



# **COURSE TITLE: INTRODUCTION TO GAS CONDITIONING & PROCESSING**

**Course Duration:** 5 days

**Course Level:** Foundation

## **Overview of Course:**

The course covers the physical and chemical nature of natural gas, its behaviour in typical production systems and the equipment and processes commonly used in gas production and treatment.

The main topics covered include natural gas properties, background thermodynamic theory, phase behaviour, vapour-liquid separation, water-hydrocarbon phase behaviour and some of the common gas processing systems and equipment used.

Typical gas dehydration processes will be covered including cooling, refrigeration, glycol dehydration, solid bed adsorption processes and membranes. NGL & LPG extraction is covered together with similar processes such as condensate stabilisation.

Natural gas measurement and transportation is discussed and participants will also learn about new developments and emerging technologies.

## **DESIGNED FOR YOU, IF YOU ARE...**

- A Process or Facilities Engineer, either a Graduate or a more experienced Technical Professional looking to develop theoretical competence
- A Project Manager who seeks greater understanding of the process and mechanical design of plants
- An Operations Engineer looking to deepen your knowledge of the design principles of the plants
- A Sub-Surface Engineers seeking to broaden your technical knowledge

## **HOW WE BUILD YOUR CONFIDENCE**

The course links theory to application. It reinforces this through real industry problems and examples which are solved by the participants as part of the sessions.

The course is highly interactive and participants are encouraged to share their own experiences and problems to the benefit of all.

## **THE BENEFITS FROM ATTENDING**

By the end of the course you will have gained a technical understanding of the principles and practices of gas processing used across the Oil & Gas industry. You will have gained this from seasoned professionals who have been involved directly with the processes and have real life experiences to offer not just textbook knowledge.

Upstream Concept Engineering Ltd – Bespoke Training & Workshops for the Energy Industries

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## TOPICS

- Gas Properties
- Gas Separation & Filtration Systems
- Gas Distillation
- Gas Dehydration
- Measurement, Transportation, and Technologies

## DAILY AGENDA

### Day 1: Gas Properties

- Natural gas properties
- Well Testing, Sample Collection & PVT Properties
- Effects of contaminants on NG properties
- Water-hydrocarbon behaviour
- Hydrates, hydrate control
- Gas Quality & Sales specifications

### Day 2: Gas Separation & Filtration Systems

- Gas separation principles and processes
- Two and three phase separators
- Filters
- Water Treating
- Design and operations criteria & trouble-shooting

### Day 3: Gas Distillation

- Distillation & Separation Principles
- NGL and LPG Extraction
- Column Components
- Distillation operation, control, start-up/shutdown & troubleshooting

### Day 4 : Gas Dehydration

- Overview of Dehydration Methods
- Cooling, Expansion & Refrigeration
- Glycol Dehydration & Enhanced Glycol Processes
- Key operating parameters & trouble-shooting for Glycol Dehydration
- Solid Desiccant Dehydration and Molecular Sieves
- Membrane Dehydration

### Day 5 : Measurement, Transportation, and Technologies

- Gas measurements
- Transportation systems
- New developments and emerging technology
- Technological challenges for natural gas

#### **INSTRUCTOR:**

**Phil Tudhope** is currently Director of a consulting company, specialising in technical and project management training for graduates and more senior technical staff. He has a first class honours B.Sc. in Mechanical Engineering from Bristol University and is a Chartered Engineer, Fellow of the Institution of Mechanical Engineers and Associate Member of the Institution of Chemical Engineers.

Phil has 40 years' experience in Project Management, Technical Development and Change Management in the oil & gas industry and proven technical and managerial capabilities to achieve results with a strong business focus and to effect significant positive change. He is a specialist in front-end (feasibility & concept selection) phases of upstream oil & gas developments with midstream (LNG) experience and project execution experience and has the ability to perform analysis and development work as well as lead and motivate teams.

Amongst other roles, he was Specialist Front End Advisor at Petronas Carigali, Chief Process Engineer at BG Group and Head of Upstream Engineering at Shell Technology India. He has experience worldwide in differing political, social and remote environments, having worked overseas for 28 years including the Far East, USA, Europe, the Middle East and India.

Phil is an experienced instructor including the development and delivery of technical and project management courses.