Training - Centrifugal compressors and steam turbines

CCTAV-EN-P | Face-to-face only | 4 days

This course provides a clear understanding of the performance and technology of these types of equipment

Level
Expert

Public
Graduate engineers, new engineers and staff supervisors from the maintenance, process or operation department of refineries and petrochemical plants

Objectives
Attendees will be able to implement the following skills:

- Explain the operation of centrifugal and axial compressors, steam turbines and expanders
- List the essential elements for the sizing and selection of a centrifugal compressor or a steam turbine
- List potential incidents encountered on these machines

Pedagogical & technical resources

- Extensive use of digital applications related to industrial equipment
- Interactive course
- Specific, detailed and high level documentation
- Use of a dynamic simulator (centrifugal compressor + steam turbine)

Assessment of achievements
Quiz

Prerequisites
No prerequisites are necessary to follow this course

Responsable
IFP Training instructors, with expertise in the field and trained in modern teaching methods adapted to the specific needs of learners from the professional world

Program

GAS COMPRESSION & EXPANSION — 1 day

Gas laws, isentropic, polytropic compression; mass and volume flowrate.
Gas compression calculations: discharge temperature, compression work and power.
Mollier diagram for steam. Steam work and power.
Centrifugal compression and steam expansion mechansim: Euler law, Velocities triangle.
Steam Expansion modes: Impulse, reaction, twisted blades.
Affinity laws and calculations. Head and flow coefficients.

COMPRESSORS, TURBINES & EXPANDERS PERFORMANCE & OPERATION — 2 days

Axial and centrifugal compressors:

- Performance curves.

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- Aerodynamical operating limits _ Surge and stonewall, operating range.
- Flow control methods. Anti Surge control systems.
- Start-up and shutdown: key points.

Steam turbines:

- Turbine performances: rotation speed range, steam consumption, efficiency.
- Turbine performance vs inlet and exhaust conditions.
- Steam turbine governors. Control systems. Protection against overspeed.

Turbo-expanders:

- Technology and main uses.
- Safety devices.

TECHNOLOGY & ENGINEERING ASPECTS OF COMPRESSORS & TURBINES — 1 day

Technology:

- Casings, diaphragms, stator, blades.
- Rotor, journal and thrust bearings, internal and shaft seals, coupling.
- Balancing and critical speeds. Lubrication and seal systems. Standard mechanical failures.
- Machine monitoring: vibrations, oil temperature,...

Engineering:

- API specifications. Information required for bidding. Factory acceptance tests.

To French entities : IFP Training is referenced to DataDock ; you may contact your OPCO about potential funding.
Please contact our disabled persons referent to check the accessibility of this training program : referent.handicap@ifptraining.com

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