



CAESAR II Piping Stress Analysis Information Requirements





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Introduction:

CAESAR II piping stress analysis is a comprehensive course designed to provide participants with a thorough understanding of piping engineering and pipe design concepts and a detailed grasp of pipeline/pipe stress analysis services using the industry-standard CAESAR II software.

The information requirements for this CAESAR II piping stress analysis course encompass pipe stress calculations as outlined by API, ASME B31.3, B31.1, B31.8, B31.4, and CSA Z662 to ensure the mechanical integrity and operational efficiency of piping systems.

Pipe Stress Analysis Using CAESAR II:

The cutting-edge CAESAR II pipe stress analysis software forms the backbone of this course's practical elements. Participants will engage in a CAESAR II pipe stress analysis tutorial, allowing them to apply the fundamentals of pipe stress analysis with an introduction to the software. Participants will explore the CAESAR II piping software and undertake advanced studies on designing and maintaining safe and efficient piping systems.

Target Audience

- Process, Mechanical, and Chemical Engineers.
- Operation and Maintenance Engineers.
- Project Engineers.
- Supervisors and Managers.
- Technical personnel are involved in the inspection and maintenance of piping systems.

Course Objectives:

Upon completing this CAESAR II piping stress analysis course, participants will:

- Develop an increased awareness and understanding of the mechanical integrity and safety aspects of process equipment and piping systems.
- Acquire practical methods and tools to execute basic design calculations for pressure equipment according to relevant codes, standards, and best practices.
- Gain insights into the different degradation mechanisms that affect process equipment during their operational lifetime.
- Learn to perform damage and failure analysis to prevent future occurrences.
- Sharpen their skills in hazard identification, risk assessment, and management.

Targeted Competencies:

Upon completing this CAESAR II piping stress analysis tutorial, the target competencies will:

- Know piping materials and pipe support details.
- Understand fluid characteristics and their impact on system design.
- Proficiency in assessing as-exist conditions.
- Explore the capability to perform specialized analyses, such as safety valve discharge and turbine trip analysis.

Course Details:

Unit 1: Fundamental Pipe Materials Information:

- Understand the pipe OD and ID or wall thickness.
- Pipe material specification.
- Fit wall thickness or class.
- Know the valve type, pressure ratings, and weights.
- Explore types of valve operators and weights.
- Relief valve relieving capacities and dimensional data.
- Insulation thickness and density.
- Termination point nozzles expansion and allowable loads.

Unit 2: CRUCIAL Pipe Support Details:

- Pipe support type and locations.
- Spring-type support load capacities.
- Spring-type support load adjustments.
- Component bills of materials.

Unit 3: Essential Fluid Characteristics:

- Design temperature.
- Design pressure.
- Operating temperature.
- Operate pressure.

Unit 4: Critical As-Exists Conditions:

- Pipe hanger hot and cold walk-down data, such as actual spring settings, hanger condition, interferences, etc.
- Pipe system hot and cold walk-down data, such as insulation damage, interferences, pipe distortion, movements, etc.



Unit 5: CAESAR II Pipe Stress Analysis Tutorial and Safety Valve Discharge Analysis:

- Relief valve relieving capacities and dimensional data.
- Pipe snubber details and locations.

Unit 6: Analysis of Turbine Trip Scenarios:

- Stop and/or Intercept valves' effective closing time.
- Stop and/or Intercept valves' details and weights.
- Heat balance data, including the flow rate for each pipe size lb./hr..

Unit 7: Advanced Topics in Transient Load Analyses:

- Underline the importance of obtaining piping segment information from boiler and turbine manufacturers for detailed transient load analyses.