

(2) Gas Processing Operation

WHO SHOULD ATTEND

- Technical and non-technical personnel involved in the activities of natural gas industry
- Specifically, technical, operations and maintenance personnel who had limited exposure to this area
- Professionals involved in other areas of the gas industry who require a comprehensive overview of natural gas processing
- Junior and senior and more experienced engineers involved in the operation and/or design of the Oil & Gas field processing facilities
- Maintenance and operations foremen and superintendents; plant engineering technicians; plant operators; process control technicians; and new plant engineers desiring a knowledge of operational issues
- Those directly involved in supervising gas processing operations
- Managers involved in the development or re-design of new/existing facilities

COURSE OBJECTIVES

- Gain a deep knowledge of the properties, specifications and end uses of natural gas.
- Gain a deeper understanding of typical natural gas processing operations, including: Dehydration, acid gas removal (gas sweetening), hydrocarbon dew point control, recovery of ethane, LPG production, propane and NGL (natural gas liquids), and Sulfur recovery
- Gain a deeper understanding of the production of liquefied natural gas (LNG).
- Gain a deeper knowledge of the different equipment and facilities found in natural gas processing plants.
- Learn about fundamentals of gas transportation and distribution.
- Know the different problems posed by the undesirable components present in natural gas well effluent and the required treatments.
- Know the gas treatment and liquefaction processes, their typical operating conditions, and the influence of each operating parameter.
- Be able to perform hand calculations for summary design of main equipment used for gas processing.
- Know the main operating problems encountered in gas processing and conditioning and the main technical solutions.
- Know how to apply physical and thermodynamic property correlations and principles to the design and evaluation of gas production and processing facilities.
- Design and selection criteria of key process equipment including separators, heat exchangers, pumps, compressors, valves and towers
- Safety, risk and hazard considerations
- Acquire a deep understanding of the thermodynamics applied to the gas processing facilities
- Know the technology and operating rules of the static equipment and rotating machinery used in the gas production facilities
- Know how to start-up and shut-down, operate and monitor, isolate and reinstate gas processing equipment safely

CONTENT

Origins, properties, uses, advantages and specifications of natural gas; Molecular theory of gases and liquids; Natural gas processing plant and basic principles of LNG plants; Heat exchange and Heat exchangers in gas processing; Hydrates; Inhibitors; Low temperature exchange (LTX) units; Condensate stabilization and stabilizer; Multistage separation and Multi flashes; Distillation tower; Acid gas treating and Gas sweetening processes; Gas and Glycol dehydration; Gas processing, Absorption/lean oil Refrigeration; Mechanical design of pressure vessels; Gas transportation and distribution; Principles and operation of refrigeration systems and liquefaction of natural gas to make LNG; Physical properties, phase equilibrium and vapor liquid equilibrium calculations; Dew point control and natural gas liquids recovery; Multi-stage refrigeration and mixed refrigerant units; Measurement of natural gas and gas liquids; Plant considerations—economics, allocations, operating limits; Removing impurities (e.g. CO₂, H₂S); Providing fuel gas

INTENDED FOR

This short course is designed to give the attendants the fundamentals of natural gas and its by-products conditioning and processing including some of the details of the process. Typical equipment and facilities that are found in typical natural gas processing operations will also be discussed including compressors, vessels, relief systems and safety systems. Finally, the fundamentals of gas transportation and distribution will be discussed.