

Workshop on Enhancing Energy Efficiency in Design and Operation of HVAC Systems

July 9, 2021

If you want to control performance, measure forever

Program Overview

In commercial buildings, HVAC consumes more than 50% of the overall energy consumption. HVAC system work on varying loads and performance drifts do occur leading to a lot of inefficiency. Many of the issues of HVAC system performance are common across applications & this Workshop will focus on explaining the fundamentals of design and operations of central chilled water plants. The objective of the Workshop will be to cover the fundamentals of HVAC systems in a very lucid manner & to provide tips on equipment as well as system level efficiency.

The program is basically designed for HVAC System Operations Team to help them get a very clear understanding of HVAC processes and equipment functioning. The Workshop shall be conducted in an interactive manner and aims to dispel common myths as well as provide tips on energy optimization. It is our endeavour to empower participants to implement various low cost / no cost ECMs for HVAC systems that improve efficiency by 10-15%.

Target Audience

- ▶ Plant Managers, HVAC Engineers & Technicians
- ▶ Facility Engineers & Energy Auditors
- ▶ Engineering and Consulting firms specializing in Energy Efficiency
- ▶ ESCOs who conduct energy audits, prepare M&V plans or monitor project savings
- ▶ HVAC equipment suppliers – Engineers, Technical Sales & Support, Servicing Agencies & their staff

Training Agenda

The training will cover following topics:

Module 1: Overview of HVAC Systems

- Dissecting the various loops in HVAC
- Components in each sub-system / loop
- Interaction of loops with each other
- Overall plant efficiency

Module 2: Efficiency of HVAC Systems

- Design & Operating decisions affecting achieved plant room efficiency
- Performance Degradation & Performance Drift
- Defining an optimized plant room performance

Module 3: Ways to improve Chiller Efficiency

- Maximizing chiller operating efficiency
- Savings opportunities related to component, system & retrofit

Module 4: Basics of Pump Selection

- Pump Curves
- Pump Energy Calculations
- Pump Operating Point
- Pump Specifications

Module 5: Chilled Water Pumping Configurations

- Constant Primary, Primary-Secondary & Variable Primary
- Low Delta T
- VFD modulation

Module 6: Cooling Tower Fundamentals

- How a Cooling Tower works
- Types of Cooling Towers
- Cooling Tower performance characteristics
- Installation & Operation of Cooling Towers

Module 7: Energy Management and M&V

- Need for M&V to enhance performance
- Monitoring & Optimization
- Singapore's Green Mark Certification

About AEEE

Alliance for an Energy Efficient Economy (AEEE), is one of the leading organizations in India that works on creating awareness about energy efficiency as a resource. It is a policy advocacy and energy efficiency market enabler with a not-for-profit motive. We advocate for data-driven and evidence-based energy efficiency policies and research.

We foster a culture of energy efficiency in India, working with industry, government and civil society organizations. AEEE advocates for *Thermal Comfort for All*, and a *Lean-Mean-Green* philosophy to design and construct net-zero energy-water-waste built environments, Sustainable Transportation and robust Energy Data Framework for better policy-making and implementation, to build a culture of energy efficiency in India. We are committed to achieve India's energy transition for a climate-resilient and energy secure future and meet India's commitments to the 2030 nationally determined goals (NDC) and UN sustainable development goals (SDG).



About the Trainer

Sandeep Dahiya has over 20 years' experience in HVAC industry, having worked in sales, service and product management roles. Since 2014, he has been working as a Freelance Energy Engineer helping Building Clients run their HVAC systems more efficiently thru' Retro-commissioning, Retrofits and Energy Management. He is a BEE Certified Energy Auditor, LEED AP, CMVP & BCXP. He is also a certified Level 4 Trainer for CMVP & has conducted numerous workshops in India & abroad.

Testimonials from Previous Workshops



Technical materials on operation and maintenance of HVAC systems were very well presented by Mr. Sandeep Dahiya. Concepts and practical tips learned in workshop can be immediately applied and put into practice which I am sure will lead to significant energy and cost savings.

Mr. K. Kamakshaiah,
Sr. Engineer (Maintenance), Quality Care Hospitals



Very good workshop, very well presented and nicely managed workshop. I learned a lot on chilled water pumping configuration systems.

A. K. Kaushal,
Chief Engineer, Rajiv Gandhi Cancer Institute & Research Centre, Delhi



The trainer was fully loaded with all useful relevant information excellent and explained things in a very detailed manner.

R. N. Pandya,
Retd. Senior Project Executive, GEDA, Gujrat



Registration

Registration Fee:

₹ 10,000 + GST

10% OFF for AEEE member companies

For Registration form & more detail, visit: www.aeee.in



For any Queries, write to:

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Useful Links

ECBC User guide:

<https://beeindia.gov.in/sites/default/files/ECBC%20User%20Guide%20V-0.2%20%28Public%29.pdf>

ICAP report:

<http://ozonecell.nic.in/wp-content/uploads/2019/03/INDIA-COOLING-ACTION-PLAN-e-circulation-version080319.pdf>

This Workshop will be conducted through a digital platform