**TEMA – Shell & Tube Heat Exchangers Part III**

**Equipment design for general applications:** Design Combination of design loads, Design and calculation of Supports - vertical and horizontal eqpt, design of Non-standard flanges.

**What to Expect?**

- **Get familiar** with the different internal and external attachments used in S&T heat exchangers.
- **Learn** to define the combination of applicable loads in S&T heat exchangers: Wind & Seismic.
- **Design** and calculate supports for S&T heat exchangers, horizontal and vertical equipment.
- **Learn** to design Non-standard flanges (size, pressure and/or temperature out of commercial range).

**Methodology**

Available in English and Spanish
Self-guided Hands-On
40 hs Dedication, 60 days Open
Self-paced course
Available 24/7
“Learn by doing” concept
Non-scheduled sessions
Available on [iPhone](#) / [Android](#)

**Resources Available**

- Study Notes
- Introductory Videos
- Multiple Choice Assignments
- Real Data Sheets
- Calculation Sheets Included
- Extra Material
- Instructor Support
- Virtual Campus: Schoology

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**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.
Contents

Shell and tube heat exchangers
Parts and types of heat exchangers
External Elements
Main components
TEMA heat exchanger classification
Internal attachments
Impingement Plate, extraction bolts, vortex breakers

External attachments
Clips, davits, lifting devices, platforms

Loadings
Loads imposed by wind & seismic effects
Local loads
Combined effects

Design of supports
Saddles for horizontal equipment
Brackets for vertical equipment
Anchor bolts

Design of non-standard flanges
Design criteria
Loads definition
Types of flanges
Bolts and gaskets

Case Studies

Module 1: vocabulary, terminology, material selection, internal and external attachments.
Module 2: definition of wind and seismic loads, superimposed effects (worst case scenario).
Module 3: design and calculation of supports for S&T heat exchangers, horizontal and vertical equipment.
Module 4: design of Non-standard flanges (size, pressure and/or temperature out of commercial range).

Instructor

Javier Tirenti. Senior Mechanical Engineer and Master in Business Administration (MBA). More than 20 years of experience in design, calculation and fabrication of pressure vessels, heat exchangers, storage tanks, piping systems and structures in general.

Duties of the above mentioned positions cover the entire cycle of an equipment, from the very conception, drawings, design and calculation, technical specifications, technical requisitions, vendor drawings, to the manufacturing phase and installation assistance. Among the developed projects, clients such as SHELL, EXXON, REPSOL, CHEVRON, GALP, CEPSA, TUPRAS and SAUDI ARAMCO can be found.

Vast experience providing specific training sessions in both, classroom and online approaches. More than 75 training courses carried out in different institutions and in-company, courses oriented to graduates, designers, engineers and experienced professionals.

Complementary Parts

Part II: Design of Shells & Heads, Design of Conical Transitions, Design of Nozzles.

All three parts together cover the complete design of a Shell & Tube Heat Exchanger.