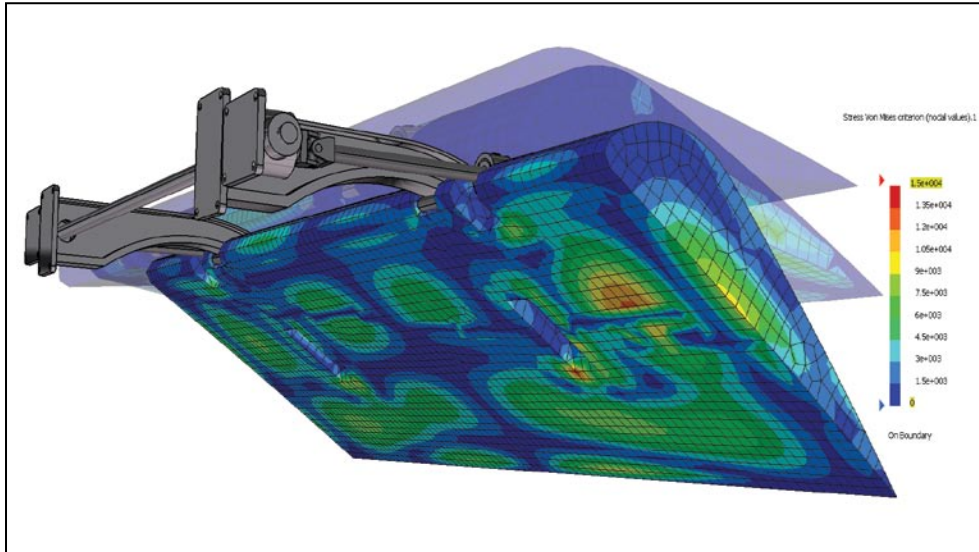


SimDesigner Workbench Edition

CAD-Embedded Simulation

Leads to Smarter Design



Overview

MSC SimDesigner is a component of the MSC SimEnterprise simulation product suite, which also includes MSC SimXpert and MSC SimManager. SimEnterprise enables manufacturing companies to improve product development by deploying role-based simulation applications and enabling integration to third party and in-house tools used for the design and test of products. Through the use of SimEnterprise, companies can build corporate standards for simulation and virtual test processes, create and capture simulation methods and knowledge for reuse across user types and supply chain, and manage and control simulation data and process pedigree.

SimDesigner Workbench Edition for CATIA V5 consists of an integrated set of multidiscipline simulation workbenches for conducting early, in-process studies completely in the CATIA V5 environment. Discipline workbenches include Structures, Motion, Thermal, Nonlinear and Crash supported by MSC's industry leading solvers including MD Nastran, MSC ADAMS, and MSC Marc. Designers can quickly model, simulate and review results all within the CATIA V5 environment. SimDesigner also comes with built-in Enterprise Gateways that enable users to export ready-to-run solver input files, execute and monitor them on remote computing resources. Simulation results created externally from MD Nastran, Marc, or LS-DYNA can then be imported and visualized within the CATIA environment.

Capabilities

- Integrated Motion, Structures, Thermal, and Crash workbenches for performing multi-body dynamics (with rigid or flexible bodies), linear statics, nonlinear, modal, buckling, frequency response, and thermal analysis.
- SimEnterprise enabled allowing CAD users to connect to an enterprise server for simulation template execution, results capture, reuse, and revision control.
- Native-CAD environment featuring structural analysis capabilities with full association between simulation models and CAD geometry.
- Direct interfaces to existing corporate simulation resources through Enterprise Gateways to run jobs using MD Nastran, Marc, and LS-DYNA*.

Benefits

- Drive simulation earlier in the design process to lower the cost of design changes and improve product quality and manufacturability.
- Gain greater confidence and insight into design performance through accurate and robust multidiscipline simulation without leaving the CAD environment.
- Enhance collaboration and communication between design teams and expert analysts to promote automation and reuse best practices across the extended enterprise.
- Boost the rate of in-process simulations to explore more design alternatives and shorten the overall product development cycle.



Enterprise Manager

- Built-in Web client access to MSC SimManager Enterprise server
- Execute SimEnterprise templates to automate processes and leverage best practices.
- Seamless method for publishing, retrieving, and sharing simulation data throughout the enterprise
- Simulation data pedigree, historical results access, and revision management.
- Post-process and chart template simulation results within the CATIA environment.

Motion Workbench

- Powered by industry-leading Adams technology
- Performs multi-body dynamic motion simulation on CAD assemblies
- Simulates mechanisms including contacts and friction
- Automatically convert a CATIA assembly to a motion simulation model.
- Support for flexible bodies to compute part deflections and stresses as a result of the motion simulation
- Seamlessly transfer load histories from a Motion to Structures workbench to automatically create boundary conditions on a finite element model.
- Animate models in CATIA environment and utilize CAD measures, swept volumes, and clash detection for clearance studies.

Structures Workbench

- Powered by industry-leading MD Nastran solver
- Simulates linear statics, normal modes, modal analysis with differential stiffness, buckling, and modal frequency response
- Includes nonlinear analysis capabilities for simulating large deformations, material plasticity, and nonlinear contact
- Automatically apply loads extracted from the Motion workbench as boundary conditions
- Supports thermal mechanical coupling when combined with the Thermal workbench to investigate mechanical stresses caused by heat and thermal changes

Thermal Workbench

- Uses industry-leading MD Nastran solver for both steady-state and transient thermal analyses
- Simulates heat transfer due to conduction, convection, and flux
- Provides temperature distributions for subsequent use in structural analysis
- Automatic recognition of part contact for assemblies

Crash Workbench

- Supports explicit, highly-nonlinear, time-dependent applications involving crash, impact, drop testing, initial velocity problems, and rigid wall analyses
- Defines input conditions and analysis parameters for third-party LS-DYNA solver
- Imports and displays the results of the LS-DYNA simulation

Enterprise Gateways

- Provides bidirectional access to existing remote simulation resources, including MD Nastran, Marc, and LS-DYNA
- Exports ready-to-run solver input decks and imports simulation results without leaving the CATIA environment
- Schedules and monitors job submissions on remote queues

System Requirements

- CATIA V5 with Generative Part Structural Analysis 2 (GPS), and DMU Kinematics Simulator 2 (KIN)
- Recommended CATIA products for increased FEA functionality include Generative Assembly Structural Analysis 2 (GAS), FEM Surface 2 (FMS), FEM Solid 2 (FMD), and ELFINI Structural Analysis 2 (EST)
- Recommended CATIA products for increased motion analysis functionality include DMU Optimizer 2 (DMO), DMU Space Analysis 2 (SPA), DMU Engineering Analysis Review (ANR), and DMU Navigator 2 (DMN)
- Supported on Windows 32-bit & 64-bit and AIX 32-bit platforms

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