BHARATI VIDYAPEETH'S

COLLEGE OF ENGINEERING

One Day Workshop On

Industrial Practices in Air Conditioning Duct Design

Date- 15th September-2017

Workshop Report

1. Workshop Overview

About Workshop

In the today's world, air conditioners have become commonplace both in domestic and commercial environments. Air conditioners are most commonly used to achieve a more comfortable interior environment for humans; however, air conditioning is also used to cool/dehumidify rooms filled with heat-producing electronic devices, such as computer servers, power amplifiers, and even to display and store artwork.

Duct system leakage and inefficiencies are problems our industry can no longer ignore. Everyone wants a "greener" building - both to show our commitment to preserving the environment and to combat the real challenges of rising energy costs. On the other hand, material and labor costs continue to rise and customers want to pay less for buildings. It is time to have some candid discussions about both cost and performance of HVAC systems. We believe that as designers we should never have to accept compromises in performance.

This workshop focuses on the theoretical and actual duct design practices and obstacles occur during installation of duct and also to create awareness among the student, engineer and faculty.

The objective of the Workshop:

The workshop aims to enhance the capabilities of participants in

- Understanding the role of duct design.
- Different methods of duct designing.
- Optimizing the design with minimum cost.

1.2 Workshop Materials

Several documents were developed to conduct and evaluate the workshop.

- **Workshop Agenda:** The workshop agenda is included in Appendix A.
- **Participant List:** A list of all workshop participants is included in Appendix B.
- **Workshop Presentation and Handouts:** The workshop presentation provides basic information on duct designing. The presentations and handouts used in the workshop are included in Appendix C.
- **Workshop Evaluations:** Participants were asked to evaluate the value and facilitation of the workshop. These evaluations are included in Appendix D.

2. Workshop Discussions

2.1 First secession covered the details about theoretical aspect of A/C duct design :-

The detailed report of first secession is given in following table

Secession -1	Contents
Introduction	Before going for the actual duct designing we should know the all fundamentals related with ducting. Generally at the time of designing an air conditioning duct system, the required airflow rates are known from load calculations. The location of fans and air outlets are fixed initially. The duct layout is then made taking into account the space available and ease of construction. In principle, required amount of air can be conveyed through the air conditioning ducts by a number of combinations. However, for a given system, only one set results in the optimum design. Hence, it is essential to identify the relevant design parameters and then optimize the design. Content covered during secession ▪ **Air Distribution System** ▪ **Air handling unit** ▪ **Sample Ducting layout** ▪ **Classification of ducts** ▪ **Duct material – quality & thickness** ▪ **Flow through duct & pressure losses** ▪ **Friction Chart** ▪ **Air flow through simple duct system** ▪ **Duct design methods: Equal Friction, Velocity Reduction, Static Regain**
About Speaker	**Prof. Sanjay Rumde:-** He has completed his Post Graduation in Mechanical Thermal & Fluids, having vast Experience in HVAC industries total of 30+ Years (24 years Industrial & 6 years Teaching). Currently working as Assistant Professor in MIT, Pune. Also provide consultancy in REFRIGERATION & AIR CONDITIONING. He is life member of Indian Society of Heating Refrigeration and Air-conditioning Engineers (ISHRAE) also member of BEE. He has published many papers in national and international journals

2.2 Second secession was all about the actual practices in duct design and obstacle occurs during installation:-

Secession -2	Contents
Introduction	In actual practices the modification is always need to be done because of various parameters. Designing and Duct leakage can produce even larger impacts. Supply leaks can lose highly conditioned air and depressurize your home, adding more infiltration. Return leaks can add to the air conditioner or furnace loads and draw air from unintended locations. All these issues add up to a strong case for having the duct system properly sealed and placed within the conditioned space. Once these decisions are made: •Make sure that duct sealing and testing are part of your plan for sizing and installing a new air conditioning system. Sealed ducts are particularly critical for systems with variable speed air handlers, which may operate with higher air flows and duct pressures. • In new construction, seriously consider installing the duct system inside the insulated building envelope. This will both reduce space conditioning energy use and improve comfort by reducing the time it takes the indoor temperature to reach the thermostat set-point In this secession speaker also covered various obstacle occur during installation wit case study
About Speaker	**MR. Vijay J. Kapote:** At present he is conducting HVAC training & doing regular HVAC & clean room consultancy. Work Experience as an Employee 1) KICONS LTD. Pune , HVAC Associate Consultant 2) S.N.JOSHI Pune Design Manager 3) KAZAMA Engineering Projects. KUWAIT . Design & CAD Incharge 4) IRACO , Muscat Oman , HVAC Design Engineer 5) Filter-On India Pvt Ltd. Pune, Project Manager 6) Kirloskar Electrodyne Ltd. Bhosari Pune. Asst. Manager Engineering

2.3 Third secession was all about the actual MEP issued in A-C ducting:-

Secession -3	Contents
Introduction	Everything inside a building which makes it safe and comfortable to be in comes under the title of 'Building services'. A building must do what it was designed to do – not just provide shelter but also be an environment where people can live, work and achieve The major MEP installation projects require the identification of separate arrangements for HVAC, power supply, plumbing, fire protection, telecommunications, and other related systems. Specialized consultants and contractors design and construct these systems. Currently, according to technical specifications, each specialty or trade subcontractor is assigned the responsibility of integrating MEP systems. Coordination of mechanical and electrical systems to detail their configuration provides a major challenge for complex building and industrial projects. The speaker explained the importance of MEP in the designing and installation of air conditioning duct.
About Speaker	**Anand Joshi:** He did his graduation from college of engineering, pune. He is having his own consultancy S.N.JOSHI CONSULTANTS PVT LTD providing consultancy for MEP.

Appendix A.

BHARATI VIDYAPEETH's
COLLEGE OF ENGINEERING,

Lavale, Pune – 412 115

One Day Workshop On

Industrial Practices in Air Conditioning Duct Design

ISHRAE Student Chapter @ BVCOEL

15th Sept. 2017, Engineers Day

Sr. no	Agenda	Time
1	Registration and Refreshment	9:30 am
2	Workshop Inauguration	10:15 am
3	Introduction of Workshop **(Prof. S. Y. Nagwase)**	10:45 am
4	Theoretical design Aspect of Duct **(Prof. Sanjay Rumde)**	11:00 am
5	Industry design practices and Installation and Fabrication obstacles. **(Mr. Vijay Kapote)**	12.00 pm
6	LUNCH	1: 00 pm
7	Industry and Commercial Duct Application **(Mr. Anand Joshi)**	2: 00 pm
8	TEA BRAKE	3.30 pm
9	Valedictory function and Vote of Thanks **(Prof. Nilesh Singh)**	3:45 pm

Venue:

Mechanical Drawing Hall BVCOE, Lavale


WORKSHOP
ON
A/C DUCT DESIGN


Industrial Practices in Air Conditioning Duct Design


Industrial Practices in Air Conditioning Duct Design


AIR DISTRIBUTION SYSTEMS
noise
noise


AIR DISTRIBUTION SYSTEMS


Air distribution system : Ducts