



THE CHEMICAL ENGINEERING MAJOR

Process Plant Operation, Commissioning & Start-Up

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Process Plant Operation, Commissioning & Start-Up

Introduction:

Start Up and Commissioning of new plant and equipment presents both a major technical and management challenge. An organization's personnel must familiarise themselves with new equipment, processes and technologies, develop the relevant operating and safety procedures.

Who Should Attend?

Operation Personnel, Safety Officers, Control Engineers, Production Supervisors, Plant Operators, Instrument / Electrical / Mechanical Supervisors & Technicians Process & Procedures Engineers (Offshore)

Methodology:

This interactive Training will be highly interactive, with opportunities to advance your opinions and ideas and will include;

- Lectures
- Workshop & Work Presentation
- Case Studies and Practical Exercise

- Videos and General Discussions

Certificate:

BTS attendance certificate will be issued to all attendees completing minimum of 80% of the total course duration.

Objectives:

- To develop and overall commissioning and plant start-up strategy
- To deal with machinery and equipment specific commissioning issues
- How to manage issues dealing with the commissioning of Electrical, Instrumentation and Utilities Systems
- To develop a overall commissioning management plan, resource plan and budget
- Troubleshooting and Problem Solving strategies which can be applied during commissioning
- How to manage risks associated with commissioning

Contents:

- Introduction
- TERMS AND TOOLS
- Start-Up Problems
- Start-Up Planning

- Start-Up Cost Prediction
- Minimizing Equipment Problems
- Overall Process Flow

Test Separators, Process Separators, Desalting Facility, Crude Oil Coolers, Field Metering, Produced Brine Treatment System, Crude Oil Storage and Shipping Terminal, Crude Oil Deliver Station and Vapor Recovery Unit

- Gas Liquid Separation

Principles of Separation, Phases of Separation, Stages of Separation Separators Classification, Separator Internals, Separators Operation & Troubleshooting, and Troubleshooting procedure for liquid carries over in outlet gas stream

- Oil Water Separation

Emulsion, Emulsifying Agents, Demulsifiers, Factors Affecting Emulsion Breakdown, Crude Oil Treating (Emulsion Treating), Factors that Affect Treating, Equipment Used in Oil/Water Separation and Crude Oil Desalting.

- Crude Oil Treating Methods

Chemical Treating, Heaters, Electrostatic, Electrostatic Treater Operation

- Desalting Facility

The desalting facility is made up of the following:

Desalting water supply pumps, Dilution water filters, Oxygen stripping tower. Water storage vessel Dilution water recycle pumps, Free water knockout

separators (FWKO) , Crude Desolater operations and troubleshooting, High salt content in desalted crude, Water content of desalted crude too high and Appreciable continuous variations in voltmeter

- Glycol Dehydration

Water Hydrocarbon System Behavior, Gas Dehydration Systems

Absorption Using Liquid Desiccants (Glycol Dehydration), Process Flow and Components

Process Operation, Process Variables, Operating Problems,

Troubleshooting

- Water Treatment

Impurities in Water, Operating Problems, Industrial Water Treatment, Waste Water Treatment and Water Injection

- Heat Exchanger , Air Coolers & Fired Heaters

Principles of Heat Transfer, Function of Heat Transfer Equipment, Types of Heat Exchangers, Heat Exchangers Operation and Troubleshooting and Cleaning of Heat Exchangers

Principles of Heat Transfer in Fired Heater, Performance Monitoring

Fired Heater Operation and Troubleshooting

- Pumps

Basic Pump Hydraulics, Centrifugal Pumps, Centrifugal Pump Operation, Start-up and Shutdown Procedure and Troubleshooting

Positive Displacement Pump, Reciprocating Pumps Types, Reciprocating Pumps Operation, Reciprocating Pumps Operating Problems, Reciprocating Pumps Troubleshooting

- Compressors
 - Centrifugal Compressors Control
 - Compressor Operation
 - Reciprocating Compressors
 - Start-up and Shutdown and Troubleshooting
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- Types of Storage Tanks

The Fixed Roof Tanks, The Floating Roof Tanks, Hazardous Conditions Explosive Air – Vapor Mixtures, Ignition Sources, Static Electricity, Pyrophoric Iron Sulphide , Spark Formation by Striking of Metal Objects, Electrical Equipment ,Smoking in the Tank ,Gases Discharged During Gas – Freeing, Petroleum Gases, Hydrogen Sulphide, Gas and Safety procedures

- MANAGEMENT
- Start-Up Safety and Environmental Issues
- Start-Up Management
- Start-Up Manpower
- Management & contingency plan.
- Risk management associated with commissioning & manages issues with commissioning of Electrical, instrumentation & utilities system. And supplier assistance,
- Discussion Case Studies