



FACT SHEET (LIVE COURSE)

ASME B31 | Piping Systems in Industrial Plants



Design of piping systems for industrial processes: Pressure loss, Piping components, Arrangement, Thickness calculation, Stress fundamentals and support selection.

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.

Methodology

Instructor-led training course in adult learning format with discussions, individual exercises and simplified case studies, providing practical knowledge to implement in the field.

Duration

The duration of this training course is **16 hours**, divided into several sessions to facilitate the learning process.

What to expect?

Acquire the vocabulary and basics

Learn to calculate the pressure loss

Get familiar with the different components

Understand the importance of the plot plan

Design and calculate piping systems:

- Optimal piping diameter calculation

- Pressure loss calculation

- Thickness calculation: B31.1, B31.3, B31.4 y B31.8

- Stress analysis: n° of loops

- Stress analysis: nozzle loads

- Design of structural supports



Contents

Introduction

What is a piping system?

Applications

Characteristics

Diameter & Pressure loss

Flow of fluids in pipes

Energy conservation law

Pressure loss

Optimum diameter in piping systems

Piping Systems

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Materials

Corrosion types | Corrosion allowance

Allowable stress

Material designation

Components of a system

Joining methods

Piping, flanges and fittings

Valves specification

Piping class

Piping Calculation

Design Loads

Thin Wall Pipes

Thickness Calculation Procedure

ASME B31 Thickness Calculations

Pipe Expansion

Fundamentals of flexibility

Loops and expansion joints

Equipment nozzle loads

Piping Arrangement

Basic philosophy

General arrangement and layout of plants

Piping arrangement considerations

Plot Plan, key document

Gantries and Pipe racks

Connection of pipelines to various equipment

Design of supports

Functions of supports : Classification

Symbology

Location

Supports selection

Pipe Insulation

Insulation objective | Selection parameters

Effective thickness

Thickness selection

Case studies in the classroom:

Optimal piping diameter calculation

Pressure loss calculation

Thickness calculation: B31.1, B31.3, B31.4 & B31.8

Stress analysis: n^o of loops

Stress analysis: nozzle loads

Design of structural supports



Instructor

Senior Mechanical Engineer and master's 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, CEPESA, TUPRAS and SAUDI ARAMCO can be found.

Vast experience providing specific training sessions in both classroom and online methodologies. More than 75 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 is one that satisfies the needs of each company's business focus and deliverables. **We adapt our training programs to each specific requirement, offering bespoke solutions for each need.** The result, 100% tailored programs, developed to maximize the time investment and deliver tangible and intangible returns to the work teams.

After an assessment phase, a tailored training plan is de-signed jointly with the client. This plan is specifically tailored to meet the client's needs, focusing on effectively enhancing the capabilities of the work team. **We provide practical, dynamic and hands-on training,** making available the best instructors in each subject.

Arveng Training

Arveng Training has developed effective and practical courses for the needs of today's industrial challenges by delivering specific and high-quality engineering training courses utilizing all three approaches: classroom, on-line and tailored training. We are proud to have imparted more than 100 classroom courses, 200 online courses and over 15 in-company sessions. Our training activities has benefited over 1,500 professionals. Our greatest pride is in the letters of recommendation we receive from so many of our customers in this area.

We consider the time of our students as the most valuable. For this reason, all our courses have been designed with the main objective of quickly the professional skills of the participants, through our expert instructors in different disciplines. **We stimulate creativity, innovation and initiative to make the participants inquisitive to bring good engineering practices and lessons learned to the field that benefits their employers in the long term.**

Our Company

Arveng Training & Engineering SL is a leading company providing Training and Engineering services based in Madrid, Spain. Our mission and vision are to be a leading training and engineering services company. We are a team of highly motivated, talented high qualified professionals with more than 20 years of experience. Our main goal is to provide our clients, the best training and engineering services and to exceed their expectations in all their spheres of industrial activity, through our renowned services which are based on efficient, innovative, cost-effective and transparent principles.

Established in July 2010, mainly oriented to the industrial sector, from the very beginning Arveng has always worked with closeness, responsibility and commitment in the different areas of activity.