

Training Title

GAS BOOSTER STATION OPERATIONS

Training Duration

5 days

Training Venue and Dates

PE141	Gas Booster Station Operations	5	22 - 26 Jan. 2024	\$6,500	Munich, Germany
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In any of the 5-star hotels. The exact venue will be informed once finalized.

Training Fees

- \$6,500 per participant for Public Training includes Materials/Handouts, tea/coffee breaks, refreshments & Buffet Lunch.

Training Certificate

Define Management Consultancy & Training Certificate of course completion will be issued to all attendees.

TRAINING DESCRIPTION

Throughout this course, sessions will provide opportunities for the trainees to get familiar with the fundamentals and practical aspects of Gas booster station operation. Further, the course will acquaint the trainees intensely with the most recent technologies applied in the field of Gas compressor and Gas Turbine through delivering real-life case studies to achieve marketable products that meet desired product specifications.

Emphasis is placed on offering plant operating personnel an improved understanding of the Booster station operation techniques and equipment used and finally a detailed understanding of the gas treatment process.

Typical equipment and facilities that are found in typical natural gas processing operations will also be discussed including compressors, vessels, and relief, flare and safety systems. This improved understanding of plant process operations and effective process plant surveillance techniques will lead to an increased ability to achieve optimum, economical operating performance.

TRAINING OBJECTIVES

By the end of the training course, the participants should be able to:

- Demonstrate knowledge and understanding of the principles of natural gas industry.

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- Select and implement most adequate techniques for Booster station operation and gas treatment process.
- Relate the gained knowledge in the area of natural gas utilization to real-life cases.
- Apply troubleshooting to technical difficulties encountered in the field of specialization.

WHO SHOULD ATTEND?

The program is ideal for personnel involved in gas plant process operations, troubleshooting, process engineering, and technical services as well as others providing services to the gas industry, should also find this program beneficial.

TRAINING METHODOLOGY:

A highly interactive combination of lectures and discussion sessions will be managed to maximize the amount and quality of information and knowledge transfer. The sessions will start by raising the most relevant questions and motivating everybody to find the right answers. You will also be encouraged to raise your own questions and to share in the development of the right answers using your own analysis and experiences. Tests of the multiple-choice type will be made available on a daily basis to examine the effectiveness of delivering the course.

Very useful Course Materials will be given.

- 30% Lectures
- 30% Workshops and work presentation
- 20% Group Work & Practical Exercises
- 20% Videos & General Discussions

DAILY OUTLINE

DAY-1

Natural gas fundamentals

Introduction, Natural gas history, Natural gas origin and composition, Gas sources, Natural gas phase behavior & properties, Quality and transportation

Basic concepts of natural gas processing

Introduction, Process modules, Scope of natural gas processing

- Processing objectives
- Effect of gas type in field processing
- Location of the gas field

End uses and markets for natural gas, Environmental advantages, Physical behavior of natural

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gas systems, Physical and thermal properties, Behavior of mixtures, Vaporization by gas pressure, Molecular theory of gases and liquids.

Gas Booster station operations

Flow sheet, Equipment and components

Gas-Liquid Separation – Factor affecting separation; separator and scrubber technology (design and application); and maintenance and troubleshooting considerations.

DAY-2

Absorption Processes –

Mass transfer fundamentals; absorption process; adsorption process; and system considerations. Acid Gas Removal – overview of the process; effects of acid gas; sweetening processes (absorption, adsorption, direct conversion, distillation and membranes); process selection; acid gas components (H₂S and CO₂); process selection and design procedure; and typical operating problems and troubleshooting.

Gas Dehydration and Hydrate Formation Inhibition –

Process classification; dehydration theory and principles; moisture content of a saturated gas; calculation of moisture content of different gas compositions; consequences of hydrate formation; prediction of hydrate apparition; hydrate formation inhibitions (injection of inhibitors, molecular sieve adsorption); comparison inhibitors vs. desiccants; key operating parameters for and optimum operation; and most common operational problems and possible solutions.

Gas Conditioning – Removes contaminants at inlet of plant; water removal processes (absorption, adsorption, condensation, and membranes) H₂S and CO₂ removal processes (chemical Absorption, physical absorption, solid bed, direct conversion, membranes, and extractive distillation); nitrogen removal (cryogenic fractionation) and mercury removal.

DAY-3

Gas Processing – Purpose of condition gas for sales and/or extract and recover LPG hydrocarbon Dew-point Control (adsorption, Hydrocarbon Recovery Units (HRU' s), and Short-Cycle Units); absorption/lean oil process; Vapor Compression System;

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DAY-4

Gas Compression – Basic definitions, Types and operations of gas compressors and Turbines, centrifugal compressors, control system, safeguards, safe startup and shut down system, safety features. Surge and anti-surge system

Reciprocating compressors, basic definitions, various types, control system, safeguard system, safe start up and shut down.

Gas Turbines, definition, various types, process control system of Gas turbines, operating procedure, safeguards, start up and shut down, safe, emergency and fire shut down of gas turbines.

DAY-5

BASIC INSTRUMENTATION AND CONTROL SYSTEM

Basic Process control and Instrumentation – Process variable, measuring elements, transmitters, controllers, converters and control valves.

Process safeguards- Alarms, Trips, shut down valves, Blow down valves, fire and gas detectors.

Booster station Utilities – Instrument air compressor, Inert gas generator, power generation. Routine and emergency operation of generators, emergency operation and spill over.

Practical session :-P&ID review to understand Instrumentation and control system.

Case studies, group discussions. Video presentations.

End of program assessment. Certificate distribution.

NOTE:

Pre & Post Tests will be conducted.

Case Studies, Group Exercises, Group Discussions, Last Day Review & Assessments will be carried out.

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