ICTD
المركز العالمي للتدريب والتطوير
International Centre For Training & Development

MUE216

Reciprocating Compressors:

Operation and Maintenance

Course Introduction:

Due to the importance of maintenance process to any production or service plants, maintenance management received considerable and intensive research that resulted in many procedures which are applicable for implementation everywhere.

Maintenance management includes organization of maintenance resources, failure analysis, maintenance cost estimation, spare parts classification and planning, overhaul planning and management, documentation of failures and maintenance procedures, etc.

This course will focus on the applied topics of maintenance management taking into consideration the technical and economic issues.

Course Objectives:

Upon successful completion of this course, the delegates will be able to:

- ✓ Know the different types of compressors, their use, proper operation, and performance.
- ✓ Understand the mechanical design of compressors
- ✓ Learn how to purchase, service, operate and maintain compressor components used in any of the process industries such as oil and gas, Power and
- ✓ Practice manufacturing, seals and their operations
- ✓ Understand the importance of control in reciprocating gas compressors
- ✓ Highlight the importance of seals and bearings on centrifugal compressors availability
- ✓ Learn the maintenance of compressors
- ✓ Understand the role and duties of a scheduler

Who Should Attend?

This course is intended for engineers, plant managers, maintenance managers, maintenance supervisors, operations staff, planning & follow-up staff and material suppliers.

Course Outline:

Day 1:

Introduction

- Compression system simulation
- Equation of states and their applications
- Estimation of the thermodynamic properties
- Flow diagram to prepare compression stages
- Basic simulation of pipelines, pumps and compressors
- Examples and exercises
- Overview of natural gas systems and processes in gas plants
- Definitions related to gas systems: egg. natural gas, types of gas
- Gas conditioning, dehydration and sweetening
- Rotating equipment overview
- Classification of compressors
- Arrangement of compressors
- General, Dynamic Compressor
- Positive Displacement Compressor
- Overhaul and Repair of PD Compressors

Day 2:

Performance of Compressors

- The Head-Flow Curve Shape.
- Elements of the Characteristic Shape.
- Variable-Speed Drive.
- Operation of compressors.

Day 3:

Positive-Displacement Compressor Control Systems

- Valve Unloading
- Clearance Pockets
- Bypass Operation
- Engineering Encyclopedia Compressors
- Operation of Compressor
- Control and Protection Systems

Day 4:

Positive-Displacement Compressor Protection Systems

- Relief Valve (Stage)
- Start up Bypass
- High Process Temperature

Day 5:

Maintenance of Compressors

- Valve testing and inspection
- Valve failure
- Safety valve component and design
- Control valves types and selection
- Case studies
- Practical sessions
- Group discussions
- Course summary and evaluation

Course Certificate:

International Center for Training & Development (**ICTD**) will award an internationally recognized certificate(s) for each delegate on completion of training.

Course Methodology:

A variety of methodologies will be used during the course that includes:

- (30%) Based on Case Studies
- (30%) Techniques
- (30%) Role Play
- (10%) Concepts
- Pre-test and Post-test
- Variety of Learning Methods
- Lectures
- Case Studies and Self Questionaires
- Group Work
- Discussion

- Presentation

Course Fees:

To be advised as per the course location. This rate includes participant's manual, hand-outs, buffet lunch, coffee/tea on arrival, morning & afternoon of each day.

Course Timings:

Daily Course Timings:

08:00 - 08:20	Morning Coffee/Tea
08:20 - 10:00	First Session
10:00 - 10:20	Recess (Coffee/Tea/Snacks)
10:20 - 12:20	Second Session
12:20 - 13:30	Recess (Coffee/Tea/Snacks)
13:30 - 15:00	Last Session