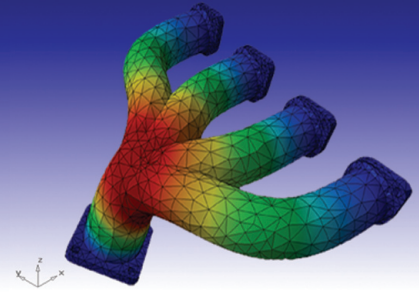


# SimXpert Thermal

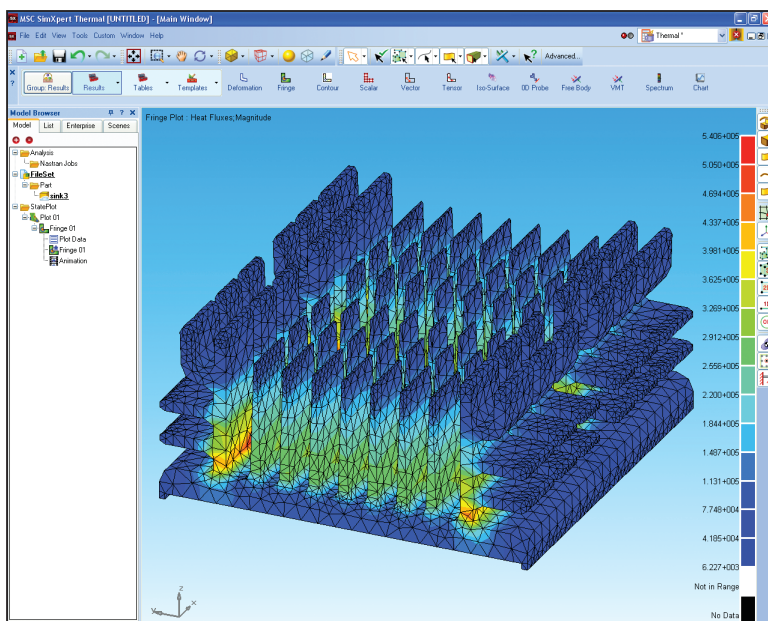
## Make Thermal Analysis Part of Your Enterprise Simulation Process



### Overview

SimXpert Thermal is the next generation Computer Aided Engineering environment for simulation of heat transfer problems using finite element analysis. It brings together game changing end-to-end multidiscipline simulation capabilities and best practice methodology capture and deployment technologies in a single unified environment. This approach closes the collaboration gap that exists between analysts and designers enabling them to leverage common data models and share critical information across disciplines without duplicating work and allows them to deploy their best practices to the extended enterprise. This radical change to the traditional analysis process enables manufacturers to accelerate the speed and accuracy of simulation, increase design productivity, and bring better products to market faster.

SimXpert Thermal offers a breadth of simulation capabilities ranging from simple steady-state conduction to forced convection to radiation in an integrated user environment; SimXpert Thermal provides users with a variety of geometry and meshing tools, material and analysis types.



### Capabilities

- Perform state of the art multidisciplinary CAE analysis based on the industry's best solution capabilities with MD Nastran™
- Increase the pace of analysis with advanced workspaces that integrate Pre-, Post- and Solver processing
- Capture and deploy best practice CAE methods by integrating with MSC's SimEnterprise Suite™, SimManager™ and SimDesigner™
- Improve modeling speed and accuracy with bi-directional native CAD access
- Smoothly exchange key data between disciplines using the integrated multidiscipline workspaces

### Benefits

- Increase productivity by handling all requirements of the analysis process within one intuitive environment
- Shorten design cycles by enabling maximum collaboration across the extended enterprise
- Maximize business efficiencies by capturing CAE best practices and deploying throughout the enterprise using SimManager
- Improve accuracy and product quality by unifying the multi discipline simulation process into a single, integrated environment, leveraging the common data model across simulation disciplines
- Drive innovation by delivering simulation process improvements throughout the enterprise, releasing experts to focus on design improvements

### A Member of the Integrated Suite of Multidisciplinary Simulation Workspaces

As a key enabler of Enterprise Simulation, SimXpert provides the best platform for expert analysts to complete all stages of the simulation process – from pre-processing and modeling, through solution, to post-processing, results manipulation and reporting – within one integrated workspace environment. These workspaces allow the analyst to easily move from one discipline to another while sharing data models and results.

**Structures Workspace** – Perform linear and advanced non-linear, static and dynamic structural analyses based on the very best solutions available in MD Nastran.

**Motion Workspace** – Predict loads and analyze system motion based on MSC's leading MD Adams capabilities. Bring in flexible bodies, and pass through nodal loads seamlessly.

**Explicit Workspace** – Use MD Nastran to perform large deformation, highly nonlinear, short duration transient dynamic analyses for both structural impact and coupled fluid-structure interaction problems.

**Crash Workspace** – A complete pre- and post- processing environment for vehicle crash and impact analysis based on LS-DYNA™, the most widely used crash solver in the market.

**Thermal Workspace** – Evaluate and analyze the thermal performance of designs by using the linear and non-linear, steady state and transient analysis capabilities of MD Nastran.

**Advanced Solution Extensions** – SimXpert is an open platform enabling easy integration with third party tools as well as the creation of customized workspaces.

## Enabling Capabilities

- Intuitive object based user interface with contextual actions
- View, manipulate, and organize your model with advanced browser functionality
- Native bi-directional CAD access for CATIA, Pro/ENGINEER, and NX
- Import IGES, Parasolid, CATIA V4, CATIA V5, Pro/ENGINEER, ACIS, STEP and STL data for FE modeling
- Interactive CAD cleaning and healing with auto curve, shell, and solid meshing
- Define simulation properties using engineering terms for use across all workspaces
- Contact creation and setup through easy and intuitive contact tables
- Visualize and manipulate all CAE entities
- User configurable toolsets and menus to streamline the modeling process

## Multi-Discipline Examples

- Coupled Thermal and Structures analysis to seamlessly apply thermal loading to structural analysis

## Features

- Surface Meshing algorithms: paver, mapped, minimal, quad-dominant
- Mesh seeding: uniform/bias
- Assembly meshing
- Virtual geometry / topological simplification
- Import and export of solver input files
- Create control cards and parameters

## Post-processing

- View model, state plots and x-y charts and graphs simultaneously using multiple windows
- Result data probes
- Animate displacements, stresses, strains and vectors
- Supports time domain data
- Multi-file attachment
- Report generation

## Process Capture and Automation

- Capture and record specific processing tasks as macros
- Directly integrate macros to create highly complex SimTemplate™ CAE processes
- Build complex SimTemplate CAE processes based on SimXpert macros and SimXpert scripting to standardize and automate complete end-to-end analyses.
- Perform batch processing of SimTemplates

## MSC SimEnterprise Integration

- “Out of the box” integration with MSC SimManager and SimDesigner delivers a true Enterprise Simulation solution
- Manage and control simulation processes, templates, analysis data and results
- Deploy best practices throughout the extended enterprise
- Supported by MSC Enterprise Advantage Licensing Program

## System Requirements

SimXpert is supported on Intel and AMD x86 and x86-64 based systems running Microsoft Windows XP Professional (including SP2), Microsoft Vista Ultimate and Enterprise Editions, and Red Hat Enterprise Linux 4 (including Update 3 and Update 4).

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