



Commercial Refrigeration and Cold Room Systems Course: Design, Installation and Maintenance



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Introduction:

Commercial refrigeration and cold room systems design, installation and maintenance is a 5-day course for supermarket, food service and cold store refrigeration units, who produce a Cold Room and Retail Refrigeration Upgrade Plan for a case site. Walk-in freezers ice up, display cases lose temperature, racks leak refrigerant and older R-404A plant faces phase-down while energy bills climb. Nominees already install, service or manage refrigerated cases and walk-ins, and learn through inspection walkthroughs of machine rooms, sales floors and cold stores. CoreConcept Training Center delivers this commercial refrigeration and cold room systems course.

Course Objectives:

- Calculate cold room and walk-in heat loads from transmission, infiltration, product, defrost and internal gains and size evaporators and condensing units to match
- Specify insulated panel envelopes, vapour barriers, heated door frames, relief ports and freezer floor heave protection for chilled and frozen rooms
- Install and commission supermarket compressor racks, display cases and walk-in evaporators with correct pipework, evacuation and expansion valve settings
- Compare CO2 transcritical boosters, A2L and HFO blends and remaining HFC options against charge limits, ambient conditions and phase-down drivers
- Set defrost, case controller and floating suction strategies that cut ice build-up, product loss and compressor energy
- Prepare a site upgrade plan that ranks leak repairs, refrigerant transition steps and energy measures for a retail or logistics site

Target Audience:

- Refrigeration installation teams responsible for erecting cold rooms, walk-ins and display case lines
 - Service technicians responsible for compressor racks, condensing units, leak checks and defrost faults
 - Store and facilities maintenance units responsible for supermarket and food service refrigeration assets
 - Cold store and distribution centre engineering units responsible for chilled and frozen rooms
 - Refrigeration design and estimating units responsible for heat load sizing and equipment selection
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Course Outline:

Day 1: Commercial Refrigeration Landscape and Cold Room Baseline

- Retail, Food Service and Logistics Refrigeration Duty Classes
- Medium-Temperature and Low-Temperature Product Holding Ranges Compared
- Integral, Remote Condensing and Central Rack Architectures Compared
- International HFC Phase-Down Schedule and R-404A Retrofit Drivers
- Site Refrigeration Asset Register and Energy Baseline Survey

Day 2: Cold Room Envelope, Heat Load Calculation and Refrigerant Safety Standards

- Cold Room Heat Load Calculation by Transmission and Infiltration
- Product Pull-Down, Respiration, Lighting and Defrost Load Allowances
- Insulated Sandwich Panels, Vapour Barriers and Thermal Bridging Control
- Freezer Floor Heave Protection and Pressure Relief Port Sizing
- EN 378 and ASHRAE 15 Charge Limits for A2L Refrigerants

Day 3: Rack, Display Case and Walk-In Installation Practice

- Supermarket Compressor Rack Suction Groups and Oil Management
- Multideck, Island and Glass-Door Display Case Selection Criteria
- Walk-In Evaporator Placement, Air Throw and Door Air Curtains
- Electronic Expansion Valve and Case Controller Superheat Tuning
- Copper Pipework Brazing, Pressure Testing and Evacuation Procedure

Day 4: CO2 Transcritical Systems, Defrost, Leak Control and Energy Optimisation

- CO2 Transcritical Booster with Gas Cooler and High-Pressure Valve
- Parallel Compression and Ejector Options for Hot Ambient Operation
- Electric, Hot Gas and Off-Cycle Defrost Termination Strategies
- Refrigerant Leak Detection, Charge Monitoring and Leak Rate Records
- Floating Suction, Night Blinds and Anti-Sweat Heater Savings

Day 5: Inspection Walkthrough and Refrigeration Upgrade Plan

- Supermarket Sales Floor and Machine Room Inspection Walkthrough
 - Cold Store Door, Panel Joint and Ice Build-Up Checklist
 - Case Controller Alarm and Temperature Log Trend Review
 - Refrigerant Transition Option Appraisal for a Case Retailer
 - Cold Room and Retail Refrigeration Upgrade Plan Completion
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Skills You Will Gain:

- Cold Room Heat Load Sizing
- Insulated Envelope Specification
- Compressor Rack Commissioning
- Display Case Controller Setup
- CO2 Transcritical System Operation
- Defrost Strategy Selection
- Refrigerant Leak Management
- Retail Refrigeration Energy Auditing

Why Attend This Course:

- Deliver a Cold Room and Retail Refrigeration Upgrade Plan to the facilities manager and the store operations lead for approval and budgeting
- Choose between CO2 transcritical, A2L blend or retrofit routes for an ageing rack using charge limits, ambient conditions and site constraints
- Prevent product write-offs, iced evaporators and repeat refrigerant top-ups caused by poor defrost settings, door seals and undetected leaks
- Coach installers and service crews on evacuation, superheat tuning, leak checks and panel joint inspection routines

Conclusion:

Back at work, the participant presents the Cold Room and Retail Refrigeration Upgrade Plan to the facilities manager and the store or warehouse operations lead. They use it to approve leak repairs, defrost and controller changes, envelope fixes and the refrigerant transition route for each rack and walk-in. After the first season under the plan, the unit should compare refrigerant top-ups, temperature alarms, product losses and refrigeration energy per store against the baseline survey and adjust the priorities.

Frequently Asked Questions FAQ:

What should participants know before the commercial refrigeration and cold room systems course?

Participants should already install, service or manage refrigerated display cases, walk-ins or cold rooms and understand basic pressure and temperature readings. Bringing equipment lists, temperature logs or refrigerant top-up records from their own site helps them apply the walkthrough exercises to real assets.

How does commercial refrigeration and cold room systems training differ from an industrial refrigeration course?

This course covers walk-ins, cold rooms, supermarket racks and display cases with CO₂, A2L and HFC refrigerants. Industrial refrigeration courses deal with large process plants, machinery rooms and bulk ammonia or hydrocarbon charges with different equipment and safety systems.

Why are commercial refrigeration and cold room systems moving to CO₂ transcritical racks?

CO₂ has negligible global warming impact, so it avoids the phase-down pressure on high-impact HFCs such as R-404A. Transcritical boosters with parallel compression or ejectors now hold acceptable efficiency in warm climates, although they run at much higher pressures.

What do participants take back from the commercial refrigeration and cold room systems course?

Participants take back a Cold Room and Retail Refrigeration Upgrade Plan with heat load checks, envelope repairs, defrost and controller settings, a leak management routine, a refrigerant transition option and ranked energy measures for a case site.
