Special Courses · SC276

# HVAC Design, Operation, and Maintenance

Cairo · 20 - 24 Dec 2026

| Date | Venue | Duration |
|---|---|---|
| **20 - 24 Dec 2026** | **Cairo** | **1 Week** |
| Fee | Ref | Language |
| **£3,100 GBP** | **SC276** | **English** |

## Introduction

HVAC (Heating Ventilation & Air Conditioning) is a science and professionalism known by a good population in this world but knowing and justifying the reason for the proper decisions and selections are great additions to any organization, company, facility, building, production, operation, maintenance and other departments. This PetroKnowledge training course is planned to define the proper route for HVAC design, operation, and maintenance.

“Comfort conditions” are the golden words used by HVAC professionalism; these golden words need to be more specified, more customized, and accurately applied to reach customer satisfaction. This PetroKnowledge training course introduces the standards which lead the definitions of the main parameters, requirements, limitations. By knowing where we are in this world; and what the atmospheric conditions are; and what the project conditions are, we can reach the expected end results and deliverables.

### This PetroKnowledge training course will highlight:

- HVAC Design concepts
- Chilled Water System Piping
- Heat Transfer and Selecting the proper Air Cooling System
- HVAC Operation modes
- HVAC Maintenance requirements

## Training Objectives of HVAC Design, Operation, and Maintenance

### What are the Goals?

### By the end of this training course, participants will learn to:

- Understand the HVAC design as materials and equipment
- Analyze the alternatives and select the best one
- Determine the proper AC Units
- Understand the operation modes

- Develop the maintenance tasks from the available manuals

## Target Audience

### Who is this Training Course for?

### This training course is suitable to a wide range of professionals but will greatly benefit:

- HVAC Engineers
- HVAC Consultants
- HVAC Contractors
- End Users Engineers

## Organisational Impact of HVAC Design, Operation, and Maintenance

### Improving the operation and maintenance staff performance which will lead to a budget reduction by:

- Reducing the amount of improper operation
- Reducing the improper maintenance
- Increasing the end user’s satisfaction
- Reducing the Mean Time to Perform Maintenance
- Increasing the Mean Time Between Maintenance
- Reduce Initial and Running costs and Increase the HVAC systems

## Course Outlines of HVAC Design, Operation, and Maintenance

### Day One:

### HVAC Systems Design

- Sources of heat load
- Using the equation of each heat load for analysis and possible reduction in the heat load.
- Air treatment and human comfort
- Evaluating and studying the outside and inside design conditions to meet the human comfort
- Daily and monthly heat load profiles, how they affect the heat load
- Selecting the type of AC system

### Day Two:

### Piping System for Chilled Water Applications

- Velocity/friction loss VS initial and running cost. How to decide which way to go.
- Closed or open type systems. (Advantages and dis-advantages of each type).
- Pressure breakers and the need for high rise buildings
- Expansion and contracting of the piping circuits and the selection of expansion joints, pressurized expansion & make up tanks
- Refrigerants and their effect on AC systems selection and the environment.

### Day Three:

### Heat Transfer and Selecting the Right AC System

- How cooling towers work for centralized water-cooled systems.
- Thermal storage
- Types of thermal storage systems.
- Air cooled systems Load shifting (partial and full), daily and weekly, case study with calculations and comparison of C.O.P
- Ventilation, infiltration, ex-filtration. How to minimize their heat loads
- Factors used to select the right AC system

## Day Four:

## HVAC Operation

- System components
- System start-up preparation
- System running conditions
- Systems sequence of operation
- System monitoring
- System partially stopping
- System shutdown

## Day Five

## HVAC Maintenance

- Scheduled preventive maintenance routines.
- Daily log sheets and the monitored items and logged records.
- Utilizing records history for improvement of systems reliability
- Hand over package and its importance for proper maintenance.
- Training of hands on staff for better understanding of the systems to reduce down time and operational cost
- Operation and maintenance case studies

**Register or ask about this course online**
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