Advanced Oil and Gas Process Engineering Practices Training Course

OGT-1102 · 5 days · 10 CPD hours · English

OVERVIEW

The **Advanced Oil and Gas Process Engineering Practices Training Course** is a specialised professional development programme designed to strengthen the technical capabilities of engineers and industry professionals involved in oil and gas process design, engineering, operations, troubleshooting and optimisation. It provides a structured understanding of advanced process engineering principles, equipment performance, process integration and engineering decision-making across upstream, midstream and downstream hydrocarbon facilities.

Within the **Process Engineering and Operations** category, this course explores the engineering methodologies used to develop, evaluate, improve and maintain efficient hydrocarbon processing systems. Participants will examine essential process design principles, fluid separation technologies, gas processing operations, heat exchanger performance, process simulation techniques, process flow diagrams (PFDs), piping and instrumentation diagrams (P&IDs), equipment sizing, energy efficiency and operational troubleshooting.

The programme focuses on the practical application of process engineering concepts to real industrial environments, including crude oil processing, natural gas treatment, hydrocarbon recovery, separation systems, pressure management, thermal operations and process optimisation. It addresses the technical challenges associated with changing feed compositions, process bottlenecks, equipment limitations, energy consumption, production efficiency and operational reliability.

Participants will develop a deeper understanding of how process engineering decisions influence facility performance, equipment selection, process safety, product specifications and operating costs. Through technical exercises, engineering case studies and process analysis activities, they will explore how to evaluate processing systems, interpret engineering data, identify performance deficiencies and recommend technically sound solutions.

Delivered with a practical, industry-focused approach by the Oil & Gas Training Institute, this advanced programme is intended to help professionals strengthen their engineering judgement, improve process analysis capabilities and apply modern process engineering practices to the design, operation and optimisation of oil and gas facilities.

OBJECTIVES

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

- Analyse advanced process engineering principles and their application to oil and gas production, processing and facility design.
- Interpret process flow diagrams, P&IDs, equipment specifications and process engineering documentation.

- Evaluate process design requirements, operating conditions, material balances and energy balances for hydrocarbon processing systems.
- Apply appropriate separation techniques to improve crude oil, natural gas and hydrocarbon processing performance.
- Assess gas processing technologies, including gas dehydration, sweetening, hydrocarbon recovery and gas conditioning.
- Evaluate heat exchanger design parameters, thermal performance, fouling behaviour and heat transfer efficiency.
- Use process simulation concepts to analyse process behaviour, evaluate operating scenarios and support engineering decisions.
- Identify process bottlenecks, operational inefficiencies and equipment performance limitations in oil and gas facilities.
- Recommend engineering improvements that enhance process reliability, energy efficiency, production capacity and operational performance.
- Apply advanced process engineering approaches to troubleshooting, process optimisation and technical problem-solving.

TRAINING METHODOLOGY

The Advanced Oil and Gas Process Engineering Practices Training Course adopts a technical, interactive and application-driven learning approach designed to connect engineering theory with practical industry challenges.

The programme combines instructor-led discussions, engineering exercises, process analysis and real-world case studies to help participants develop a comprehensive understanding of advanced process engineering practices.

- **Interactive Technical Presentations:** Structured presentations introduce advanced process engineering concepts, design methodologies, equipment behaviour, process integration and engineering considerations across oil and gas facilities.

- **Engineering Workshops:** Participants work through process design scenarios involving material and energy balances, equipment performance evaluation, process operating conditions and engineering calculations.

- **Process Simulation Exercises:** Simulation-based discussions and exercises explore process behaviour under different operating conditions, helping participants understand the use of simulation tools in process design, troubleshooting and optimisation.

- **Real-World Case Studies:** Industrial case studies examine separation inefficiencies, gas processing challenges, heat exchanger performance issues, process bottlenecks and operating constraints.

- **Equipment Performance Analysis:** Participants evaluate the performance of process equipment, including separators, heat exchangers, compressors, pumps, columns and gas processing systems.

- **Collaborative Problem-Solving:** Group activities encourage participants to analyse process problems, develop improvement strategies and discuss engineering solutions using practical technical reasoning.

- **Scenario-Based Learning:** Simulated engineering situations enable participants to explore process upsets, changing feed conditions, operational constraints and design limitations.

- **Professional Experience Sharing:** Guided discussions allow participants to exchange engineering experiences, industry practices and technical perspectives relating to process design, operations and facility optimisation.

ORGANISATIONAL IMPACT

Advanced process engineering capabilities contribute directly to the performance, reliability, efficiency and technical integrity of oil and gas facilities. Organisations can benefit from improved engineering decision-making, better process design practices and a stronger ability to identify operational inefficiencies.

This training course can support organisational development through the following benefits:

- **Improved Process Efficiency:** Strengthens the ability of engineering teams to evaluate process performance, identify inefficiencies and implement improvements across hydrocarbon processing operations.

- **Enhanced Engineering Decision-Making:** Improves the quality of engineering decisions concerning equipment selection, process configuration, operating conditions and design modifications.

- **Optimised Equipment Performance:** Supports better evaluation of separation equipment, heat exchangers, compressors, pumps and other process systems to improve reliability and efficiency.

- **Reduced Operational Inefficiencies:** Develops technical capabilities for identifying bottlenecks, excessive energy consumption, process instability and equipment-related performance limitations.

- **Improved Energy Management:** Encourages the evaluation of heat recovery, thermal efficiency, pressure losses, process integration and energy optimisation opportunities.

- **Stronger Troubleshooting Capabilities:** Equips technical teams to investigate process deviations, operating problems and performance losses using structured engineering analysis.

- **Better Process Design Practices:** Promotes consistent application of process engineering principles during design reviews, technical evaluations, process modifications and facility development.

- **Enhanced Operational Reliability:** Helps organisations improve process stability, equipment performance and production continuity through informed engineering recommendations.

- **Improved Technical Collaboration:** Encourages collaboration among process engineers, operations personnel, maintenance teams, project engineers and other technical stakeholders.

- **Support for Business Performance:** Contributes to improved production efficiency, resource utilisation, engineering quality and long-term operational competitiveness.

PERSONAL IMPACT

Attending the Advanced Oil and Gas Process Engineering Practices Training Course can strengthen participants' technical expertise, engineering confidence and professional capabilities in demanding oil and gas environments.

Participants can benefit through:

- **Advanced Process Engineering Knowledge:** Develop a deeper understanding of process design, separation technologies, gas processing, thermal systems and process integration.

- **Improved Technical Analysis:** Enhance the ability to evaluate engineering calculations, process conditions, operating data and equipment performance.

- **Greater Engineering Confidence:** Build confidence in assessing process design decisions, reviewing engineering documentation and recommending process improvements.

- **Practical Troubleshooting Skills:** Develop structured approaches to identifying, analysing and resolving process engineering problems and operational inefficiencies.

- **Better Process Simulation Understanding:** Gain insight into simulation methodologies and their use in evaluating processing systems, design alternatives and operational scenarios.

- **Enhanced Equipment Evaluation Skills:** Improve the ability to assess heat exchangers, separators, pumps, compressors and other critical process equipment.

- **Stronger Engineering Judgement:** Learn to consider technical, operational, safety, efficiency and economic factors when evaluating process engineering solutions.

- **Improved Professional Collaboration:** Strengthen communication with multidisciplinary teams involved in process design, plant operations, project execution and facility optimisation.

- **Career Development:** Expand technical capabilities relevant to advanced engineering responsibilities, process design assignments, facility optimisation projects and technical leadership roles.

- **Workplace Application:** Apply course concepts and analytical methods to practical engineering tasks, process reviews, troubleshooting activities and performance improvement initiatives.

WHO SHOULD ATTEND

This course is designed for professionals who work in oil and gas process engineering, hydrocarbon processing, facility design, operations, technical analysis and engineering optimisation.

It is particularly beneficial for:

- **Process Engineers:** Engineers seeking to strengthen their knowledge of advanced process design, equipment performance, separation systems, gas processing and process optimisation.

- **Senior Process Engineers:** Experienced professionals responsible for technical reviews, process improvements, engineering decisions, facility optimisation and complex operational challenges.

- **Production Engineers:** Professionals involved in production optimisation, process performance monitoring, operating efficiency and facility constraints.

- **Petroleum Engineers:** Engineers seeking a stronger understanding of surface processing systems, hydrocarbon treatment, separation technologies and production facility performance.

- **Chemical Engineers:** Chemical engineering professionals involved in process calculations, process design, equipment selection, thermal systems and industrial process optimisation.

- **Facility Engineers:** Professionals responsible for evaluating, improving and maintaining the performance of oil and gas production and processing facilities.

- **Project Engineers:** Engineers involved in process engineering coordination, facility development, project execution, technical documentation and engineering reviews.

- **Operations Engineers:** Professionals responsible for monitoring process conditions, analysing operational problems, identifying bottlenecks and supporting plant efficiency.

- **Process Technologists and Technical Specialists:** Specialists involved in process operations, equipment performance, process analysis, production optimisation and technical support.

- **Engineering Managers and Technical Supervisors:** Leaders responsible for engineering teams, process improvement initiatives, technical decisions, facility performance and operational development.

- **Consultants and Engineering Contractors:** Professionals supporting oil and gas projects through process engineering assessments, design reviews, technical consultancy and engineering solutions.

- **Professionals Preparing for Advanced Engineering Responsibilities:** Technical personnel seeking to develop specialised process engineering knowledge for more complex assignments and leadership roles.

COURSE OUTLINE

Advanced Process Engineering Fundamentals and Process Design

Separation Technologies and Hydrocarbon Processing Systems

Gas Processing, Treatment and Conditioning

Heat Exchangers, Process Integration and Energy Optimisation

Process Simulation, Troubleshooting and Advanced Process Optimisation

SCHEDULED DATES

Dates	Venue	Format	Fee
01 - 05 Mar 2027	Abu Dhabi, United Arab Emirates	In person	On request
01 - 05 Mar 2027	Abuja, Nigeria	In person	On request
01 - 05 Mar 2027	Accra, Ghana	In person	On request
01 - 05 Mar 2027	Addis Ababa, Ethiopia	In person	On request
01 - 05 Mar 2027	Al Ain, United Arab Emirates	In person	On request
01 - 05 Mar 2027	Al Khobar, Saudi Arabia	In person	On request
01 - 05 Mar 2027	Alberta, Canada	In person	On request
01 - 05 Mar 2027	AlUla, Saudi Arabia	In person	On request
01 - 05 Mar 2027	Amman, Jordan	In person	On request
01 - 05 Mar 2027	Amsterdam, The Netherlands	In person	On request
01 - 05 Mar 2027	Athens, Greece	In person	On request
01 - 05 Mar 2027	Baku, Azerbaijan	In person	On request
01 - 05 Mar 2027	Barcelona, Spain	In person	On request
01 - 05 Mar 2027	Berlin, Germany	In person	On request
01 - 05 Mar 2027	Boston, USA	In person	On request
01 - 05 Mar 2027	Brussels, Belgium	In person	On request
01 - 05 Mar 2027	Budapest, Hungary	In person	On request
01 - 05 Mar 2027	Cairo, Egypt	In person	On request
01 - 05 Mar 2027	Cape Town, South Africa	In person	On request
01 - 05 Mar 2027	Casablanca, Morocco	In person	On request
01 - 05 Mar 2027	Dammam, Saudi Arabia	In person	On request
01 - 05 Mar 2027	Dhahran, Saudi Arabia	In person	On request
01 - 05 Mar 2027	Doha, Qatar	In person	On request
01 - 05 Mar 2027	Dubai, United Arab Emirates	In person	On request
01 - 05 Mar 2027	Edinburgh, United Kingdom	In person	On request
01 - 05 Mar 2027	Edmonton, Canada	In person	On request

Dates	Venue	Format	Fee
01 - 05 Mar 2027	Frankfurt, Germany	In person	On request
01 - 05 Mar 2027	Geneva, Switzerland	In person	On request
01 - 05 Mar 2027	Houston, USA	In person	On request
01 - 05 Mar 2027	Istanbul, Turkey	In person	On request
01 - 05 Mar 2027	Jakarta, Indonesia	In person	On request
01 - 05 Mar 2027	Jeddah, Saudi Arabia	In person	On request
01 - 05 Mar 2027	Jubail, Saudi Arabia	In person	On request
01 - 05 Mar 2027	Khamis Mushait, Saudi Arabia	In person	On request
01 - 05 Mar 2027	Kigali, Rwanda	In person	On request
01 - 05 Mar 2027	Kuala Lumpur, Malaysia	In person	On request
01 - 05 Mar 2027	Lisbon, Portugal	In person	On request
01 - 05 Mar 2027	Liverpool, United Kingdom	In person	On request
01 - 05 Mar 2027	London, United Kingdom	In person	On request
01 - 05 Mar 2027	Los Angeles, USA	In person	On request
01 - 05 Mar 2027	Luanda, Angola	In person	On request
01 - 05 Mar 2027	Madrid, Spain	In person	On request
01 - 05 Mar 2027	Manama, Bahrain	In person	On request
01 - 05 Mar 2027	Marbella, Spain	In person	On request
01 - 05 Mar 2027	Marrakech, Morocco	In person	On request
01 - 05 Mar 2027	Miami, USA	In person	On request
01 - 05 Mar 2027	Milan, Italy	In person	On request
01 - 05 Mar 2027	Munich, Germany	In person	On request
01 - 05 Mar 2027	Muscat, Oman	In person	On request
01 - 05 Mar 2027	Nairobi, Kenya	In person	On request
01 - 05 Mar 2027	New York, USA	In person	On request
01 - 05 Mar 2027	Nice, France	In person	On request

Dates	Venue	Format	Fee
01 - 05 Mar 2027	Oslo, Norway	In person	On request
01 - 05 Mar 2027	Paris, France	In person	On request
01 - 05 Mar 2027	Port Louis, Mauritius	In person	On request
01 - 05 Mar 2027	Prague, Czech Republic	In person	On request
01 - 05 Mar 2027	Pretoria, South Africa	In person	On request
01 - 05 Mar 2027	Riyadh, Saudi Arabia	In person	On request
01 - 05 Mar 2027	Rome, Italy	In person	On request
01 - 05 Mar 2027	Sarajevo, Bosnia and Herzegovina	In person	On request
01 - 05 Mar 2027	Sharm El Sheikh, Egypt	In person	On request
01 - 05 Mar 2027	Singapore, Singapore	In person	On request
01 - 05 Mar 2027	Stockholm, Sweden	In person	On request
01 - 05 Mar 2027	Tokyo, Japan	In person	On request
01 - 05 Mar 2027	Toronto, Canada	In person	On request
01 - 05 Mar 2027	Tromso, Norway	In person	On request
01 - 05 Mar 2027	Vienna, Austria	In person	On request
01 - 05 Mar 2027	Zagreb, Croatia	In person	On request
01 - 05 Mar 2027	Zurich, Switzerland	In person	On request
01 - 05 Mar 2027	Online, Virtual	Online	On request

CERTIFICATE