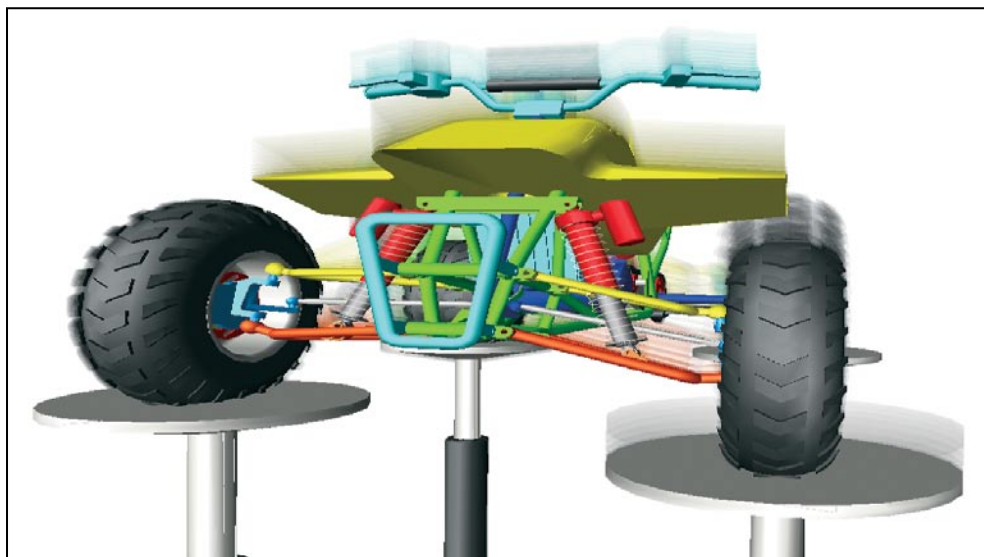


Adams

Engineering Productivity through Advanced Multi-Body Simulation



Overview

Adams is the world's most widely used mechanical system simulation software. It lets you build and test virtual prototypes, realistically simulating on your computer, both visually and mathematically, the full-motion behavior of your complex mechanical system designs.

Modeling

The Adams/View interface and point-and-click operation make it easy for even novice users to create complete, accurate mechanical models. Drag-and-drop positioning lets you sketch a rough model without having to define numerical coordinates at every step.

With Adams/View, you build a model the same way you build a physical system – by creating and assembling parts, connecting them with joints, and driving them with motion generators. You can also define forces, such as springs or friction, and apply them between individual parts in your full system design. You can also give your Adams model parametric properties, enabling you to select a design variable, sweep it through a range of values, and initiate a set of parametric simulations to study design sensitivities.

If you choose to build your model in your preferred CAD environment, you can import its geometry directly into Adams through any of the industry standards interfaces provided by the optional Adams/Exchange module.

Solution

Adams 2007r1 provides the robust solution engine to solve your mechanical system model. The software checks your model and automatically formulates and solves the equations of motion for kinematic, static, quasi-static, or dynamic simulations.

Capabilities

- Build your virtual prototype by creating or importing component geometry in wire-frame or 3D solids.
- Extensive library of joints and constraints to define part connectivity.
- Mimic your product's operating environment by defining internal and external forces acting on the assembly.
- Automatically incorporate 2D and 3D contacts in your model.
- Refine your models with part flexibility, automatic control systems, joint friction and slip, hydraulic and pneumatic actuators, and parametric design relationships.
- Define objectives, constraints, and variables, then automatically iterate to your optimal design. .
- Obtain nonlinear results for testing complex, large-motion designs.

Benefits

- Improve quality by quickly optimizing full-system performance.
- Increase innovation by exploring many design concepts quickly and efficiently.
- Drive manufacturing cost down by moving simulation technologies to the front of the new product development cycle.
- Explore more design alternatives, predict system-level functional performance, and accurately assess lifecycle service (safety, fatigue, durability) issues before making costly manufacturing commitments.

With Adams, you don't have to wait until the computations are complete to begin seeing the results of your simulation. You can view animations and plots – and continue to refine your design – even as your simulations is running, saving valuable time.

For design optimization, you can define your variables, constraints, and design objectives, then have Adams iterate automatically to the design, providing optimal system performance.

Visualization

An important advantage of virtual prototyping is the ability it gives you to easily modify design variables and instantly visualize the effects of these design changes on total system performance. Adams OpenGL graphics port allows fast high-quality animation and detailed plotting for viewing the results of your simulation. You can animate your model in wire frame or shaded modes, and isolate a single frame or superimpose a series of images.

Adams then lets you plot you model's behavior (displacements, velocities, accelerations, forces) and compare the results to other simulations.

Adams Modules

The following modules enhance the capabilities of Adams by allowing the simulation of systems ranging from simple to sophisticated. The following section describes each module in more detail.

Adams/Flex

Adams/Flex allows the incorporation of component flexibility within your full-system simulations. Adding flexibility provides better insight into the behavior and life of your designs, allowing you to deliver higher quality products faster. Adams/Flex allows the use of existing linear FE models and is tightly integrated with MD Nastran and MD Patran.

Adams/Durability

Adams/Durability extends the capability offered by Adams/Flex to recover stresses on flexible bodies. Results from an Adams solution are combined with modal stresses from FE to more accurately predict the stress in a flexible body. These stresses and strains can then be used to complete a life/damage calculation with fatigue prediction software such as Fatigue.

Adams/Vibration

Adams/Vibration allows you to study forced vibration of your Adams models using frequency domain analysis. Adams/Vibration results can be used in NVH studies to predict the impact of vibrations on passenger comfort in an automobile train, plane or other vehicle. You can also include the effects of controls on the system behavior.

Adams/Controls

Adams/Controls helps you easily integrate the worlds of motion simulation and control system design in true Multi-Discipline fashion. With this Adams Module, you can incorporate your Adams models within

block diagrams in your preferred control system design software. Alternatively, you can directly import actuators and/or controllers from the controls design software into the Adams simulation environment. Currently, Adams/Controls support both Easy5 from MSC.Software and Matlab/Simulink from The Math Works, Inc.

Adams/Exchange

Adams/Exchange allows the import of export of common geometry formats into and out of Adams. There is no need to recreate model geometry each time you transfer between CEA tools. You have your choice of Parasolid, STEP, IGES, and DWG/DXF formats. When you import you model from your preferred CAD system, you can use the model's geometric features to quickly position forces and constraints for your motion simulation.

Corporate

MSC.Software Corporation
2 MacArthur Place
Santa Ana, California 92707
Telephone 714 540 8900

www.mscsoftware.com

Europe, Middle East, Africa

MSC.Software GmbH
Am Moosfeld 13
81829 Munich, Germany
Telephone 49 89 431 98 70

Asia-Pacific

MSC.Software Japan LTD.
Shinjuku First West 8F
23-7 Nishi Shinjuku
1-Chome, Shinjuku-Ku
Tokyo, Japan 160-0023
Telephone 81 3 6911 1200