

## Course Name: Plant startup and Shutdown procedures

**Code:**

**DATE:**

### Course Objective:

Upon the successful completion of this seminar, participants will have a good knowledge of:

- The various activities/steps (checklists) of the pre-commissioning and commissioning of a process
- How to develop an overall commissioning strategy and plant start-up management
- How to deal with machinery and equipment specific commissioning issues
- How to manage issues dealing with the commissioning of Electrical, Instrumentation and Utilities Systems
- How to develop an overall commissioning management plan, resource planning and commissioning budget?
- Typical process plant Startup and Commissioning procedures
- Troubleshooting and Problem-Solving strategies (Case Study – Gas and Liquid Separation, Natural Gas Dehydration and Natural Gas Amine Treatment) which can be applied during commissioning for each category of equipment.

### Program Methodology:

This highly practical and results-oriented program is based on adult learning concept. The facilitator will give plenty of input and then help participants to make sense of the themes through discussion and practice. It incorporates short inspiring demonstrations, role play and much practice to enhance learning. Delegates will be encouraged to introduce problems of their own for discussion and analysis. There will be ample time for Q&A, discussions with 'return to work' action planning. The course will reinforce key concepts within an inspiring and engaging learning environment.

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## Who Should attend?

This training seminar is suitable for a wide range of professionals but will greatly benefit:

- Technical personnel involved in supporting Plant Commissioning and Start-up activities;
- Supervisors and Engineers, both operations and maintenance who are involved or likely to be involved in Plant Commissioning and Start-up activities;
- Team Leaders, Project Managers, Refinery Managers, Plant Managers, Section Heads, Plant Supervisors, Process Engineers, technicians, technical staff and contractor personnel involved in project execution and plant Commissioning and Start-up in the Oil and Gas Process industry;
- Managers and specialists who lead or facilitate in the designing, selecting, specifying, operating, installing, repairing and trouble-shooting of oil and gas processing facilities;
- Mechanical, Electrical, Instrumentation and Control Engineers who are involved in Pre-commissioning, start-up and trouble shooting

## Course Outline:

Module 1 - Introduction, Scope, General Requirement, and Preparation Prior to Start-up

- KeyTopics:
  - Introduction
  - Scope
  - General Requirements
  - Preparation Prior to Start-up
    - Operational Check-Out
    - Hydrostatic Testing
    - Final Inspection of Vessels
    - Flushing of Lines
    - Flushing – Steam Piping
    - Flushing – Process and Utility Piping
    - Instruments
    - Breaking-In Pumps
    - Breaking-In Compressors

Module 2 - Preparation Prior to Start-up & Normal Plant Start-up Procedure

- KeyTopics:

### Preparation Prior to Start-up (contd.)

- Preparation Prior to Start-up

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- Dry-out and boil-out.
- Catalyst loading.
- Tightness test.

## Normal Plant Start-up Procedure (Commissioning)

- General
- Pre Start-up Check List
- Plant Start-up
- Making Area Safe
- Utilities Commissioning
- Air Purging and Gas Blanketing of Non-Catalytic Sections
- Catalytic Units Reactor Section Air Purging and Gas Blanketing
- Heat Exchanger Activation
- Vacuum Test
- Establishment of Flow in the Unit
- Inhibitor/Chemical Injections
- Operation Adjustment to Obtain Quality

## Module 3 - Acid Cleaning, Chemical Boil-out & Heater Dry-out Procedures

- KeyTopics:
  - Typical Acid Cleaning Procedure for Compressors Lines
    - Preparation
    - Acid-Cleaning Operation
  - Typical Chemical Boil-out Sequence Procedure
  - Typical Heater Dry-out Procedure
    - General Procedure
    - Gas Fired Heaters
    - Oil Fired Heaters
    - Burners

## Module 4 - Performance Guarantees

- KeyTopics:
  - Scope
  - Guarantee Items and Figures
    - Process Performance Guarantee
      - Plant capacity
      - Plant Yield

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- Product Specifications
- Raw Materials
- Catalyst Performance and Life
- Chemical Consumption
- Utility Consumption Guarantee
  - Guarantee Items
  - Guarantee Figures
- Equipment Guarantee
- Environmental Related Guarantee
  - Effluent Waste Water Characteristics
  - Solid Waste Characteristics
  - Gaseous Waste Characteristics
- Execution of the Performance Guarantee Test
- Completion of Performance Test

## Module 5 - Troubleshooting and Problem Solving

- KeyTopics:
  - Oil and Gas Separation Processes
    - Process Flow Sketches & Brief Description
    - Potential Operational Problems
    - Trouble Shooting
  - Natural Gas Amine Sweetening Process
    - Process Flow Sketch & Brief Description
    - Potential Operation Problems
    - Trouble Shooting
  - Natural Gas Glycol Dehydration Process
    - Process Flow Sketch & Brief Description
    - Potential Operation Problems
    - Trouble Shooting

**Course Duration: ( 5 ) Day**

**Venue:**

**Time:**

**Numbers of hours: Hours**

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