

Mechanical Overview

Realize your Product Promise through superior simulation technology. Customers trust our accurate solutions to obtain insight into real-world product performance, driving innovation and business success.



Help meet product code regulations



Improve product performance and reliability



Root cause failure analysis



Reduce time and cost of product development

/ Mechanical Overview

Insight into Real-World Product Performance - Ansys Mechanical is a best-in-class finite element solver with structural, thermal, acoustic and piezoelectric simulation capabilities. Static analysis accurately predicts the deformed shape, steady-state temperature and stress distribution. Transient analysis helps you to understand dynamic effects of loading. Linear dynamics analysis reveals vibration characteristics.

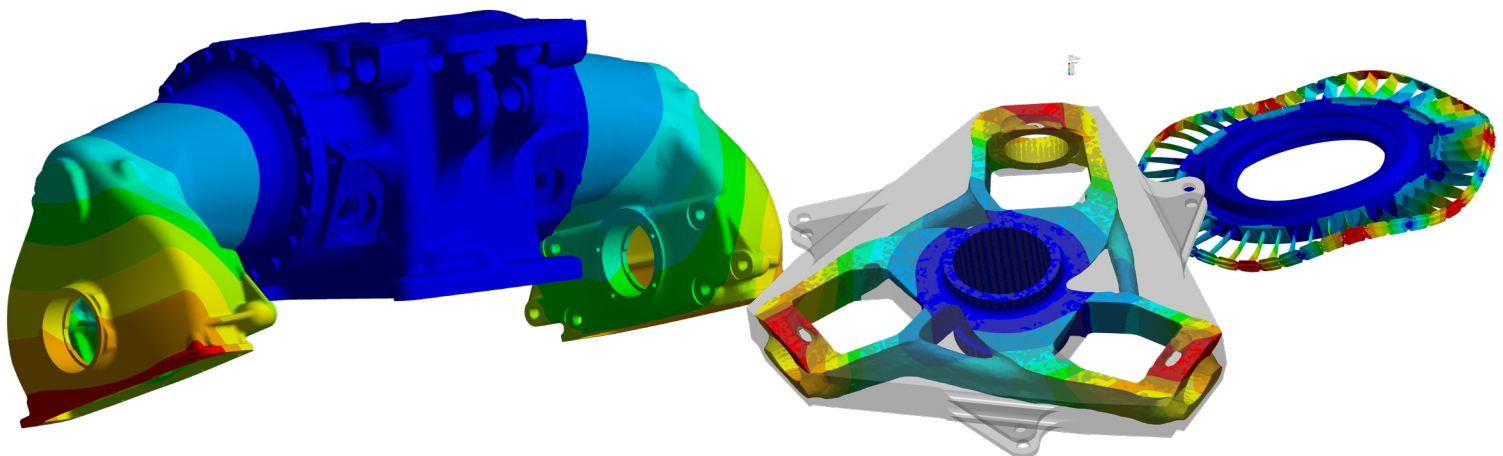
Combine Solver Accuracy and Speed - Superior solver accuracy and speed provide trustworthy information and enable enormous productivity gains through scalable HPC performance.

A Parametric, Multiphysics Platform - Ansys Workbench enables robust connection to commercial CAD tools, providing clickbutton design point updates. Seamlessly integrated multiphysics capabilities are available with our fluids and electrical solvers.

/ Mechanical is Your Solution

Ansys Mechanical is a dynamic environment that has a complete range of analysis tools from preparing geometry for analysis to connecting additional physics for even greater fidelity. The intuitive and customizable user interface enables engineers of all levels to get answers fast and with confidence.

- **CAD connected - work with geometry from anywhere**
- **Parametric - vary geometry and loads to find the optimal solution**
- **Quick to learn - intuitive, modern user interface**



CAPABILITIES

ELEMENTS	1D, 2D and 3D continuum and structural elements, rigid body representation
MATERIAL MODELS	Linear and nonlinear elastic, viscoelastic, rate-dependent and rate-independent plasticity, geomechanical, gaskets, composites
INTERACTION MODELS	Linear and nonlinear contacts, joints
FRACTURE MODELS	SMART, cohesive zone, XFEM
ADVANCED SOLVER TECHNOLOGIES	Nonlinear adaptivity, cyclic symmetry, submodeling, substructuring (CMS), inverse analysis, multidimension modelling
ANALYSIS TYPES	Static, transient dynamics, modal, response spectrum, harmonic, random vibration, acoustics, explicit dynamics, hydrodynamics, multibody dynamics
USER PROGRAMMABLE FEATURES	Custom material models, interactions, loads, elements
MULTIPHYSICS	Coupled element technology and one to two way connection to other solvers (eg. fluid-structure interaction, electromagnetics)
HIGH PERFORMANCE COMPUTING	Paralleled solvers for faster solution times

TOOLS

GEOMETRY PREPARATION TOOLS	Ansys Spaceclaim, Ansys DesignModeler
DESIGN OF EXPERIMENTS	Ansys DesignXplorer, Ansys OptiSLang
COMPOSITES PRE AND POST PROCESSING	Composites PrepPost
MATERIALS DATABASE	Ansys Granta Material Data for Simulation
MATERIALS HOMOGENIZATION	Ansys Material Designer
TOPOLOGY OPTIMIZATION	Level set and SIMP methods, shape optimization
RIGID BODY DYNAMICS	Ansys Rigid Body Dynamics, Ansys Motion
HYDRODYNAMICS ANALYSIS	Ansys AQWA
EXPLICIT DYNAMICS ANALYSIS	Ansys Explicit, Ansys LS-DYNA, Ansys Autodyn
FATIGUE ANALYSIS	Ansys nCode DesignLife
SOLVE MANAGEMENT	Remote Solve Manager, Distributed Compute Service

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