

Advanced Amine Gas Sweetening and Sulphur Recovery Training Course

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Overview

Amine gas sweetening and sulphur recovery is a one-week advanced course for gas-processing, operations, reliability, and process-safety functions who leave with an Acid Gas Removal and Sulphur Recovery Performance Improvement File. Participants connect acid gas removal, amine solvent selection, absorber and regenerator performance, Claus sulphur recovery, tail gas treatment, and emissions evidence. The course applies amine gas treating data, material balances, cause-and-effect diagnostics, and prioritized corrective actions across the Claus process interface. Agile Leaders Training Center presents integrated gas sweetening and sulphur recovery practice.

Who Should Attend

- Gas-processing functions responsible for feed characterization, product specifications, and process performance
- Operations functions responsible for amine circulation, unit stability, alarms, and operating responses
- Process-engineering functions responsible for material balances, solvent selection, and optimization studies
- Maintenance and reliability functions responsible for equipment condition, fouling, corrosion, and failure recurrence
- Process-safety functions responsible for hydrogen sulphide hazards, safeguarding, emissions, and abnormal operations
- Technical-assurance functions responsible for performance reviews, change control, and corrective-action governance

The course assumes participants already interpret process flow diagrams, operating trends, laboratory results, and equipment records, and it leaves out detailed equipment design, proprietary simulation configuration, and laboratory analytical procedures.

Departments and Industries

The course supports departments and industries that operate or assure acid-gas removal and sulphur-recovery facilities.

- Natural gas processing and transmission
- Petroleum refining and petrochemical operations
- Integrated energy and industrial-utility facilities
- Process engineering and technical services
- Operations, maintenance, and reliability
- Process safety, environmental performance, and technical assurance

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Learning Objectives

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

- Analyze sour-gas composition and treatment specifications
- Evaluate amine selection, loading, circulation, and regeneration evidence
- Diagnose foaming, degradation, corrosion, and off-specification gas
- Apply Claus stoichiometry and SRU performance indicators
- Prioritize tail-gas, emissions, safety, and reliability actions
- Build an integrated performance-improvement file

Course Agenda

Day 1: Define the Treatment Chain

- Sour-Gas Composition and Contaminant Characterization Matrix
- Sales-Gas and Acid-Gas Stream Specification Map
- Amine-to-SRU Process Interface Block Diagram
- Hydrogen Sulphide Hazard and Safeguard Barrier Register
- Integrated Unit KPI and Evidence Baseline

Day 2: Control Amine Unit Performance

- Amine Solvent Selection and Selectivity Decision Matrix
- Rich-and-Lean Solvent Loading Calculation Method
- Absorber Mass-Transfer and H2S Slip Trend Review
- Regenerator Energy and Stripping Performance Balance
- Circulation Rate, Temperature, and Reflux Operating Envelope

Day 3: Diagnose Solvent and Equipment Problems

- Foaming Cause-and-Effect Diagnostic Tree
- Heat-Stable Salt and Solvent Degradation Evidence Table
- Filtration, Contamination, and Hydrocarbon Carryover Checklist
- Amine Corrosion Circuit and Materials-Risk Map
- Equipment Reliability and Recurring-Failure Action Register

Day 4: Optimize Sulphur Recovery and Emissions

- Claus Reaction Stoichiometry and Air-Demand Calculation
- Reaction Furnace and Waste-Heat Boiler Performance Review
- Catalytic Converter and Sulphur Condenser Temperature Profile
- Tail-Gas Treatment, Incineration, and Emissions Balance
- API Standard 565 Thermal-Reactor Safeguarding Checklist

Day 5: Practice Integrated Improvement

- Suggested Exercise: Reconcile Feed, Product, Acid-Gas, and Sulphur Balances
- Suggested Exercise: Diagnose Amine Foaming and Off-Specification Gas
- Suggested Exercise: Correct Claus Air Demand and Converter Performance
- Suggested Exercise: Prioritize Tail-Gas, Corrosion, and Reliability Actions
- Capstone Exercise: Complete the Acid Gas Removal and Sulphur Recovery Performance Improvement File

Practical Exercises

The course uses suggested activities to convert operating evidence into traceable cross-unit decisions.

- Suggested activity: calculate rich and lean loading, circulation adequacy, and regenerator performance from a plant-data case.
- Suggested activity: use trend evidence to distinguish foaming, contamination, degradation, corrosion, and equipment limitations.
- Suggested activity: reconcile Claus stoichiometry, furnace conditions, converter temperatures, sulphur yield, and tail-gas indicators.
- Suggested activity: assign corrective actions, owners, evidence requirements, priorities, and verification measures.

FAQs

Who suits amine gas sweetening and sulphur recovery training, and what does it assume?

Amine gas sweetening and sulphur recovery training suits process, operations, reliability, safety, and assurance functions. It assumes practical use of process diagrams, operating trends, laboratory results, equipment histories, and performance reviews.

How does amine gas sweetening and sulphur recovery differ from general gas-processing training?

Amine gas sweetening and sulphur recovery concentrates on acid-gas removal, solvent performance, Claus chemistry, tail-gas control, sulphur handling, and their operating interfaces. General gas-processing training spans a wider range of dehydration, separation, compression, liquids recovery, and fractionation topics.

What operating data diagnose poor amine gas sweetening performance?

Poor amine performance is diagnosed through feed and treated-gas composition, rich and lean loading, solvent strength, circulation, temperatures, pressure drop, regenerator duty, reflux, filtration condition, contaminants, corrosion evidence, and alarm history.

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How is Claus sulphur recovery performance evaluated?

Claus performance is evaluated through acid-gas composition, air demand, furnace temperature, converter temperature profiles, sulphur condenser behavior, sulphur yield, tail-gas composition, incinerator conditions, and the accuracy of analyzers and control loops.

How are tail gas treatment and sulphur handling risks controlled?

Tail-gas and sulphur-handling risks are controlled through stable upstream operation, verified safeguards, emission monitoring, oxygen exclusion, temperature control, degassing, containment, detection, inspection, operating limits, and practiced abnormal-situation responses.

Conclusion

Participants take back an Acid Gas Removal and Sulphur Recovery Performance Improvement File linking feed evidence, solvent performance, equipment condition, Claus conversion, tail-gas indicators, emissions, and prioritized actions. It changes isolated unit observations into one cross-functional improvement path. The file makes assumptions, owners, verification measures, and escalation triggers visible.

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