

Training Title

Caesar II: Piping Modelling and Stress Analysis

Training Duration

5 days

Training Dates & Venue

REF	Caesar II : Piping Modelling and Stress				Dubai,
ME107	Analysis	5	23 - 27 June 2025	\$5,500	UAE

In any of the 4 or 5-star hotels. The exact venue will be intimated upon finalizing.

Training Fees

- \$5,500 per participant for Public Training includes very useful illustrative Materials/Handouts, tea/coffee breaks, refreshments, Break Fast & Lunch .

Training Certificate

Define Management Consultancy & Training Certificate of course completion will be issued to all attendees.

TRAINING DESCRIPTION

Piping Stress Analysis involves examining the flexibility and stiffness of a particular piping configuration under different types of loading, primary and secondary types. Piping Stress Analysis determines the maximum stresses in the piping system and suggests necessary modifications.

Less flexible systems are more susceptible to failure. Stress analysis helps revise the piping layout and its supports to avoid high local stresses. The course will discuss different types of stresses affecting piping flexibility, code criteria and methods of analysis, simple methods, and computerized methods. Participants will practice performing such analysis using one of the software for the same.

COURSE OBJECTIVES

Upon completion of this course, attendees will be able to apply the piping system stress analysis requirements of ASME B31.3 to process plant piping systems and understand how to use piping analysis software to meet these requirements.

WHO SHOULD ATTEND?

Engineers who are responsible for performing piping system stress analysis and others who must have a good understanding of its requirements are invited to attend this course.

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TRAINING METHODOLOGY

A highly interactive combination of lectures and discussion sessions will be managed to maximize the amount and quality of information and knowledge transfer. The sessions will start by raising the most relevant questions and motivating everybody to find the right answers. You will also be encouraged to raise your own questions and to share in the development of the right answers using your own analysis and experiences. Tests of multiple-choice type will be made available on daily basis to examine the effectiveness of delivering the course.

Very useful Course Materials will be given.

- 30% Lectures
- 30% Workshops and work presentation
- 20% Group Work& Practical Exercises
- 20% Videos& General Discussions

COURSE PROGRAM

Ch 1 Piping System Layout, Supports, and Restraints

Introduction

General System Layout Considerations

Layout Considerations for Specific Piping Systems

Support and Restraint Considerations

Types of Pipe Support

Estimating Maximum Permitted Support Span

Estimating Loads at Supports

Types of Pipe Restraints

Ch 2 Engineering Mechanics of Piping

Piping Criteria

Stress Categories:

 Primary and Secondary Stresses

Classification of Loads

 Primary loads

 Sustained loads

 Occasional loads

 Expansion loads

Allowable Stress Range for secondary Stresses

Stress Acting on Piping Elements

Stress Calculations

Code Stresses

Ch 3 Piping Flexibility and Stiffness

Introduction

Fundamentals

Flexibility Analysis

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- Identifying Lines with Adequate Flexibility
- Stiffness and Large Piping
- Flexibility Method
 - Pipe Offsets and Loops
 - Expansion Joints
- Pipe Restraints and Anchors
- Criteria for Flexibility Analysis
- Level of Piping Flexibility Analysis
- Simplified Flexibility Analysis Methods
- Computerized Piping Flexibility Analysis
- Special Considerations for Specific Piping Systems

Ch 4 Piping Vibration

- Introduction
- Basic Concepts
- Fatigue Stress and Other Failure Considerations
- Types of Vibration Analysis
- Common Causes of Piping Vibration
- Vibration Measurement
- Screening Vibration Problems
- Vibration Control
- Overall Design Considerations

Ch 5 Piping Support Systems for Process Piping

- Spring Supports
 - Variable Springs
 - Constant Springs
- Piping Nozzle Loads on Rotating Equipment
 - Pump Nozzle Loads
 - Compressor Nozzle Loads
- Piping System without Springs
- Fluid Forces Acting on Piping Systems
- Nozzle Movements and Thermal Displacement
- Case Studies

NOTE:

Pre-& Post Tests will be conducted.

Case Studies, Group Exercises, Group Discussions, Last Day reviews, and assessments will be carried out.

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