Advanced Storage Tank and Product Loading Operation, Design, and Troubleshooting 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 operation, engineering, and maintenance teams understands the fundamentals of process tank and product loading design and 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 is 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 to operate, repair, design and troubleshoot Storage Tank and Product Loading Systems. These key concepts can be utilized to make decisions that can improve your unit's performance.

This course will help;

1. Provide an appreciation of the fundamentals design requirements for new storage tanks and product loading systems.

2. Understand the various techniques available for safe site build and achieving quality assured standard for the construction of storage tanks and product loading systems

3. Consider maintenance strategies for the inspection, assessment repair and maintenance of storage tanks and product loading systems.

Course Syllabus

The goal of the course would be to refresh the knowledge of those who have a basic understanding of process operations and to build a foundation to those who are new to process operations. This course is an advanced advance storage tank and loading systems design and operation course – for an introduction to these topics consider attending our introduction to storage tank course.

Introduction

- Introduction to the Process Industry
- Safety for the Process 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

Storage and Loading Systems

- Introduction to Storage and Product Loading Systems
- History of Storage and Product Loading Systems
- Review of Tanks and Product Loading Codes

Operation of Storage and Loading Systems

- Spill and overfill prevention
- Containment
- Release detection
- Corrosion protection
- Emergency response
- Product and equipment compatibility and demonstration
- Vapor Recovery
- Emissions Calculations
- Relief Devices
- Tank Heaters
- Design Considerations for Tank farm /Manifold
- Loading and Unloading Facilities
- Product Measurement

Types of Storage Tank Systems

Fixed Roof Tanks
Floating Roof Tanks
Underground Tanks
Pressurized Tanks

Fixed Roof Tanks

A. Basic Design
    1. Leak Prevention
    2. Leak Detection
    3. Secondary Containment
B. Construction
C. Operation
D. Maintenance
E. Troubleshooting

Floating Roof Tanks

A. Basic Design
   1. Leak Prevention
   2. Leak Detection
   3. Secondary Containment

B. Tanks Seals
C. Construction
D. Operation
E. Maintenance
F. Troubleshooting

Underground Tanks

A. Basic Design
   1. Leak Prevention
   2. Leak Detection
   3. Secondary Containment

B. Construction
C. Operation
D. Maintenance
E. Troubleshooting

Pressurized Tanks

A. Basic Design
   1. Leak Prevention
   2. Leak Detection
   3. Secondary Containment

B. Construction
C. Operation
D. Maintenance
E. Troubleshooting

Tank Corrosion Mitigation

A. Causes of Corrosion
B. Tank Floor Corrosion
C. Lining Systems
D. Sulphur Corrosion

Inspection

A. Non-Destructive Testing

Sludge Control Guidelines

Storage Tank Maintenance Guidelines

A. Planning
B. Inspection
C. Managing

Product Loading

- Truck Loading
- Rail Car Loading
- Barge and Ship Loading

Truck / Lory Loading

A. Basic Design
   1. Leak Prevention
   2. Leak Detection
   3. Secondary Containment

B. Construction
C. Operation
D. Maintenance
E. Troubleshooting

Rail Car Loading

A. Basic Design
   1. Leak Prevention
   2. Leak Detection
   3. Secondary Containment

B. Construction
C. Operation
D. Maintenance
E. Troubleshooting

Barge and Ship Loading

A. Basic Design
   1. Leak Prevention
   2. Leak Detection
   3. Containment

B. Construction
C. Operation
D. Maintenance
E. Troubleshooting

Storage Tank and Product Loading Safety

A. Fire Fighting Guidelines
B. Preparing for Personnel Entry
C. The Classifications of Flammable and Comestible Liquids (Per NFPA 30)
D. The Classification of Flammable Chemicals
E. What are the contents of a Typical Safety Data Sheet (SDS)

Auxiliary Equipment

A. Pumps / Compressors / Blowers
B. Control Valves
C. Heaters / Heat Exchangers
D. Flares / Thermal Oxidizers
E. Vapor Recovery

Summary

Who Should Attend:

- People who are making day to day decisions regarding operation, design, maintenance 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

What You Can Expect To Gain;

- Overview of the Storage Tank and Product Loading Systems
- Design Evaluation Techniques
- An understanding of tank / and stored product interaction
- An understanding of essential tanking concepts
- Valuable practical insights for trouble free design and field proven techniques for commissioning, start up and shutdown of storage system operations
- To tailor your approach to specific design, analysis and troubleshooting problems.