

# SimWise 4D

## Integrated Motion and Stress Analysis

Are you looking for an engineering tool that will resolve design problems, reduce failures and warranty costs, turn around designs faster, and work with your existing Windows-based 3D CAD system?

SimWise 4D is for design and engineering professionals developing products involving assemblies of 3D parts. By simulating your assemblies in this unique virtual environment, you will produce more creative, robust designs and reduce cycle time.

With SimWise 4D, you can simulate the rigid body dynamics of an assembly, "size" components, determine part interferences and collision response, identify stresses induced by motion, produce physics-based animations, and test your control systems.



### Integrated with Your 3D CAD System

SimWise 4D works, in fully associative mode, with the latest versions of popular CAD applications, including Autodesk Inventor, Creo Elements/Pro, Solid Edge, and SolidWorks. You can customize your SimWise 4D toolbars and buttons to function as they do in your preferred CAD system. Parts, assemblies, and assembly constraints are associatively translated from the CAD system to SimWise 4D.

Geometry from virtually every CAD system can be accessed using standard formats: ACIS, Parasolid, STEP (AP203), IGES, and STL.

Geometry transfer from CAD to SimWise is complete and permits meshing for stress analysis and smooth collisions between bodies.

### A Proven Simulation Tool

SimWise 4D was born when DST acquired a license from MSC Software Corporation to the MSC.visualNastran 4D (vn4D) product. The software traces its roots to the Working Model 3D product developed by Knowledge Revolution, which was acquired by MSC in 1999, extended to include FEA capabilities, and renamed Working Model 4D. It has found tens of thousands of users among engineering professionals, students, and educators.

### Capabilities

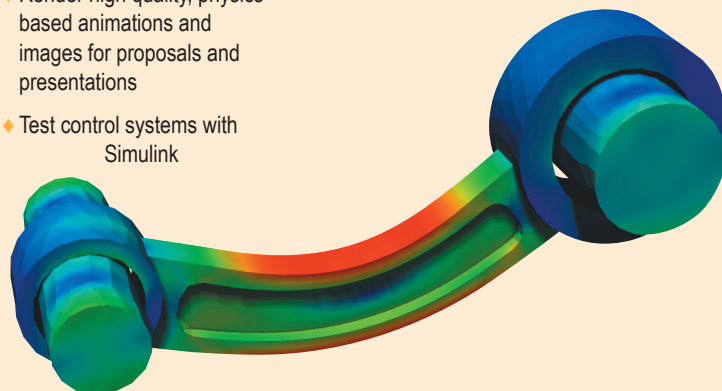
SimWise 4D is a complete simulation solution. It enables you to:

- ◆ Measure forces, torques, friction, velocity, and collisions
- ◆ Determine vibration modes, buckling, heat transfer
- ◆ Automatically calculate loads and stresses throughout the assembly
- ◆ Render high quality, physics-based animations and images for proposals and presentations
- ◆ Test control systems with Simulink

### Benefits

SimWise 4D saves you time and money by increasing your productivity. It can help you:

- ◆ Get to market faster
- ◆ Reduce the number of physical prototypes
- ◆ Decrease warranty costs
- ◆ Improve product quality



### How to Get Started

Download a free evaluation version of SimWise 4D at our website. An interactive multimedia tour guides you through basic concepts, and lets start your own simulation and analysis projects. Get the evaluation software at: [www.design-simulation.com/SimWise4D](http://www.design-simulation.com/SimWise4D)

# SimWise 4D Integrated Motion and Stress Analysis

## Measurable Parameters

Velocities, accelerations and displacements

Force and torque

Friction force, collisions

Interference detection and closest distance between bodies

## Motion Drivers

Motor and actuators

Point forces, torques, distributed forces, pressure

Table input, sliders, Simulink controls

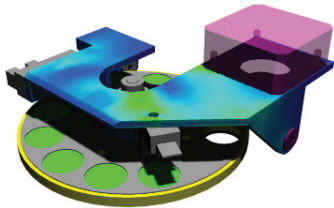
## FEA

Stress, strain, deflection, vibration, buckling

Heat transfer, h-adaptivity

FEA results meter and factor of safety plots

Advanced mesh control



## Constraints

Rigid, revolute, spherical, curved slot, planar

Rods, ropes, springs, gears, belts

Bushings

Generic (user-defined)

Fixed constants on body faces for FEA



## Integrated Motion and Stress Analysis

Converts joint forces to distributed loads

Transfers inertial information for stress analysis of parts

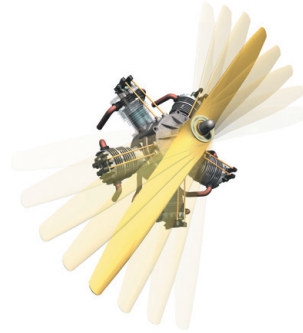
Calculates stress and strain at every time step

Utilizes finite element technology to solve redundantly constrained assemblies

## Annotation and Dimensioning

Text and pointer annotations, vectors

Distance and radii dimensions



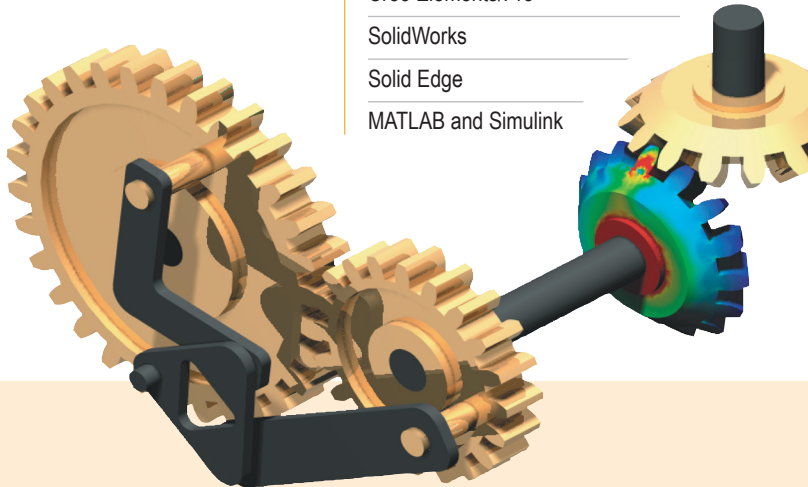
## Animation Capabilities

Flexible key framing and animations of exploded assemblies

Shadows, surface rendering, and texture mapping

Clipping planes to "cut away" sections

AVI video creation



## Output

Meter data from simulations in MS Excel format

Snapshot tool automatically creates JPG, TIF, and BMP image files

DAT files

VRML and HTML files for web distribution

Simulation reports

## Ease-of-Use Features

Getting Started

Online Tutorial Guide

CAD Environment Emulation

Transient Zoom

File Open Preview

Paint the Constraint

"What's This?" pop-up instant help

## Software Support

Autodesk Inventor

Creo Elements/Pro

SolidWorks

Solid Edge

MATLAB and Simulink



## Try it free!

Download your SimWise 4D evaluation software at:  
[www.design-simulation.com/SimWise4D](http://www.design-simulation.com/SimWise4D)

## Questions?

To learn more about SimWise 4D, please call us at:  
1.800.766.6615 or 1.734.446.6935

## Ready to buy?

Call us today. Or purchase SimWise 4D online at:  
[www.design-simulation.com/purchase](http://www.design-simulation.com/purchase)

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