BLACKBIRD FOR TRAINING

Optimization of Oil and Gas Facilities Design and Operations

15 – 19 March 2027
Rome (Italy)



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Introduction

Developing new oil and gas fields and managing existing ones are increasingly challenging and costly. New fields require careful, long-term planning to maintain flexibility over extended operation periods and varying production rates, thereby minimizing the need for modifications to facilities. Such modifications can incur substantial capital costs and lead to prolonged shutdowns. On the other hand, many existing fields are facing depletion and become harder to produce, presenting numerous challenges—higher water production, the need for artificial lift systems, aging systems with emerging new technologies, and stricter environmental regulations. This makes it imperative to periodically review existing facilities to assess their design and operational modes. This systematic review helps minimize modification costs and ensures operational efficiency.

This Optimization of Oil and Gas Facilities Design and Operations training course focuses on contemporary methods for evaluating upstream, midstream, and downstream facility operations and designs. With real field case studies, this course provides a step-by-step approach to assess existing facilities and optimize proposed designs for new developments and field expansions.

Course Objectives

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

- Compare alternatives from both operational and economic perspectives to identify optimal solutions for oil and gas facilities management.
- Assess the capacity and efficiency of processing facilities in the oil and gas sector.
- Understand midstream operations and the essential components involved.
- Develop integrated oil and gas production systems along with water injection systems.
- Identify operational bottlenecks and propose remedial modifications to optimize facility performance.



Course Outlines

Day 1: Oil & Gas Infrastructure

- Field processing facilities
  Understanding the design and operation of processing facilities to optimize production and minimize downtime.
- Water injection systems
  Analyzing seawater sourcing, treatment, transportation, and the role of water injection in production optimization in oil and gas.
- Power generation, supply, and field electrification
  Key factors influencing energy requirements for oil and gas facility design and operations.
- Refining facilities
  Optimizing the design and operations of refining processes for higher efficiency and cost savings.
- Lifecycle cost analysis
  Assessing lifecycle costs of oil and gas facilities to optimize both short-term and long-term investments.



Day 2: Oil & Gas Equipment and Processes

- Flowlines
  Studying efficient designs for flowlines and optimizing their use in oil and gas transportation systems.
- Crude separation
  Optimizing the crude oil separation process to enhance production efficiency.
- Oil desalting
  Improving the desalting process in oil refining operations for enhanced oil quality.
- Gas handling and compression
  Understanding gas operation and optimizing processes for effective gas handling and compression.
- Oil pumping
  Assessing and improving oil pumping systems to increase operational efficiency.

Day 3: Water Injection

- Seawater sourcing, treatment, and transportation
  Efficient systems for sourcing and transporting seawater used in water injection processes.
- Aquifer water
  Best practices for utilizing aquifer water in oil field operations.
- Supply lines, injection pumps, and lines
  Optimizing water injection infrastructure for greater efficiency.
- Produced water handling and reinjection
  Improving the management of produced water and reinjection techniques.
- Pump selection types and sizing
  Understanding pump technologies and selecting the right type and size for water injection systems.



Day 4: Midstream Transportation

- Pump station types
  Understanding various pump station designs and their roles in midstream transportation.
- Power sourcing and generation
  Key considerations for sourcing and generating power for transportation systems.
- Infrastructure requirements
  Optimizing midstream infrastructure for improved oil and gas transport.
- Optimizing size, number, and location of stations
  Efficiently sizing and locating transportation stations for optimal flow and cost-effectiveness.
- Monitoring and control
  Understanding systems for monitoring and controlling midstream operations.

Day 5: Gas Operations

- Determining gas rate and specification
  Best practices for determining gas flow rates and ensuring gas meets specification requirements.
- Calculating the gas energy value
  Analyzing the energy content of gas and evaluating its economic potential.
- Options for gas flare, process, use, or sell
  Assessing various options for managing excess gas—whether to flare, process, use onsite, or sell to the grid.
- Assessing the processing requirement
  Evaluating the need for processing gas to ensure economic and operational efficiency.
- Evaluating economics
  Calculating the economic impact of different gas operation options and improving financial returns.



Why Attend This Course: Wins & Losses!

- Oil and Gas Facilities Management: Learn how to effectively manage oil and gas facilities, ensuring operations are optimized for cost and efficiency.
- Production Optimization: Gain hands-on knowledge of oil and gas production optimization techniques, helping you enhance productivity and reduce operational costs.
- Improved Operational Efficiency: Learn how to identify and overcome bottlenecks in production, from processing facilities to gas handling.
- Real-World Application: With field case studies, you'll learn practical methods to evaluate and optimize existing facilities, ensuring you can apply the course content immediately.
- Long-Term Benefits: By mastering the design and operational optimization of oil and gas facilities, you'll significantly reduce unnecessary costs and downtime, ensuring higher profitability and sustainability.

Conclusion

This course offers comprehensive training in oil and gas facilities management with a strong focus on production optimization across upstream, midstream, and downstream operations. Participants will leave with valuable insights into oil and gas facility design and production optimization, equipping them with the tools to improve both operational efficiency and economic performance. Whether you are managing existing facilities or designing new ones, this course will enhance your skills and knowledge, helping you achieve a competitive edge in the ever-evolving oil and gas industry.

