

**Training Title**

**PROCESS PLANT START-UP COMMISSIONING & TROUBLESHOOTING**

**Training Duration**

5 days

**Training Venue and Dates**

PE231	Process Plant Start-up Commissioning & Troubleshooting	5	03 – 07 November, 2019	\$4,250	Dubai, UAE
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**In any of the 5 star hotels. The exact venue will be informed once finalized.**

**Training Fees**

- 4,250 US\$ per participant for Public Training includes Materials/Handouts, tea/coffee breaks, refreshments & Buffet Lunch.

**Training Certificate**

Define Management Consultancy & Training Certificate of course completion will be issued to all attendees.

**TRAINING DESCRIPTION**

Start Up and Shutdown of process plants present both a major technical and management challenge. This course explains and illustrates all the necessary steps that are needed to plan and manage start-ups and shutdowns in a process plant environment, which is increasingly becoming a complex and demanding task. Moreover, Improper planning, managing and controlling of plant start-ups and shutdowns will lead to unpredictable risks and costly delays. Therefore, this course is designed to provide the participants with the most recent techniques of planning, management and controlling of the process plants startups, shutdowns and maintenance operations. In addition to scientific procedures and contents of this program, many of real life case studies and implementations are planned to be presented in an open discussion forum with the participants. The course will also cover the troubleshooting of the start-up process. Upon the successful completion of this course, participant will gain enough skills to anticipate and avoid problems associated with such start-up processes related to petrochemical plant start-up and commissioning.

**TRAINING OBJECTIVES**

**At the end of the training, the participants will be able to:**

- Recognize the six key stages of the commissioning process
- Develop and overall commissioning and plant start-up strategy
- Deal with machinery and equipment specific commissioning issues

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- Manage issues dealing with the commissioning of Electrical, Instrumentation and Utilities Systems
- Develop an overall commissioning management plan, resource plan and budget
- Apply troubleshooting and problem solving strategies to address issues commonly arising during start up and commissioning
- Manage risks associated with commissioning

### **WHO SHOULD ATTEND?**

**This course is ideal for:**

- Team Leaders
- Project Managers
- Refinery Managers
- Refinery operations personnel
- Refinery process engineers.
- Refinery maintenance supervisors
- Maintenance Planners
- Plant Managers
- Section Heads
- Technical Staff
- Mechanical, Electrical and Instrumentation Engineers who are involved in Process Plant Start up and Commissioning will benefit from this course.

### **TRAINING METHODOLOGY:**

A highly interactive combination of lectures and discussion sessions will be managed to maximize the amount and quality of information and knowledge transfer. The sessions will start by raising the most relevant questions, and motivate everybody find the right answers. You will also be encouraged to raise your own questions and to share in the development of the right answers using your own analysis and experiences. Tests of multiple-choice type will be made available on daily basis to examine the effectiveness of delivering the course. Very useful Course Materials will be given.

- 30% Lectures
- 30% Workshops and work presentation
- 20% Group Work& Practical Exercises
- 20% Videos& General Discussions

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### **DAILY OUTLINE**

#### **Introduction and Preparation**

Course Introduction & Pre-assessment

- Refinery Overview
- Crude Oil classification and Properties
- Products From Crude Oil Refining

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- Refinery Configuration
- Commissioning Activities Overview
- Start-up and Shutdown Rules of Thumb
- Planning Methods for Start-Up
- Preparation for a Successful Start-up or Shutdown
- Startup Safety Review (Case Study)
- Preparation for Initial Start-Up
- Organization and Roles
- Cost Estimation
- Spare Parts Planning
  
- Hydrostatic Pressure Testing
- Plant Inspection
- Commissioning of Utilities
- Final Inspection of Vessels
- Acid Cleaning
- Flushing of lines and Equipment
- Inspection and Running of Pumps
- Break-In Gas Compressor
- Service and Calibrate Instruments
- Dry Out Fired Heaters
- Leak Testing
- Purging and Gas Blanketing.

### **Start-up Material Issues and Control**

- Process Unit Start-Up Procedure
- First-time Start-Up: General Precautions for first-time Start-up
- Problems associated with first-time Start-up
- Process flow description
- Start-up procedure
- Process flow Description
- Start-up Procedure
- Reasons of problems associated with first-time start-up and
- How to avoid them & troubleshooting first-time start-up
- Start-up instrumentation issues and control

### **Commissioning Strategy**

- Commissioning Strategy
- Mechanical Completion & Integrity Checking
- Pre-commissioning and Operational Testing
- Start-up/Initial Operation, Testing and Acceptance
- Process Plant and Machinery Commissioning

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- Instrumentation and Control Systems
- Preparing and Isolating Process Plant

**Managing Risks during Commissioning**

- Trouble Shooting and Problem Solving
- Risk Management
- Managing Safety and Quality
- How to Anticipate and Avoid Problems and Consequences During Commissioning and Start-Up.
- Process Failure: Loss of feed, Furnace tube rupture, Loss of makeup gas, Loss of wash water, Loss of recycle gas compressor, Loss of column top reflux, Loss of column pump around.
- Utilities Failure: Electrical power failure, Steam failure, Instrument air failure, Cooling water failure, Fuel gas failure, Explosion, fire, line rupture, or serious leak.
- Importance of Check Lists.
- Start-up Equipment Issues and Control.
- Refinery Equipment Start-Up Troubleshooting
- Fired Heaters, Heat Exchangers, Water Coolers, Pumps, Compressors
- Case Study: Operational Troubleshooting (Root Cause Analysis).
- Video Demo (pre-commissioning, commissioning, startup, post commissioning).
- Safe Handling of Equipment
- Shutdown and Decommissioning
- Normal Shutdown
- Decommissioning and demolition
- Unplanned Shutdown
- Planning Methods for Shutdown
- Troubleshooting Case Studies
- Crude Distillation operation & troubleshooting
- Shutdown Environmental and Safety Issues and Control
- Final Assessment and Course Closing
- Conclusion

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NOTE:

**Pre & Post Tests will be conducted**

**Case Studies, Group Exercises, Group Discussions, Last Day Review & Assessments will be carried out.**

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