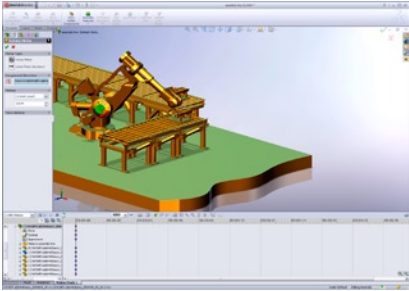


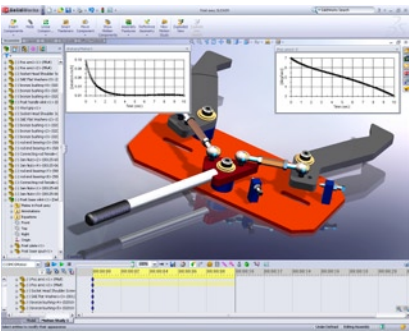
COSMOSMotion

POWERFUL, EASY-TO-USE PHYSICS-BASED MOTION SIMULATION FOR SOLIDWORKS® USERS

COSMOSMotion™ allows you to perform motion analysis directly from within the SolidWorks interface, eliminating intermediary setup steps. Tight integration with COSMOSWorks® software enables you to design, simulate, and analyze a mechanical assembly in a single, seamless operation.



COSMOSMotion assists in the validation of key factors in mechanical designs, such as torque, displacement and performance.



COSMOSMotion can estimate the clamping force required on the handle to eject a part moving in the automotive assembly line for spot inspection.

COSMOSMotion simulates the mechanical operations of motorized assemblies and the physical forces they generate. By determining factors such as power consumption and interference between moving parts, COSMOSMotion helps you determine if your designs will fail, when parts will break, and whether or not they will cause safety hazards.

Leverage the power of SolidWorks. Complete and seamless integration of COSMOSMotion inside SolidWorks software allows existing assembly information to be used to build motion simulation studies.

- Automatic use of SolidWorks assembly components and mates without having to re-define them
- Single work environment encompassing motion tools like COSMOSMotion, physical simulation, and SolidWorks assembly motion provide a scalable approach to solving motion problems
- Automatic transfer of material properties defined in SolidWorks
- Easily duplicate or create studies to investigate multiple "what if" motion simulation studies

Transfer loads seamlessly. With the seamless transfer of loads from COSMOSMotion to COSMOSWorks, you can visualize stress and displacements on a component, at a single time instance or for the entire simulation cycle.

Simulate real-world operating conditions. By combining physics-based motion with assembly information from SolidWorks, COSMOSMotion can be used in a broad span of industry applications.

- Estimate peak motor torque when performing tasks like positioning antenna reflectors, opening and closing security gates, handling materials, and raising and lowering scissors-type lift tables. Also see how friction can increase power requirements and actuator size.
- Understand robotics performance during operation: installing windshields, pick and place electronic components on circuit boards in electronics plants.
- Optimize or minimize the force imbalance of a rotating system in orbital sanders, sewing machines, shaker beds, driveshafts, and more.
- Change the length of backhoe linkages to provide better digging performance.
- Generate CAM curves (profiles) employed in automatic feed mechanisms and screw machines.
- Represent interactions between various gears (spurs, worm, helical, and rack-and-pinion) used in different kinds of power transmission or motion control.
- Perform basic suspension tuning for racing applications.

Primary industries served

- Aerospace
- Automotive
- Consumer products
- Electromechanical
- Entertainment
- Heavy equipment
- Machine design
- Medical
- Off-Highway

Supported languages

- Chinese
- Czech
- English
- French
- German
- Italian
- Japanese
- Korean
- Polish
- Portuguese
- Russian
- Spanish

Associate physics-based models to engineering conditions. COSMOSMotion offers several types of joint and force options to represent real-life operating conditions.

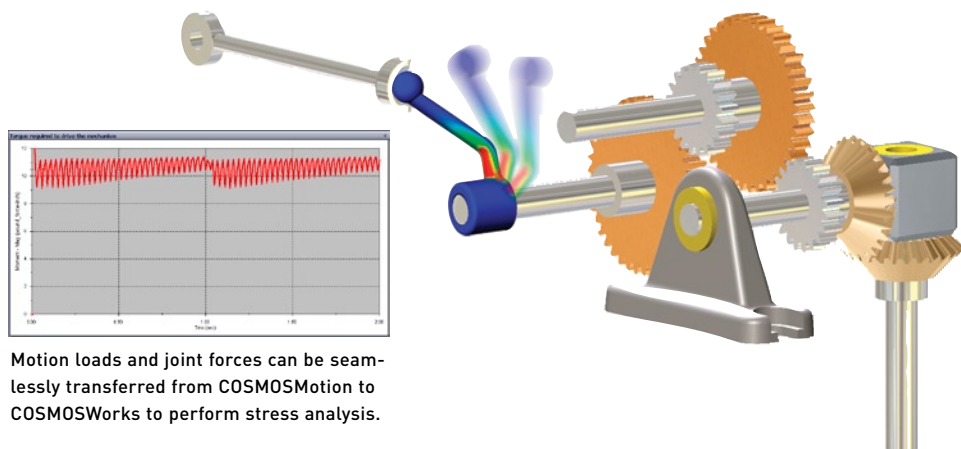
- Use SolidWorks mates to create various compound joints to represent conditions like hinge, screw, spherical, cylindrical, planar, and universal.
- Use action-only force to control the acceleration rate and velocity when designing actuators.
- Apply constant, oscillating data points (spline), and step forcing functions to motors and forces.
- Switch motors on and off during the mechanism range of motion. Suppress and unsuppress mates to enforce positions on parts.
- Create joint couplers (kinematic gears) to allow motion between various types of gears for power transmission.
- Define linear and nonlinear springs in applications lacking torsional and flexural rigidity when extended.
- Define 3D contacts (with static and dynamic friction) to capture interaction between two or more contacting parts.
- Include damping effects to reduce the amplitude of oscillations of an oscillating system.

Interpret results with powerful and intuitive visualization tools. Once you have completed the motion simulation run, COSMOSMotion offers a variety of results visualization tools that allow you to gain valuable insight into the performance of your design.

- Create XY plots of numerical data for the entire simulation cycle.
- Represent multiple XY plots in the same graph.
- Display displacement, velocity, acceleration, and force vectors at joint locations.
- Display the trace of any point of the body during simulation and generate a reference curve directly on a SolidWorks part.
- Check for colliding parts while the assembly moves.

Collaborate and share analysis results. COSMOSMotion makes it easy to collaborate and share analysis results effectively with everyone involved in the product development process.

- Use COSMOSMotion AVI or eDrawings® formats to capture and communicate the physical motion to others.
- Generate graphs with numerical data in Microsoft® Excel format in any coordinate system.
- Export graphs using a different reference frame (part).



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