Creo™ Simulate

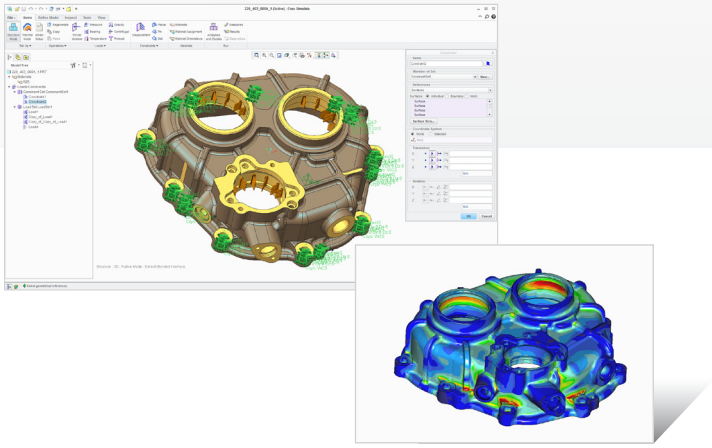
GAIN EARLY INSIGHT INTO DESIGN PERFORMANCE

Creo Simulate gives designers the power to understand structural and thermal product performance 'on the desktop,' before resorting to costly, time-consuming physical prototyping. By gaining early insight into product behavior, you can vastly improve product quality while saving time, effort and money.

Today's competitive marketplace is forcing design teams to 'get it right the first time.' The reality is, the earlier in the development cycle that designers can understand product performance, the faster a quality product can get to market. When teams must rely on costly, time-consuming physical prototyping to test product behavior, schedules and budgets are quickly compromised. Other CAE tools offer a solution, but they're usually disconnected from the CAD solution. Thus, engineers must spend valuable time translating data and preparing the model for analysis. Then, each time there's a design change, designers have to repeat the translation process. Moreover, typical CAE tools require users to have an extensive, specialized skill set. There's a faster, smarter way to evaluate product performance with a powerful yet easy–to–use simulation solution – Creo Simulate.

With Creo Simulate, design engineers can better understand product performance and then optimize the digital design – early in the design cycle, without needing expertise in simulation. Available as a stand-alone or an extension to Creo Parametric, Creo Simulate has the same user interface, workflow and productivity tools that are prevalent throughout Creo. Thus, product designers can enjoy the same industry – leading power, performance and associativity of Creo Parametric for all their analysis needs – without needing to learn a new program. In addition, Creo Simulate analyzes native Creo and Creo Elements/Direct™ models and stores the analyses in the model files. This capability means streamlined data management with no data translation.

With the ability to virtually evaluate product performance on screen, Creo Simulate gives engineers the freedom to explore new ideas and design variants, then optimize their designs. Furthermore, engineers have confidence that their new designs will satisfy performance requirements, need fewer changes during physical prototyping and deliver superior value.



Creo Simulate allows you to analyze your model and quickly identify problem areas. Once you update the design, you can easily rerun the analysis, without recreating it.

Key Benefits

- Gain early insight into product performance and discover design flaws quickly, as you increase first-time build success
- Improve user efficiency with an intuitive, familiar user interface
- Obtain realistic performance data, and improve product quality, by directly applying real-world conditions to design geometry
- Evaluate more scenarios than is possible with physical prototypes
- Save time and reduce errors by working in a seamlessly integrated design and simulation environment – with no data translation
- Increase innovation by simultaneously designing and simulating design variations
- Decrease development costs by reducing or even eliminating physical prototyping
- Capture the knowledge of your simulation experts, and make it accessible to others, using the Process Wizard, a structured, customizable wizard that guides engineers through the simulation process

Features and Specifications

Advanced adaptive solution ensures results accuracy

- Automatic convergence gives designers confidence in results
- Capture actual model geometry "as-designed," not as an approximation, as with traditional analysis packages

Broad range of analysis capabilities

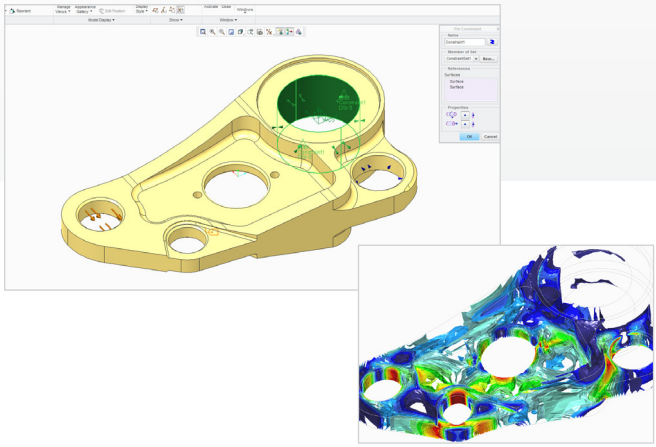
- Analyze static stress and displacement
- Evaluate natural frequency
- Solve for buckling factors of safety
- Perform steady state thermal analyses for temperatures and fluxes

Thermal analysis capabilities

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

Analyze and communicate results

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



Setting up analysis constraints is fast and easy in Creo Simulate.

Robust set of tools for modeling assemblies

- Model spot, end and perimeter welds
- Automate the handling of assembly connectivity
- Define contact between components as free, bonded, or nonlinear
- Simulate bolt or screw connections with fasteners
- Automate mid-surfaced assembly modeling

Meshing tools for tackling difficult projects

- Mixed meshing options (solids, shells and beams)
- Flexible meshing options offer both automatic meshing and user-controlled meshing
- 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 Creo 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 Creo Behavioral Modeling® Extension, for more advanced design exploration, such as design of experiments
- Apply loads from Creo Mechanism Dynamics Extension to a structural analysis
- Compatible with advanced Creo Parametric modeling tools, such as simplified reps, inheritance features, and assembly merges
- Automated mid-surface extraction for sheetmetal and thin solid parts

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
- Enforced displacement, mirror and cyclic symmetry constraints
- Force and movement, 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 specifications

- Microsoft® Windows® 7 and XP
- UNIX® platforms (Solaris®)

For specific operating system levels, visit: PTC.com/partners/hardware/current/support.htm

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