

Industrial Air Emissions Control and Retrofit Training Course

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Overview

Industrial Air Emissions Control and Retrofit Training Course is a one-week advanced course for environmental, process, plant, EHS, maintenance, and emissions functions who leave with an Industrial Emissions Control Retrofit Action Plan. Participants connect source inventories, baseline evidence, pollutant mass balances, control-device selection, brownfield integration, performance monitoring, and operating decisions. The course addresses stack and fugitive emissions across mineral processing, chemicals, power, metals, and manufacturing facilities. Agile Leaders Training Center presents industrial air emissions control through traceable retrofit decisions.

Who Should Attend

- Environmental functions responsible for emissions inventories, permits, monitoring evidence, and improvement plans
- Process functions responsible for source characterization, mass balances, capture systems, and operating conditions
- Plant functions responsible for retrofit priorities, production interfaces, shutdown constraints, and performance decisions
- EHS functions responsible for air-quality risk, inspection findings, records, and compliance controls
- Maintenance functions responsible for fans, ducts, collectors, scrubbers, instruments, and failure diagnosis
- Engineering functions responsible for control-technology evaluation, integration, testing, and handover

The course assumes participants interpret process, maintenance, or emissions data at work and leaves emissions trading, greenhouse-gas accounting, general environmental management, and new-plant design outside scope.

Departments and Industries

The course supports departments and industries that operate, monitor, maintain, and retrofit stationary industrial emission sources.

- Environmental engineering, EHS, and regulatory affairs departments
- Process engineering, production, utilities, and technical services
- Maintenance, reliability, instrumentation, and project engineering
- Cement, minerals, metals, and bulk-material processing
- Chemicals, refining, power generation, and waste treatment
- Food, pharmaceutical, coating, and general manufacturing operations

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Learning Objectives

By the end of this course, participants will be able to:

- Build source and pollutant inventories from process and monitoring evidence.
- Analyze stack and fugitive emissions using mass-balance and baseline methods.
- Evaluate particulate, acid-gas, nitrogen-oxide, and organic-vapor control options.
- Build capture, duct, control-device, and monitoring retrofit concepts.
- Diagnose control-system performance, maintenance, energy, and waste trade-offs.
- Prioritize an industrial emissions control retrofit action plan.

Course Agenda

Day 1: Establish the Emissions Baseline

- Industrial Emission Source and Release-Point Inventory Template
- Pollutant Property, Hazard, and Process-Origin Matrix
- Stack Test, CEMS, Parametric, and Inspection Evidence Map
- Process Mass Balance and Emission-Factor Reconciliation Worksheet
- Baseline Uncertainty, Data-Gap, and Retrofit Priority Register

Day 2: Select Particulate and Acid-Gas Controls

- Capture Hood, Enclosure, Duct, Fan, and Pressure-Loss Design Map
- Cyclone and Multicyclone Particle-Size Selection Method
- Fabric Filter and Baghouse Air-to-Cloth Decision Worksheet
- Electrostatic Precipitator Resistivity and Field-Performance Review
- Wet and Dry Scrubber Pollutant-Solubility Selection Matrix

Day 3: Control Gases and Fugitive Releases

- Low-NOx Combustion and Post-Combustion Option Screen
- Sulfur-Oxide Reagent, By-Product, and Cross-Media Trade-Off File
- Adsorption, Condensation, and Vapor-Recovery Selection Grid
- Thermal and Catalytic Oxidation Operating-Window Analysis
- LDAR Component Inventory, Screening, Repair, and Verification Workflow

Day 4: Integrate and Sustain Retrofit Performance

- Brownfield Plot-Space, Tie-In, Shutdown, and Constructability Register
- Control-Train Compatibility, Corrosion, Fouling, and Materials Review
- CEMS, COMS, and Parametric Monitoring Architecture
- Performance Test, Acceptance, Alarm, and Data-Quality Plan
- Operation, Maintenance, Troubleshooting, Energy, and Residue Scorecard

Day 5: Practice Emissions Control Retrofit Decisions

- Suggested Exercise: Reconcile a Source Inventory and Baseline Evidence File
- Suggested Exercise: Match Pollutants to Capture and Control Technologies
- Suggested Exercise: Diagnose a Baghouse, Scrubber, or Oxidizer Deviation
- Suggested Exercise: Build a Monitoring and Performance Verification Plan
- Capstone Exercise: Present an Industrial Emissions Control Retrofit Action Plan

Practical Exercises

The course uses suggested activities to turn plant and monitoring evidence into defensible retrofit and operating decisions.

- Suggested activity: reconcile process rates, stack measurements, and fugitive-source records for a metals facility.
- Suggested activity: compare baghouse, electrostatic precipitator, and scrubber options for mineral-processing emissions.
- Suggested activity: diagnose pressure drop, temperature, reagent, fan, and instrument deviations in a control train.
- Suggested activity: sequence a chemical-plant retrofit around tie-ins, shutdowns, monitoring, and acceptance evidence.

FAQs

Who suits industrial air emissions control training, and what does it assume?

Industrial air emissions control training suits environmental, process, plant, EHS, maintenance, and engineering functions and assumes participants already interpret process, maintenance, or emissions evidence.

How does industrial air emissions control differ from emissions trading training?

Industrial air emissions control focuses on physical sources, capture systems, treatment equipment, monitoring, and operating performance, while emissions trading training focuses on allowance obligations and market decisions.

How are air-pollution control technologies selected for an existing plant?

Control technologies are selected by matching pollutant form, concentration, gas conditions, required performance, capture needs, space, utilities, materials, residues, maintenance, shutdown constraints, and monitoring evidence.

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What evidence shows an industrial emissions retrofit is performing?

Retrofit performance is shown through stack or continuous measurements, control-device parameters, inspections, maintenance records, acceptance tests, alarms, data-quality checks, and comparison with the approved operating basis.

How are fugitive emissions controlled alongside stack emissions?

Fugitive emissions are controlled through component inventories, enclosure and capture, inspection routes, screening methods, repair priorities, verification checks, work practices, and records linked to source and pollutant inventories.

Conclusion

Participants take an Industrial Emissions Control Retrofit Action Plan back to their organization. It connects source evidence, pollutant priorities, control-technology choices, integration constraints, monitoring, maintenance, and verification actions. The plan changes isolated equipment proposals into a sequenced basis for retrofit investment, operating control, and performance review.

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