

SimWise Motion

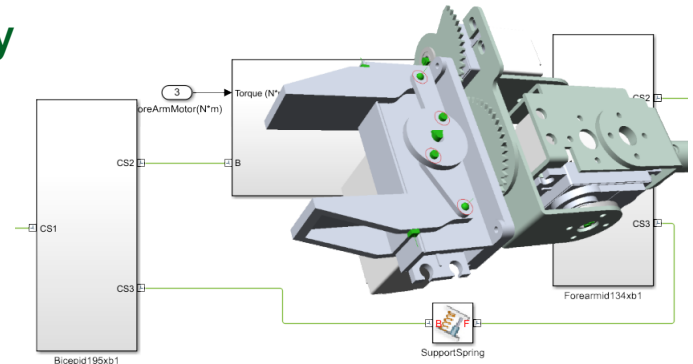
Connect CAD to Simscape Multibody

If you are using Simscape Multibody and need to simulate mechanical models that are defined in a CAD system, you understand the challenges that are involved in translating the CAD model to Simscape Multibody, debugging the multibody model so that it performs as it should, and dealing with updates to the CAD assembly later in the process.

SimWise provides a solution to all of these issues by providing a seamless bridge between CAD and Simscape Multibody. It provides an easy-to-use graphical environment for transforming a CAD assembly into a simulation-ready multibody model. Once you are satisfied with the SimWise multibody model, you can transfer that model directly into Simscape Multibody.

When the CAD model is opened in SimWise, the geometry, assembly structure, and mass properties are all transferred to the SimWise 3D graphical environment. Some CAD systems can also have their assembly constraints read, and these will be converted to SimWise constraints.

SimWise also supports a complete set of Motion specific entities that can be added to the model, culminating in a complete, simulation ready motion model. SimWise can validate the motion model by running a simulation within SimWise, ensuring that when the model is transferred to Simscape Multibody, it is complete and ready to be used.



Benefits

- Significant time reduction moving from CAD to Simscape Multibody. Model definition now takes minutes or hours.
- Utilizes existing CAD data, no need to recreate.
- Transfer a validated and complete motion model to Simscape Multibody, immediately ready for use in a multi-domain simulation.
- The right tool for the right job. CAD for parts/assembly definition, SimWise for multibody definition, Simscape Multibody for simulation and integration with control systems.
- Allows Simscape Multibody to be used earlier in the design cycle because design changes are handled easily.

Integrated with Your 3D CAD System

SimWise works, in fully associative mode, with the latest versions of popular CAD applications, including Autodesk Inventor, PTC Creo Elements/Pro, Solid Edge, SOLIDWORKS, CATIA, Siemens NX, Onshape, Spaceclaim, and Geomagic Design.

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

SimWise uses a precise solid modelling engine so mass and inertia properties can come from the CAD system if they are available or SimWise can calculate them from the geometry.

Changes to the CAD model can be re-imported into SimWise and the model will be updated, preserving any Motion entities that were added. The SimWise model can be re-exported to Simscape Multibody.

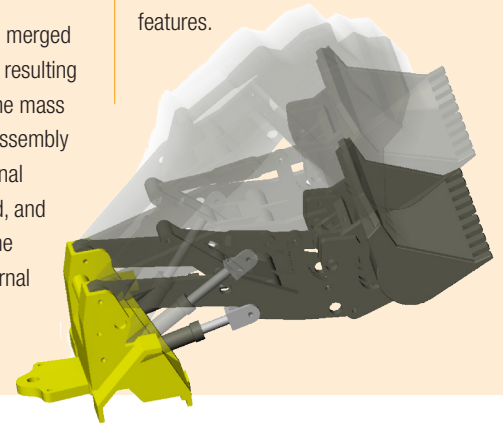
Modelling Tools

The **constraint navigator** steps through each constraint in the model, showing the two parts it connects and allowing that constraint to be edited directly.

Subassemblies can be merged into a single body. The resulting body will have the same mass properties as the subassembly that generated it. Internal constraints are deleted, and constraints between the subassembly and external parts are maintained.

Feature Detection

SimWise employs feature detection to identify the faces, edges, and vertices of the imported CAD model. Motion entities can be attached to these features.



How to Get Started

Download a free evaluation version of SimWise at our website. An interactive multimedia tour guides you through basic concepts, and lets start your own projects. Get the evaluation software at:

www.design-simulation.com/SimWise4D/swssmbeval.php

SimWise Motion Connect CAD to Simscape Multibody

Constraints

Rigid, revolute, spherical, curved slot, planar

Rods, ropes, springs, gears, belts

Bushings

Generic (user-defined)

Motion Drivers

Motor and actuators

Position, velocity, acceleration or force drivers

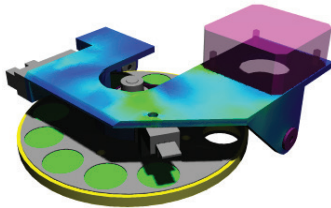
Table input, sliders, Simulink controls

Forces

Forces can be applied at a point, distributed along an edge, or across a surface

Linear and torsions springs

Linear and torsion dampers



Coords

3D local coordinate systems

Motion entities attached to coords

Coords attached to geometry

Coords move with geometry across a CAD update



Direct CAD Access

CATIA

Siemens NX

PTC Creo Elements

SOLIDWORKS

Autodesk Inventor

Solid Edge

Access via Neutral File

ACIS

Parasolids

STEP

IGES

CAD Access via Plug-in

SOLIDWORKS

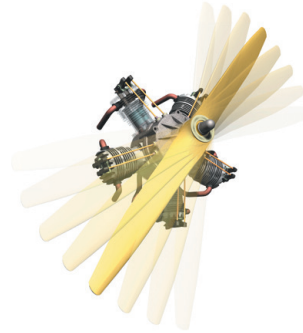
Solid Edge

Autodesk Inventor

Onshape

Spaceclaim

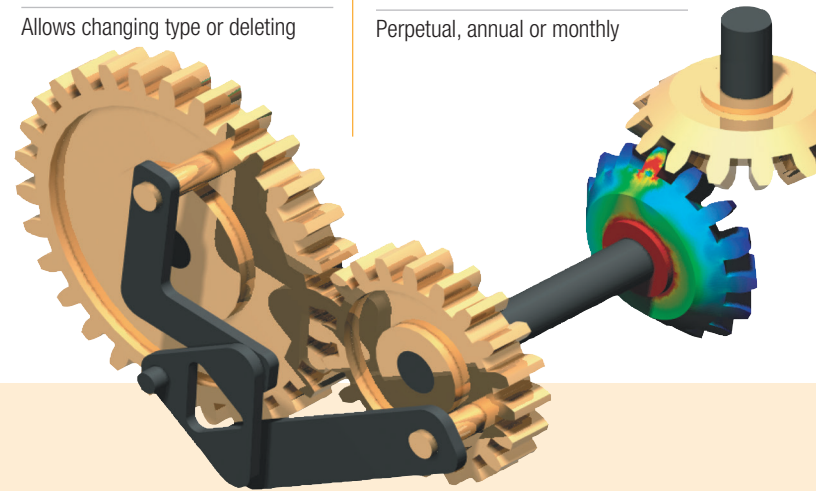
Geomagic Design



Constraint Navigator

Steps through each constraint in an imported model

Allows changing type or deleting



Model Organization

Create subassemblies

Drag parts between subassemblies

Convert subassembly to single part preserving mass properties

Model Validation

Drag or rotate a part with the mouse and the model will move accordingly

SimWise dynamic engine can run the multibody simulation

Animate or step through positions to verify intended motion

Transfer to Simscape Multibody

Initiated from SimWise or from MATLAB

Geometry and structure transferred

Motion entities transferred

Simscape Multibody model automatically built

Licensing

Nodelocked, dongle, network

Perpetual, annual or monthly



Try it free!

Download your SimWise Motion evaluation software at:
www.design-simulation.com/SimWise4D/swssmbeval.php

Questions?

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

Ready to buy?

Call us today. Or purchase SimWise Motion online at:
www.design-simulation.com/purchase

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