Training - Gas Cycling: an Integrated Approach

GASCYCL-EN-P | Face-to-face only | 5 days

This course provides participants with an integrated approach of gas cycling, from the reservoir to the surface facilities

Level

Knowledge

Public

Production or petroleum engineers involved in operating or designing Oil & Gas field processing facilities

Objectives

Attendees will be able to implement the following skills:

- List main characteristics of Oil & Gas well effluents
- Identify key field and reservoir parameters, choose a gas cycling strategy
- Evaluate reservoir performances and recovery factor
- Specify quality and flowrate needed for gas re-injection
- Assess key parameters for surface facilities design as needed for gas re-injection

Pedagogical & technical resources

- Highly interactive training with industry specialist lecturers
- Methodology illustrated by multiple industrial case studies

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

Responsable

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

GAS CYCLING — 0.5 day

Introduction.
The integrated gas cycle: elements, configuration, challenges.
Gas cycling for pressure maintenance.
Gas cycling for miscible gas displacement (EOR): sweeping and soaking, compositional effects.
Dry gas cycling in retrograde condensate reservoirs.

Cycling non-hydrocarbon gases.
Major issues and constraints: reservoir, wells, flow lines and surface facilities.

WELL EFFLUENT BEHAVIOR — 0.5 day

Different types of well effluent. Main characterization parameters.
Constituents that pose problems for storage and transport.
Gas composition: rich and lean gas, sweet and sour gas.
Gas PVT behavior.
PVT properties of pure components and mixtures.

RESERVOIR FLUID BEHAVIOR & NEEDS FOR GAS CYCLING — 0.5 day

Phase envelop, reservoir and surface PVT issues.
Ternary diagram, first contact miscibility, multiple contact miscibility: condensing drive and vaporizing drive, Minimum Miscibility Pressure (MMP).
Specificities of condensate gas: retrograde region.

RESERVOIR ASPECTS — 0.5 day

Reservoir performance.
Drive mechanisms: gas reservoirs, gas cap, gravity drainage displacement, tertiary gas displacement, miscible gas displacement.
Requirements for gas quality for injection, flowrate, cycling rate and configuration of injection.
Field development: architecture and phasing.

INTRODUCTION TO SURFACE FACILITIES DESIGN — 0.25 day

Gas specifications to conform with gas cycling (dew point, sulfur removal & valorization).
Field processing of gas effluents for gas cycling.

GAS DEHYDRATION & SWEETENING — 0.25 day

Moisture content of natural gas.
Gas dehydration processes.
Gas sweetening, acid gases disposal.

CONDENSATE: RECOVERY, STABILIZATION & MONETIZATION — 0.5 day

Low-temperature separation techniques.
Condensate stabilization.
Monetization routes.

GAS COMPRESSION — 0.25 day

Multistage compression: design criteria.
Gas compression versus field aging: effect on operating parameters, needs for booster station.

COMPRESSORS & DRIVERS — 0.5 day

Compressors technology: choice criteria, effect of gas density evolution.
Compressor drivers.

INJECTION NETWORK — 0.25 day

Network architecture.
Network operations, backpressure management.
Well performance issues.

CASE STUDY: SYNTHESIS - WRAP UP — 1 day

Field monitoring, adaptation of surface facilities to field aging, re-injection rate versus surface production capacities and effect on recovery, re-injection rate versus gas sales and effects on reservoir monitoring.

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