AUTODESK®
NASTRAN® IN-CAD™

CAD-embedded advanced mechanical simulation

AUTODESK®

Delivering CAD-embedded advanced finite element analysis

Use advanced mechanical simulation directly in your CAD system with the industry-trusted Autodesk Nastran solver

Autodesk® Nastran® In-CAD™ software, a general purpose finite element analysis (FEA) tool embedded in your CAD system, is powered by the Autodesk® Nastran® solver and offers simulation spanning across multiple analysis types, such as linear and nonlinear stress, dynamics, and heat transfer. This single product is available as a network license and serves multiple CAD platforms, providing a consistent user experience and eliminating the need for multiple single-platform simulation technologies. It delivers high-end simulation technology in a CAD-embedded workflow so you can make great products.

3D CAD-embedded tool

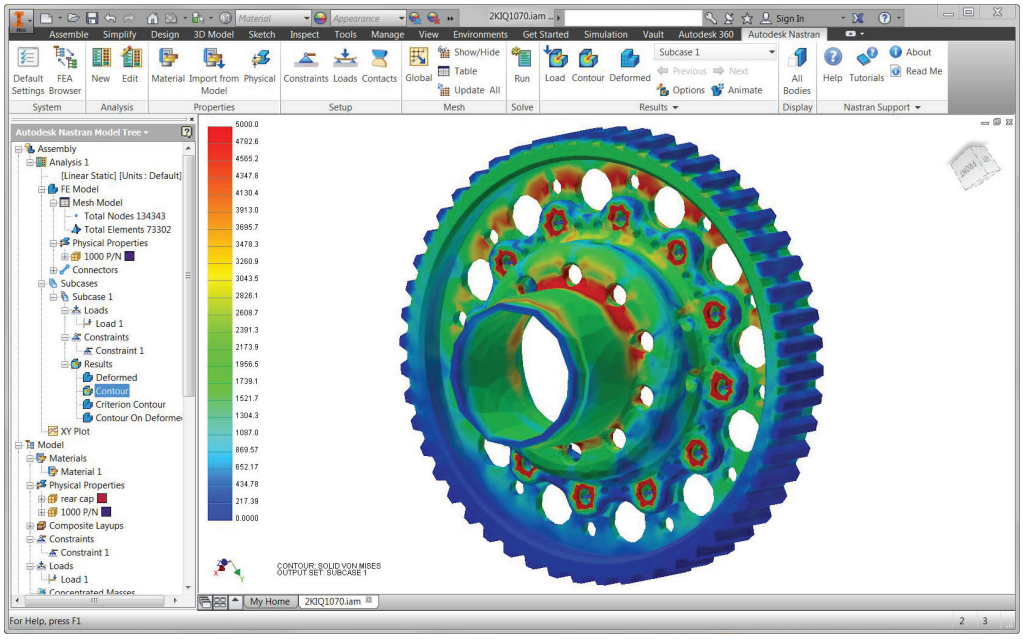
To meet the demands of an increasingly competitive global market, manufacturing firms face intense pressure to constantly innovate, reduce development cycles and time to market, and avoid in-field failures while staying profitable. There are powerful benefits that a CAD-embedded FEA technology can bring to your product development process. Advanced analysis enables engineers to subject their designs to real-world behavior and optimize product quality for performance before manufacturing. This translates into innovation, better quality, lower costs, and minimal field failure.

By offering an embedded workflow, Autodesk Nastran In-CAD streamlines processes, helping you to maintain your productivity, and eliminate compatibility issues while equipping you with an industry-recognized, professional-level FEA platform. Autodesk Nastran In-CAD delivers powerful FEA technology while keeping the familiarity, ease-of-use, integration, and associativity of your system:

- **Ease-of-use for Autodesk Inventor and SolidWorks users**—Autodesk Nastran In-CAD eliminates the need for multiple single-platform simulation technologies by embedding advanced FEA technology directly into Autodesk® Inventor® software and SolidWorks®, enabling its solid and surface modeling capabilities to provide FEA pre- and post-processing.
- **Familiar interface and workflow**—A single-window CAD/FEA experience provides the same look and feel, menu, and tree-type structures of your CAD system when you develop your FEA model—enabling a workflow conducive to frequent use of simulation for small changes to products that you typically couldn't make before.
- **Integrated with powerful CAD model translation**—Reduce your learning curve and maintain your productivity by eliminating compatibility issues arising from importing CAD models into different FEA platforms. Rapidly explore how design iterations perform without re-creating the setup with each modification.
- **True geometry associativity**—Part geometry data is accessed directly through your CAD system and features true geometry associativity, so you can easily make changes to your model without having to duplicate work for validation. Explore what-if scenarios easily with full associativity of FEA and CAD data, and validate concepts.

Autodesk Nastran solver

Autodesk Nastran is an industry-recognized, general purpose FEA solver known for its accuracy in analyzing linear and nonlinear stress, dynamics, and heat transfer characteristics of structures and mechanical components. The Autodesk Nastran solver is the integrated solving platform for Autodesk® Simulation Mechanical software—high-end simulation technology that enables you to obtain more accurate results for complex simulations.



Advanced analysis

Start with basic analysis for exploring the viability of design alternatives and concept validation and move on to advanced analysis if and when powerful analyst tools are needed. Autodesk Nastran In-CAD has a wide range of analysis capabilities from basic to advanced—linear and nonlinear, dynamic analyses, and powerful automated impact and drop testing. Several special analysis types also are available, such as fatigue, explicit FEA for high-speed and extreme deformation impact, and advanced techniques for composites. Advanced analyses capabilities include:

- **Nonlinear:** Computes advanced nonlinear solutions such as large displacements/rotation, large strain, plasticity, hyperelasticity, creep, and more.
- **Thermal:** Supports analysis of structures subjected to thermal loads. Solves heat transfer problems with linear and nonlinear thermal boundary conditions that vary through time (for example, power fluctuations).
- **Fatigue:** Determines the life of parts subjected to cyclic loads and easily extends a linear static or random response analysis to calculate fatigue life and fatigue damage.
- **Buckling:** Assesses stability under loads; examines structures for sudden failure modes caused by compressive forces.
- **Dynamic Response:** Determines displacements, loads, stresses, and strains in structures subjected to transient or frequency-dependent loads.

Extensive material models

Material data is vital to the accuracy of engineering simulation in design. Simulation of materials such as metal, composites, rubber, and plastics help users learn more about how a product will perform—or even how it might fail. Autodesk Nastran In-CAD supports a wide range of linear and nonlinear materials allowing for better understanding of the real-world behavior of products.

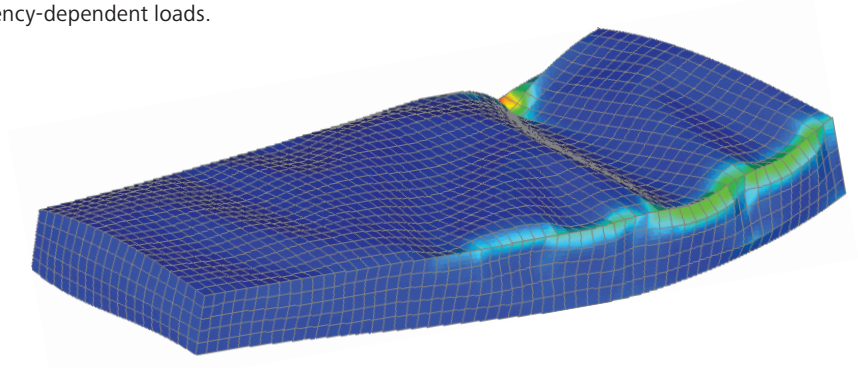
Packaging and availability

Autodesk Nastran In-CAD brings high-end simulation to all engineers by offering a value-enhanced package. It delivers a single product, packaged as a network license that serves multiple CAD platforms—such as Autodesk Inventor and SolidWorks—reducing the initial cost of investment and subsequent yearly maintenance. The value-enhanced package also includes a multidomain network license manager, so the software can be shared among CAD products, projects, and regional and global teams with ease. Network licensing enables users to share results with others regardless of their CAD system.

Autodesk portfolio of simulation software

Autodesk Nastran In-CAD is part of the mechanical simulation offerings from Autodesk, which are all powered by the Autodesk Nastran solver. Autodesk Nastran is an industry-recognized FEA solver that delivers accurate results to complex simulations. Autodesk Nastran In-CAD delivers CAD-embedded FEA simulation. Autodesk® Simulation Mechanical software is a complete mechanical simulation solution that accurately predicts product performance, optimizes designs, and validates product behavior before manufacturing.

Autodesk offers additional simulation products to help you predict product performance further by optimizing and validating your designs. The Autodesk® Simulation family of products and Digital Prototyping solution from Autodesk enable you to integrate mechanical, structural, fluid flow, thermal, composite, and plastic injection molding simulation tools into your product development process to help reduce costs and speed time to market. Autodesk provides a range of flexible solutions that enable you to solve locally or in the cloud, to help increase your productivity.



Autodesk Digital Prototyping is an innovative way for you to explore your ideas before they're even built. It's a way for team members to collaborate across disciplines. And it's a way for individuals and companies of all sizes to get great products into market faster than ever before. From concept through design, manufacturing, marketing, and beyond, Autodesk Digital Prototyping streamlines the product development process from start to finish.

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Autodesk 360

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