

€ TRAINING

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





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

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