Advanced Natural Gas Processing Training Course

Introduction

The success of every company depends on each employee's understanding of the key business components. Employee training and development will unlock the companies' profitability and reliability. When people, processes, and technology work together as a team developing practical solutions, companies can maximize profitability and assets in a sustainable manner. Training and development are an investment in future success - give yourself and your employees the keys to success

It is strategically important that your team understands the fundamentals of process unit operations concepts. This is the difference between being in the best quartile of operational ability and being in the last quartile. There is vast difference in the operational ability of operating companies and most benchmarking studies have confirmed this gap in operational abilities.

Whether you have a team of new or seasoned employees, an introduction or review of these concepts are very beneficial in closing the gap if you are not in the best quartile or maintaining a leadership position. Most studies show that a continuous reinforcement of best practices in operational principles is the most effective way to obtain the desired results. Training and learning should be an ongoing continuous lifelong goal.

Course Objective

This course will guide the participates to develop key concepts and techniques for Natural Gas Processing Operations. These key concepts can be utilized to make operating decisions that can improve your unit's performance.

Many aspects of Natural Gas Processing operations management can be improved including, product recoveries, purities and energy utilization, and safety. This cannot be achieved without first an understanding of basic fundamental principles of design and operation. These principles need to be understood in advance of operating and trouble shooting a process unit operation for the manager or problem solving to be effective.

This seminar focuses on the core building blocks of the Natural Gas Processing process systems, equipment, and economics. This program will emphasize the process unit operation fundamentals, safe utilization of these fundamentals by operations, engineering, maintenance, and support personnel.

Syllabus

Introduction

- Overview of the Chemical Processing Industry

Review of Process Incidents

- Safety for the Chemical Processing Industry

Fundamentals of Petroleum Chemistry

- Description of a Hydrocarbon Molecule
- Types of Hydrocarbon Molecules

Process Equipment Troubleshooting

- Troubleshooting concepts and techniques
- Typical Problems
- Interaction of Process and Equipment
- Tower Inspection Case Study

Introduction to Natural Gas Processing

- Well Head Gas Liquid Physical Separation
  - Slug Catchers / Separators
- Dew Point Units / Dehydrations Units
  - Glycol Units
  - Mole Sieve Units
- Gas Sweeting Units
- Mercury Removal Units
- Gas Processing Units
  - Natural Gas Liquid Plants (NGL)
  - Liquified Petroleum Gas Plants (LPG)
  - Liquified Natural Gas Plants (LNG)
- Gas Compression Systems

Well Head Gas Liquid Physical Separation

- Overview of Gas Separation Systems
  - Slug Catchers
  - Separators
  - Pigging Operations
- Safe Commissioning of Gas Separation Equipment
- Design of Gas Separation Systems
- Economics – Process Optimization and Integration
- Trouble Shooting
- Case Study
  - Slug Catcher Piping Case Study
- Maintenance Guidelines
- Safety
  - Piping Safety Factors

Dew Point Units / Dehydration Units

- Overview of Dehydration Unit Systems
  - Glycol
  - Mole Sieve
- Safe Commissioning of Dehydration Unit Equipment
- Design of Dehydration Unit Systems
  - Overview of Adsorbers Systems
  - Regeneration Systems
  - Controlling Solvent Losses
- Economics – Process Optimization and Integration
- Trouble Shooting
- Case Study
  - Improper blinding
- Maintenance Guidelines
- Safety
  - Piping Safety Factors

Natural Gas Sweeting (Acid Gas Removal)

- Overview of Gas Sweeting Unit Systems
- Safe Commissioning of Gas Sweeting Unit Equipment
- Design of Gas Sweeting Unit Systems
  - Overview of Absorption
  - Process Flow Sheets
  - Choice of Solvent
  - Regeneration Systems
  - Controlling Solvent Losses
- Economics – Process Optimization and Integration
- Trouble Shooting
- Case Study
  - Improper blinding
- Maintenance Guidelines
  - Review of OSHA Welding Guidelines
- Safety

Mercury Removal Units

- Overview of Mercury Removal Unit Systems
- Safe Commissioning of Mercury Removal Unit Equipment
- Design of Mercury Removal Unit Systems
  - Overview of Absorption
  - Process Flow Sheets
- Economics – Process Optimization and Integration
- Trouble Shooting
- Case Study
- Maintenance Guidelines
- Safety

Natural Gas Liquid Plants (NGL)

- Overview of NGL Unit Systems
- Safe Commissioning of NGL Unit Equipment
- Design of NGL Unit Systems
  - Overview of Distillation
  - Process Flow Sheets
  - Condensate Stabilization
  - Plate Fin Heat Exchangers
  - Expanders
  - Condensate Storage and Loading
- Economics – Process Optimization and Integration
- Trouble Shooting
- Case Study
  - Low Temperature Embrittlement
  - Plate Fin Heat Exchangers
- Maintenance Guidelines
- Safety

Liquified Petroleum Gas Plants (LPG)

- Overview of LPG Unit Systems
- Safe Commissioning of LPG Unit Equipment
- Design of LPG Unit Systems
  - Overview of Distillation
  - Process Flow Sheets
  - Plate Fin Heat Exchangers
  - Storage and Loading
- Economics – Process Optimization and Integration
- Trouble Shooting
- Case Study
  - Low Temperature Embrittlement
  - Plate Fin Heat Exchangers
- Maintenance Guidelines
- Safety

Liquified Natural Gas Plants (LNG)

- Overview of LNG Unit Systems
- Safe Commissioning of LNG Unit Equipment
- Design of LNG Unit Systems
  - Condensate Removal
  - Acid Gas Removal
  - Dehydration
  - Mercury Removal
  - Refrigeration
  - Liquefaction
  - Storage and Loading
- Economics – Process Optimization and Integration
- Trouble Shooting
- Case Study
  - Low Temperature Embrittlement
  - Plate Fin Heat Exchangers
- Maintenance Guidelines
- Safety

Compression Systems

- Overview of Compression Unit Systems
- Safe Commissioning of Compression Unit Equipment
- Design of Compression Unit Systems
  - Types of Compressors
  - Types of Drivers
  - Typical Compressor Station
- Economics – Process Optimization and Integration
- Trouble Shooting
- Case Study
  - Discharge Piping
- Maintenance Guidelines
- Safety

Who Should Attend:

- People who are making day to day decisions regarding operation, design, and economics of processing plants.

    1. 1st Line Operations personnel,
    2. Operation Supervisors,
    3. 1st Line Maintenance personnel,
    4. Maintenance Supervisors,
    5. Senior Plant Supervisors,
    6. Operations Engineers
    7. Process Support Engineers,
    8. Design Engineers,
    9. Cost Engineers

- Ideal for veterans and those with only a few years of experience who want to review or broaden their understanding in Processing Plant Operations.

- Other professionals who desire a better understanding of subject matter

What you can expect to gain:

- A detailed overview of Natural Gas Processing Unit operations, processes, and design
- Gain an understanding of the equipment of a Natural Gas Processing Unit
- Gain an understanding of the Gas Processing Unit flow sheets
- Gain an understanding of Gas Processing Chemistry
- Troubleshooting Techniques
- Gain an insight to optimization strategies