



FACT SHEET (SELF-GUIDED)

ASME PCC-1 | Guidelines for Bolted Flange Joint Assembly



ASME PCC-1: Introduction, bolted flange joint alignment, Installation of bolts, Inspection and documentation.

Who Should Attend?

This course is intended for **graduates (or soon to be), 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 to guarantee and **adequate design and installation of flanged joints**. This knowledge has been obtained from experience and sound engineering practices.

At the end of the course, participants will have a clear vision of the requirements of these regulations.

What to Expect?

At the end of this training participants will be able to describe the organization, scope, and fundamental sections of the code, to implement best practices from different international projects, and to define the main requirements for flanged joints:

- Flanged joints as per ASME PCC-1
- Verification of the main parameter to guarantee an adequate sealing of bolted flanges.
- Tightening of bolts and tightening Sequence
- Torque calculation and pressure tests

Course Duration

Full Course: 16 hs; to be completed in 30 days. The Virtual Campus will be open for 90 days (flexibility).

Methodology

Self-guided, Hands-On Course

Available 24/7, Self-paced course

“Learn by doing” concept

No scheduled sessions

Instructor available during the entire course

Included in the course

Study Notes

Summary Videos

Conceptual Questions

Case Studies

Calculation sheets



Contents

L1. Introduction

ASME PCC-1 Scope

Introduction

Terminology and vocabulary

Introduction to flanged joints

Types of flanges, bolts, and gaskets

Tests & Case studies

- *Assimilation questions*

L2. Flanged joints as per ASME PCC-1

Guidelines for bolted flanged joint assembly as per ASME PCC-1

Training and qualification of bolted joint assembly personnel

Quality assurance of qualification organizations

Surface finish of joints

Flatness and defects in joint surfaces

Cleaning and verification of contact surfaces in flanged joints

Alignment of flanged joints

Gasket Installation

Lubrication of workings surfaces

Tests & Case studies

- *Assimilation questions*

L3. Installation of bolts

Bolt installation

Bolt numbering

Bolt tightening

Tightening method and load control technique

Torque vs Tension, what is the difference?

Tightening Sequence

Measurement of gaps

Calculation of target torque

Selecting the bolt assembly torque

Bolt torque: direct approach

Parameters for selecting the bolt torque: assembly approach

Procedure for determining the adequate bolt torque: assembly approach

Use of tables through case studies

Tests & Case studies

- *Assimilation questions*
- *Determination of torque in bolts*
 - *Simple approach*
 - *Assembly approach*
- *Example of real case studies*

L4. Inspection and documentation

Pressure and leak test

Assembly records

Joint assembly reports

Dismantling of flanged joints

Load control during disassembly

Comments and guidelines on bolt reuse

Tests & Case studies

- *Assimilation questions*



Instructor

Senior Mechanical Engineer with a focus in management. **More than 31 years of experience in design, calculation and fabrication of piping systems and equipment**

Duties of the above-mentioned positions range from the initial conception of pipes and static equipment to their delineation, design, calculation, purchase, approval of vendor documentation, and commissioning. Among the developed projects, clients such as SHELL, EXXON, REPSOL, CHEVRON, GALP, CEPESA, TUPRAS and SAUDI ARAMCO stand out.

Extensive experience providing specialized training sessions in both classroom and online methodologies. More than 50 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 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.