

Training Title

Pipe Stress Analysis Training (CEASAR II Application)

Training Duration

5 days

Pipe Stress Analysis (CAESAR II Application)	5	15-19 January	\$3,750	Abu Dhabi
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Training Certificate

Define Management Consultants Certificate of course completion will be issued to all attendees.

Training Fees

- US\$ 3,750 per participant for Public Training includes very useful illustrative Materials/Handouts, tea/coffee breaks, refreshments, Break Fast & International Buffet Lunch each day.

Accommodation

- Accommodation is not included in course fees. However, any accommodation required can be arranged by Define at the time of booking as per your budget and choice.

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.

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 susceptible to failure more. Stress analysis helps revising 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. Participant will practice performing such analysis using one of the software's for the same.

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.

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**
- 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)

Last Day Review, Discussions will be carried out.

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