

Training Title

PROCESS PLANT START-UP, SHUTDOWN, TROUBLESHOOTING & PROBLEM SOLVING

Training Duration

5 days

Training Venue and Dates

REF PE078	Process plant Start-up, Shutdown, Troubleshooting & Problem solving	5	30 Sep -04 Oct. 2024	\$6,500	London, UK
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Will be held at any of the 4 or 5-star hotels. The exact venue will be informed soon upon finalizing.

Training Fees

- \$6,500 per participant for Public Training includes Materials/Handouts, tea/coffee breaks, refreshments & Lunch

Training Certificate

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

TRAINING OVERVIEW

TRAINING DESCRIPTION

Many accidents occur during the start-up or shutdown of process plants. . In addition, several accidents, which occur during the normal working conditions of the plant, are caused by either thermal or mechanical stresses as a consequence of these operations. •

The hazards that are most frequently encountered during the start-up/shutdown procedures are:

- **Mixing of air and hydrocarbons**
- **Contact of water with hot oil**
- **Freezing of residual water in equipment**
- **Corrosive and poisonous liquids and gases**
- **Thermal and mechanical stresses**

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This course is designed to give the attendees the requirements and understanding of the process plant operation, process, control system and safeguarding, thereafter will proceed towards the step-by-step methods of plant start-up and shutdowns. Monitoring of normal operation, taking actions at upset conditions, various trouble shooting and risk assessment are included.

Course will be more practically oriented with interactive discussions and experience transfers. Operation and troubleshooting of main equipment will be discussed too.

This will enable the participants to enhance their knowledge on process operation, troubleshooting and take corrective actions at different upset conditions to maintain production with quality requirements, without compromising safety.

More emphasis will be given to practical exercises, experience transfer and safety incident case studies.

TRAINING OBJECTIVES

On completion of the course candidates will get good understanding and knowledge on the following:

- Advanced the plant process operating technique
- Understanding of the process trouble shooting at different scenarios.
- Utilization of the proper tools / equipment.
- Equipment common operating parameters & controls.
- Equipment & process start-up / shutdown from / to different modes.
- (Vessel start-up after major maintenance job, power failure, stand by, different ESD levels,)
- Oil & gas production overview from well head to tank farm and gas export.
- Different process equipment's- Operation & trouble shooting techniques.
- Process parameters measurement principles and commonly used devices.
- Working control loops and ASD system
- Quality requirement for exporting of oil and gas.
- Collection and reporting of process parameters
- Review lab reports
- Take corrective actions to avoid process upset, off-spec qualities
- Review daily production reports
- Review chemical, lube oil and other utilities consumptions.
- Hazards identifications & control measures (Safety in operation.)
- More confidently guide freshers and those who with less experience.

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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 motivating everybody to 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 the multiple-choice type will be made available on a 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

WHO SHOULD ATTEND

- Production managers, Supervisor / Engineers and Operators
- Mechanical, Instrument and Electrical Engineers, Supervisors and Technicians

COURSE OUTLINE

Day 1: Knowledge of the process and Control system

1.1 Process plant operation- Requirements

- Introduction
- Entry Test
- Knowledge on Facility Operation-Overview
- Knowledge and experience on the respective process plant
- Good understanding of safety philosophy & design
- Familiar rise with the major static and rotating equipment
- Process control system knowledge
- Control room and field operation interactions
- Location of valves, switches, sampling points. Etc.
- ESD, F&G system knowledge.

1.2 Process/ production Management functions

- Make available updated process operation & vendor manuals

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- Updated SOPs
- Updated copy of P& ID and C&E doc.
- Keeping audited override register
- Emergency operation Procedure
- Training and assessment of Operation team.

1.3 Process Control

- Process parameters
- Process parameters measurement
- Basic control loop
- Components of control system
- Feedback control
- Different types of control system
- Split range control
- Cascade control
- On-off controls
- Tuning of controllers

Day 2: Process Plant start-up

- Different types of plant start-ups
- Pre-checks and preparations for:
 - a. Initial start-up followed by commissioning
 - b. Start up after a unit shutdown
 - c. Start up after ESD
- Line walk and check Isolations/de-isolation
- Methods of purging
- Hydro carbon Introduction
- Immediate actions after shutdown
- Giving clearance for re-start
- Ramp up operations
- Monitoring and control of running plant

Day 3 Process Plant Shutdown

- Different types of plant shutdown
- Shutdown of a major equipment or unit
- Emergency shutdowns
- Automatic actions of control and safe guarding system of different levels of ESD
- Identify the cause of shutdown
- Resetting of shutdown switches and valves

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- Control room and field activities during shutdowns
- Shut down of equipment or unit due maintenance
- Work permit procedures
- Process Isolations and gas freeing
- Mechanical Isolations
- Positive isolations
- Gas testing

Day 4 Process plant Troubleshooting Techniques

- Basic requirement for troubleshooting
- Regulating Process Conditions
- Troubleshooting and Debottlenecking
- Examples of Trouble shooting table
- Seven-Step Troubleshooting Philosophy
- Symptom recognition
- Symptom elaboration
- Listing of probable faulty functions
- Localizing the faulty function
- Localizing the trouble to a faulty component
- Failure analysis

Day 5: Problem solving Techniques

5.1 Problem solving & follow up on following equipment

- Separators
- Scrubbers
- Columns
- Centrifugal Gas compressors
- Reciprocation Gas Compressors
- Heat Exchangers
- Flow meters
- Storage tanks

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5.2 Problem solving & follow up on following process unit

- Well head operation
- 3 phase oil & gas separator train
- Desalter
- TEG dehydration- Glycol loss
- Gas Compression train

5.3 Abnormal situation management

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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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