Heating, Ventilation& air conditioning (HVAC) Systems

Course general description:

This program is designed for Engineers and technicians from a wide range of abilities and backgrounds and will provide an excellent introduction to the fundamentals of Heating, Ventilation and Air-conditioning. It commences with a review of psychometric charts and then examines the factors that influence design choices, indoor air quality, load calculations and heating/ventilation and air-conditioning systems, Numerous tips and tricks throughout the program make it very practical and topical to your applications.

Either it is a small warehouse or a complex high-rise building, there is an increasing demand by owners and engineers to design and install the HVAC systems in a more efficient and cost-effective manner. Due to the on-going advances in HVAC & R technology, this demand is becoming a must and often controlled by new governmental regulations and engineering codes.

By the end of this program, participants will have enough knowledge to implement their daily assignments correctly and professionally.

Audience:

This course is designed for:

1. Maintenance Engineers, technicians and staff
2. Plant engineers; Operation, maintenance, inspection and repair managers, supervisors and engineers. Mechanical and electrical engineers and technicians

Course objectives:

At the end of the workshop participants will be able to understand and practice the following:

- To provide the participants with a complete and up-to-date overview of the area of Heating, Ventilation and Air-conditioning (HVAC).
- Understand HVAC& R cycles and components
- Design for good air quality using hourly analysis program (HAP)
- Initiate effective inspection and maintenance program & know about troubleshooting and fault finding skills

Course duration:

5 days

Course location:

Dubai

Course contents:

Day 1

✓ Concepts & Definitions

- Refrigeration Cycle
- VCR – Vapour Compression Refrigeration
- VAR – Vapour Absorption Refrigeration
- Codes and standards

- Abbreviation
- Air Condition, Ventilation, Refrigeration

✓ Important of air
✓ Human Comfort
✓ HVAC Application
✓ Air Properties
✓ Psychrometric Chart
✓ Case Studies for Psychrometric Chart
✓ HVAC
✓ Air Conditioning unit types
✓ Thermodynamic
- States of matter
- Sensible & Latent heat

Day 2

✓ Basic of Refrigeration Cycles & P-H charts
✓ Case Studies for P-H charts
✓ HVAC Equipment
- Chiller types and chiller selection
- Chiller performance adjustment
- Types of compressors and compressor selection
- Types of condensers and condenser selection
- Types of evaporators and evaporator selection
- Types of expansion devices
- Chilled water circuits components
- Water Cooling load calculations
- Chiller C.O.P & EER calculations

Day 3

✓ Definition of Maintenance troubleshooting goals & objectives
✓ Maintenance types and procedures
✓ Testing & Maintenance
- Purging & Pump Down
- Leak test
- Adding oil to the compressor

✓ Troubleshooting skills and fault finding skills

Day 4

✓ Control Circuits

Day 5

✓ Design Stages
✓ Overview on HAP software

Methodology:

- 50% lectures & concepts
- 10% Videos

- 10% Case studies
- 10% Exercises
- 10% Discussions
- 10% Software (if applicable or examples)

Course code: (TEME022)