

▲ Who should attend?

Engineers involved in operation, inspection and maintenance of reciprocating compressors.

▲ Duration

5 days

▲ Dates & Location

Non-scheduled

May only be organized for a single company

▲ Tuition Fees

To be agreed upon

▲ Course Coordinator

Christian Castelnau

Ref. MTE / EECV-E

RECIPROCATING COMPRESSORS

Operation - Maintenance - Troubleshooting

OBJECTIVES

To provide a better understanding of reciprocating compressors technology, performances, operation and breakdowns.

On completion of the course, the participants:

- know how these machines operate and their technology
- have improved their knowledge of operation practices
- understand the most common modes of failures
- can be involved in troubleshooting.

COURSE CONTENT

TECHNOLOGY

1 day

Construction and design philosophies.

Components of reciprocating compressors: frame, cylinders, piston and rings, piston rod and crank head, crankshaft and connecting rods, bearings, compartment distance piece, specific emphasis on valves.

Auxiliaries: pulsation dampeners, crank mechanism and cylinder lubrication systems, cooling system, safety devices.

PERFORMANCES

1 day

Ideal gas compression: discharge temperature, power.

Axial compression: valve behavior, leakages, internal thermal exchanges.

Indicator diagram.

Efficiency, compression power.

Applications: temperature and power calculation, p/v diagram plotting, efficiency calculation.

COMPRESSOR OPERATING ON PROCESSES

1 day

Start-up, capacity control, shut-down.

Influence of: pressures, nature of gas, inlet temperature.

Multistage compressors: behavior.

Case of air compression: specific problems such as water condensation.

MAINTENANCE

1 day

Forces created by the pressure, by inertia, by friction: effects on bearings and internal parts.

Defects and typical failures or wear with: valves, piston rings and packing rings, piston rod, ...

Dismantling and mounting procedures and reports.

Applications: dismantling report studies, force on a connecting rod calculation.

Case studies: typical failures encountered on reciprocating compressors.

TROUBLESHOOTING

1 day

General aspects: noise, vibration, temperature.

Multistage compressors: troubleshooting by temperature and inter-stage pressure monitoring.

Matrix approach.

Applications: matrix construction, piston rod run-out and drop monitoring.

Training method: all the course items are presented with actual examples from industry (refinery, petrochemical, chemical). The document given to the participants corresponds to a comprehensive manual designed for easy use during on-job situations. Trainee participation is continuously encouraged through case studies selected by the lecturer or proposed by the participants themselves.