

Training - LNG Process Simulation



LNGSIM-EN-P



Face-to-face only



5 days

This course aims to acquire a comprehensive knowledge and practical know-how in the simulation of natural gas pre-treatment and liquefaction processes, with an emphasis on condensate recovery, fractionation and integration with the liquefaction process

Level

Skilled

Public

Process design engineers involved in conceptual design, basic or detailed engineering of LNG plants and familiar with process simulation

Objectives

Attendees will be able to implement the following skills:

- Assess various problems that can be induced by unwanted elements and compounds in gas streams
- Design, explain the operation and operating parameters of gas condensate recovery systems and natural gas liquefaction processes
- Perform steady-state simulations with PRO/II™ or HYSYS™, model set-ups, and simulate gas processing and liquefaction processes
- Optimize process operating conditions, compare processes performances, evaluate power requirements, size equipment...
- Check plant performance under different operating conditions, implement the optimal process scheme

Pedagogical & technical resources

- Highly interactive training course delivered by industry experts and adapted to participants' experience
- Numerous simulation and case studies performed using PRO/II™ or HYSYS™
- Simulation of DMR, MFC, N2/dual-expander & SMR processes can be performed in classroom or as e-learning upon request

Assessment of achievements

- Trainees are assessed throughout the training through practical application phases and interactions with the trainer
- A final on-the-spot evaluation may also be carried out at the end of the course and/or at the end of each module using tests designed to verify the learners' understanding and assimilation of the knowledge linked to the training objectives

Prerequisites

No prerequisites are necessary to follow this course

Responsible

IFP Training instructors, with expertise in the field and trained in modern teaching methods adapted to the specific needs of learners from the professional world

Program

NEED FOR GAS FIELD PROCESSING - QUALITY REQUIREMENTS

0.25 day

Review of main concepts and products within the gas/condensate chain.
Undesired constituents for storage, transport, or end use of natural gas.
Different specifications and quality requirements for natural gas: sales gas specifications, reach/lean gas specifications.
Required treatments and overview of gas processing.
Examples of compositions of commercialized natural gases.

STEADY-STATE PRO/II™ OR HYSYS™ SIMULATION CASE STUDIES

0.75 day

Equations Of State (EOS); uses, examples, selection:

- Reservoir fluids phase envelope.
- Flash separation of multicomponent mixtures.
- Phase envelope of gases versus composition.
- GHV and WI calculation using PRO/II™ or HYSYS™.
- Construction of simulation reports.

CONDENSATE RECOVERY, FRACTIONATION & REFRIGERANT MAKE-UP

0.5 day

Condensate fractionation: choice of the operating conditions.
Quality requirements for methane, ethane, propane and butane used for MR make-up.
Storage of methane, ethane, propane and butane for make-up.
Nitrogen requirements for make-up.

SIMULATION OF CONDENSATE RECOVERY & FRACTIONATION USING PRO/II™ OR HYSYS™

0.5 day

Selection of thermodynamics packages.
Simulation of a condensate fractionation and stabilization process.

CASCADE PROCESS OPERATING CONDITIONS & SIMULATION

0.5 day

Process diagram and operating parameters.
Simulation of the liquefaction process: optimization of the operating conditions, compressors sizing.

COMPARISON OF THE MAIN MIXED REFRIGERANTS LIQUEFACTION PROCESSES

0.5 day

Fields of application of liquefaction processes.
Comparison with cascade process and turbo expander based process.

LIQUEFACTION WITH C3 - MIXED REFRIGERANTS - OPERATING CONDITIONS & SIMULATION

1 day

Process diagram and operating parameters.
Simulation of the liquefaction process: optimization of the operating conditions, compressors sizing.
Optimization of MR composition.

LIQUEFACTION WITH 2 MIXED REFRIGERANTS - OPERATING CONDITIONS & SIMULATION

0.5 day

Process diagram and operating parameters.
Simulation of the liquefaction process: optimization of the operating conditions, compressors sizing.
Optimization of MR composition.

LIQUEFACTION PROCESSES PERFORMANCES COMPARISON

0.5 day

Heat and mass balance for each process.

Comparison of power requirements for the different processes.

To French entities : IFP Training is referenced to DataDock ; you may contact your OPCO about potential funding.

Please contact our disabled persons referent to check the accessibility of this training program : referent.handicap@ifptraining.com