTE – CONSERVE". I am happy to announce that the DCI chapter working committee (CWC) has a blend of youth as well as women power and experience, who are very committed and I am sure with their support and zeal, will together be able to take the mission of ISHRAE further. By the time this edition is in your hands, we would have had 2 CWC meetings post the installation ceremony and we have decided to have prime focus on "Engagement/Involvement of Existing Members with DCI" as follows:

- With increase of membership base, focus on interaction with existing members/students to get their valued inputs on areas to improve
- Conduct future technical programs/trainings based on current topics to improve skill set of members

- Advocacy through interactions with more societies and more involvement of members in concurrent events/seminars
- Reach out to senior members to come forward and contribute/be guidance force
- Plan and execute more relevant Programs/Technical Talks for Students with the help of Student Chapters' CWC Members
- Providing quality delegates to companies on ISHRAE Platforms for Product Launch
- Meeting with all Past Presidents to take their inputs and plan better way forward
- Creating a separate link inviting members to provide inputs/suggestions
- Online information/access for participation in programs being planned at DCI
- New Office at Saket is underway for better connectivity and to hold workshops at our own
- Sharing of programs/events every month amongst members



As president, I encourage you all to take active part in the running of your society by becoming part of the Chapter Working Committee as an extended committee member, give your valued inputs in support programs, encourage your friends and colleagues to become members and many more ways. I am also keen to increase the diversity of our membership base by encouraging more women to come on board as they are underrepresented in our industry at present.

I and the CWC members look forward to your support and valued inputs all through the year and engaging with you, the DCI members.

Warm regards,

Gaurav Vasudev

PS: I would love to hear from you –

I am contactable on 9871566133 or at president@dcishrae.org



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DCI Installation Ceremony for Society Year 2017-18

DCI Installation Ceremony for Society Year 2017-18 held on April 1, 2017 at India Habitat Centre

Office Bearers:

Mr. Gaurav Vasudev - President
Mr. Aneesh Kadyan – Immediate Past President
Mr. Subir Das : President Elect
Mr. Shami Bhardwaj - Secretary
Mr. Pradeep Dua – Treasurer

CWC Committee:

Mr. Braj Mohan Srivastava
Mr. Siddharth Juneja
Mr. Vivek Behari Lal
Mrs. Yesha Choudhury
Mr. Talha Saifuddin
Mr. Robin Chauhan
Mr. Dilip Kumar Chaudhary
Ms. Rishita Singh
Ms. Divya Bajaj
Mr. Ashish Gupta



DCI Orientation Program

DCI Orientation Program by Mr. Sushil K. Choudhury & 1st CWC Meeting on April 15, 2017 at Russian Culture Centre, New Delhi



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Tel.: 011-28344773 Mob.: 9811347199, 9811937730, 9811323237, 9814936793

Email : dynamic_er@hotmail.com, sales@fanair.in, sales@airprojectsindia.com

Student Chapters :

HI-TECH ENGINEERING COLLEGE, GHAZIABAD



Student Chapter Installation at Hi-Tech Engineering College, Ghaziabad on April 13, 2017, followed by Technical Lecture by Mr. Robin Chouhan

DCRUST, MURTHAL, SONIPAT



Student Chapter Installation at DCRUST, Murthal, Sonipat on April 21, 2017, followed by Technical Lecture by Mr. Dilip Choudhury

MANAV RACHNA UNIVERSITY, FARIDABAD



Student Chapter Installation at Manav Rachna University, Faridabad on April 20, 2017, followed by Technical Lecture by Mr. Ashish Gupta

ADVOCACY PROGRAMS

- @ NBC 2016: Challenges and Opportunities in Life & Fire Safety held on April 27, 2017 at India Habitat Centre, New Delhi.
Delhi Chapter of ISHRAE participated as Knowledge Partner. DCI delegation including President Mr. Gaurav Vasudev and other Senior Members participated as panelists.
- DCI Participated @ Summit on Air Quality Control & Monitoring at The Imperial Hotel, New Delhi on May 5, 2017
The event aimed to bring together Industry Experts and Service providers on one platform discussing about the latest trends and advancements in the areas of Air Quality control and Monitoring.
- DCI Supported National Conference on "Cold Chain & Awards - Technologies, Convergence and Capacity Building" by ASSOCHAM being held at Hotel Shangri-La, New Delhi on 30th May 2017
Our CWC Member Mr. Ashish Gupta was one of the panelists on Technology, Industry Perspective, Capacity Development

CWC MEETINGS

- 2nd Chapter Working Committee meeting held on May 6, 2017 at New Delhi for work done in April Month, sharing of thoughts/ inputs & strategies new activities for coming months
- 3rd Chapter Working Committee meeting held on June 7, 2017 at USO House, New Delhi for work done in May Month, sharing of thoughts/ inputs & strategies new activities for coming months

MEETINGS

- 2 Days "Regional Chapter Conference" meeting held at Lucknow to have introduction amongst newly elected office bearers, deliberations, sharing of inputs/ reports etc. for North India Chapters
- Industry Meet "ACREX Roadshow held on May 18, 2017 at Hotel Le Meridian with participation of 200 Delegates from the Industry

DCI TEAM BONDING EXERCISE

- Delhi Chapter of ISHRAE Team Bonding Exercise on Sunday April 30, 2017 morning @ Vinay Marg Complex, New Delhi
- Preparation of Regional Cricket Tournament :
Delhi Chapter of ISHRAE Team Bonding Exercise held on June 25, 2017 @ Kendriya Vidyalaya, Delhi Cantt, New Delhi



WORKSHOPS

- Full Day Technical Workshop on “Basic of Refrigeration” by Mr. Sanjay Hans on May 8, 2017 at Emerson Cold Chain Centre, Gurgaon
- Half Day Technical Workshop on “Electronics & Automation in Cold Chain” by Mr. Srinivas Nagobarao on May 19, 2017 at Emerson Cold Chain Centre, Gurgaon
- Half Day Technical Workshop on “Ice Slurry as Secondary Refrigerant and its utility for energy saving” by Dr. Rajinder Singh May 27, 2017 at USO House, Qutub Institutional Area, New Delhi
- Half Day Technical Workshop on “Workshop on “Understanding GST and its implications for HVAC&R Industry” by Mr. Aditya Agarwal at Russian Culture Centre, New Delhi on June 17, 2017
- Half Day Technical Workshop on “Design & Heat Load for Cold Room ” by Mr. Sanjay Hans at Emerson Cold Chain Centre, Gurgaon on June 16, 2017.
- Technical talk by Mr. Rajendra Bhargava on “Heat Load Estimation” held at Manav Rachna University on June 15, 2017
- Technical talk by Mr. Sanjay Hans & Mr. Krishna Singh on “Insulation, Installation, Charging and Maintenance of Refrigeration and Air Conditioning Systems” held at Manav Rachna University on June 23, 2017.
- Full Day Technical Workshop on “District Cooling” on April 29, 2017 at Hotel Park Inn, New Delhi



K- 12 Activities

- K-12 Activity @ MCD School, Arya Samaj Road, Uttam Nagar held on April 26, 2017
 - K-12 Activity @ MCD School, Bal Udyan Road, Uttam Nagar held on April 27, 2017
 - K-12 Activity for the Society Year 2017-18 held @ Jain Bharti Public School, Bal Udyan Road, Uttam Nagar held on May 3, 2017
 - K-12 Activity for the Society Year 2017-18 held @ NGO “KalpVriksh”, Kachhe Tihar, New Delhi held on May 8, 2017
 - K-12 Activity for Society Year 2017-18 Held at @ Aangan Badi, Janakpuri, New Delhi held on May 27, 2017
- Delhi Chapter of ISHRAE Team Bonding Exercise on May 6, 2017 evening @ JMC, Chanakyapuri, New Delhi
- K-12 Activity at Blind School, R K Puram on June 24, 2017 including Plantation, Quiz & Talent show by kids.



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S.No.	Member Name	Company Name
1	Sandeep Roy	Westwind Engineers Pvt. Ltd.
2	Lalit Yadav	Westwind Engineers Pvt. Ltd.
3	Deepak	Brenna Engineering Services (India)
4	Ashutosh Roja	Sai Technologies
5	Raj Kumar Sah	Weldon Engineers India
6	Mohit Rawat	WSP Consultants India Pvt Ltd
7	Mohd Talha	Arun Mahapatra Eng. Consultan
8	Anas Zaidi	Greentree Building Energy Pvt Ltd
9	Ankur Aggarwal	PDA Consultants
10	Kartik Jalan Kailash	Agro Cold Storage
11	Rahul Chaudhary	Castle Valves Ltd
12	Vishal Sharma	Tablix Technology LLC
13	Piyush k Singh	Ireo Pvt Ltd
14	Nitin Verma	MDD Engineering Pvt. Ltd.
15	Abhishek Sharma	Delhi Fluid Handling Systems
16	Puneet Jain	Boulton Trading Corporation
17	Vikas Nanda	R&E Engineering & Control System
18	Chandra B. Yadav	D.R Aircon
19	Vikas Jaiswal	Paramount Polytreat Chemicals Pvt. Ltd.

S.No.	Member Name	Company Name
20	Sabir Ahmad	Bright Star Aircon
21	Masidur Rehman	Airtech Sales & Services
22	Danish Farooqui	Blue Star Limited
23	Bashir Ahmad Najar	Universal Engg. & Unicorn Building Services
24	Vinay Saxena	Air India
25	Saad Umar	Pure India
26	Nikhil Arora	Emerson Climate Technologies Pvt. Ltd.
27	Malik Faiyaz Ahmed	AGM Infra Tech
28	Sandeep Chanana	Ambience Airtech Pvt.
29	Niteesh Dua	IIT Delhi
30	Sai Saran Yagnamurthy	IIT Delhi
31	Santhosh Kumar S	Hpcl Mittal Energy Limited
32	Pranav Mahajan	Dustech Duct Co. (P) Ltd.
33	Ankit Bhardwaj	Ankit Air Systems Pvt. Ltd.
34	Yatish Bhati	Global Aircon
35	Vishal Gupta	Consulting Design Engineers
36	Sunil Kumar	WSP India PVT. LTD.
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ISHRAE NIGHT

ISHRAE NIGHT By Delhi Chapter & Gurgaon sub-chapter 21st January 2017 Hotel Mapple Emerald, NH 8, Nr. T3 Airport



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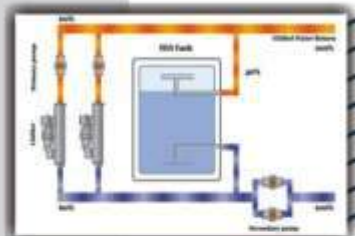


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ACREX INDIA 2017

The 2017 chapter of ACREX India, the biggest, widest and a most dynamic global platform on this side of the continent on all that is cool is going to be held in Delhi. The focus will not be limited only to HVAC&R the exhibition will feature diverse Building Engineering Services that include Electrical & Plumbing Services, Building Automation and the ever - growing Cold Chain Industry.

ACREX India 2017 is meant to not only be the launch-pad for potential business-enabling collaborations, but also be a living resource pool and a seamless amalgamation of Integrated Building Solutions that you can access right there and then.



OUR PARTNERS

Crystal:

Crystal Air Systems, a well known leading manufacturer of HVAC equipment for various applications has been serving the industry for more than one decade now. Crystal has made its presence pan India and has been associated with ISHRAE India Chapter over the years and sponsoring various events such as Lunch Partner in Ventcof, 2016, KIT partner in RACON, 2016,. Participated in ACREX 2017. Sponsored Lunch and deliver product presentation during installation of Guwahati sub Chapter, 2017. Our association with ISHRAE has brought good results in marketing of our quality products and increased our reach wide.

Ensavior:

Ensavior Technologies, is a comprehensive solutions provider company engaged in Design, Engineering, Sales, Marketing and Servicing of following:

- Pumping Systems: Pumps for HVAC, Plumbing, Fire
- Hydronic Balancing: Automatic Balancing / PICV Valves for HVAC System
- Ventilation & IAQ System: Ultra Violet Germicidal Irradiation (UVGI) System / Electrostatic Precipitator System
- TES System: Thermal Energy Storage System

We firmly believe that; when a customer comes first, the customer lasts.....

Ensavior is operating pan India and is actively associated with ISHRAE over the years. Participate regularly in ACREX, partner to Delhi Chapter- 2017-18, conducted Tech-Talks, Platinum partner for a Seminar on Data Centers in Mumbai. Our association with ISHRAE has brought good results in marketing of our products.

Greenheck:

Greenheck India Pvt. Ltd. is a leading manufacturer that provides high quality air movement and control equipment, operating in countries around the world and is proud to be a part of 'Indian Society of Heating Air conditioning & Refrigeration Engineers (ISHRAE)'.

Collaboration between Greenheck and ISHRAE began before Greenheck incorporated in India, presenting leading industry technology from USA at ISHRAE seminars to promote and advance India's passionate and dynamic HVAC&R industry. It is due to the continued commitment and support from ISHRAE that Greenheck India has grown to be a leader in India's HVAC&R world. ISHRAE continually advances the HVAC&R science and industry, focusing on continuous member education through their magazine and seminars. We are proud to be associated with ISHRAE and look forward to our continued relationship.

Mechmaark:

Mechmaark Filtech India Pvt. Ltd. is one of the leading manufacturing company and primarily engaged in manufacturing of all types of Air Filters & Rubber base Adhesive. Mechmaark presently supplying Air Filters to all big Pharmaceuticals Companies, Hospitals, HVAC & Pharmaceuticals contractors and all leading AHU manufacturers across India. Over the years, Mechmaark introduced several unique products of accuracy and durability. Thoroughly new technologies have enabled us to bring design quality, productivity and cost improvements to our customers. The company is continuously meeting the demands of the changing and challenging market environment around the country. Mechmaark has been associated with ISHRAE India Chapter over the years and participated various events such as ACREX 2016 Mumbai & ACREX 2017 Delhi.

EFFECTIVE PUMP MAINTENANCE – Keeping your cooling system's heart in shape

- Aneesh Kadyan

This article touches upon this very important and system critical aspect of pump operations from a maintainers stand point. The cost of pump maintenance is very low yet the impact of a break down is high, hence it makes economic sense to develop and run a pump maintenance plan. Since pumps run almost continuously in most systems, they consume a significant portion of energy as well, and hence, ensuring that the pumps are running at their design point is essential and methodologies to measure pump performance during operations is presented.

Effective Pump Operations

Getting the best out of your pumps consist of three phases – the installation/commissioning of the pumps, operations as per OEM guidelines/industry best practices and finally, effective maintenance as shown in figure 2.



Pump installation/Commissioning factors:

Some of the factors that need to be kept in mind by owners when selecting pumps are

- Look for the pump with the highest electrical efficiency as pumps consume a large amount of system electrical energy and a minor cost at the installation phase will result in long term savings
- Build in system redundancy as the impact of a pump break down can have disastrous consequences on the process
- Spend money on making good pump foundations. Vibrations due to poorly installed pumps can cause mis alignment between the pump and motor resulting in premature failures.

Matching the pump to the system requirements is a complex task and most system deficiencies arise due to improper assessment of downstream requirements. Engineering teams need to also be wary of design changes during the construction phase that can impact the pump delivery. Addition of AHU's on floors, more bends in the line or relocation of the pump due to design requirements are some of the instances where the pump output can get affected.

Pump Operations – keeping the heart pumping: Most pumps get damaged during start up and the majority of times, the cause of the defect is human error – the operator started the pump without opening the inlet valve and let the pump run dry! While it sounds difficult to believe, human error is the main cause of pump failure, accounting for over 70% of pump failures. Important aspects of pump operations are

- Pumps should always be started only after the inlet and out valves as well as system valves have been checked to be in the correct positions
- Leakages from seals should be attended to at the first available opportunity. Leakages result in wastage of fluids being transported as well impacts the pump efficiency as the system pressure drops
- Where possible, the pump delivery valve should be closed at the time of starting and only when the pump pressure has stabilized should the valve be opened. Reciprocating pumps should however have their inlet and outlet valves open before starting.
- A good practice is to check the pump and motor bearings for overheating and the pump body for leakages after 10 -15 minute of starting.
- The output head should be maintained to about 85% of rated head for maximum efficiency.
- Operators should look out for signs of failures such as abnormal noise or high vibrations. Loud rumbling sounds are an indication of "choking" of the system which is essentially an off design operation and can result in damage to the piping

Pump Maintenance – looking after the heart: A few simple maintenance activities will ensure that pumps have a long life and the cost of maintenance is low. The key factors to keep in mind with respect to pump maintenance are:

- Grease pumps at the OEM recommended frequency. This helps

keep dirt out of the bearings and also reduces the electrical load on the motor as friction is reduced

- Pumps which are not in use should be turned manually at least once a day. This prevents buildup of deposits on the impeller and helps circulate the lubricant to all areas of the bearing.
- Logging of pump parameters and undertaking a trend analysis on a monthly basis helps in identifying possible impending defects in the pump – lower pressures at the same system load may be an indication of either a system leak or wearing down of the impeller clearances.
- Undertake overhaul of pumps as per the OEM's guidelines. Delaying the overhaul will lead to increased power consumption although the system pressures may be correct? Typically, centrifugal pumps require an overhaul at about 12 -15000 hrs. of operations.
- Check foundation bolts of pumps and replace if they are in poor condition. Loose foundations are a sure shot way to have mis alignment between the pump and motor and the resultant break-down/leakages across the seals.

Measuring Pump efficiency: Doctors check your heart using the Electro Cardiogram (ECG). You too can check your pump's performance although you don't need any sophisticated equipment's. Take the following parameters of the pump for measuring the efficiency

- Input power using a tong tester –P
- Get motor efficiency from design data, it is usually 90% -Me
- Discharge and suction head to get total head - H
- Flow rate (in case it is not available, use design data) - Q

The pump efficiency is then found by

$$\text{Efficiency} = (Q \times H) / P \times Me$$

This is an estimation of the efficiency but used consistently, the pump health can be estimated.

Energy Savings Opportunities in Pump Operations – maximizing the hearts usage: Pumps of various sizes are installed in buildings and industrial environments. While the smaller pumps operate at constant load, the larger pumps such as condenser pumps of chillers operate under varying loading conditions. All pumps however consume substantial amount of energy and hence provide an avenues to reduce cost on energy for the asset owner. A few energy saving opportunities are

- Installation of VFD's on large capacity pumps. Where there is a variation of load by more than 15 – 20 %, a Variable speed drive (VFD) will help in reducing energy costs. Since energy is proportional to the cube of the speed, any reduction of speed will reduce the input energy. The typical RoI for modern VFD is under 2 years and hence financially attractive.
- Use of high efficiency pumps. These pumps have better quality of windings and impeller design that enable savings of up to 25% from standard pumps.
- Undertake a Pump audit once a year. This will help in identifying poorly performing pumps and enable repairs before breakdowns.
- Keep the suction strainers and system filters clear. Choked filters increase system head resulting in higher power consumption.
- Install booster pumps in case higher pressure is required for smaller loads

Conclusion: Just like the human heart, pumps play a very critical role in maintaining a healthy system and hence require be maintaining and operating in the best possible manner. There is a need for enhanced training of the technicians on the importance of optimal pump operations and also the need to have a robots maintenance plan to avoid breakdowns. There are also substantial opportunities to save energy by exploiting the pumps optimally which can reduce overall operational and maintenance budgets. Keeping pumps in a healthy state requires minimal effort but neglecting this effort can lead to serious consequences.

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