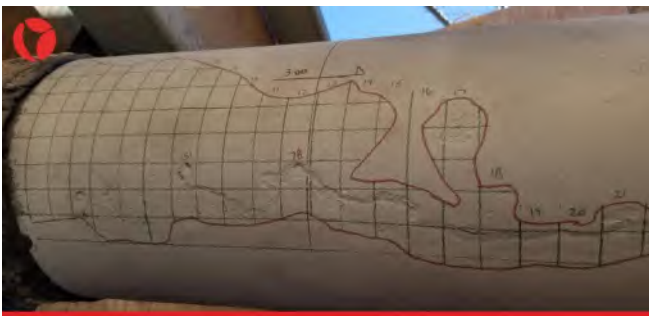




# FACT SHEET (LIVE COURSE)

## Fitness for Service Evaluation & Repair of Piping Systems



**Fitness for Service Assessment and Repairs of piping systems according to the codes: ASME B31G; API RP 579-1 & ASME PCC-2. Thickness evaluation after corrosion degradation, crack evaluation, remaining life. Welded repairs, mechanical repairs, composite repairs.**

### 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 used 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 **12 hours**, divided into several sessions to facilitate the learning process.

### What to expect?

**Become familiar** with the vocabulary, terminology and fundamental concepts.

**Know the organization** of the Design Codes, their scope and fundamental sections.

**Benefit from best practices** and lessons learned from different international projects.

At the end of the course, participants will be able to **define the necessary requirements** for a Fitness for Service assessment and repair of piping systems:

- Remaining thickness calculation.
- Fitness for Service assessment procedures.
- Evaluation of material loss.
- Main welded repairs.
- Major mechanical repairs.
- Repairs with composite materials.



## Contents

### ASME B31G

Introduction

Life cycle management of a piping system

Failures evaluation methods

Scope, organization and intent

Glossary of terms

Failure types,

Orientation

Evaluation Methods

Levels 1, 2, and 3

**Case Study:** calculation of remaining stress in corroded lines

### API RP 579

Scope

Organization

Intent

Glossary of terms

**Procedures for Fitness for Service assessments in piping systems.**

Applicability and limitations

Evaluation levels and acceptance criteria

Remaining life assessment

Damage mechanisms

Thicknesses, MAWP and stresses for FFS evaluations.

**Generalized Material Loss Assessment**

**Localized Material Loss Assessment**

**Evaluation of fissure type failures (cracks)**

**Case Study:** Serviceability Assessment of Corroded Components

### ASME PCC-2

**Part 1 - Scope, organization and intent**

**Part 2 - Welded Repairs**

Art. 201 - Butt welded insert plates in pressure components

Art. 206 - Steel reinforcement sleeves

Art. 207 & 212 - Patches with fillet welding

Art. 210 - Welding in CS pipe service

**Part 3 - Mechanical Repairs**

Art. 304 - Excavation of defects and repair with welding

Art. 305 - Repair of flanges and conversion

Art. 306 - Repair with mechanical clamps

**Part 4 - Repairs with composite materials**

**Part 5 - Examination and tests**

**Case Study:** calculation of reinforcement jackets thickness

### Exercises to develop in class

Assimilation questions

Case studies (ASME B31G, API RP 579, ASME PCC-2)



## 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 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 4,500 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.