

ROTATING MACHINERY

OBJECTIVES

To provide knowledge of the technology, the operating principle and the performances of the rotating machinery used in the Oil & Gas field processing facilities.

On completion of the course, participants know the:

- different types of rotating machinery and their main applications,
- working principle and main performances of these equipment,
- technology of the rotating machinery and their main operating constraints.

COURSE CONTENT

FUNDAMENTALS OF FLUID FLOW - FRICTION LOSSES 1 day

Characteristics of liquid and gas single phase flow
Flow rate measurement
Determination of pressure drops in industrial plants
Influence of control valves
Circuit characteristics, examples of typical circuits
Liquid-vapor two phase flow chart

Application: study of a pumping circuit

PUMPS 1.50 days

Main types of pumps and classification - Selection criteria

Centrifugal pumps:

Types of centrifugal pumps: single or multi stage, radial or horizontal split, high speed, in line, vertical barrel, pit suction, magnetic drive, canned motor, electrical submersible (ESP)...

Typical centrifugal pump installation in a circuit: block valves, filter, check valve, manometers, vent and drain...

Technology of the centrifugal pumps: impellers, seals, couplings, bearings, driving machine...

Auxiliaries: flushing and quench, lubrication, cooling

Centrifugal pumps performances: characteristics curves, pump-circuit coupling, problems encountered (cavitation and NPSH, adaptation to operating conditions...)

Positive displacement pumps:

Rotating positive displacement pumps: Progressing Cavity Pumps (PCP)...

Reciprocating positive displacement pumps (piston or plunger type)

Technology of the positive displacement pumps and main applications

Safety and environment related to pumps operation

FUNDAMENTALS OF GAS COMPRESSION AND EXPANSION 0.50 day

Isentropic and polytropic gas compression
Practical gas compression laws
Case of gas expansion

COMPRESSORS AND EXPANDERS 1.25 days

Main types of compressors and classification - Selection criteria

Reciprocating compressors:

Technology 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

Main instrumentation

Typical mechanical incidents

Centrifugal compressors:

Technology of centrifugal compressors: rotor and stator, journal and thrust bearings, internal and shaft seals, balance disc...

Auxiliaries: lubrication, sealing (liquid or gas) and cooling systems

Main instrumentation

Typical mechanical incidents

Turbo-expanders: technology and main uses

Safety and environment related to compressors and expanders operation

GAS TURBINES 0.75 day

Operating principle of gas turbines: compression, combustion and expansion – Typical cycles and performances

Technology of gas turbines: compressor part, combustion chamber, turbines part, internal cooling, lubrication...

Auxiliaries: fuel supply and filtering, exhaust gas, fire fighting system

Main instrumentation

Typical mechanical incidents

E-602

▲ Who should attend?

Graduate engineers involved in the operation or design of the Oil & Gas field processing facilities.

▲ Duration

5 days

▲ Dates & Location

March 16-20, 2009
Martigues (South)

Sept. 28 - Oct. 02, 2009
Martigues (South)

October 19-23, 2009
Martigues (South)

November 23-27, 2009
Martigues (South)

French session: F-602

▲ Registration

Fees: € 2,060

Contact:

exp.rueil@ifptraining.com

Fax: (+33) 1 47 52 74 27

▲ Course Coordinator

Franck BEIJER

Ref. MAT / EQUIP2