



APSG Engineering

PROPEL INNOVATION THROUGH ENGINEERING COGNIZANCE



TYPE OF ANALYSIS USED IN PIPING SECTOR

Stress Analysis

Software used- Hexagon Caesar-II

Piping stress analysis is a crucial aspect of designing piping systems in industries like oil and gas, petrochemicals, power generation, and more. It involves evaluating the stresses and forces acting on piping components to ensure their structural integrity and safe operation under various conditions.

CFD Analysis (Computational Fluid Dynamics) Software used- Ansys

Computational Fluid Dynamics (CFD) analysis is a powerful engineering tool used to simulate and analyze fluid flows, heat transfer, and associated phenomena using numerical methods and algorithms. It's applied across various industries, including aerospace, automotive, oil and gas, HVAC, and more.

Hydraulic Analysis

Software used- AFT Impulse (Applied Flow Technology)

Hydraulic analysis for piping involves assessing the flow of fluids within a piping system to ensure its optimal performance, reliability, and safety. It focuses on understanding pressure drops, flow rates, velocities, and other hydraulic parameters.



Surg Analysis

Software used- AFT FATHO (Applied Flow Technology)

Surge analysis in piping refers to the study of transient pressure changes, often caused by sudden flow variations or disturbances within a piping system. These pressure fluctuations, known as water hammer or surge events, can occur due to abrupt changes in flow rate, valve closure, pump starts or stops, and other operational changes.

Pipethickness Calculations

Pipe thickness calculations are essential in ensuring the structural integrity and safety of piping systems, particularly in industries like oil and gas, chemical, and petrochemical.

Calculating the appropriate pipe thickness involves considerations of pressure, temperature, material properties, and applicable design codes and standards (such as ASME B31.1, B31.3).



STRESS ANALYSIS

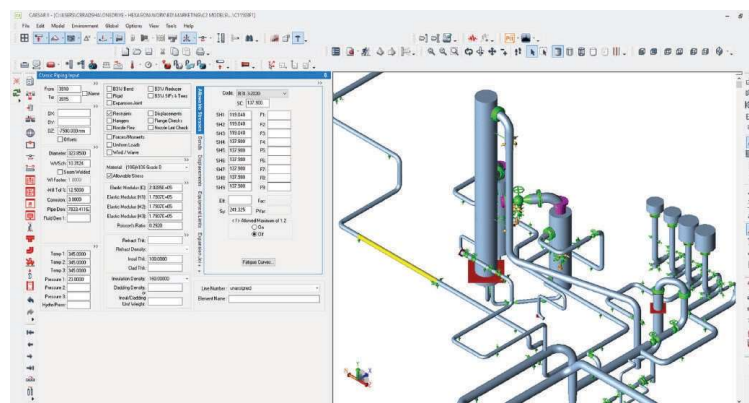
Caesar II

Type of studies in Caesar II

CAESAR II is a widely used software in the piping industry, primarily for pipe stress analysis. It's capable of performing various types of studies to assess and validate the structural integrity and safety of piping systems. Some key studies conducted using CAESAR II include:

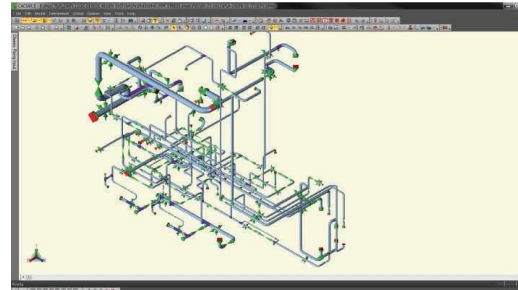
Static Analysis:

Stress Analysis



Evaluates stresses and strains on piping components under steady-state conditions, including pressure, thermal expansion, weight, and external loads.

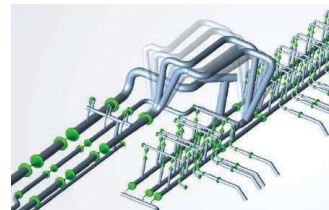
Dynamic Analysis:



Modal Analysis

Studies system natural frequencies and mode shapes to identify potential resonances and dynamic behavior that could lead to fatigue or vibration issues.

Response Spectrum Analysis



Evaluates piping response to seismic or other dynamic loads based on predened response spectra, aiding in seismic design and evaluation.

Time History Analysis

Simulates the transient response of the piping system to time-varying loads or events, such as water hammer or transient pressure changes.

Other Studies:

Wind and Seismic Analysis: Assessing the effects of wind or seismic forces on the piping system to ensure stability and safety under extreme environmental conditions.

Flange Leakage Analysis

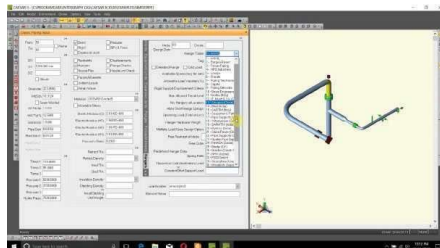
Analyzing flange connections to predict potential leaks or gasket failure under different operating conditions.

Fatigue Analysis

Evaluating the piping system's susceptibility to fatigue failure due to cyclic loading or thermal fluctuations over its operational life.

Trunion Calculation

Hanger Designs



These studies aid in designing, evaluating, and optimizing piping systems, ensuring compliance with industry codes and standards (e.g., ASME B31.1, B31.3). CAESAR II facilitates comprehensive analysis, providing engineers with critical insights to design robust and reliable piping systems.



OUR MAJOR PROJECTS



PDB-Maria Quiteria (PETROBRAS) FPSO

Our experienced team designed and analyzed the Piping system and structure of FPSO (floating project and storage offloading) in PDB-Maria Quiteria for Petrobras



AGOGO (YINSON & VME) FPSO

Our experienced team designed and analyzed the Piping system and structure of FPSO (floating project and storage offloading) in AGOGO for YINSON & VME



OKWOK (TECHNOMAK) FPSO

Our experienced team design and analyzed the Piping system and structure of FPSO (floating project and storage offloading) Stress Analysis for OKWOK [FPSO]



HYDROCARBON LINES IN BPCL KR

Our experienced team design and analyzed the hydrocarbon line connection from heat exchanger to 16' pipeline in oxo alcohol unit in PDPP Cochin (DCN 20 & DCN 17) Also designed and analyzed the pipe rack for DCN 20 & DCN 17





RLNG PIPELINE FROM DHDS TO MSBP BPCL KR

Our team drew the General arrangement drawing for routing 8” pipeline from the unit

DHDS to MSBP



BPCL FUEL PUMP STATION

We design the 3D model of several BPCL fuel station across kerala using non parametric

3D software



COCHIN INTERNATIONAL AIRPORT AVIATION FUEL LINE

Designing of GAD and PLOTPLAN of interconnection of Underground aviation fuel from

BPCL storage area to Terminal 4 of Cochin International airport



HPCL(Hindustan petroleum corporation Ltd)

Stress analysis of 16 inch and above petrol additives pipeline from ambalamugalil storage area to konkan island

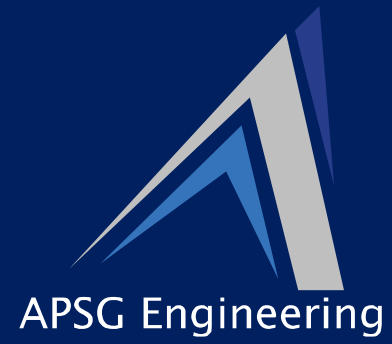
Surge and hydrolic analysis of hydrocarbon lines in cochin depo



IOCL (Indian oil corporation Ltd)

Hydrolic analysis of firefighting and foam lines including sprinklers in various units of IOCL

Stress analysis of wagon lines in IOCL



*Thank
you*

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