Flow Assurance Simulation

Duration: 5 Days

Instructor Bio:

Ayman Henawy

Senior Petroleum Engineer

- **17 years Experience in oil and gas onshore & offshore fields**

Education :

Bachelor of Petroleum Engineering Suez University – 2009

Diploma in advanced Chemistry – PSU 2025

Preparing Master Degree in Chemical Engineering– PSU

Experience

- Wells operation and wells interventions
- Natural gas processing and production plants
- Process control systems
- Certified NEBOSH Process safety Management and ISO EMS
- Instructor for oil & gas courses with different training centers

Current Position :

- Department Head for offshore production in NOSPCO

Summary:

- Theoretical Section :
- Fluid properties and Characterization
- Multi phase flow and Flow Regime Mapping
- Flow restrictions (Hydrate , WAX , Scale , etc..) formation ,mitigation and Control

- Simulation Section : Using HYSYS 14 and OLGA V21 for simulating flow assurance restrictions and how to mitigate and Control

Table of Contents:

Day 1:

- Introduction to Flow Assurance , Importance and Challenges
- Fluid properties and Characterization
- Multi phase flow and Flow Regime Mapping
- Flow restrictions (Hydrate , WAX , Scale , etc..) formation ,mitigation and Control

Day 2:

- Continue : Flow restrictions (Hydrate , WAX , Scale , etc..) formation ,mitigation and Control
- Exercise using Software (V14) :
  A) Simulate pipe line network
  B) Simulate Wax formation and how to control it
  C) Simulate oil characterization

Day 3:

- Exercise using Software (V14) :
  A) Check gas well for water production and multi phase flow
  B) Check Gas well hydrate formation risk and how to control it.
  C) Check Slug flow in pipe line and how to mitigate it

Day 4:

- Simulate fluid using PVT Software(V20) and export file to Software (V 21)
- Explore OLGA interface and different feature and options.
- Exercise: A. Flow line simulation in a steady state Case and extracting results
  B. Creating network with multi wells and adding advanced geometry for pipeline
  C. Simulate mixture fluid for Stream using PVT sim

Day 5:

- Exercises:
  A. Transit simulation using Software during Shutdown and Start-up
  B. Hydrate simulation in Software and how to control by different methods
  C. WAX simulation in Software and determination the expected amount.
  D. check slug flow and how to mitigate
  E. pigging simulation in Software.

Calculations using: ■ **Software** ☐ **Excel Sheet** ☐ **AI Modules**