

# € TRAINING

Designing, Installation, Maintenance &  
Troubleshooting of Chillers and VRF  
Systems

4 - 8 August 2024  
Cairo (Egypt)





# Designing, Installation, Maintenance & Troubleshooting of Chillers and VRF Systems

REF: O2434 DATE: 4 - 8 August 2024 Venue: Cairo (Egypt) - Fee: 4465 Euro

## Introduction:

In today's dynamic climate control landscape, both chillers and VRF systems play crucial roles in maintaining optimal temperatures for commercial and residential buildings. This comprehensive 5-day training course delves into the intricacies of both technologies, empowering you to design, install, maintain, and troubleshoot these systems with confidence.

## Course Objectives:

- Gain a thorough understanding of chiller and VRF system principles and components.
- Master the design process for efficient chiller and VRF systems tailored to specific needs.
- Acquire the skills for proper installation and commissioning of both systems.
- Implement effective maintenance procedures to optimize system performance and longevity.
- Develop troubleshooting expertise to diagnose and resolve common chiller and VRF issues.

## Target Audience:

- HVAC/R technicians and engineers
- Mechanical contractors and installers
- Facilities managers and building operators
- Architects and consultants involved in building design

## Course Outline:

### Unit 1: Chiller Fundamentals and Design Principles

- Chiller Technology Overview:
  - Refrigeration cycle and chiller types air-cooled, water-cooled, etc.
  - Chiller capacity and efficiency considerations
  - Choosing the right chiller for the application
- Chiller System Design:
  - Load calculations and sizing requirements
  - Chilled water system design and piping considerations

- Control strategies and system optimization

## Unit 2: VRF System Installation and Commissioning

- Pre-Installation Planning and Procedures:
  - Site preparation and equipment handling
  - Electrical and piping requirements
  - Building code compliance and permits
- VRF Installation Techniques:
  - Refrigerant piping installation and leak detection
  - Electrical wiring and control system connections
  - Indoor and outdoor unit placement and mounting
- VRF Commissioning and Start-up:
  - System refrigerant charging and evacuation
  - Performance testing and adjustments
  - User training and system operation

## Unit 3: VRF Maintenance and Troubleshooting

- Regular Maintenance Procedures:
  - Preventive maintenance schedules and checklists
  - Filter cleaning and replacement
  - Refrigerant leak detection and repair
  - System performance monitoring and data analysis
- Common VRF System Issues and Troubleshooting:
  - Refrigerant flow and pressure problems
  - Electrical control malfunctions
  - Airflow and temperature control issues
  - Advanced troubleshooting techniques and diagnostic tools
- VRF System Optimization Strategies:
  - Energy efficiency optimization for reduced operating costs
  - Advanced control features and automation techniques
  - System integration with other building systems

## Unit 4: Chiller Installation and Commissioning

- Pre-Installation Planning and Procedures:

- Site preparation and equipment handling
- Electrical and piping requirements
- Building code compliance and permits
- Chiller Installation Techniques:
  - Refrigerant piping and leak detection
  - Electrical wiring and control system connections
  - Water piping and connections
  - Chiller placement and mounting
- Chiller Commissioning and Start-up:
  - System refrigerant charging and evacuation
  - Performance testing and adjustments
  - User training and system operation

## Unit 5: Hands-on Workshop and Case Studies

- Practical exercises on VRF system installation and troubleshooting
- Interactive discussions and Q&A sessions
- Review and analysis of real-world VRF system case studies
- Manufacturer manuals and technical specifications
- Industry associations and professional organizations
- Online resources and forums