Compressors Types, Operation & Maintenance

Course general description:

A compressor is a mechanical device that increases the pressure of a gas by reducing its volume or giving velocity .Many compressors can be staged, that is, the gas is compressed several times in steps or stages, to increase discharge pressure. Each stage further compresses the gas and increases its pressure and also temperature . This Course address a detailed knowledge of compressors Describe its :, principals , Glossary ,Terminologies, operation, maintenance (corrective, preventive, predictive) , overhauling criteria , acceptance testing and troubleshooting.

Audience:

This course is designed for:

1. Mechanical engineers
2. Process engineers
3. Maintenance Engineers
4. Supervisors from different disciplines

Course objectives:

By end of the course participants will gain:

1. Clarify various types of engines
2. Identify all common engine components and their functions.
3. Describe operating principles of various types of engines
4. Identify difference between Spark ignition engines & self ignition engines
5. Know common Engine terminology
6. How to use appropriate tools & equipment to maintain engines
7. Know how four and two stroke engines work
8. Describe the operating parameter of Each engine
9. Know how the engine oil, water, fuel air, exhaust systems work
10. Be familiar with Items found in datasheets of Engines
11. Evaluate and interpret performance and integrity data of engines
12. Learn how to make engines are more efficient.
13. Learn how to deal with Troubleshooting and repairing activities
14. Learn Preventive maintenance for engine
15. Learn Testing for engines
16. Recognize and respond to abnormal condition and take relevant remedy

Course duration:

5 days

Course location:

Dubai

Course contents:

Day-1

- Introduction and Proactive concept(Pretest)
- Ideal gas law
- Function of Compressors and applications
- Principles of compressor operation
- Compressors classifications
- Compressors different types
- Compressors Terminologies

- What are compressors characteristic curves?

Day-2

- Compressors theory of operation
- Compressors efficiency
- Hermetic & semi hermetic compressors
- Material of construction (MOC) of compressors
- Mfr. data and meanings
- Direct driven vs belt driven compressors
- Torque transmission types at compressors
- Dynamic Vs Positive displacement compressors
- Alignment with driver

Day-3

- Pressure control & management in compressors and sequencer
- Control of flow rates at compressors
- Series and parallel connections for compressors
- Compressors loading & unloading
- Dryer types and working principles
- Tanks design and precaution
- Suction & Discharge piping precautions

Day-4

- Advantages of screw compressors
- Oil free vs oil injected screw compressors
- Main components for screw compressors
- Flow diagram , cooling diagram , lubrication diagram for screw compressors
- Overhauling kit for screw compressors
- Protections on screw compressors
- Inlet valve , Min. pressure valve & oil stop valve

Day-5

- Reciprocating compressors description & features
- Single stage & Multi stage reciprocating compressors
- PV diagram for reciprocating compressors
- Valves losses at reciprocating compressors
- Centrifugal compressors fundamentals
- Rotor breakdown at centrifugal compressor
- Dry gas seal at Centrifugal compressors
- posttest

Methodology:

50% lectures & concepts
10% Videos
10% Case studies
10% Exercises
10% Discussions
10% Software (if applicable or examples)

Course code: (TEME025)