SM TECHNO

Training Services

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SM Techno MEP Training Services is an ISO 9001: 2008 certified organization, providing a world class leading technical training in Mechanical, Civil& Electrical engineering disciplines to meet the requirements of skilled professionals in the field of M.E.P.

We provide online courses, interactive classroom classes, video lectures, and providing students with the flexibility to learn at their own pace. and making their courses accessible to individuals from all over the world.

We offer Classroom, Online & Video courses

- HVAC
- FIRE FIGHTING
- ELECTRICAL
- REVIT MEP
- PLUMBING
- REVIT ARCHITECTURE

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SM TECHNO

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HVAC DESIGNING

COURSE STANDARDS

ASHRAE

Carrier

AUTODESK

SMACNA

SOFTWARES

- Carrier HAP
- ASHRAE Climatic Data
- ASHRAE Psychrometry
- Autodesk Design Review
- AutoCAD 2D
- Zamil E-selector Machine Selection
- Diakin VRV
- McQuay Duct Sizer
- McQuay Pipe Sizer
- Beta Program
- ASHRAE Duct Fittings
- Pump Excel Program
- Fan static Pressure Excel Program
- Air Terminal Selection Software
- BOQ Excel Program

PROJECTS

- Villa Type A
- Sample Project (Load Calculation)
- School Project (HAP)
- Studio Project (Machine selection)
- Hotel Project (Ducting & Piping)

HIGHLIGHTS

- Live online Training
- Classroom Training
- Video Courses
- Gulf experience faculty
- Digital classroom
- Basic to advance level
- Concept based training
- Software calculation
- Interactive sessions
- Updated syllabus
- Motivation

smt online

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HVAC DESIGNING

PART 01
DESIGN BASICS

Chapter 1

Introduction to MEP

- Difference between MEP & HVAC
- HVAC abbreviation
- Definition of air conditioning
- HVAC application
- Standard societies
- ASHRAE, ISHRAE, SMACNA..

Chapter 2

How HVAC project executes

- Types of drawing
- Overview of HVAC design
- Roles & responsibilities of design engineers
- Overview of HVAC installation
- Roles and responsibilities of installation engineers

Chapter 3

Physics Used in HVAC

- Heat
- British thermal unit
- Modes of heat transfer
- Unit of refrigeration
- Temperature & temperature scales
- Enthalpy
- Sensible and latent heat
- Vapour compression refrigeration cycle
- Unit
- System of units
- Conversions

Chapter 4

Psychometric

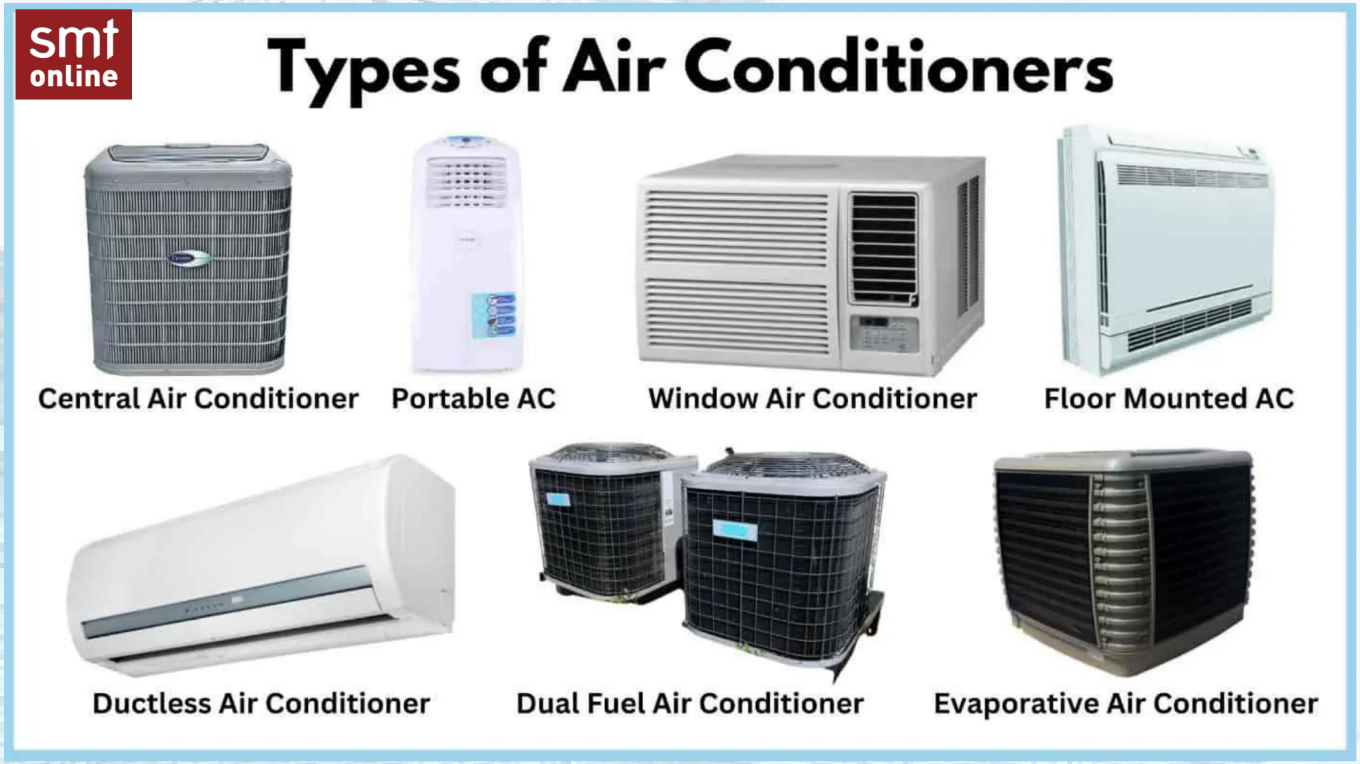
- Introduction
- Properties of air
- Dry bulb temperature
- Wet bulb temperature
- Dew point temperature
- Relative humidity
- Humidity ratio
- Manual psychometric chart
- Psychometric software
- Psychometric analysis
- Humidification
- De-humidification
- Sensible heat ratio
- By pass factor
- Contact factor

Chapter 5

Air conditioning system

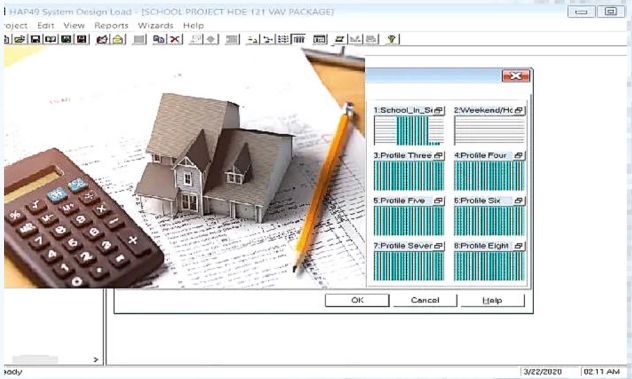
- Direct expansion system
- Window air conditioning
- Split air conditioning
- High wall
- Cassette air conditioning
- Floor stand
- Cube air conditioning
- Ductable split air conditioning
- Package air conditioning
- Chilled water system
- Air cooled chiller
- Water cooled chiller

- VRF/VRV system
- Radiant cooling
- Chilled beams
- District cooling system
- Air system
- FCU (fan coil unit)
- AHU (air handling unit)
- HRU (heat recovery unit)
- Exhaust Fans
- Side wall exhaust fan
- Exhaust blower
- Inline exhaust fan
- Car parking exhaust fan
- Kitchen exhaust fan
- CAV system
- VAV system
- Desert cooler
- Air curtain



HVAC DESIGNING

PART 02
MANUAL LOAD CALCULATION



Chapter 6

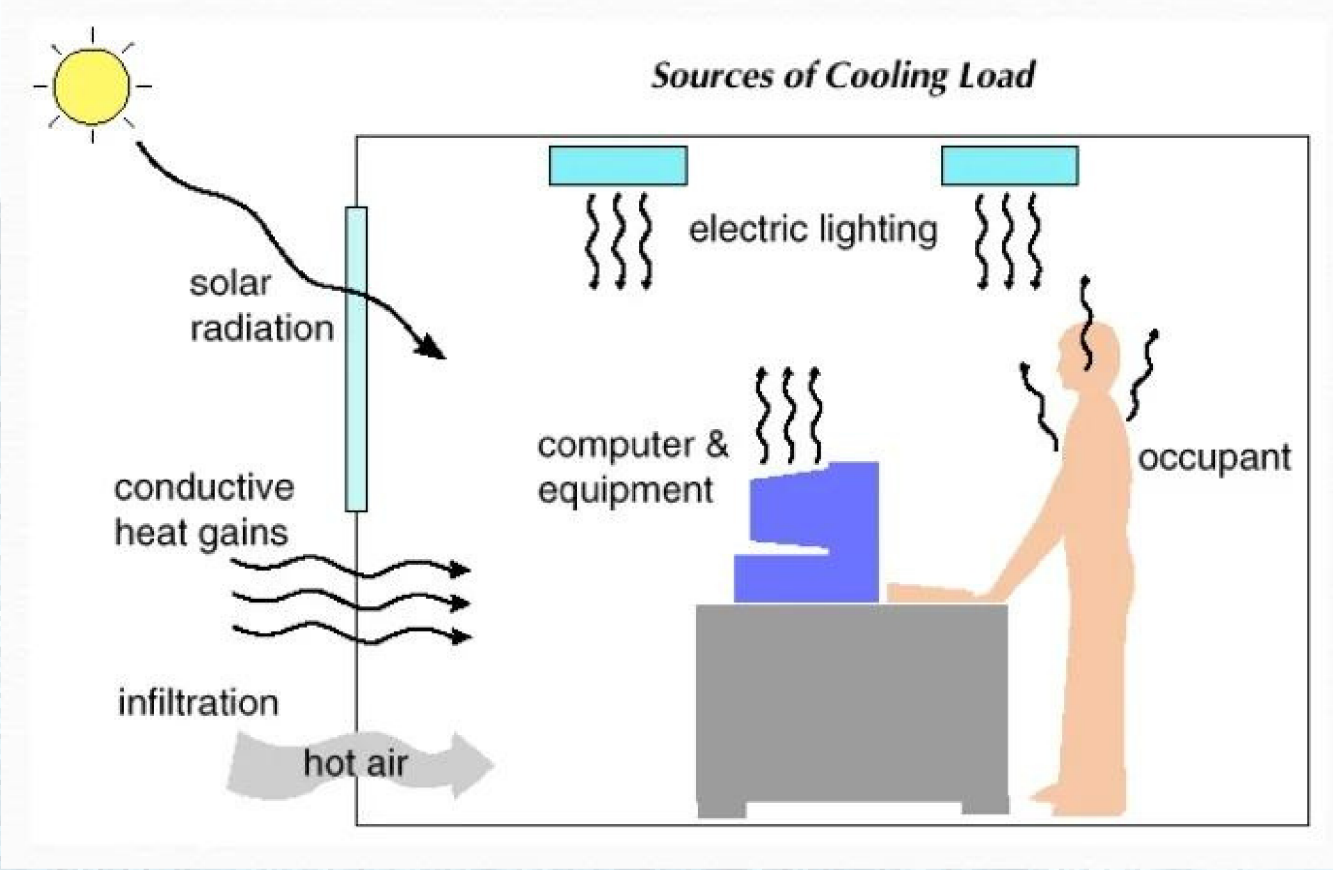
Building survey

- Introduction
- Types of architecture drawing
- Psychometric conditions
- Latitude
- Longitude
- Orientation of building
- Elevation of city
- Levels (section heights)
- Construction materials
- Terminology of building structure
- Surrounding conditions
- Windows
- Doors
- People
- Lighting
- Appliances
- Thermal storage
- Location air conditioning machine
- Available spaces
- Power services
- Water services
- Applications
- Drain location

Chapter 7

Manual load calculations

- Cooling load calculation
- Heating load calculation
- Sources of heat
- Project data extraction
- Sample project
- Input file
- Finding u-values
- Manual load calculation
- E-20 chart calculation
- E-20 excel calculation



HVAC DESIGNING

PART 03
SOFTWARE (HAP)
LOAD CALCULATION

HAP - Hourly Analysis Program

Sample project

School project

Optional project for practice

Chapter 7.1

Software load calculation

- Introduction to HAP
- Ventilation standards
- Sample Project
- School project
- HAP general settings
- Project sequence
- Input weather data
- Creating Library
- Creating spaces
- All Air conditioning system
- Creating System
- Generating report
- Archive and Retrieve HAP project Data
- HAP Additional Topics
- HAP Project Analysis
- Ventilation in HAP

Chapter 8

Machine selection

- Factor effecting machine selection
- Window air conditioning
- Split air conditioning
- Ductable air conditioning
- Package air conditioning
- VRV/VRF
- Chiller
- Air cooled selection
- Water cooled selection
- Ahu selection
- Software Selection

HVAC DESIGNING

PART 04
HVAC AIR SYSTEM

Chapter 9

HVAC Ducts

- Introduction to ducting
- SMACNA standard
- Classification of duct
- Duct material
- Duct gauging
- Duct fitting
- Duct accessories
- Duct designing
- Duct aspect ratio
- Velocity for ducting
- Duct designing method
- Equal friction method
- Velocity reduction method
- Static regain method Project

Chapter 9.1

Air distribution

- Comfort zone
- Occupied zone
- Primary air, total air, room air
- Throw, drop &spread
- Convection currents
- Returns
- Air terminal selection
- Types of air terminal
- Selection fundamental
- Performance factor
- Design factor
- Standard sizes of air terminal
- Low size planning

Chapter 9.2

Fan selection

- Introduction
- Types of fan
- Fan laws
- Fan performance characteristics
- Fan selection requirements
- Loss coefficient
- Air volume in CFM
- Static pressure
- Sound characteristics
- Fan selection manual
- Fan selection with Excel Program

Chapter 9.3

Building exhaust system

- Toilet exhaust system
- Kitchen exhaust system
- Car parking exhaust system

HVAC DESIGNING

PART 05
HVAC WATER SYSTEM

Chapter 10

Introduction

- Types of pipe
- Pipe material
- Pipe class
- Classification of pipe
- Types of pipe arrangements
- Direct return systems
- Reversed return system
- Pipe Designing
- Pipe designing method
- Velocity method
- Velocity + fraction combine method
- Manual pipe designing
- Software pipe designing
- Project

Chapter 11

Fitting & Accessories

- Pipe fitting
- Pipe accessories
- PICV
- Pump hookup
- Chiller hookup
- Ahu hook up
- Valves selection

Chapter 12

Pump Selection

- Introduction
- Classification of pumps
- Pump laws
- Pump Curves
- Types of pump Primary pump
- Secondary pump
- Tertiary pump
- Head loss
- Pump selection manual
- Pump selection with Excel Program

Chapter 12.1

Other Equipment Selection

- Cooling Tower Selection
- Make up Water Tank Selection
- Expansion Tank Sizing
- • Air Separator selection

"Teaching is our Passion & Profession"

ESTD. 2008
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