Training - Gathering Network: Design Engineering

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

This course aims to provide a practical understanding of gathering network conceptual design and tie-in assessment and to acquire best practices of Oil & Gas gathering network design and simulation using PIPESIM™

Level
Skilled

Public
Engineers looking to acquire best practices of Oil & Gas gathering network design

Objectives
Attendees will be able to implement the following skills:

- Explain operational constraints of single and multi-phase flow lines
- Describe multiphase flow patterns and main disturbing factors
- Assess the implications of different gathering network architectures
- Study actual network configurations and the impact of adding tie-ins using the software PIPESIM™
- Explain the different phases of the construction of a gathering network

Pedagogical & technical resources

- Highly interactive training with industry specialist lecturers
- Methodology illustrated by multiple industrial case studies
- Numerous design simulation using PIPESIM™

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

FUNDAMENTALS OF FLUID MECHANICS — 0.5 day

Total energy of a fluid; Bernoulli law.
Real fluid flow: viscosity, friction coefficient.

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Flow regimes: laminar and turbulent flows.
Application: evaluation of pressure drop in a pumping station.

MULTIPHASE FLOW — 0.5 day

Definition of multi-phase flow, main terminology.
Flow patterns, main considerations.
Basic understanding of different modeling approaches.

GATHERING SYSTEMS DESIGN & ARCHITECTURE SELECTION — 0.5 day

Types of gathering systems, a review of common architectures.
Backpressure and well productivity.
Design practices and guidelines.
Main considerations: pressure drop, erosion velocities.
Design of pipelines, sizing criteria and sizing methodology.
Application: sizing of an oil/gas condensate production line.

OIL/GAS GATHERING NETWORK PROJECTS — 0.5 day

Project planning; route selection; jurisdiction, permitting and rights of way.
Surface considerations; alignment; surveying and mapping.
Construction; inspection and testing.
Operation and maintenance.

GATHERING NETWORK DESIGN & OPTIMIZATION USING PIPESIM™ — 2 days

Introduction to PIPESIM™ software: building models, main considerations and recommendations.
PIPESIM™ will be used to study both gas production networks and crude oil production networks. For each type of system, the production network will be analyzed in detail:

- Well performance vs. backpressure.
- Multiphase flow modeling (flow regimes, liquid holdup, slug characteristics and pressure loss analysis) across the production network.
- Comparison of different gathering network configurations.
- Determination of optimal locations for pumps and compressors.
- Identification of locations most prone to flow assurance issues (erosion, corrosion, hydrate formation, deposits).
- Analysis of heat transfer across the production network and associated flow assurance issues.
- Identification of bottlenecks and optimization opportunities.

TIE-IN ASSESSMENT USING PIPESIM™ — 1 day

Tie-ins and their impact on existing networks.
Implementation strategies, design and operation considerations.
Introduction to gathering network simulation using PIPESIM™.
Tie-ins case studies using PIPESIM™.

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

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