

GLOBAL EXPERTS INSTITUTE FOR TRAINING.
ISO 9001-2008 TRAINING PROVISION CERTIFIED

HVAC Maintenance, Design, and System Optimization

Schedule Dates:

| Start Date | End Date | Place |
|-------------|-------------|--|
| 17 Nov 2025 | 21 Nov 2025 | Turkey - CVK Park Bosphorus Hotel Istanbul |

Program Introduction:

This course provides participants with a comprehensive understanding of Heating, Ventilation, and Air Conditioning (HVAC) systems—covering the principles of system design, installation, operation, maintenance, and performance optimization.

Through theoretical insights and practical applications, participants will learn how to design efficient HVAC systems, maintain optimal performance, troubleshoot common issues, and apply modern technologies for energy savings and system reliability.

Program Objectives:

- ✓ Understand the fundamental principles of HVAC systems and components.
- ✓ Design HVAC systems according to international standards and building requirements.
- ✓ Implement preventive and corrective maintenance strategies.
- ✓ Analyze and improve system efficiency and performance.
- ✓ Identify common operational faults and perform troubleshooting effectively.
- ✓ Apply modern tools and software for HVAC design and performance analysis.
- ✓ Optimize energy consumption and sustainability in HVAC operations.

Who should attend?

- Mechanical engineers and HVAC designers
- Maintenance and facility engineers
- Energy managers and building operations staff
- Technical supervisors and HVAC technicians
- Professionals working in construction, oil & gas, and facility management sectors

Program Outlines

Day One

- Introduction to HVAC Systems and Fundamentals
- Thermodynamics and Heat Transfer Basics
- Types of Air Conditioning Systems (Split, Package, VRF, Chiller, etc.)
- Key HVAC Components: Compressors, Condensers, Evaporators, and Fans
- Psychrometrics and Air Properties

Day Two

- Load Calculation and Cooling/Heating Demand Estimation
- HVAC System Design Process and Standards (ASHRAE, SMACNA, ISO)
- Duct Design and Airflow Distribution Principles
- Piping Design for Chilled and Condenser Water Systems
- Equipment Selection and Sizing

Day Three:

- Ventilation Design and Indoor Air Quality Control
- Controls and Automation in HVAC Systems (BMS, Sensors, Actuators)
- Energy Efficiency and Green Building Considerations
- Maintenance Planning and Scheduling
- Predictive vs. Preventive Maintenance

Day Four:

- Troubleshooting Common HVAC Problems

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- Testing, Adjusting, and Balancing (TAB) Procedures
- Refrigerants and Environmental Regulations
- Safety Practices and Risk Management in HVAC Operations
- Documentation, Drawings, and As-Built Records

Day Five:





- Software Tools for HVAC Design (Revit, HAP, AutoCAD MEP)
- Retro-Commissioning and System Upgrades
- Lifecycle Cost Analysis and Performance Benchmarking
- Sustainable Cooling Technologies and Smart HVAC Systems
- Case Studies and Best Practices in System Optimization

Training Methodology:

- Slide presentations
- Interactive discussion
- Simulations and Gamification
- Online Video material

Cost Quotation in Kuwaiti Dinars

The total cost includes:

-  Instructor(s) expenses
-  Training materials
-  Certification
-  Lunch Included

Total Cost: 1500 KD per Participant

(One Thousand Five Hundred Kuwaiti Dinar)