“What if?” is the question that fuels innovation. SolidWorks® Simulation software takes the risk out of “what if” and replaces it with an infinite canvas to virtually test new ideas and bring products to market faster.

SolidWorks Simulation is a complete suite of structural, functional, and flow analysis applications for every designer in the product development process. The software is easy to use, yet powerful enough to tackle the most complex design issues. It helps you predict the performance of your design under real-world operating conditions and to detect problems and correct them before prototyping, testing, and production.

Integrated with the SolidWorks 3D-CAD environment, SolidWorks Simulation unleashes your innovation by letting you experiment with new configurations and materials as you design—when innovation is free, but potential gains are worth millions.
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SOLIDWORKS® Flow Simulation software is a powerful computational fluid dynamics (CFD) tool that enables you to quickly and easily simulate fluid flow, heat transfer, and fluid forces that are critical to the success of your design.

Gain valuable insights with powerful and intuitive results visualization tools:

- List results and automatically export data to Microsoft Excel
- Graph results variation along any SolidWorks sketch
- Apply time- and coordinate-dependent boundary conditions and heat sources
- Apply inlet velocities, pressures, mass or volume flow rates, and fans
- Solve flow problems involving non-Newtonian fluids, such as blood and plastic
- Examine the flow trajectory inside or around the model with animated bands
- Couple flow with thermal analysis, simulating convection, conduction, and radiation effects
- Gain greater control of model actuators with the new servo motors
- Simulate various load scenarios
- Study and optimize assemblies of all sizes
- Transition easily between linear and nonlinear simulations
- Use Trend Tracker and Design Insight plots to drive optimal changes as you work
- Calculate acceleration loads, stresses, and displacements as the components hit the floor or each other
- Design better products with a comprehensive simulation tool
- Simulate the real-world response of your design has never been easier. With the full-featured suite of tools in SolidWorks® Simulation Premium, you can reduce the number of assumptions required in a world that is rarely linear or static.

SOLIDWORKS SIMULATION PROFESSIONAL

Perform virtual testing and analysis of parts and assemblies.

- Simulate composite materials, including glass, carbon, and other elastomers
- Conduct an elasto-plastic analysis to study the onset of yield as well as plastic deformation
- Examine creep effects and material changes with temperature
- Use 3D CAD models without modification to generate 2D sections
- Use Trend Tracker and Design Insight plots to drive optimal changes as you work
- Study stress, velocity, and acceleration response
- Plot translations versus time (dynamic response) at specified locations due to time-varying loads.
- Study the effects of cyclic loading on parts and assemblies:
  - Conduct a fatigue analysis to predict the number of cycles to failure
  - Study products made with nonlinear materials:
  - Simulate products made with nonlinear materials:
  - Study stress, velocity, and acceleration response
  - Create plane stress, plane strain, and axisymmetric nonlinear analysis
  - Use plane stress, plane strain, and axisymmetric sections at any location.
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SOLIDWORKS SIMULATION PREMIUM

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SOLIDWORKS® Flow Simulation Professional extends the capabilities of SolidWorks Simulation, so you can expand your virtual testing environment to evaluate the longevity of your design. It also allows you to use complex real-world scenarios.

Study and optimize assemblies of all sizes:
- Analyze results in both linear and nonlinear simulations
- Perform dynamic analyses of parts and assemblies:
- Study time-history loading, steady-state harmonic input, response spectrum, and random vibration excitations
- Use peak loads from testing or 3D CAD models
- Study nonlinear stress, deformation, and random vibration excitations
- Study products made with nonlinear materials:
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**SOLIDWORKS FLOW SIMULATION**

Easily simulate liquid and gas flow within SolidWorks.

- Easily simulate liquid and gas flow within SolidWorks
- SOLIDWORKS FLOW SIMULATION
- Solve large-scale problems quickly and efficiently with two vertical solutions:
  - Gain valuable insights with powerful and intuitive results visualization tools:
  - Leverage an unlimited combination of real-world operating conditions:
  - Solve flow problems involving non-Newtonian fluids, such as blood and plastics:
  - Simulate the rotation of impellers and fans起こりかけている流れをシミュレートする。
  - Leverage an unlimited combination of real-world operating conditions:
  - Solve flow problems involving non-Newtonian fluids, such as blood and plastics:
- Examine the flow trajectory inside or around the model with animated bands, such as flow trajectories, section plots, and surface plot data.
- Examine how vibrating or unstable modes can shorten equipment life and cause unexpected failures.

**SOLIDWORKS SIMULATION PROFESSIONAL**

Perform virtual testing and analysis of parts and assemblies.

- SolidWorks® Simulation Professional extends the capabilities of SolidWorks Simulation, so you can expand your virtual testing environment to evaluate the longevity of your design. It also allows you to use more complex tool scenarios.
- Study and optimize assemblies at all stages:
  - Evaluate forces and stresses between contacting parts, including friction:
  - Use connectors or virtual fasteners to model bolts, pins, springs, and bearings:
  - Band components with closures or gaps, without modification:
  - Apply bearing loads, forces, pressures, and torques:
  - Use Trend Tracker and Design Insight plots to drive optimal changes as you work:
  - Create plane stress, plane strain, and axisymmetric linear static analysis:
- Simulate drop tests using your part or assembly:
  - Calculate acceleration load, stresses, and displacements as the component hits the floor or other objects:
- Analyze assembly motions for process and toolset with event-based simulations:
  - Utilize the newly integrated user interface to define motion studies based on model events:
  - Trigger actions through new motion sensors, time, or the completion of a previous task:
- Gain greater control of model actuators with the new servo motors:
- Understand the effects of temperature changes on parts and assemblies:
  - Study conduction, convection, and radiation heat transfer:
  - Utilize isotropic, orthotropic, and temperature-dependent material properties:
- Simulate vibration or buckling in your designs:
  - Examine well-known vibration modes or complex vibration modes to understand behavior and prevent failures:
- Study the effects of cycling load on your product lives:
  - Check a system's expected life or accumulated damage after a specified number of cycles:
- Investigate designs with hyperelastic materials, such as rubbers, silicones, and other elastomers:
- Examine the performance of composite materials, including sandwich, graphite, and carbon-fiber composites:
- Easily tackle complex problems with the 2D planar simplification tool:
  - Create plane stress, plane strain, and axisymmetric nonlinear analysis:
  - Use JD CFD model without modification to generate 2D sections:

**SOLIDWORKS SIMULATION PREMIUM**

Design better products with a comprehensive simulation tool.

- Simulate the real-world response of your design has never been easier. With the full-featured suite of tools in SolidWorks® Simulation Premium, you can reduce the number of physical prototypes and reduce your risk and costs.
- SolidWorks Simulation Premium software balances the depth and the ease of use of SolidWorks. SolidWorks® Simulation Professional with additional capabilities, including a powerful set of tools for simulating nonlinear and dynamic responses as well as composite materials:
- Capture the effects of large displacements on your designs:
  - Easily simulate large deformations caused by overloads, contact, and flexible materials:
  - Transition slowly between linear and nonlinear simulations:
- Study nonlinear buckling and snap-through events:
- Simulate products made with nonlinear materials:
  - Investigate designs with hyperelastic materials, such as rubbers, silicones, and other elastomers:
  - Conduct an electro-plastic analysis to study the onset of yield as well as plastic deformation:
- Examine stress egress effects and material changes with temperature:
- Perform dynamic analyses of parts and assemblies:
  - Simulate time-history loading, steady-state harmonic input, response spectrum, and random vibration excitations:
  - Import excitation curves of forces in random vibration analysis:
  - Study stress, displacement, velocity, and acceleration with time, as well as NURBS and FID data for strain, displacement, velocity, and acceleration:
- Simulate composite materials:
  - Utilize simulation to leverage these advanced materials in an increasing number of applications:
  - Examine the effects of stress on consumer goods to advanced aerospace structures:
  - Use multidisciplinary studies to examine the effects of each layer with its own material properties, thickness, and orientation:
- Use the revolutionary user interface to dynamically control and display animation directly on your SolidWorks model:
  - Utilize handhelds and graphics or carbon-fiber composites, including honeycomb and filled materials:
  - Quickly and easily create simulations of problems that occur with the new 2D planar simplification tool.

**Electronics Lab**

- Evaluate components' thermal properties and cooling requirements:
  - Study the effects of cyclic loading on your product lives:
  - Check a system's expected life or accumulated damage after a specified number of cycles:
- Examine how vibrating or unstable modes can shorten equipment life and cause unexpected failures:
- Examine well-known vibration modes or complex vibration modes to understand behavior and prevent failures:
- Study the effects of cycling load on your product lives:
  - Check a system's expected life or accumulated damage after a specified number of cycles:
- Compare performance to real-world data:
  - Use JD CFD model without modification to generate 2D sections:
- Evaluate composite materials, including sandwich, graphite, and carbon-fiber composites:
- Easily tackle complex problems with the 2D planar simplification tool:
  - Create plane stress, plane strain, and axisymmetric nonlinear analysis:
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**SolidWorks® Flow Simulation**

Easily simulate liquid and gas flow within SolidWorks

**SolidWorks® Flow Simulation Professional**

Perform virtual testing and analysis of parts and assemblies

**SolidWorks® Simulation**

Design better products with a comprehensive simulation tool

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**SolidWorks Simulation Premium**

LT: Low Feature Complete Simulation Environment for limited use.

Professional: Full feature set based on SolidWorks LT with additional capabilities, including a powerful set of tools for simulating nonlinear and dynamic responses as well as composite materials.

**Capture the effects of large displacements on your designs:**

- Evaluate large deformations caused by overstress, contact, and flexible materials.
- Transition easily between linear and nonlinear simulations.

**Simulate products made with nonlinear materials:**

- Investigate designs with hypersonic materials, such as rubbers, silicones, and other elastomers.
- Conduct an elastomeric analysis to study the onset of yield as well as plastic deformation.
- Examine creep effects and material changes with temperature.

**Perform dynamic analyses of parts and assemblies:**

- Simulate time-history loading, steady-state harmonic input, response spectrum, and random vibratory excitations.
- Interpret excitation forces in terms of random vibration analysis.
- Study stress, displacement, velocity, and acceleration with time, as well as RMS and PSD values for stress, displacement, velocity, and acceleration.

**Simulate composite materials:**

- Utilize simulations to leverage these advanced materials in an increasingly rugged world by simulating the effects of loading on composite materials.
- Simulate multidirectional shell bodies to examine the effect of each layer with its own material properties, thickness, and orientation.
- Use the revolutionary user interface to dynamically control and display ply orientation directly on your SolidWorks model.
- Utilize random and graph or carbon-fiber composites, including homogeneous and laminate ply orientation.

**Easily tackle complex problems with the 2D planar simplification tool:**

- Create plane stress, plane strain, and axisymmetric nonlinear analyses.
- Use 2D CAD models without modification to generate 2D sections.
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