

Training Title

PIPE STRESS ANALYSIS TRAINING (CEASAR II APPLICATION)

Training Duration

5 days

Training Dates & Venue

REF					
ME049	Pipe Stress Analysis (CAESAR II Application)	5	10-14 June 2024	\$5,500	Dubai, UAE

In any of the 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, and an international Buffet Lunch each day.

Training Certificate

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

TRAINING OVERVIEW

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.

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.

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.

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. The delegates will also be

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encouraged to raise their questions and to share in the development of the right answers using their analysis and experiences.

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

COURSE OUTLINE

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

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

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**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**

All the above concepts and methods will be examined through pipe modeling using a Piping Stress Analysis Program. (CAESAR II Application)

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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