FACT SHEET (LIVE COURSE)

ASME VIII Div. 2 | Design of PV by Analysis

Design by Analysis code compliance checks for collapse, ratcheting, fatigue, and buckling load cases. Differences between types of stresses. Structural stress using FEA, linearization.

Who Should Attend?

This is an essential course for individuals involved with design, analysis, fabrication, purchasing, repair, and inspection of pressure vessels, as well as supervisory and regulatory personnel.

Although some knowledge of design and fabrication of pressure vessels is desirable, **previous knowledge of this subject is not required to attend 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 **12 hours**, divided into several sessions to facilitate the learning process.

What to expect?

Understand the **General Definitions and Failure Mechanisms** associated with ASME VIII-2 Ch. 5 (Design by Analysis) assessments.

Have a good overview of the code section requirements.

Be able to **perform Stress Categorization** and be able to link results to failure mechanisms.

Benefit from **worked examples** developed with Finite Element Models.

Know the concepts of Stress Linearization and are able **to apply them**.

Understand the different methods of analysis as per ASME VIII-2 Part 5.

Benefit from best practices and lessons learned.

Contents

Introduction

ASME BPVC VIII Div.2 Chapter 5 “Design by Analysis”

Failure model evaluated in Chapter 5

Code revisions of Section VIII division 2

Stress values from FEA

Plastic Collapse and Stress Linearization

Plastic Collapse evaluation – 3 Methods

Method 1 Elastic analysis

Method 2 Limit load analysis

Method 3 Elastic-plastic analysis

Comparing the 3 methods against Plastic Collapse

Stress linearization of FEA results

Ratcheting Failure Mode and Compliance

What is ratcheting?

An introduction | Compliance check for ratcheting failure

Simplified elastic/plastic analysis method

Elastic/plastic analysis method

Fatigue Failure Mode and Compliance

Fatigue failure and micro cracks

Fatigue Assessment methods

Method A: Smooth bar method

Method B: Welded curve method

Buckling & Local Failure

Local failure and compliance checks

Buckling and compliance checks

Case studies & worked examples:

Plastic Collapse – Elastic analysis

Stress linearization

Fatigue screening

Fatigue assessment

Buckling Failure

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, CEPSA, 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 designed 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 solutions for today's industrial challenges by delivering specific, high-quality engineering courses utilizing three different approaches: classroom, online, and tailored training. We are proud to have imparted more than 250 classroom courses, 1200 online courses, and over 65 in-company sessions. Our training activities have benefitted over 4500 professionals, our greatest accomplishment of all.

We consider our students' time to be of utmost importance. For this reason, all our courses have been designed with the main objective of quickly improving the professional skills of the participants through our expert instructors in different disciplines. **We stimulate creativity, innovation, and initiative to make the participants inquisitive, bringing good engineering practices and lessons learned to the field, that benefits their professional lives 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, providing our clients with the best in the sector. We are a team of highly motivated, talented, highly qualified professionals with over 20 years of experience. We aim to exceed expectations by offering efficient, innovative, cost-effective, and transparent services.

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

Through experience gained by partaking in multidisciplinary engineering projects in sectors such as Petrochemical, Energy Generation, and Industrial, we provide answers and solutions to concrete requirements, making the effort to build long-lasting and mutually beneficial relationships.