Centrifugal Compressors. Principles, Design & Operation

Centrifugal compressor principles, design & operation: gas compression, configurations, drivers, control system, auxiliary & ancillary systems, packages, applications, commercial analysis.

Who Should Attend?

This course is intended for graduates (or soon to be), designers, freelancers, technicians and engineers involved in: calculation, design, selection, manufacturing, safety, quality and maintenance of systems and equipment in industrial processes.

Previous knowledge of this subject is not required to attend to the course.

Training Objectives

The main objective of this course is to transfer to participants the theoretical and practical skills required in projects, obtained from experience and sound engineering practices.

Length: 24 hs

Applied Concepts: 16 hs
Hands-on case studies: 8hs

Methodology

Hands-on course
Study notes
Classroom case studies
Real data sheets
Calculation sheets provided
Reference documentation
Best practices and lessons learned

What to expect?

Understand the basic principles of compression
Familiarization with design parameters

Selection criteria

Comprehend the operation data and criteria
Design and select appropriate auxiliary systems
Recognize all type of drivers

Control system understanding
Commercial evaluation
Develop a centrifugal compressor specification
Contents

Introduction to compression
Compresibles fluids
Compression and gas transport
Compressor types and applications
Centrifugal compressor basic principles
Operation principle. Energy conversion
Parts and components of a centrifugal compressor
Centrifugal compressor configuration
In-line, Double Flow, Compound, Back-to-Back
Performance & Aerodynamics
Efficiency and aerodynamics limits
Velocity triangles. Performance curves
Rotordynamics
Natural frequencies and critical speeds
Amplification factor, rotordynamic stability
Centrifugal compressor drivers
Direct drive / gearbox
Electric Motor, Gas Turbine, Steam Turbine
Centrifugal compressor operation control
Variable speed
Suction or discharge throttling
Variable inlet guide vanes
Auxiliary systems and compressor packages
Lubrication, sealing, and control systems
P&IDs, convencional package Vs. Offshore package
Centrifugal compressor applications
Downstream, Midstream, Upstream
Commercial evaluation
CAPEX Vs. OPEX
Spare part analysis

Case studies in the classroom:

Centrifugal compressor selection:
- Required process parameters
- Design conditions
- Volumetric Flow
- Head
- Q-H & performance curves

Instructor

Fernando Rodriguez-Bustelo. Industrial Engineer and MSc Mechanical Engineering. **Oil & Gas projects consultant specialized in Rotating Equipment**, in which he has developed his whole professional career. Throughout the years, he has been involved in different areas such as design and manufacturing, projects engineering, commissioning & start up, and field operation.

**Broad international experience. He is currently the Managing Director of OSL Iberia**, the Spanish branch of the British engineering group OSL. In his previous position, he was based in London where he managed the Client Services Dept. for Europe, Middle East, and Africa of one of the world’s leading oil & gas compression and turbine manufacturer.

**Vast experience providing specific training sessions in both classroom and online methodologies. Training courses carried out in different institutions and in-company, courses oriented to graduates, designers, engineers and experienced professionals.**

**Tailored Training**

The most effective training course is that one lined up with your needs. That is why we adapt our continuous training courses to meet your requirements.

**Email us with your queries and we will design the training session you need!**