Gas Sweetening and Dehydration Training Course

Professional Development Training Course Outline

Category	General Training	**Duration**	5 Days
Base Fee	$1,500 USD	**Delivery Mode**	Online / On-site Hybrid

Course Introduction

Gas Sweetening and Gas Dehydration Training Course is designed to equip professionals with advanced knowledge of natural gas processing, acid gas removal, H?S and CO? treatment, and water vapor control technologies. With increasing global demand for cleaner energy and stricter environmental regulations, this course focuses on modern amine treating systems, glycol dehydration units, process optimization, and emissions compliance strategies. Participants gain in-depth exposure to real-world plant operations, troubleshooting techniques, and simulation-based learning aligned with industry standards.

This training integrates cutting-edge concepts in gas treating plant design, operational safety, corrosion control, process efficiency, and carbon capture readiness. It is tailored for engineers and technicians working in refineries, LNG plants, gas processing facilities, petrochemical industries, and offshore production platforms. The program emphasizes both theoretical foundations and practical field applications, ensuring participants can confidently manage gas quality specifications, hydrate prevention, and process reliability under high-pressure operations.

Programme Curriculum

Gas Sweetening and Dehydration Training Course

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Course Duration

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Course Objectives

1. Master Natural Gas Sweetening processes using Amine systems
2. Understand advanced H?S and CO? removal technologies for sour gas treatment.
3. Optimize Gas Dehydration systems using TEG, DEG, and molecular sieves.
4. Apply Process Simulation and Modeling tools for plant efficiency improvement.
5. Enhance Corrosion control strategies in sour gas environments.
6. Achieve compliance with Environmental Emission Standards (EPA, ISO, API).
7. Improve Hydrate formation prevention techniques in gas pipelines.
8. Analyze and troubleshoot Gas Processing Plant operations effectively.
9. Implement Energy efficiency optimization in gas treating units.
10. Strengthen understanding of Safety Integrity Level (SIL) and HSE protocols.
11. Develop skills in Process control instrumentation and automation systems.
12. Reduce operational risks using Predictive Maintenance and Reliability Engineering.
13. Prepare for LNG and downstream integration readiness in gas facilities.

Target Audience

- Process Engineers in oil & gas industries
- Chemical Engineers in gas processing plants
- Production and Operations Supervisors
- Plant Operators and Technicians
- Maintenance Engineers
- HSE and Safety Professionals in hydrocarbon facilities
- LNG and Refinery Project Engineers
- Graduates seeking careers in petroleum and gas processing

Course Modules

Module 1: Fundamentals of Natural Gas Processing

- Composition of natural gas streams
- Phase behavior and gas conditioning
- Overview of sweetening and dehydration
- Gas specifications for sales and LNG
- Process flow diagrams (PFDs) interpretation
- **Case Study:** Analysis of gas conditioning failure in offshore production leading to pipeline corrosion.

Module 2: Gas Sweetening Technologies

- Amine systems operations

- Acid gas removal mechanisms
- Solvent selection criteria
- Absorber and regenerator design
- Foaming and degradation control
- **Case Study:** Optimization of MDEA system improving CO? removal efficiency by 18%.

Module 3: Gas Dehydration Systems

- TEG dehydration unit operations
- Glycol circulation and regeneration
- Water dew point control
- Solid desiccant systems
- Troubleshooting dehydration failures
- **Case Study:** TEG system retrofit reducing hydrate formation in Arctic gas pipeline.

Module 4: Process Simulation & Optimization

- HYSYS/PRO II modeling basics
- Sensitivity analysis in gas treating
- Energy optimization techniques
- Mass transfer efficiency improvements
- Real-time process monitoring
- **Case Study:** Simulation-based redesign of absorber column improving throughput by 22%.

Module 5: Corrosion and Materials Selection

- Sweet vs sour corrosion mechanisms
- H?S cracking and mitigation
- Material compatibility selection
- Chemical injection systems
- Inspection and monitoring strategies
- **Case Study:** Failure analysis of carbon steel pipeline in sour gas field and mitigation redesign.

Module 6: Hydrate Prevention & Flow Assurance

- Hydrate formation conditions
- Thermodynamic inhibitors
- Insulation and heating systems
- Flow assurance strategies
- Subsea gas transport challenges
- **Case Study:** Deepwater pipeline blockage resolved using MEG injection optimization.

Module 7: Safety, HSE & Environmental Compliance

- Gas toxicity and H?S safety systems
- Emergency shutdown (ESD) systems
- Gas leak detection technologies
- Environmental emission controls
- Risk assessment and HAZOP studies
- **Case Study:** HAZOP implementation reducing gas leakage incidents by 35%.

Module 8: Advanced Gas Plant Operations & Troubleshooting

- Integrated gas plant operations
- Upset condition handling
- Instrumentation and control loops
- Predictive maintenance strategies
- Production optimization techniques
- **Case Study:** LNG feed gas quality stabilization through advanced control system tuning.

Training Methodology

This course employs a participatory and hands-on approach to ensure practical learning, including:

- Interactive lectures and presentations.
- Group discussions and brainstorming sessions.
- Hands-on exercises using real-world datasets.
- Role-playing and scenario-based simulations.
- Analysis of case studies to bridge theory and practice.
- Peer-to-peer learning and networking.
- Expert-led Q&A sessions.
- Continuous feedback and personalized guidance.

Register as a group from 3 participants for a Discount

Send us an email: info@fineskilltrainingcenter.org or call *+254769199797*

Certification

Upon successful completion of this training, participants will be issued with a globally- recognized certificate.

Tailor-Made Course

We also offer tailor-made courses based on your needs.

Key Notes

a. The participant must be conversant with English.

b. Upon completion of training the participant will be issued with an Authorized Training Certificate

c. Course duration is flexible and the contents can be modified to fit any number of days.

d. The course fee includes facilitation training materials, 2 coffee breaks, buffet lunch and A Certificate upon successful completion of Training.

e. One-year post-training support Consultation and Coaching provided after the course.

f. Payment should be done at least a week before commence of the training, to Fineskill Training Center account, as indicated in the invoice so as to enable us prepare better for you.

Upcoming Scheduled Sessions

Start Date	End Date	Location	Price
23 Nov 2026	27 Nov 2026	Online	$1,000
23 Nov 2026	27 Nov 2026	Physical	$1,500
23 Nov 2026	27 Nov 2026	Physical	$3,000
23 Nov 2026	27 Nov 2026	Physical	$3,000
23 Nov 2026	27 Nov 2026	Physical	$6,000
23 Nov 2026	27 Nov 2026	Physical	$4,500
23 Nov 2026	27 Nov 2026	Physical	$6,000
23 Nov 2026	27 Nov 2026	Physical	$6,000

Ready to enroll or request a customized program? Book online or contact us:

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