CAESAR II PIPING STRESS ANALYSYS

Pipeline and Piping component compliance

- About Caesar
- Basic operation
- Purpose of stress analysing
- Menu Commands
- Node no & names, Element length, Pipe dia and Schedule, Temp& pressure
- Special Elements
- Bend, tee, reducer, rigid & expansion joint.
- Boundary Conditions
- Restrains, Displacements, Hanger & Nozzle
- Loading Condition
- Force & Movement, Uniform Load, Wind & Wave Load
- File menu, Edit menu, Model menu, Environment menu.
- Types of Support and Support design
- Spring hanger design
- Support thickness calculation
- Expansion loop design
- Nozzle Load analysing
- Nozzle WRC297, Nozzle API 650, Nozzle PD 5500
- Static Analysing & Report Generation

Equipment and Component Compliance

- Intersection Stress Intensification Factors Analysing

- Bend Stress Intensification Factors Analysing
- WRC 107 (Vessel Stresses) Analysing
- WRC Bulletin 297 Analysing
- Flange Leakage/Stress Calculations Analysing
- Remaining Strength of Corroded Pipelines, B31G Analysing
- Expansion Joint Rating Analysing
- NEMA SM23 (Steam Turbines) Analysing
- API 610 (Centrifugal Pumps) Analysing
- API 617 (Centrifugal Compressors) Analysing
- API 661 (Air Cooled Heat Exchangers) Analysing
- Heat Exchange Institute Standard For Closed Feed water Heaters

• Syllabus of Caesar II:

- The items as mentioned below cover acquaintance to Caesar II and focus on modeling & working with this software.

- - Piping Input
  Diameter, sch, C.A, fluid density, Temperatures, Pressure, Material, Insulation Thk.
  Insert & break & Delete element ,Application of close loop
  Flange &Valve modeling, Special execution options
  Include piping files
  Rotate, Duplicate, Delete, Renumber elements
  List input
  Bend, Reducer, Rigid element modeling
  determination of restraints support & imposed displacement
  flange leakage check (activated for higher than 5.1)
  Determination of Uniform load(such as seismic) & Wind pressure
  Start Run(piping error check) & Batch run
  Review Elements
  - Static Analysis
  Load case editor
  Load case option
  Wind loads & methods of wind definition
  Load case definition & making different load cases
  Generate stress isometrics (edit stress annotations , create isometric drawing)
  Configure (effect of friction stiffness ,unit file name ,memory allocated
  - Static Output
  Load case analyzed (HYD-OPE-SUS-OCC-EXP load cases)
  Which loads case shall be checked for stress ,displacement , loads
  Standard report(displacement, restraints, flange Peq, stress, code compliance)
  General computed result (hanger table, input echo)
  Output viewer wizard (how to generate & prepare stress report for client)

- The items as mentioned below try to debate & transfer Technical subjects & practical application of
  Caesar II in industrial working:

- -Equipment modeling (*)
  Exchanger (horizontal & vertical, temperature distribution on shell & tube & saddles)
  Vessel (horizontal & vertical, temperature distribution on shell & saddles)
  Pump (modeling suction & discharge and how to distribute temperature around pump
  in stand-by condition)
  Tower (modeling & temperature distribution throughout trays)
  Air-cooler (modeling & temperature distribution on inlet & outlet and how to find best positioning for slide & fix support of Air-cooler)
  Compressor (reciprocating & rotary and how to determine reaction of compressor on
  piping system)
  Heater (how to simulate heater reaction)
  *Note: All of above mentioned checked with methods of increasing piping flexibility around equipment and how to reduce forces &
  moments on equipment nozzles.
  Trunnion modeling and effect of that in piping stress analysis.

- Professional Stress analysis methods
  Best of Simplified methods.
  Free thermal analysis method by program & efficiency of that.
  Program routine methods by totally approach to stress world.