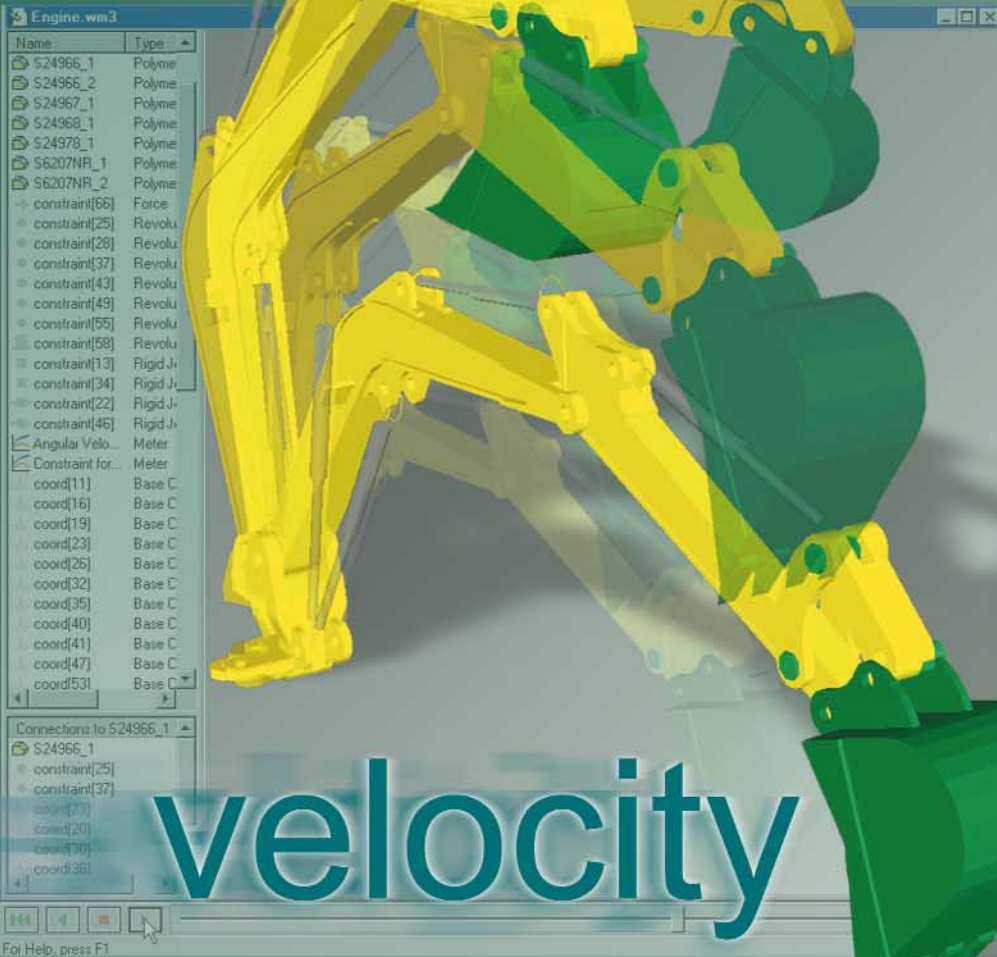


Working Model® 3D

for
Mechanical Desktop®



Your design looks good on paper...but does it work?

CAD lets you create the form and fit of your design: geometry, dimensions, drawings. But what about function? The true test of a design is whether it performs as intended; that's where Working Model 3D comes in.

The Standard in Kinematic and Dynamic Motion Simulation for the Desktop

Working Model 3D sets the standard as the leading motion simulation solution for the desktop. Thousands of Mechanical designers and engineers around the world are choosing Working Model to simulate and explore the kinematic and dynamic behavior of a wide range of mechanical assemblies and mechanisms, from vehicle suspensions to copiers to conveyor systems.

Easy To Use and Learn Windows-based Simulation

The most complete 3D motion simulation product in the world, is also the easiest to use and learn. Working Model 3D is the only computer-aided engineering (CAE) tool that intuitively merges modeling, simulation, and analysis under one consistent Windows interface.

Avoid Costly Errors: Save Money and Reduce Time to Market

Working Model turns your CAD model into a software prototype that you can roll, bounce, slide, wiggle and collide, allowing you to measure, analyze and refine problem areas in your design. All on the computer; all before building a physical prototype.

You'll be solving complex motion problems in a matter of hours or days, rather than weeks or months. Getting your products to market faster, saving you time, money, and best of all, beating your competition, is what Working Model 3D is all about.

 Autodesk

Mechanical Applications Initiative Partner

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Working Model® 3D for Mechanical Desktop®

UNITS SYSTEMS AND FORMULAS

- SI
- English
- CGS
- Custom

Automatically determines appropriate units for entered formulas or constant values.

An embedded formula language features a full set of mathematical and arithmetic functions to customize the simulation model.

MECHANICAL DESKTOP INTEGRATION

Automatic Constraint Mapping™ (ACM) technology expands your Mechanical Desktop assembly into a functioning "Working Model" by automatically mapping geometry and assembly constraints into a motion model with true mechanical joints.

PHYSICAL PROPERTIES AND BODIES

Body properties include: mass, density, volume, geometry, center of mass, moment of inertia, position and orientation, velocity and angular velocity, and coefficients of restitution and friction.

Display vectors to visualize the magnitude and direction of a velocity or angular velocity; acceleration or angular acceleration; force or torque.

Track the motion path of a body.

Bodies may be set to penetrate or collide with other bodies.

Predefine the trajectory of a body with the Prescribed Motion feature to enable bodies to move according to user-defined formulas or tables rather than the laws of physics.

CONSTRAINTS

- Rigid, revolute, and spherical joint
- Rigid, revolute, and spherical slot joint
- Rigid, revolute, and spherical planar joint
- Parallel joint
- Rod
- Rope
- Separator
- Linear and revolute spring/damper
- Generic joint (user defined constraints)

Constraints and drivers are defined by numeric or equation input in the formula editor, or with tabular data.

Joint limits establish minimum and maximum positions.

Examine relationships among bodies, subassemblies, and constraints with the Constraint Navigator to verify and modify the simulation model.

MOTION DRIVERS

- Motor
- Actuator
- Force
- Torque

Interactive sliders simulate real-time input.

Tight associative integration with Mechanical Desktop allows you to iteratively refine your design and perform real-time "What If" analyses. When you modify your model in Mechanical Desktop, Working Model automatically updates the motion model, maintaining all constraints, forces, equations, and meters created in Working Model 3D.

SIMULATION CONTROL

Choose between an Euler or Kutta-Merson integrator with fixed or variable time stepping.

Control the accuracy of your simulation by modifying integration and animation steps and configuration tolerances.

Run simulations in a gravity field, turn gravity off, or modify the direction and magnitude of the gravitational force.

Run, stop, reset, single step, or pause the simulation at any time.

MEASURABLE PARAMETERS

- Position
- Velocity
- Acceleration
- Linear Momentum
- Orientation
- Angular velocity
- Angular acceleration
- Constraint tension, length, displacement, force, and torque
- Contact force
- Contact impulse
- Friction force

Measure any constraint, part, or point.

Record and display simulation data in real-time with graphical and digital meters.

VIEW CONTROLS

Rendered modes:

- Wireframe
- Shaded

ADDITIONAL CAD INTERFACES

In addition to the tightly coupled ACM interface with Mechanical Desktop, Working Model interfaces to a variety of other CAD systems via support for the following file formats:

- SAT (ACIS)
- STL

OUTPUT

- Video AVI files to play back an animation run of your simulation.
- VRML 2.0 compliant files to allow others to view a fully animated simulation on the web.
- Meter data taken during a simulation to a tab-delimited text file for further analysis.

Automated Load Transfer™ (ALT) allows you to determine if parts will fail by writing a file containing inertial and load information suitable for use with FEA packages.

OLE Automation support provides access to Working Model 3D APIs for expanded simulation control. Create links to Matlab, Excel, and other applications using Visual Basic.

PRINTING

Print an image of your simulation or of your meter data (graph or digital format).

SYSTEM REQUIREMENTS

- Microsoft Windows® NT 4.0 or higher, Windows 95 or higher
- Pentium-based PC
- 32 MB RAM Minimum
- Video card and monitor capable of displaying 256 colors or more
- CD-ROM drive (installation only)
- Mechanical Desktop 3 or higher

800.766.6615

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