COURSE TITLE: GAS DEHYDRATION

Course Duration: 2 days Classroom

Course Level: Intermediate

Overview of Course:

The course covers dehydration of natural gas in some depth.

The course describes the four main gas dehydration processes of Cooling, Absorption, Adsorption and Membrane dehydration. Absorption processes concentrate on Glycol Dehydration but also include discussion of enhanced and proprietary processes. Adsorption processes concentrate on Molecular Sieves but also discuss Silica Gels. Membrane dehydration covers the principles as well as typical process arrangements.

The course covers the process design and sizing calculations as well as the equipment within the processes and typical operational issues as well as process design safety matters.

DESIGNED FOR YOU, IF YOU ARE...

- A Facilities or Process 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 a good understanding of how to select an appropriate gas dehydration method for a field development as well as the basic principles of the process design and how to size the equipment within the process.

You will have had hands-on experience of designing a glycol dehydration system and calculating the glycol purity required and the glycol circulation rates and well as the sizing of the main components of the system.

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TOPICS

- Water content of Natural Gases
- Cooling, Expansion and Refrigeration Processes
- Absorption Dehydration with emphasis on Glycol Dehydration
- Adsorption Dehydration with emphasis on Molecular Sieves
- Membrane Dehydration

DAILY AGENDA

Day 1: Background and Absorption Dehydration

- Introduction
    - Water Content of Gas
    - Reasons to Dehydrate gas

Exercise 1 : Water Content

    - Gas Product Specifications
    - Overview of Dehydration Methods
- Cooling, Expansion & Refrigeration
    - Heat exchange, Refrigeration & Expansion Cooling

Exercise 2 : Water Removal Through Cooling

    - LTX & Twister™ Processes
    - Hydrate Inhibition

Exercise 3 : Hydrate Inhibition

    - Operating & Trouble-Shooting MEG Injection
- Absorption Dehydration
    - Types of Absorbent
    - TEG Dehydration

Exercise 4 : TEG Dehydration

    - Enhanced Glycol Dehydration Processes
    - Operating & Trouble-Shooting TEG Dehydration
    - Process Design Safety for TEG Dehydration

Exercise 4 : TEG Dehydration cont.

Day 2: Adsorption Dehydration and Membranes

- Adsorption Dehydration
    - Types of Adsorbent
    - Silica Gel
    - Molecular Sieves
    - The Adsorption Mechanism
    - Adsorption Vessel Design
    - Adsorption Process Flow Schemes
    - Adsorbent Regeneration Processes

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Exercise 4 : Mol Sieve Dehydration

- Tips for Reliable Molecular Sieve System Design

Exercise 5 : TEG Dehydration cont.

- Membrane Dehydration
  - Principles of Membrane Separation
  - Membrane Types and Configuration
  - Membrane Dehydration Flow Schemes

Exercise 6 : TEG Dehydration completion

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 over 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.

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