CAESAR II from Intergraph evaluates the structural responses and stresses of piping systems to international codes and standards. As a registered user we work with the latest software to provide comprehensive static and dynamic pipe stress analysis services.

Our qualified engineers develop pipe models for analysis, while clearly indicating areas of concern and providing an excellent idea of the piping system’s flexibility. Colour coded stress models and animated displacements for any stress load case are available.

Besides the evaluation of a piping system’s response to thermal, deadweight and pressure loads, CAESAR II analyses the effects of wind, support settlement, seismic loads and wave loads.

CAESAR II also allows for the detailed modelling of expansion joints and restraints such as anchors, guides and skids, as well as selecting the proper springs for supporting systems with large vertical deflections. Dynamic analysis capabilities include modal, harmonic, response spectrum and time history analysis.

**INPUT INFORMATION**

The pipe model has to be carefully built from scratch by accurately inputting all the parameters:

- Pipe Diameter
- Pipe Weight / Schedule
- Mill Tolerance
- Corrosion Allowance
- Insulation Thickness
- Ambient Temperature
- Operating Temperature T1, T2, T3, etc.
- Operating Pressure P1, P2, P3, etc.
- Hydrostatic Test Pressure
- Fluid Density
- Insulation Material and Density
- Pipe Material; elastic moduli are taken from databases.
- Piping Code; allowable stresses are taken from databases.

**MODEL INFORMATION**

Pipe bends
Reducers
Rigids (i.e. valves, strainers, etc.)
Tees
Expansion joints

Restraints (i.e. anchors, supports, guides, hangers, etc.)
Displacements
Spring Hangers
Flanges
Nozzles

**LOAD CASES**

Analysis will be performed in order to assess Static or Dynamic Load Case stresses. Load cases can be selected from the following:

- Operating (OPE)
- Sustained (SUS)
- Expansion (EXP)
- Occasional (OCC)
- Fatigue (FAT)

Evaluations for fatigue, wind and seismic loads, offshore and buried pipe are possible either individually or in combination.

**APPLICATIONS**

**PIPING CODES AND STANDARDS**

Analysis can be made to the following international codes, specifications and standards:

- ASME American Society of Mechanical Engineers
- ASME B31.1 Power Piping
- ASME B31.2 Fuel Gas Piping
- ASME B31.3 Process Piping
- ASME B31.4 Pipeline Transportation Systems for Liquid Hydrocarbons and Other Liquids
- ASME B31.5 Refrigeration Piping
- ASME B31.8 Gas Transmission and Distribution Piping Systems
- ASME B31.9 Building Services Piping
- ASME B31.11 Slurry Transportation Piping Systems
- BS 806 British - Specification for design and construction of ferrous piping installations for and in connection with land boilers
- BS 7159 British - Code of practice for design and construction of glass-reinforced plastic (GRP) piping systems for individual plants or sites
- CAN Z662 Canadian - Oil & Gas Pipeline Systems
- CODETI French - Petrochemical
- DNV Norwegian - Det Norske Veritas
- EN 13480 European - Metallic Industrial Piping
- FDBR German - Piping Code
- HPGSL Japanese - High Pressure Gas Safety Law
- IGE / TD / 12 British - Institute of Gas Engineers
- ISO 14692 International Organisation for Standardisation Petroleum and natural gas industries - glass-reinforced plastic (GRP) piping
- JPI Japanese - Piping Code
- NAVY S505 Navy Piping Code
- Norwegian TBK-6 Norwegian - Piping Code
- PD 8010 British - Code of practice for pipelines
- RCC- M French - Nuclear Piping Code
- Swedish 1 Swedish - Piping Code
- Stoomwzezen Dutch - Piping Code
- UKOOA UK Offshore Operators Association

...and more as new versions of Caesar II are released.

subject to alteration without notification