

Pro/ENGINEER Mechanical

Features and Specifications

Advanced Adaptive Solution Ensures Results Accuracy

- Powerful technology drives solution result accuracy
- Automatic convergence gives designers confidence in results
- Capture actual model geometry as designed, not as an approximation as in traditional analysis packages

Broad Range of Analysis Capabilities

- Analyze static stress and displacement
- Evaluate natural frequency
- Solve for buckling factors of safety
- Perform steady state thermal analyses for temperatures and fluxes

Thermal Analysis Capabilities

- Apply heat loads, prescribed temperatures and convection coefficients for thermal models
- Import thermal boundary conditions from Computational Fluid Dynamic (CFD) analyses
- Solve coupled structural thermal analyses

Querying, Interpreting and Communicating Results

- Query results values directly on the model using simple mouse clicks and get results in fringe, iso-plot, vector plot or graph
- Output MPEG, VRML, JPEG, EXCEL, TIFF and HTML reports
- Automate results-creation using templates
- Compare model iterations side-by-side

Scalability to Address Your Needs

- Output, solve and post-process the model in either NASTRAN or ANSYS

Robust Set of Tools for Modeling Assemblies

- Model spot, end and perimeter welds
- Define contact between components as free, bonded, or nonlinear
- Simulate bolt or screw connections with fasteners
- Automated midsurfaced assembly modeling

Meshing Tools for Tackling Tough Jobs

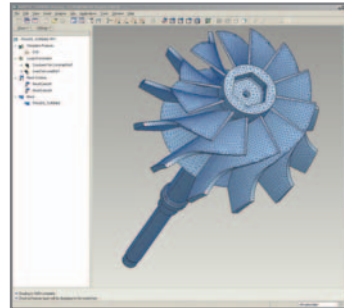
- Mixed meshing options (solids, shells and beams)
- Flexible meshing options offer both automatic meshing or with user control
- Automated geometry cleanup and diagnostics

Multiple Modeling Entities to Simulate Complex Designs

- Springs, masses, beams and shells
- Specify the degrees of freedom at beam ends
- Library of standard sections for common beams

Leverage All that Pro/ENGINEER Offers

- No separate data files; one file stores all simulation and design data
- Model units and material properties are shared with the design model
- Integrated with Pro/ENGINEER Behavioral Modeling Extension, for more advanced design exploration such as design of experiments
- Apply loads from Pro/ENGINEER Mechanism Dynamics Option to a structural analysis
- Compatible with advanced Pro/ENGINEER modeling tools such as simplified reps, inheritance features and assembly merges
- Automated mid-surface extraction for sheetmetal and thin solid parts



Pro/ENGINEER Mechanical gives you the option of uniformly meshing a model, as we see here, or customizing the mesh for tailored results.

Design Improvement and Optimization Tools

- Track results at specific locations
- Conduct optimization and feasibility studies to improve initial designs
- Answer "what if" scenarios using sensitivity studies
- Parametrically vary properties in your simulation model

Structural Boundary Conditions including...

- Enforced displacement, mirror and cyclic symmetry constraints
- Force and moment, bearing and pressure loads
- Gravity, angular acceleration/velocity body loads
- Inertial relief
- Temperature loads
- Vary loads as a function of coordinates or table data

Language Support

- English, German, French and Japanese

Platform Requirements

- Microsoft Windows (XP, 2000)
- UNIX platforms (Solaris, HP-UX)

For specific operating system levels, visit:

www.ptc.com/partners/hardware/current/support.htm

The Pro/ENGINEER Advantage

Every Pro/ENGINEER module delivers an advantage over other CAD/CAM/CAE products due to the power of associativity; any change in the design is automatically reflected in the analysis, without any translation of model information between applications. By eliminating the data translation step, you not only save time, but you also avoid the chance of introducing translation errors in your design. This application integration is especially powerful in simulation modules, where addressing design flaws can be an iterative process. With full associativity across CAD, CAM and CAE functions, Pro/ENGINEER gives you an advantage that no other application offers.