CORE CONCEPT

HVAC and Home Appliance Manufacturing Course: Coil Lines, Brazing, Charging and End-of-Line Tests

30 August – 3 September 2027
Paris - Right Bank business hotel

HVAC and Home Appliance Manufacturing Course: Coil Lines, Brazing, Charging and End-of-Line Tests

Ref: 1932_28831 **Date:** 30 August – 3 September 2027 **Location:** Paris - Right Bank business hotel **Fees:** 23500 SAR

Introduction:

HVAC and home appliance manufacturing, from coil lines and brazing to charging and end-of-line tests, is the subject of this 1-week course for production, process engineering, quality and plant management teams in air conditioner, chiller and white-goods factories, ending with an Appliance Plant Production and Quality Improvement Plan. Plants lose output and warranty margin when coil expansion drifts, brazed joints leak, charges vary and test gates pass marginal units. Nominees already run or support these lines, and teaching is by inspection walkthrough of coil, cabinet, sealed-circuit and test stations. CoreConcept Training Center delivers this HVAC and home appliance manufacturing course.

Course Objectives:

- Map the coil, cabinet, assembly and test areas of an appliance plant and baseline first pass yield, scrap and reject causes by area
- Set fin press, hairpin bending, tube expansion and powder coating parameters that hold coil geometry and cabinet finish within specification
- Control brazing filler, joint clearance and nitrogen purge, and sequence helium leak tests with reject limits and a repair loop
- Verify evacuation level, hold test and charge-by-weight accuracy and set run test acceptance bands for pressures, currents and superheat
- Organise electrical safety checks and capacity and energy sampling that support energy label declarations
- Rebalance assembly stations to takt and produce a production and quality improvement plan for a case appliance plant

Target Audience:

- Plant and production management teams responsible for output, line staffing and shift performance in appliance factories
- Process engineering teams responsible for coil, sheet-metal, coating and brazing station parameters
- Quality engineering teams responsible for leak, charge, run and electrical safety test gates and reject analysis
- Industrial engineering teams responsible for takt, line balancing and station work content
- Product compliance teams responsible for energy performance sampling and label declaration records

Course Outline:

Day 1: Appliance Plant Value Stream and Current Line Performance

- Value Stream Map of Coil, Cabinet, Assembly and Test Areas
- Product Family Routing for Split Units, Chillers and Refrigerators
- Sealed Refrigerant Circuit Bill of Process Walkthrough
- First Pass Yield and Scrap Baseline by Line Area
- Current-State Defect Pareto From End-of-Line Rejects

Day 2: Coil Line and Cabinet Fabrication Process Technology

- Fin Press Collar Height and Fin Pitch Verification
- Hairpin Bending and Mechanical Tube Expansion Ratio Control
- Cabinet Panel Punching, Bending and Spot Welding Sequence
- Powder Coating Pretreatment, Electrostatic Spray and Cure Window
- Coating Film Build, Adhesion and Corrosion Test Plan

Day 3: Brazing, Helium Leak Testing, Evacuation and Refrigerant Charging

- Copper-Phosphorus Filler Selection and Capillary Joint Clearance Control
- Nitrogen Purge Torch and Induction Brazing Station Set-Up
- Helium Vacuum Chamber and Sniffer Leak Test Sequencing
- Leak Rate Reject Limits and Leak Location Repair Loop
- Evacuation Level, Vacuum Hold Test and Charge-by-Weight Verification

Day 4: End-of-Line Test Gates, Energy Label Sampling and Line Flow Problems

- Run Test Pressure, Current and Superheat Acceptance Bands
- Hipot and Earth Continuity Electrical Safety Station Checks
- Capacity and Energy Consumption Sampling for Label Declarations
- Takt Time Calculation and Station Work Content Rebalancing
- Statistical Process Control Charts for Charge and Leak Data

Day 5: Inspection Walkthrough and the Plant Improvement Plan

- Case Plant Walkthrough Against Coil and Brazing Checklists
- Case Leak and Charge Reject Root Cause Using Five Whys
- Case Assembly Line Rebalance to a New Takt Target
- End-of-Line Test Gate Revision and Sampling Plan Update
- Appliance Plant Production and Quality Improvement Plan Completion

Skills You Will Gain:

- Appliance Value Stream Mapping
- Coil Geometry Control
- Powder Coat Process Control
- Brazed Joint Quality Control
- Helium Leak Test Management
- Refrigerant Charge Verification
- End-of-Line Test Gate Design
- Takt-Based Line Balancing

Why Attend This Course:

- Deliver an Appliance Plant Production and Quality Improvement Plan to the plant manager and the head of quality
- Decide where leak, charge and run test limits and sampling frequencies should sit for each product family
- Avoid field refrigerant leaks, undercharged units and label declarations that sampled units cannot support
- Coach line leaders and technicians on brazing checklists, leak repair loops and station work content charts

Conclusion:

Back at work, the participant presents the Appliance Plant Production and Quality Improvement Plan to the plant manager, the head of quality and the industrial engineering lead. They use it to approve revised brazing and leak test settings, new run test acceptance bands, an energy sampling routine and a rebalanced assembly line for the next model change. After the first month under the plan, the unit should compare first pass yield, leak rejects, charge variation and takt attainment with the baseline and revise the stations that missed their targets.

Frequently Asked Questions FAQ:

What should participants know before an HVAC and home appliance manufacturing course?

Participants should already work on or support coil, cabinet, assembly or test lines in an appliance plant. Bringing anonymised reject data, a line layout or test station limits from their own plant makes the walkthrough and the improvement plan more useful.

How does an HVAC and home appliance manufacturing course differ from an HVAC system design course?

It stays on the factory floor: coil lines, coating, brazing, leak testing, charging, end-of-line test gates and line balancing. A system design course sizes loads, selects equipment and lays out ducts and pipework in buildings, which this course does not cover.

Why do brazed joints leak in HVAC and home appliance manufacturing?

Most leaks come from wrong joint clearance, contaminated surfaces, missing nitrogen purge or poor heat control at the station. Plants reduce them by fixing clearance and filler choice, standardising torch or induction settings and feeding helium leak locations back to brazing.

What do participants take back from the HVAC and home appliance manufacturing course?

Participants take back an Appliance Plant Production and Quality Improvement Plan with a yield baseline, coil and brazing station settings, leak and charge test limits, an energy sampling routine and a rebalanced assembly line, ready to adapt to their own plant.