

Training - Natural Gas



NATGAS-EN-P



Face-to-face only



5 days

This course provides a comprehensive review of the techniques involved in natural gas production, processing and transport, complemented with an overview of natural gas valorization channels

Level

Knowledge

Public

Professionals from all sectors, involved or interested in the natural gas industry

Objectives

Attendees will be able to implement the following skills:

- Explain fundamentals of natural gas composition, characteristics, production and field processing
- Understand technical issues and specific constraints of natural gas transport and storage
- Review the various end-user markets available for valorizing natural gas
- Grasp key natural gas chain economic issues

Pedagogical & technical resources

- Highly interactive training by industry-specialist lecturers
- Numerous applications and illustrations

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

NATURAL GAS: TYPES & PRODUCTION TECHNIQUES

0.75 day

Types and characteristics of natural gas fields. Production techniques.
Different types of natural gases (condensate, wet or dry gas) and characterization parameters.
Constitution of natural gas well effluent, properties and specific hazards.
Case of associated gases: recovery techniques, characteristics, composition, etc.

END USES OF NATURAL GAS - MAIN QUALITY REQUIREMENTS

0.25 day

End uses of natural gases: fuel (domestic and industrial uses), conversion into other energy types (electricity production and cogeneration), automotive fuel (Natural Gas for Vehicles (NGV) and conversion into liquid automotive fuels GTL), chemical valorization, etc.

Quality requirements for commercial natural gases and associated products (ethane, LPG, condensates).

Examples of quality standards.

NATURAL GAS PROCESSING

2 days

Gas dehydration (drying) and hydrate formation inhibition:

- System behavior. Moisture content of a saturated gas.
- Applications: moisture content of different gases having various compositions.
- Hydrate formation inhibition by injection of inhibitors: MeOH, MEG, DEG, LDHI, etc.
- Gas dehydration: TEG units, Molecular Sieves, etc.
- Application: summary design of TEG unit.

Gas sweetening: removal of acid components (H₂S and/or CO₂):

- Different techniques applicable for gas sweetening: chemical solvent processes, amine units (MEA, DEA, DGA, MDEA, etc.); physical solvent processes; hybrid (physico-chemical) solvent processes; overview of other techniques; conversion of H₂S: sulfur production (CLAUS process) and tail gas processing.
- Application: summary design of an amine unit.

Natural Gas Liquids (NGL) extraction (removal of heavy components):

- External refrigeration loop.
- Joule-Thomson expansion.
- Turbo-Expander.
- Application: calculation of cryogenic loop used for NGL extraction.

Examples of gas field development schemes:

- Gas fields development options: onshore or offshore processing, single-phase or multiphase export pipelines, "Wet" or "Dry" development.
- Other treatments: mercury removal, conversion or adsorption of mercaptans (RSH), etc.

TRANSPORT OF NATURAL GAS IN LIQUID PHASE - LNG OPTION

1 day

Liquefaction processes: principle, typical operating conditions, technology.

LNG tanks: single or double or full containment (self-standing, membrane). Hazards.

LNG transport: LNG carriers (MOSS spheres, membrane...), export and receiving terminals.

LNG regasification at the receiving terminals, options for refrigeration duty recovery.

TRANSPORT & STORAGE OF NATURAL GAS IN GAS PHASE

0.5 day

Gas pipes: technology, capacities, equipment, recompression units, operating conditions, etc.

Underground storage (old reservoirs, aquifers, salt domes, etc.). Required treatments at outlet.

NATURAL GAS ECONOMICS

0.5 day

Resources, production and markets.

Natural gas marketing: competition of other energy sources and consequences on gas contracts (prices and duration), cost of transport and its impact on the structure of the gas chain.

Future of the natural gas.

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