

# **PROCESS DESIGN REVIEW AND PERFORMANCE MONITORING**



**PCE203  
Process and  
Chemical  
Engineering**

**COURSE TITLE**

**PROCESS DESIGN REVIEW AND PERFORMANCE MONITORING**

**COURSE DATE/VENUE**

20 - 24 July, 2020

London, UK

**COURSE REFERENCE**

PCE203

**COURSE DURATION**

05 Days

**DISCIPLINE**

Process and Chemical Engineering

**COURSE INTRODUCTION**

This course is designed to enhance knowledge on operation of various process equipments and its performance monitoring techniques.

Identify the various optimization tools used in process plant performance and determine the determining process plant engineering problem solving methods.

Discuss the continuous improvement, benchmarking and best practices for process plant performance and efficiency

Carryout troubleshooting procedures and identify the different performance analysis software used in process plant performance in relation to process optimization and performance monitoring.

**COURSE OBJECTIVE**

**Upon successful completion of this course, the delegates will be able to learn and reinforce their understanding on:**

- Apply and gain an in-depth knowledge on process plant troubleshooting and engineering problems solving through various practical exercises
- Enumerate the components of plant problem solving as well as the various troubleshooting techniques on engineering problem solving by familiarizing the potential sources
- Apply and gain an in-depth knowledge on various elements of process plant performance in order to improve the efficiency
- Enumerate the characterization of trouble shooting and performance
- Discuss the various thermal and mechanical separation processes and determine the performance of Separation, Desalting process and Dehydration
- Recognize the performance of pipelines, pumps, and compressors as well as the efficiency of off-site utilities such as the electrical energy, cooling water, steam, and refrigeration
- Discuss the trouble shooting procedures of process equipments like Pumps, compressor, Valves and other static equipments.
- Employ systematic methodology in measurements and control technology and their major role in plant trouble shooting, performance and efficiency.

### **COURSE AUDIENCE**

This course is intended for intermediate level, having at least 2-3 years experienced Operators and Engineers working in production and process operations of oil & gas facilities and petrochemical industries.

However, during the course Instructor will switch over to basic and advanced levels time to time depends upon the Participants level of knowledge and understanding.

### **Best suited for:**

Oil & Gas Plant Operators, Production Supervisors, Process Engineers, Control room Operators.

**Also will be benefited by:**

Other discipline Technicians, Supervisors & Engineers who wish to gain knowledge of the process plant operation.

**COURSE CONTENT**

**Day 1:**

**Over view of process operation of various process units.**

**OPERATION OF PROCESS EQUIPMENTS**

Unit operation of process plant equipment- separator, De salter, Dehydrators, scrubber, Piping systems, Valves, Pumps, Compressors, Heat Exchangers, coolers,

Bringing Equipment to Normal Operating Parameters, Bringing Equipment up to Specified Operating Parameters, Monitor and Control Equipment Item or Process, Monitoring Checks, Minimising Impact on Safety, Health and Environment, Monitoring Feed Rates and Production, Monitoring of Equipment Malfunction. Equipment Isolation, Trip and Alarm Testing, Carrying Out Minor Maintenance, Preparing Equipment or Plant for Operation after Maintenance,

**Day 2:**

**PUMPS**

Basic Pump Hydraulics, Pumping Terminology, suction lift, suction head, discharge pressure, total head. Calculating total head. Horse power calculation. NPSH, system performance, basic pump design and construction. Operation and maintenance, trouble shooting. Cavitation, routine checks.

**Day 3:**

**Compressor**

Introduction, theory of compression, effect of pressure on volume and temperature, compressor design and construction, basic calculation. compressor operation,

control system, surging and anti surging. Safe guards. Lubrication system. Seals and cooling system. Start up and shut down, trouble shooting basics. Routing checks. Knock out drums, pulsation dampeners.

Identify work place health and safety hazard – various hazards in a process plant, unsafe acts and unsafe events, safe working practices, control of hazards, Permit work system.

### **Day 4:**

#### **BASIC INSTRUMENTATION AND CONTROL SYSTEM**

- Basic Process control and Instrumentation – Process variable, measuring elements, transmitters, controllers, convertors and control valves.
- Process safe guards- Alarms, Trips, shut down valves, Blow down valves, fire and gas detectors,
- Process plant performance:-Collecting various process data such as chemical data, mass balance, physicochemical data, and processing variables as inputs for process optimization procedure.
- Valves - Definition, various types of Valves, performance, trouble shooting.

### **Day 5:**

Carryout troubleshooting procedures and identify the different performance analysis software used in process plant performance in relation to process optimization and performance monitoring.

Case studies and reviews. Assessment and Certificate distribution.

#### **COURSE CERTIFICATE**

**TRAINIT ACADEMY** will award an internationally recognized certificate(s) for each delegate on completion of training.

#### **COURSE FEES**

\$6,150 per Delegate. This rate includes participant's manual, Hand-Outs, buffet lunch, coffee/tea on arrival, morning & afternoon of each day.

### **COURSE METHODOLOGY**

The training course will be highly participatory and the course leader will present, guide and facilitate learning, using a range of methods including formal presentation, discussions, sector-specific case studies and exercises. Above all, the course leader will make extensive use of real-life case examples in which he has been personally involved. 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.

- 30% Lectures
- 30% Workshops and work presentation
- 20% Case studies & Practical Exercises
- 10% Role Play
- 10% Videos, Software or Simulators (as applicable) & General Discussions