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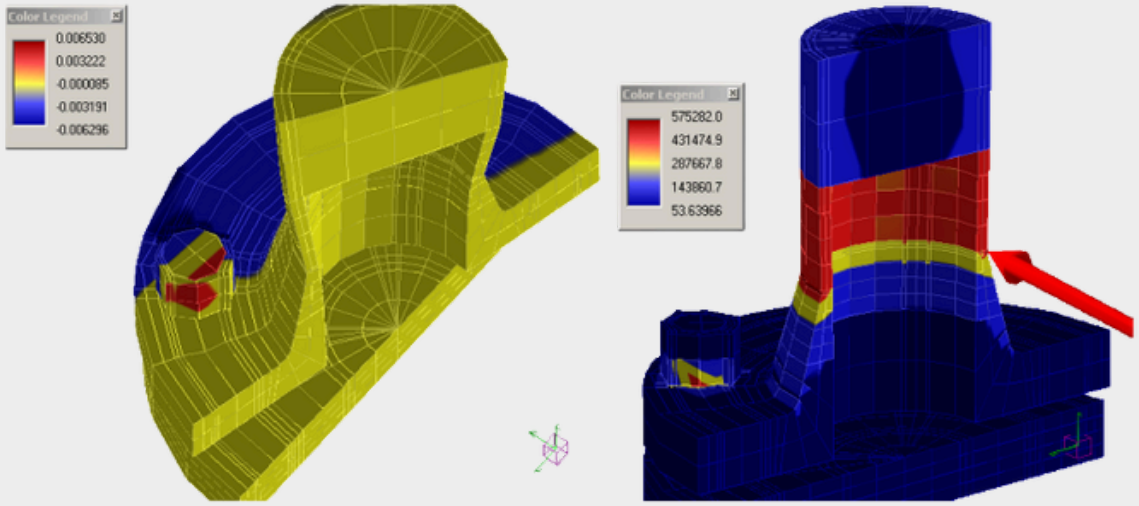

FLANGEPRO

Technical Specifications

paulin.com/flangepro

Automatic FEA

Capability:
Provides an automatic FEA analysis of standardized or custom axisymmetric models and brick models of flanged joints.

Use:
Allows users to visualize stresses and rotations on the model for API, ASME B16.5, ASME B16.47, or DIN.

Users can also visualize allowable external forces, moments, or torsional loads on the flange joints they're designing.

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Flange Design & Analysis Simplified

Design Validation for Global Codes

Capability:

Provides design checks for ASME Section VIII, Div 2, ASME Appendix 2, ASME BFJ, and EN 13445 Annex G.

Use:

Allows users to check their design against a variety of codes while also comparing the FEA results to the code calculations for the same geometries.

Gasket properties for each of these standards are stored in the program's database. They can be loaded directly onto the model and modified to fit the user's needs.

Leak Prediction

Capability:

Predicts for leakage and emission.

Use:

Users can prevent leaks in joints that are generally caused by pressure, external loads, loose bolts, or unsatisfactory gasket seating.

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Gasket Modeling Options

Capability:

Supports linear and nonlinear stiffness models, including a nonlinear approach similar to the PVRC method for accurately assessing gasket stress under varying conditions.

Analyzes bolt load distribution, predicts overstressing or leakage from overturning moments, and provides equivalent calculations between Appendix 2, BFJ, and European codes.

Use:

The program supports Ring Type Joints (RTJs), which plastically deform under axial compressive loads, filling irregularities in the flange groove. They have high surface stresses due to a small load-bearing area and poor recovery characteristics, requiring a proper axial load for sealing.

Given the confusion regarding bolt allowable stresses between ASME Section II Part D and PCC-1, the program analyzes the bolt load distribution. PCC-1 permits higher preload capacities (40-70% of ambient yield strength), while ASME focuses on applied load considerations, especially in non-flange applications where shear and bending moments may occur.

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Gap Surfaces

Capability:

Accounts for gap tolerances and computes gap closures in handling flat-faced or raised-face geometries.

Use:

Users can easily account for gaps due to bolt-up conditions in the model.

Thermal Modeling

Capability:

Performs steady state or transient thermal analyses for both operating and cool down conditions.

Use:

Users can account for the maintenance of the flange as it relates to the entire system.

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