CORE CONCEPT

Refrigerant Management and HFC Phase-Down Course: Leak Control, Recovery and Low-GWP Transition

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Introduction:

Refrigerant management and HFC phase-down, with leak control, recovery and low-GWP transition, is a 1-week course for asset owner, facilities management, district cooling and environmental oversight units, ending with a Refrigerant Bank Management and Transition Plan for a case estate. Large hot-climate estates hold high-GWP refrigerant in thousands of units, yet top-ups go unrecorded, recovered gas is vented or stockpiled and replacements are chosen unit by unit as HFC supply tightens. Nominees already oversee refrigerant-bearing assets or service contracts and work through case studies on charge registers, leak logs and transition scenarios. CoreConcept Training Center delivers this refrigerant management course.

Course Objectives:

- Explain how the Montreal Protocol and the Kigali Amendment HFC phase-down affect refrigerant supply, price and servicing options for an estate
- Build a refrigerant charge register that converts every system charge into CO2-equivalent tonnes using GWP values
- Set leak-rate KPIs, inspection frequencies and repair verification rules for systems, sites and the whole portfolio
- Organise recovery, recycling, reclamation and destruction routes so that no used refrigerant is vented or left in unmanaged stockpiles
- Apply ASHRAE 34, ISO 817, ISO 5149, EN 378 and ASHRAE 15 safety rules when assessing A2L and natural refrigerant options
- Prepare a fleet transition plan that ranks low-GWP replacement and retrofit decisions by bank reduction, safety and service capability

Target Audience:

- Asset owner units accountable for refrigerant-bearing HVAC/R equipment across building portfolios
- Facilities management units responsible for servicing contracts, contractor competence and leak records
- District cooling operations units responsible for large chiller charges and plant refrigerant stocks
- Environmental and sustainability units responsible for fugitive emission reporting and phase-down targets
- Environmental oversight units responsible for licensing, inspecting and auditing refrigerant handling

Course Outline:

Day 1: Phase-Down Drivers and the Estate Refrigerant Bank Baseline

- Montreal Protocol Ozone Phase-Out Legacy and Remaining HCFC Banks
- Kigali Amendment HFC Phase-Down Steps and Baseline Calculation
- High-Ambient-Temperature Exemption Mechanism for Hot-Climate Air Conditioning
- GWP Values and CO2-Equivalent Conversion of System Charges
- Estate Refrigerant Bank Survey by Asset Class and Charge

Day 2: Refrigerant Safety Classes, Charge Limits and Inventory Frameworks

- ASHRAE 34 and ISO 817 Safety Classes A1 to B2L
- ISO 5149 and EN 378 Charge Limits for Occupied Spaces
- ASHRAE 15 Machinery Room Provisions for Larger Refrigerant Charges
- Refrigerant Charge Register Fields, Unit Tagging and Ownership
- Leak-Rate KPI Definitions per System, Site and Portfolio

Day 3: Leak Detection, Repair and Refrigerant Recovery Practice

- Direct and Indirect Leak Detection Methods with Inspection Frequencies
- Fixed Refrigerant Detector Placement and Alarm Response Routines
- Leak Repair Verification, Retest Intervals and Chronic Leaker Escalation
- Recovery Machine Use, Cylinder Handling and Weighing Records
- Technician Certification Schemes and Contractor Competence Matrix

Day 4: Reclaim, Destruction and Low-GWP Transition Risk

- AHRI 700 Reclamation Purity Analysis Versus On-Site Recycling
- Unwanted Refrigerant Consolidation, Stockpile Control and Destruction Routes
- A2L Retrofit Risk Review of Ignition Sources and Ventilation
- R-32, HFO, R-290 and R-744 Options Screened by Duty
- GHG Protocol Fugitive Emission Reporting of Refrigerant Losses

Day 5: Case Study on the Refrigerant Bank Management and Transition Plan

- Case Estate Data Pack with Charge Register and Leak Logs
- Case Leak-Rate KPI Calculation and Chronic Leaker Ranking
- Case Recovery, Reclaim and Destruction Flow Mapping
- Fleet Transition Scenarios Ranked by CO2-Equivalent Bank Reduction
- Refrigerant Bank Management and Transition Plan Completion and Defence

Skills You Will Gain:

- Refrigerant Bank Inventory
- CO2-Equivalent Charge Conversion
- Leak-Rate Performance Monitoring
- Chronic Leaker Diagnosis
- Recovery and Reclaim Logistics
- Refrigerant Safety Classification
- Contractor Competence Assurance
- Low-GWP Transition Planning

Why Attend This Course:

- Present a Refrigerant Bank Management and Transition Plan for a case estate to the head of facilities and the sustainability lead
- Decide which systems to repair, retrofit or replace using charge size, leak history and CO2-equivalent impact rather than age alone
- Avoid emergency purchases of scarce HFCs, vented refrigerant and unsafe A2L conversions in occupied spaces
- Equip service supervisors and contractors with the charge register, leak log and recovery record templates built during the course

Conclusion:

Back at work, the participant gives the head of facilities, the district cooling operations manager and the sustainability lead a Refrigerant Bank Management and Transition Plan for the estate. Facilities teams use it to approve leak repairs and contractor work, finance uses it to phase replacement budgets, and sustainability teams use it to report fugitive emissions. After the first full cooling season, the unit should compare top-up quantities, leak-rate KPIs and recovered volumes with the baseline and reorder the transition sequence.

Frequently Asked Questions FAQ:

What should participants know before a refrigerant management and HFC phase-down course?

Participants should already oversee refrigerant-bearing equipment, service contracts or environmental reporting. Basic knowledge of the vapour-compression cycle is enough. Bringing an anonymised equipment list, top-up records or a contractor leak log helps them apply the case study work to their own estate.

How does a refrigerant management and HFC phase-down course differ from a refrigeration engineering course?

This course manages the refrigerant itself across an estate: inventories, leak-rate KPIs, recovery, reclaim, destruction and transition planning. Refrigeration engineering courses design, install or troubleshoot specific plant such as cold rooms, chillers or industrial systems.

Why does HFC phase-down matter for refrigerant management in hot climates?

HFC phase-down steadily cuts the supply of high-GWP refrigerants, so estates with leaking systems face higher top-up costs and shortages. Hot climates add long running hours and large air conditioning charges, which makes leak control and planned transition more urgent.

What do participants take back from the refrigerant management and HFC phase-down course?

Participants take back a Refrigerant Bank Management and Transition Plan with a charge register, CO2-equivalent bank figures, leak-rate KPIs, recovery and reclaim routes, contractor competence rules and a ranked low-GWP transition sequence for a case estate.