



**Report on**  
**ISTE Approved**  
**Six Days Short Term Training Programme**  
**On**  
**“Advances in Heating, Ventilation, Air-Conditioning and Refrigeration”**  
**( HVAC & R )**  
**In association with**  
**ISHRAE ( Mumbai Chapter )**



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**16th December 2019 – 21st December 2019**

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*Organised by,*  
**Department of Mechanical Engineering**  
**ISHRAE ( LTCoE Chapter )**

**LOKMANYA TILAK COLLEGE OF ENGINEERING**

Sector – 4, Vikas Nagar, Koparkhairane,  
Navi Mumbai - 400709

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ISTE Approved Six Days Short Term Training Programme on “Advances in Heating, Ventilation, Air-Conditioning and Refrigeration ( HVAC & R) ” in association with ISHRAE ( Mumbai Chapter ) was held at Department of Mechanical Engineering, Lokmanya Tilak College of Engineering during 16<sup>th</sup> December 2019 to 21<sup>st</sup> December 2019. There were 50 participants who participated in the STTP. The participants were from different colleges including faculties and students both from various streams.

All sessions were taken by Industry Experts working in the HVAC field. This was a great opportunity for the students to learn in hand from the experts of the HVAC industry. There were 13 Speakers invited for this program who shared their valuable knowledge of the industry and helped the participants to stay updated in this fast lane. For the smoothness in the programme schedule was given in advance for all the six days and college provided breakfast, lunch and evening snacks for the participants and the speakers.

The short term training programme started on 16<sup>th</sup> December 2019. The STTP was chaired by Chief Guest & Keynote Speaker Dr. Milind Vishwanath Rane ( Institute Chair Professor, Mechanical Engineering, IITB ), Guest of Honour Mr. Mihir Narendra Sanghavi ( President, ISHRAE, Mumbai Chapter), Dr. Vivek Sunnapwar ( Patron / Director, LTCoE ), Dr. Vivek Yakundi, ( Dean, R&D, LTCoE ), Dr. Jayesh J. Dange ( Dean, T&P, LTCoE ) and Dr. Kavita H. Dhanawade, ( Head of Mech. Dept. and STTP Convenor ).

As per Indian tradition, the STTP was inaugurated with lightening of the lamp. Dr. Kavita Dhanawade briefly introduced and welcomed the gathering together with floral welcome and gave introduction of all the dignitaries on the dais and invited guests. Dr. Vivek Sunnapwar, Dr. Vivek Yakundi and Dr. Jayesh J. Dange in their inaugural address expressed the importance of training programs in our life, they also appreciated the initiative to make the value addition in our faculties and students. Mr. Mihir V. Sanghavi gave the presidential remarks and suggested that the academic meet should be a meet for New-generation thus giving insight towards the theme of the STTP. Prof. Shweta V. Matey (Professor, Mechanical Dept., LTCoE and STTP Co-Convenor ) outlined the activities executed under the ISHRAE and threw light on the objective of the STTP to make the gathering aware about the goals and academic discourse that will be facilitated during the STTP. Prof. Ajay Kashikar (Professor, Mechanical Dept., LTCoE and STTP Co-Convenor ) presented the vote of thanks to the management for providing permission for STTP, Heads of the departments for providing necessary guidance, team members for successfully executing and making necessary arrangement for the STTP. Towards the end of the inaugural function, the gathering joined the National Anthem.



## Some Glimpses of Inaugural Function



Right after the Inaugural function the plenary session was given by Dr. Millind Rane as a keynote speaker where he delivered many thoughtful ideas about the ongoing demand of engineers. He informed the gathering about the basics of Heating, Ventilation, Air-Conditioning and Refrigeration ( HVAC & R ). It was found to be a thought provoking session where the participants actively participated in the open-house discussion. The schedule was well informative where each participant was made aware about the sessions.

**Some Glimpses of Session - I ( Morning :- 11:00 am - 12:00 pm )**





Next kick off session was covered by Mr. Prasad Bhagare, Director, EFC Energy Solutions Private Limited. He briefed about the Evaporative cooling tower with selection and performance evaluation of HVAC. Afterwards in the afternoon session Mr. Sandeep Vardam from MSD Control talked about demand for integrated systems which enlightened the participants about the demand in the market.

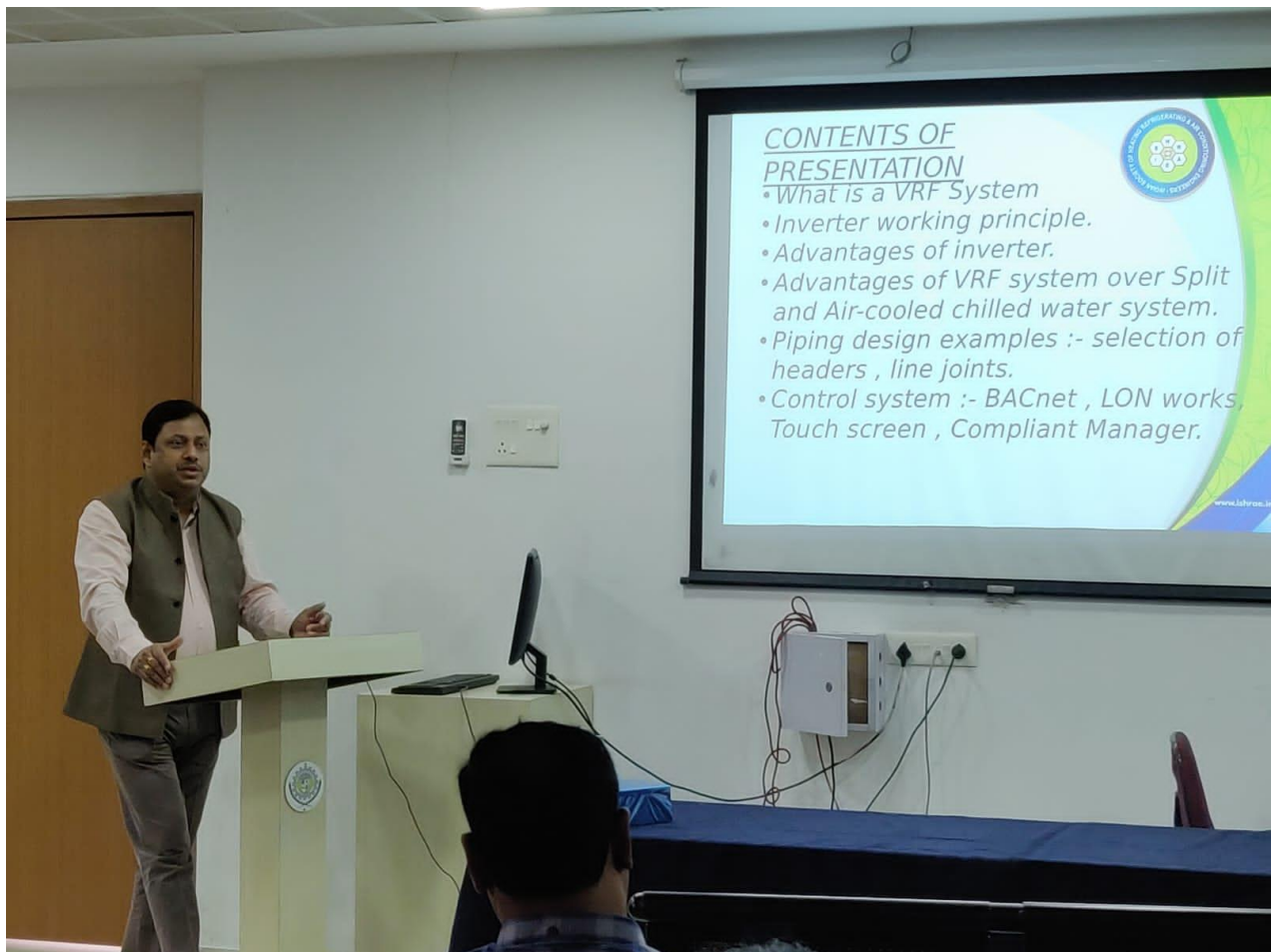
**Some Glimpses of Session – I & II**  
**( Morning :- 12:00 pm - 01:30 pm & Afternoon :- 02:30 pm – 04:30 pm )**



The participants had sense of content on the first day and looking forward to further sessions full of knowledge.

On the second day, the first session was started by Mr. Sanjay Kumar Verma, Managing Partner, SARA HVAC Systems. The theme for the session was “Energy Efficient Practices” which served the prime purpose of STTP, i.e., to revise the fundamental concepts of Variable Refrigerant Volume (VRF) which is an HVAC technology. He also gave the insight into the various challenges of HVAC technology related to the market trends .The session ended with a discussion among the participants of the STTP and the expert.

**Glimpse of Session - I**  
**( Morning :- 09:30 am - 11:30 am )**



The post lunch session was an Industrial Visit to Nutech Engineering Technologies Ltd., Turbhe. All the arrangements were done by our LTCoE Chapter Coordinator Dr. K. H. Dhanawade, Prof. Ajay Kashikar, Prof. Ashutosh Singh, Prof. Vishnu Kendre and LTCoE Chapter President Mr. Meet Chauhan.



All the participants were gathered in the college canteen and then they proceeded for the transport and reached the destination. There they gained knowledge from the experts of the industry and saw all the machines like AIR HANDLING UNITS (AHU), HEAT RECOVERY SYSTEMS, AIRIUS DUCTLESS FANS, DRY MISTING ECOJET FANS, AIR PURIFICATION, HVLS FANS, HIGH VOLUME LOW SPEED FANS, HEATING VENTILATION AIR CONDITIONING, HUMIDIFIERS, HEAT EXCHANGER COILS CENTRIFUGAL FANS, DRY SCRUBBER, TUBE AXIAL, CIRCULAR INLINE, RECTANGULAR INLINE, HIGH TEMP APPLICATIONS. Thus, on this day participants gained valuable knowledge about practical/demo of technologies used in industries.

**Glimpse of Industrial Visit  
( Afternoon :- 12:30 pm onwards )**



On third day, first session was initiated by Mr. Parth Thakkar, Director, Polfrost Air-Con Pvt. Ltd. and Partner, Fluorobond Industries. Mr. Parth specializes in Manufacturing of customised Refrigeration Solutions for Cold Storages, Refrigeration Units, Refrigerators and freezers for labs and kitchens, Blast freezers & Process Chillers so he provided depth knowledge of the Refrigerated transportation. It is the most underrated means of transportation in India and he enlightened all the participants about it and was successful in spreading the awareness.

The second session was taken by Mr. Sunil A. Mehta who is a Consultant and Service Provider to the clients in India & Overseas in the field of Cooling, Heating and Energy. He provided the fundamentals of Vapor absorption Refrigeration and he also provided knowledge about Vapor absorption machines used in VOLTAS industries.

The last session being very informative to the attendees, was taken by Mr. Amay More from Kehems Technologies Pvt. Ltd. He was there to share his knowledge on Heat pump working and application against conventional systems. He was so full of knowledge that the time slot given to him was not enough! Even the participants were so excited that the session was continued for 30 minutes more.

### **Glimpse of 3<sup>rd</sup> Day**

**( Morning :- 09:30 am - 01:30 pm & Afternoon :- 02:30 pm – 04:30 pm )**







On the fourth day of the STTP, was started by an expert full of knowledge who is a Guruji for IMC, Mr. Atul Kochrekar from Voltas Ltd. He had started his session with a very relaxing technique of omkar and prayer which cleansed the mind as well as all the participants felt very great mentally. He depicted a lecture on heat load calculations and the basics of on field knowledge.

Second session was conducted by Mr. Surendra Shah, Founder, Panasia Engineers Pvt. Ltd. He is the real-life example that knowledge is the only thing that won't fade by time as he is 80 years old and yet his enthusiasm was younger than most of the participants attending the session. He delivered the lecture on Natural Cooling System and its real life application in various fields.

After the lunch, a kick off session by Mrs. Mamta Rawat, Partner, Conserve Consultants Pvt. Ltd., who was the first female to conduct the STTP. She talked about Sustainable Building Development and its importance in this current scenario. She also conducted a valuable talk on Global Trend in Green Building that how green should make business sense with the help of case studies on design, construction & operation.

### **Some Glimpses of 4<sup>th</sup> Day**

**( Morning :- 09:30 am - 01:30 pm & Afternoon :- 02:30 pm – 04:30 pm )**







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Day five began with the Global Refrigerant Trends for which Mr. Sunil Kurade, Head of Cooling Applications & Training Centre at Danfoss engaged the session. He was thorough with each and every refrigerant and gave up most and updated knowledge on the latest refrigerants.

**Glimpse of Session – I**  
**( Morning :- 09:30 am - 11:30 am )**



It was day a followed by the Industrial Visit to STULZ. It is a very big industry, located in Kopar Khairane. All the arrangements were done by our LTCoE Chapter Coordinator Dr. K. H. Dhanawade, Prof. Ajay Kashikar, Prof. Ashutosh Singh, Prof. Vishnu Kendre and LTCoE Chapter President Mr. Meet Chauhan. As the participants were gathered in the college canteen, lunch was provided for the participants and after the lunch they reached the industry by the transportation provided by the college. As STULZ was very confidential about the site we were not able to take photos. STULZ is a company recognized as a specialized manufacturer in precision air conditioning and humidification equipments for critical applications where a very high level of quality and reliability is essential which includes Computer Rooms, Data Centers, Co-location Facilities, Telecommunications, Museums, Hospitals, etc. The participants were very much excited as the site was too big, they loved the visit and literally visited each and every corner of the industry.

**Glimpse of Industrial Visit**  
**( Afternoon :- 12:30 pm onwards )**



The Sixth day marked with a two sessions and the post lunch session was an valedictory function of the six days Short Term Training Programme on “**Advances in Heating, Ventilation, Air-Conditioning and Refrigeration ( HVAC & R )**”. Mr. Mragesh Gowda, Head, Commercial Business at Kirloskar Chillers Private Limited started first session with his expert lecture on Chillers and Energy Efficiency and had a great initiative by him as the session was very understanding. And the second session was conducted by Mrs. Anjali Prabhu who is from Urja Building Services Pvt. Limited. She demonstrated about the Electrical Systems in HVAC, she was so fluent and gave so much to the participants about the new and different combinations that can be used in the HVAC system to increase its efficiency and make it less energy efficient.



**Some Glimpses of Session – I & II**  
**( Morning :- 09:30 am - 11:30 am & 11:30 am – 02:30 pm )**



The session for the last day ended with a beautiful quote given by one of our eminent expert Mr. Surendra Shah, Founder, Panasia Engineers Pvt. Ltd. i.e., **“Kuch aur zamana kehta hai, Kuch aur hai zidd mere dil ki, Main baat zamane ki maanu, Ya baat kahu apne dil ki ? ”**

## *Valedictory Session:*

The STTP was concluded with valedictory function on 21<sup>st</sup> December 2019. The valedictory function was conducted in presence of Guest of Honor, Mr. Dinesh Shetty (Co-Chair – Research & Promotion, ISHRAE), Dr. Vivek Yakundi, ( Dean, R&D, LTCoE ), Dr. Jayesh J. Dange ( Dean, T&P, LTCoE ) and Dr. Kavita H. Dhanawade, ( Head of Mech. Dept. and STTP Convenor ). The highlights of STTP was given by Prof. Shweta V. Matey (Professor, Mechanical Dept., LTCoE and STTP Co-Convenor ) and Mr. Meet Chauhan ( Student President, LTCoE Chapter ). The valedictory speech was given by Dr. Vivek Yakundi and he congratulated the STTP Convenor, Co-Convenors, organizing committee members and Mechanical Engg. Dept. for conducting the STTP. He also appreciated the STTP theme.

The Vote of thanks was given by Dr. Kavita H. Dhanawade, STTP Convenor. She highlighted the immense contribution of college administration and organizers and special thanks to Chief Patron, Dr. Satish Chaturvedi, Chairman, LTJSS, Nagpur and Patron, Dr. Vivek Sunnapwar, Director, LTCoE for there constant support for the STTP. She also showed her gratitude to Dr. Vivek Yakundi, Dr. Jayesh J. Dange and Dr. Chandrababu D. for mentoring the event.

She heartily thanked all the speakers who took pain to travel from their places to LTCoE campus and spared there valuable time for the institute. She also thanked all the participants who made this event a grand success by participating whole heartedly.

All the participants were distributed with the certificates on successful completion of one-week STTP by dignitaries on the dais.

### **Some Glimpses of Valedictory Function ( Afternoon :- 12:30 pm onwards )**











## *Feedback of Participant*

Most of the participants rated the STTP very good / excellent as a whole. As per their feedback course contents, facilities and food were excellent. The participants said that they not only gained the knowledge of the subject but they learnt the current scenario of Heating, Ventilation, Air-Conditioning and Refrigeration ( HVAC & R ). Most of the participants also got idea for their dissertation topic.



The valedictory session ended with the National anthem and Group photo session of dignitaries and all participants.

### **Group Photo of Participants at LTCoE**





## ‘एसटीटीपी’चे आयोजन

राहुल पोग्खरकर,  
ए. पी. शाह इन्स्टिट्यूट ऑफ टेक्नॉलॉजी

कोपरखैरणे येथील लोकमान्य टिळक कॉलेज ऑफ इंजिनीअरिंग आणि 'इंडियन सोसायटी ऑफ हीटिंग, रेफ्रिजरेटिंग अँड एअर कंडिशनिंग इंजिनीअर्स (ISHRAE)' चे मुंबई चेंप्टर यांच्या संयुक्त विद्यमाने सहा दिवसीय शॉर्ट टर्म ट्रेनिंग प्रोग्राम अर्थात 'एसटीटीपी'चे आयोजन करण्यात आले होते. हीटिंग, वेंटिलेशन, एअर कंडिशनिंग आणि रेफ्रिजरेशन या क्षेत्रांमधील अद्ययावत तंत्रज्ञानाबाबतची माहिती विद्यार्थी तसेच शिक्षकांपर्यंत पोहोचवण्याचा या कार्यक्रमासाठी मुख्य उद्देश होता. मेकॅनिकल शाखेत शिक्षण घेणारे विद्यार्थी, शिक्षक यांमध्ये सहभागी झाले होते.

हीटिंग, वेंटिलेशन, एअर कंडिशनिंग आणि रेफ्रिजरेशन या क्षेत्रांमध्ये काम करणाऱ्या विविध मान्यवरांचे मार्गदर्शन या कार्यक्रमाच्या माध्यमातून उपस्थितांना मिळाले. पहिल्या दिवशी आयआयटी मुंबईमधील मेकॅनिकल विभागाचे प्राध्यापक मिलिंद राणे यांनी 'ऊर्जा संवर्धन' या विषयावर मार्गदर्शन केले. आयआयटी मुंबई येथील प्रयोगशाळेत ऊर्जा संवर्धनासाठी त्यांनी तयार केलेल्या विविध उपकरणांची माहिती त्यांनी दिली. इक्वॅपोरेटिव्ह कूलिंग, हिट पंप, चिलर्स, ट्रान्सपोर्ट रेफ्रिजरेशन, वेपर अॅबसॉरप्शन रेफ्रिजरेशन, नॅचरल कूलिंग आदी विषयांवर कंपन्यांमधील प्रतिनिधींची मार्गदर्शनपर सत्रे पार पडली. तुर्भे येथील 'नुटेक' आणि महापे येथील 'स्टुल्झ' या कंपन्यांना विद्यार्थी, शिक्षकांनी भेट दिली.

Thank You all..

Dr. Kavita H. Dhanawade

Convenor, STTP

Report Prepared by:-

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