Training Course on NGL (Natural Gas Liquids) Recovery and Fractionation

Professional Development Training Course Outline

Category	Oil and Gas	**Duration**	10 Days
Base Fee	$3,000 USD	**Delivery Mode**	Online / On-site Hybrid

Course Introduction

Natural Gas Liquids (NGLs) are a critical component of the hydrocarbon value chain, playing a pivotal role in the global energy and petrochemical markets. With the increasing demand for cleaner energy sources and the need to optimize gas processing, understanding the recovery and fractionation of NGLs is more important than ever. Training Course on NGL (Natural Gas Liquids) Recovery & Fractionation is designed to equip professionals with the technical expertise, operational insights, and strategic knowledge required to maximize efficiency, safety, and profitability in NGL recovery and fractionation processes.

The course explores state-of-the-art technologies, industry best practices, and regulatory compliance measures while emphasizing economic optimization, environmental sustainability, and safety standards. Through in-depth modules, real-world case studies, and hands-on learning experiences, participants will develop a robust understanding of cryogenic recovery, gas plant design, fractionation train operations, and downstream product applications. Ideal for engineers, plant operators, project managers, and energy analysts, this course offers the essential tools to thrive in today’s dynamic oil and gas industry.

Programme Curriculum

Training Course on NGL (Natural Gas Liquids) Recovery & Fractionation

Introduction

Natural Gas Liquids (NGLs) are a critical component of the hydrocarbon value chain, playing a pivotal role in the global energy and petrochemical markets. With the increasing demand for cleaner energy sources and the need to optimize gas processing, understanding the recovery and fractionation of NGLs is more important than ever. Training Course on NGL (Natural Gas Liquids) Recovery & Fractionation is designed to equip professionals with the technical expertise, operational insights, and strategic knowledge required to maximize efficiency, safety, and profitability in NGL recovery and fractionation processes.

The course explores state-of-the-art technologies, industry best practices, and regulatory compliance measures while emphasizing economic optimization, environmental sustainability, and safety standards. Through in-depth modules, real-world case studies, and hands-on learning experiences, participants will develop a robust understanding of cryogenic recovery, gas plant design, fractionation train operations, and downstream product applications. Ideal for engineers, plant operators, project managers, and energy analysts, this course offers the essential tools to thrive in today's dynamic oil and gas industry.

Course Objectives

1. Understand the fundamentals of NGL recovery and cryogenic gas processing.
2. Learn the operational principles of fractionation columns and distillation systems.
3. Analyze NGL market trends, including LPG and petrochemical demand.
4. Examine gas plant optimization and energy efficiency techniques.
5. Identify major NGL processing equipment and their maintenance protocols.
6. Assess design parameters for gas processing plants and modular systems.
7. Evaluate the environmental impact of NGL processing and recovery.
8. Enhance understanding of safety standards and risk mitigation in fractionation.
9. Understand the economics of NGL products: ethane, propane, butanes, and pentanes.
10. Learn about control systems and instrumentation in NGL facilities.
11. Review emerging technologies in NGL recovery and digital transformation.
12. Apply project management strategies for NGL processing facilities.
13. Gain practical insights through industry-specific NGL case studies.

Target Audiences

1. Process Engineers
2. Chemical Engineers
3. Petroleum Engineers
4. Plant Operations Managers
5. Gas Plant Operators
6. Project Engineers and Consultants
7. HSE Specialists
8. Energy Analysts and Economists

Course Duration: 10 days

Course Modules

Module 1: Introduction to Natural Gas Liquids

- Overview of NGLs and their role in gas processing
- Types of NGLs: Ethane, Propane, Butane, and Natural Gasoline
- NGL supply and demand drivers
- NGL vs LNG vs LPG: Key distinctions
- Economic impact of NGLs in global markets
- **Case Study: U.S. shale boom and NGL production growth**

Module 2: Gas Processing Fundamentals

- Composition of raw natural gas
- Gas conditioning: sweetening and dehydration
- Gas compression basics
- Overview of Joule-Thomson and turboexpander processes
- Pipeline specifications for NGL extraction

- **Case Study: Sour gas processing plant in Alberta, Canada**

Module 3: Cryogenic Recovery of NGLs

- Cryogenic principles and equipment
- Turboexpander-based recovery systems
- Process configurations for ethane and propane recovery
- Operational efficiency considerations
- Refrigeration cycles in NGL recovery
- **Case Study: Cryogenic gas plant design in Texas**

Module 4: Fractionation Process Design

- Fractionation tower types and functions
- Distillation column theory and separation principles
- Reboilers, condensers, and trays
- Design and sizing parameters
- Heat integration in fractionation
- **Case Study: Fractionation unit revamp in the Middle East**

Module 5: Plant Equipment and Operation

- Compressors, pumps, and heat exchangers
- Key control systems and instrumentation
- Rotating equipment operation
- Fouling and maintenance best practices
- Emergency shutdown systems
- **Case Study: Reliability-centered maintenance in a UAE NGL facility**

Module 6: Product Storage and Transport

- NGL storage tanks and bullet tanks
- Refrigerated storage principles
- Railcar and truck transport of NGLs
- Loading and unloading procedures
- API standards for NGL handling
- **Case Study: Propane transport safety in Canada**

Module 7: Control and Automation

- SCADA systems in NGL plants
- Distributed Control Systems (DCS)
- Smart sensors and field instruments
- Alarm management systems
- Cybersecurity in automated systems
- **Case Study: SCADA upgrade in a U.S. NGL facility**

Module 8: Energy Efficiency and Optimization

- Energy balance in gas plants
- Waste heat recovery
- Power integration and cogeneration
- Compressor efficiency
- Utility system optimization
- **Case Study: Energy audit of an NGL processing unit**

Module 9: Environmental Compliance

- VOC emissions and flare management
- Fugitive emissions control
- Environmental regulations (EPA, EU directives)
- Sustainability reporting in NGL operations
- Carbon capture opportunities
- **Case Study: Emission reduction program in a U.S. gas plant**

Module 10: Safety and Risk Management

- Process hazard analysis (PHA)
- HAZOP and LOPA applications
- Fire and explosion risk management
- Safety instrumented systems
- Emergency response planning
- **Case Study: Incident analysis in a gas leak incident**

Module 11: Market and Economics of NGLs

- Price determinants and volatility
- NGL product value chain
- Export markets and transportation economics
- Contract structures and pricing mechanisms
- Impact of energy transition on NGL demand
- **Case Study: NGL export terminal economics in the U.S. Gulf Coast**

Module 12: Modular Plant Design

- Benefits of modular design in remote areas
- Skid-mounted equipment packages
- Fabrication and assembly techniques
- Transportation and logistics planning
- Case-by-case customization
- **Case Study: Modular NGL facility in the Permian Basin**

Module 13: Digital Transformation in Gas Processing

- Role of AI and machine learning
- Predictive analytics for asset reliability
- Digital twins and simulation
- IoT integration in plant monitoring
- Blockchain in NGL supply chains
- **Case Study: Digital twin application in fractionation plant**

Module 14: Shutdown and Turnaround Planning

- Planning and scheduling best practices
- Inspection and repair prioritization
- Contractor and resource management
- Budgeting and cost control
- Post-turnaround performance analysis
- **Case Study: Turnaround execution in Southeast Asia NGL plant**

Module 15: Project Management in NGL Facilities

- Lifecycle phases of NGL plant projects
- Feasibility studies and stakeholder engagement

- Risk identification and mitigation
- Cost estimation and control
- Performance KPIs and benchmarking
- **Case Study: EPC project timeline optimization in North Africa**

Training Methodology

- Interactive instructor-led sessions
- Real-world case studies and simulations
- Group exercises and breakout discussions
- Digital tools and software demonstrations
- Knowledge checks and end-of-module quizzes
- Practical, scenario-based applications

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	04 Dec 2026	Online	$2,000
23 Nov 2026	04 Dec 2026	Physical	$3,000
23 Nov 2026	04 Dec 2026	Physical	$6,000

Start Date	End Date	Location	Price
23 Nov 2026	04 Dec 2026	Physical	$6,000
23 Nov 2026	04 Dec 2026	Physical	$12,000
23 Nov 2026	04 Dec 2026	Physical	$9,000
23 Nov 2026	04 Dec 2026	Physical	$12,000
23 Nov 2026	04 Dec 2026	Physical	$12,000

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

Register Online Now

Email: info@fineskilltrainingcenter.com | Website: www.fineskilltrainingcenter.com