KLM Technology Group

Practical Engineering Guidelines for Processing Plant Solutions

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Engineering Solutions

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Guidelines for Safe Pre-commissioning, Commissioning, and Operation of Process Units Training Course

Introduction

The success of every company depends of 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 is an investment in future success - give yourself and your employees the keys to success

It is strategically important that your operations 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 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 on going continuous life long goal.

Course Objective

This course will guide the participates to develop key concepts and techniques to pre-commission, commission, operate and troubleshoot key fundamental unit operation systems. These key concepts can be utilized to make operating decisions that can improve your unit's performance.

Many aspects of operations 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 operator or problem solving to be effective.

This seminar focuses on the core building blocks of the process unit equipment. This program will emphasize process unit equipment fundamentals, safe utilization of these fundamentals by operations and maintenance personnel, and equipment troubleshooting techniques. This program can be 3-5 days depending on the needs analysis of the participants.

Course Duration and Delivery

Typical course duration is 3 to 5 days based on the background of the participates. One of our Senior Technical Professional with over 25 years of experience would lead the class. Instruction can be in house or in an online webinar.

Outline

Day One

Introduction

- Overview of the Chemical Processing Industry
- Chemistry of the Processing Industry

Review of Process Incidents

- Safety for the Operation and Maintenance Groups

Basics Process Equipment Review

- Furnaces
- Boilers and Steam Systems
- Steam Turbines, Pumps and Compressors
- Towers and Vessels
- Piping – Pressure and Temperature Limits
- Heat Exchangers

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Day 2

Basics Process Equipment Review Continued

- Electrical Systems
- Reactor Systems
- Process Utilities Systems
- Relief Valve and Flare Systems

Review of Hazard Analysis Techniques

- Hazard Identification
  - energy sources
  - electrical sources
  - chemical sources
- Case Study on Hazard Identification
- HAZOP System Methods
- Root Cause Analysis Methods
- Case Study on Root Cause Analysis
- Incident Investigation

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Day 3

Building Commissioning Guidelines

- Industry Resources
- Industry Best Practices
- Acceptable Guidelines

Building Commissioning Plan

- Review Guidelines
- Scheduled Commissioning Activities
- Estimate Cost from Activities

Safe Equipment Isolation Guidelines

- General Hazardous Work Guidelines
- Line Breaking Guidelines
- Vessel Opening Guidelines
- Confined Spaces Guidelines
- Excavation Guidelines
- Electrical Guidelines
- TLV – Threshold Limit Values
- Case Study on Isolation Systems

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Day 4

Safe Equipment Isolation Labels Guidelines

- Labeling of Isolation Systems
- Lockout, Tag and Try

Safe Equipment Isolation Industry Standards

- Examples of Industry Standards Guidelines
- Examples of Industry Standard Labels

Troubleshooting Guidelines

- Problem Analysis
- Troubleshooting Techniques

Project Management Overview

- Project Management Guidelines
- Contingency Planning
- Balancing Technical, Mechanical, and Time Constraints

Conclusions

- Who is the Captain of Your Ship?
- Building Safety Awareness

Who Should Attend:

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

    1. Operation Supervisors,
    2. Maintenance Supervisors,
    3. Senior Plant Supervisors,
    4. Operations Engineers
    5. Process Support 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

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What you can expect to gain:

- The Process Unit Equipment Fundamentals – how each system functions from a hands on viewpoint

- Safe commissioning and utilization of process equipment

- Safe de-commissioning of process equipment

- Hazard Analysis Techniques

- Safe Isolation Guidelines

- Project Management Guidelines