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COURSE BROCHURE

Chiller Plant Commissioning and Fault Diagnosis Training Course

12 – 16 July 2027
Rome

Chiller Plant Commissioning and Fault Diagnosis Training Course

Ref: 1416_52866 **Date:** 12 – 16 July 2027 **Location:** Rome **Fees:** 7200 GBP

Chiller Plant Commissioning and Fault Diagnosis is a 1-week training course for HVAC engineers, facilities technicians and maintenance supervisors, built around a chiller fault signature log that links each symptom on a compressor, condenser or control loop to its likely cause and corrective task. Cooling now carries a large share of building and process energy, so a poorly started or misdiagnosed chiller wastes power for years. Jupiter Prime Training delivers this chiller plant commissioning and fault diagnosis course.

Why Chiller Plant Commissioning and Fault Diagnosis Matters Now

Three forces shape chilled water work today. Refrigerant phase-downs are moving plants towards low global warming potential fluids with new pressure and safety behaviour. Owners judge cooling by kilowatts per tonne of refrigeration, not just by whether rooms stay cool. Skilled refrigeration technicians are scarce, so diagnostic logic must be written down. A plant that is commissioned properly and diagnosed by evidence runs efficiently and avoids compressor failures; one that is not suffers surge, high head pressure and repeated callouts. The course draws on ISO 55001 for asset management and EN 13306 for maintenance terminology.

Who Gains Most from Chiller Plant Commissioning and Fault Diagnosis

- Engineers who select, specify and accept chillers and chilled water pumps
- Technicians who start up, service and repair refrigerant circuits and compressors
- Supervisors who schedule chiller maintenance and sign off contractor work
- Building management system operators who watch setpoints, alarms and staging logic
- Energy staff who track cooling plant efficiency against design figures

A hospital, data centre or district cooling site gains most when its engineers and technicians attend together.

Chiller Plant Commissioning and Fault Diagnosis Capabilities

Participants move from reading refrigerant gauges to defending a start-up acceptance or repair decision with measured evidence.

- Calculate superheat, subcooling and approach temperatures — refrigerant charge and heat exchanger cleaning decisions
- Specify installation checks for foundations, piping, flushing and electrical supply — contractor acceptance
- Test chiller performance against part-load ratings — owners and energy managers
- Assess oil, vibration and current readings on screw and centrifugal compressors — overhaul timing
- Apply symptom-to-cause trees to control and condenser faults — shift technicians
- Build a preventive maintenance task set for vapour compression and absorption units — maintenance supervisors

Key Chiller Plant Commissioning and Fault Diagnosis Terms

- Superheat — the temperature of suction vapour above its saturation point, showing whether the evaporator is fed correctly.
- Subcooling — the temperature of liquid refrigerant below its condensing point, used to judge charge and condenser health.
- Approach temperature — the gap between leaving water and refrigerant saturation temperature, which rises as tubes foul.
- Surge — unstable reverse flow in a centrifugal compressor at low load or high lift, causing noise and damage.
- Lithium bromide crystallisation — solidification of absorbent in an absorption chiller when concentration or temperature goes out of range.
- Integrated part load value — a weighted efficiency figure reflecting how a chiller performs across typical load levels.

Chiller Plant Commissioning and Fault Diagnosis Day by Day

Day 1: Refrigeration Cycles and Chiller Types

- Vapour Compression Cycle on the Pressure-Enthalpy Chart — Operating Point Reading
- Screw, Scroll and Centrifugal Compressors — Chiller Type Selection
- Absorption Chillers with Lithium Bromide — Waste Heat Opportunities
- Low Global Warming Potential Refrigerants — Safety and Retrofit Choices
- Chilled Water System Configurations — Primary-Secondary and Variable Flow

Day 2: Selection and Installation Practice

- Cooling Load and Part-Load Profile — Chiller Sizing and Staging
- Foundations, Isolation and Clearances — Installation Quality Checks
- Water Piping Flushing and Strainers — Heat Exchanger Protection
- Condenser Water and Cooling Tower Matching — Head Pressure Control
- Electrical Supply and Starter Types — Inrush and Harmonic Limits

Day 3: Commissioning and Performance Testing

- Pre-Start Checklists and Leak Testing — Start-Up Readiness
- Refrigerant Charging by Superheat and Subcooling — Charge Acceptance
- Flow Balancing and Differential Pressure — Evaporator and Condenser Design Flow
- Part-Load Performance Testing — Efficiency Acceptance Against Ratings
- Control Sequence Verification — Staging, Reset and Alarm Logic

Day 4: Fault Diagnosis and Preventive Maintenance

- Compressor Oil, Vibration and Current Analysis — Overhaul Timing
- High Head Pressure and Fouled Tubes — Condenser Cleaning Decisions
- Surge, Low Suction and Freeze Trips — Root Cause Trees
- Absorption Unit Crystallisation and Vacuum Loss — Recovery Steps
- Preventive Maintenance Task Frequencies — Annual Service Scope

Day 5: Practising the Chiller Fault Signature Log

- Commissioning Record Review of a Sample Plant — Applied Acceptance Checks
- Trend Data Diagnosis from Building Management Systems — Applied Fault Trees
- Efficiency Gap Calculation Against Design — Applied Performance Testing
- Criticality Ranking Under ISO 55001 Principles — Maintenance Budget Priorities
- Chiller Fault Signature Log — Symptom, Cause and Corrective Task Record

Applying Chiller Plant Commissioning and Fault Diagnosis After the Course

- Measure superheat, subcooling and approach on every running chiller and flag units with fouled tubes or wrong charge.
- Lead a review of chiller staging and reset sequences in the building management system with the controls contractor.

Chiller Plant Commissioning and Fault Diagnosis Questions FAQ

What is chiller plant commissioning and fault diagnosis and why does it matter now?

It is the work of starting chillers correctly and tracing faults to their causes. Rising cooling energy, new refrigerants and scarce technicians make evidence-based start-up and diagnosis essential for efficient plants.

Which roles gain most from chiller plant commissioning and fault diagnosis?

HVAC engineers, refrigeration technicians, maintenance supervisors and building management system operators gain most, since each touches chiller start-up, service or monitoring.

How does chiller plant commissioning and fault diagnosis differ from a general HVAC course?

It concentrates on the chiller and its refrigerant circuit. A general HVAC course spreads across air handling and ductwork, while this one goes deep into charging, compressor faults and part-load testing.

What do you bring back from chiller plant commissioning and fault diagnosis?

You bring back a structured record linking chiller symptoms to causes and corrective tasks, plus acceptance checks you can apply to the next start-up.

Chiller Plant Commissioning and Fault Diagnosis: The Way Forward

The chiller fault signature log first informs which unit needs condenser cleaning, recharging or compressor work. Technicians use it on callouts, supervisors to plan service scope and engineers to set acceptance limits. After its first cooling season, revisit the approach temperature thresholds, since local water quality and load patterns often shift the patterns recorded.