



Compressed Air and Industrial Pneumatic Systems Course: Air Treatment, Leaks and Electro-Pneumatics



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Introduction:

Compressed air and industrial pneumatic systems course held over 5 days for maintenance and utility staff who run compressor rooms, air treatment and pneumatic machinery, ending with a Compressed Air and Pneumatics Improvement Plan for a case plant. Plants lose output and money to wet or oily air, undersized pipework, unmanaged leaks and cylinders that stall without an obvious cause. Nominees already maintain compressors, dryers or pneumatic equipment and learn through inspection walkthroughs of compressor houses, air lines and machine circuits. CoreConcept Training Center delivers this compressed air and industrial pneumatic systems course.

Course Objectives:

- Select compressor types and capacity control modes that match a measured plant demand profile
- Specify dryers, filters and condensate drains that deliver the ISO 8573-1 purity class each point of use requires
- Size distribution pipework, ring mains, drops and receivers to keep pressure drop within agreed limits
- Run an ultrasonic leak survey with tagging, repair tracking and an estimate of wasted air
- Read pneumatic and electro-pneumatic circuit drawings and set up valves, cylinders and air preparation units
- Diagnose faults in electro-pneumatic circuits by tracing solenoid, sensor and controller signals in a set order

Target Audience:

- Technicians responsible for servicing screw, piston and centrifugal air compressors and their controls
 - Utility staff responsible for dryers, filters, condensate drains and air quality at points of use
 - Maintenance staff responsible for pneumatic cylinders, valve islands and air preparation units on production machines
 - Electrical and instrument staff responsible for solenoid valves, reed switches and controller inputs on pneumatic equipment
 - Shift engineers responsible for compressed air pressure, leak reporting and first response to pneumatic stoppages
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Course Outline:

Day 1: Compressed Air Fundamentals and Compressor Room Assessment

- Free Air Delivery, Pressure Ratio and Specific Power Basics
- Reciprocating, Rotary Screw, Vane and Scroll Compressor Construction
- Centrifugal and Axial Compressors for Large Base Loads
- Demand Profile Logging with Pressure and Current Recorders
- Compressor Room Condition Checklist and Nameplate Data Register

Day 2: Compressor Control, Air Treatment and ISO 8573-1 Purity Classes

- Start-Stop, Load-Unload and Modulating Control Pressure Bands
- Variable Speed Drive Trim Compressor and Sequencer Settings
- ISO 8573-1 Purity Classes for Particles, Water and Oil
- Refrigerated, Desiccant and Membrane Dryer Selection by Dew Point
- Coalescing Filters, Carbon Towers and Zero-Loss Condensate Drains

Day 3: Distribution Networks, Receivers and Pneumatic Components

- Ring Main Layout, Drop Legs and Drain Points
- Pipe Sizing Charts for Flow, Length and Pressure Drop
- Wet and Dry Receiver Sizing for Peak Demand Buffering
- Filter-Regulator-Lubricator Units and Soft-Start Dump Valves
- Directional Control Valves, Cylinders and Flow Restrictors Setup

Day 4: Leak Management, Electro-Pneumatic Circuits and Fault Cases

- Ultrasonic Leak Detector Survey Route and Tagging Method
- Leak Rate Estimation by Receiver Pressure Decay Test
- Fluid Power Graphical Symbols and Electro-Pneumatic Circuit Reading
- Solenoid Valves, Reed Switches and Controller Input Signal Tracing
- Fault Cases for Sticking Spools, Slow Cylinders and Moisture Carryover

Day 5: Inspection Walkthrough and Compressed Air Improvement Plan

- Case Plant Compressor House Walkthrough Against the Condition Checklist
 - Case Air Quality Check Against Required Purity Classes
 - Case Network Pressure Drop Survey and Leak Tag Register
 - Case Electro-Pneumatic Machine Fault-Finding Drill With Circuit Drawings
 - Compressed Air and Pneumatics Improvement Plan Completion
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Skills You Will Gain:

- Compressor Capacity Matching
- Air Purity Class Specification
- Dryer and Filter Selection
- Distribution Pipe Sizing
- Ultrasonic Leak Surveying
- Pneumatic Circuit Interpretation
- Electro-Pneumatic Fault Diagnosis
- Air System Condition Inspection

Why Attend This Course:

- Deliver a Compressed Air and Pneumatics Improvement Plan for a case plant to the maintenance manager and the utilities lead for approval
- Decide which compressor control mode, dryer type and pipe size suit a given demand before ordering equipment
- Avoid wet air reaching product contact points, recurring leaks and repeated cylinder stoppages that halt production lines
- Coach shift technicians with the leak tagging routine, condition checklist and circuit tracing sequence used during the course

Conclusion:

Back at work, the participant presents the Compressed Air and Pneumatics Improvement Plan to the maintenance manager, the utilities lead and the production engineer who owns the critical pneumatic machines. They use it to agree compressor control changes, purity class targets for each point of use, pipework corrections and a leak repair routine. After the first leak survey and one month of pressure logging under the plan, the unit should review leaks closed, dew point readings, pressure at the furthest drop and pneumatic stoppage records.

Frequently Asked Questions FAQ:

What should participants know before the compressed air and industrial pneumatic systems course?

Participants should already maintain or operate compressors, dryers or pneumatic machinery and be able to read basic mechanical and electrical drawings. A calculator and access to their own plant's air system data help with the sizing and leak exercises.

How does a compressed air and industrial pneumatic systems course differ from a hydraulics or energy management course?

It stays on the air chain from compressor to cylinder: generation, purity, pipework, leaks and electro-pneumatic circuits. Hydraulics courses cover oil-driven power units and high-force actuators, while energy management courses cover site-wide audits, baselines and savings verification across all utilities.

Why do purity classes matter in compressed air and industrial pneumatic systems?

Purity classes set how many particles and how much water and oil the air may carry at each point of use. Specifying the right class avoids paying for over-treatment while protecting valves, instruments and product contact surfaces from moisture and oil.

What do participants take back from the compressed air and industrial pneumatic systems course?

Participants take back a Compressed Air and Pneumatics Improvement Plan for a case plant, with a compressor room checklist, purity class targets, pipe sizing notes, a leak tag register and a fault-finding sequence for electro-pneumatic machines.
