Sulfur Recovery Unit (SRU) Operations 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

Sulfur Recovery Unit (SRU) Operations Training Course is designed to equip refinery and gas processing professionals with advanced competencies in sulfur recovery, Claus process optimization, and environmental compliance. As global energy industries face increasing pressure for low-emission refining, ESG compliance, and hydrogen sulfide (H?S) management, this training delivers critical knowledge on safe, efficient, and sustainable SRU operations. Participants gain hands-on insights into Claus process chemistry, tail gas treatment units (TGTU), amine systems integration, and real-time process optimization using digital refinery technologies.

This course emphasizes operational excellence, troubleshooting skills, and regulatory adherence aligned with modern refinery digitalization, carbon footprint reduction, and process safety management (PSM) standards. It is structured to bridge the gap between theory and plant-floor execution, enabling professionals to enhance plant reliability, sulfur recovery efficiency, emission control, and energy optimization. With a strong focus on case-based learning, learners will develop the ability to diagnose operational issues, improve catalyst performance, and ensure uninterrupted SRU performance under dynamic refinery conditions.

Programme Curriculum

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Course Duration

5 days

Course Objectives

1. Master Claus Process chemistry and reaction mechanisms for sulfur recovery
2. Understand SRU unit configuration, design, and operational flow
3. Optimize sulfur recovery efficiency using advanced process control (APC)
4. Identify and troubleshoot H?S and SO? emission deviations
5. Apply process safety management (PSM) in SRU operations
6. Enhance performance of thermal reactors and catalytic converters
7. Improve tail gas treatment unit (TGTU) efficiency and compliance
8. Analyze amine gas treating integration with SRU systems
9. Implement real-time monitoring and digital twin technologies
10. Reduce plant downtime through predictive maintenance strategies
11. Ensure compliance with environmental emission standards
12. Conduct root cause analysis (RCA) for operational failures
13. Achieve maximum sulfur recovery efficiency with minimum energy consumption

Target Audience

1. Refinery Process Engineers
2. SRU & Gas Plant Operators
3. Chemical Engineers in Oil & Gas Sector
4. Maintenance Engineers and Technicians
5. Process Safety and HSE Professionals
6. Plant Operations Supervisors
7. Commissioning and Start-up Engineers
8. Energy and Environmental Compliance Officers

Course Modules

Module 1: Fundamentals of Sulfur Recovery & Refinery Gas Processing

- Overview of SRU systems in oil & gas refineries
- Sulfur compounds in hydrocarbon processing
- Claus reaction chemistry and thermodynamics
- Gas sweetening and H?S removal basics
- Industry benchmarks for sulfur recovery efficiency

- **Case Study:** Analysis of sulfur imbalance in a medium-scale refinery SRU system

Module 2: Claus Process Technology & Reactor Operations

- Thermal stage combustion principles
- Catalytic converter operations and kinetics
- Air-to-gas ratio optimization
- Reaction furnace temperature control
- Sulfur condensation and separation mechanisms
- **Case Study:** Claus reactor temperature instability and efficiency loss resolution

Module 3: Tail Gas Treatment Unit (TGTU) Optimization

- SCOT process and hydrogenation principles
- Tail gas cleanup technologies
- Emission reduction strategies
- Catalyst performance monitoring
- Integration with incineration systems
- **Case Study:** TGTU failure leading to regulatory emission breach

Module 4: Amine Gas Treating & SRU Integration

- Amine circulation and regeneration systems
- CO? and H?S absorption dynamics
- Heat stable salt formation issues
- Foaming and corrosion control
- System integration with upstream units
- **Case Study:** Amine contamination affecting SRU feed quality

Module 5: Process Control & Automation in SRU

- Distributed Control Systems (DCS) overview
- Advanced Process Control (APC) strategies
- Real-time optimization algorithms
- Sensor calibration and reliability
- Alarm management systems
- **Case Study:** Control system failure causing sulfur recovery drop

Module 6: Safety, Risk Management & Environmental Compliance

- Process Safety Management (PSM) in SRU
- H?S toxicity and exposure control
- Emergency shutdown (ESD) systems
- Environmental emission regulations
- Risk assessment methodologies
- **Case Study:** H?S leak incident and emergency response evaluation

Module 7: Troubleshooting & Root Cause Analysis

- Common SRU operational issues
- Catalyst poisoning and deactivation
- Furnace plugging and fouling

- Diagnostic tools and performance indicators
- Structured RCA methodologies
- **Case Study:** Catalyst deactivation leading to reduced sulfur yield

Module 8: Energy Efficiency & Digital Refinery Transformation

- Energy optimization in SRU operations
- Heat recovery systems and integration
- Digital twin and predictive analytics
- Machine learning for process optimization
- Sustainability and carbon reduction strategies
- **Case Study:** Digital optimization improving sulfur recovery by 2.5%

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
28 Sep 2026	02 Oct 2026	Online	$1,000
28 Sep 2026	02 Oct 2026	Physical	$1,500
28 Sep 2026	02 Oct 2026	Physical	$0
28 Sep 2026	02 Oct 2026	Physical	$0
28 Sep 2026	02 Oct 2026	Physical	$0
28 Sep 2026	02 Oct 2026	Physical	$0
28 Sep 2026	02 Oct 2026	Physical	$0
28 Sep 2026	02 Oct 2026	Physical	$0

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