

# SIMULATION

## PRODUCT MATRIX

FEATURES	SOLIDWORKS SIMULATION STANDARD	SOLIDWORKS SIMULATION PROFESSIONAL	SOLIDWORKS SIMULATION PREMIUM	SOLIDWORKS FLOW SIMULATION	SOLIDWORKS FLOW SIMULATION with the HVAC Applications module	SOLIDWORKS FLOW SIMULATION with the Electronic Cooling module
<p>Concurrent Engineering</p> <p><i>Fully Embedded in SolidWorks 3D CAD</i></p> <p><i>Full Associativity with 3D Design Changes</i></p> <p><i>Support SOLIDWORKS Configurations</i></p> <p><i>SOLIDWORKS Material Properties</i></p> <p><i>Support Batch Run</i></p>	▶	▶	▶	▶	▶	▶
<p>Communication</p> <p><i>Customizable simulation report</i></p> <p><i>eDrawings of Simulation results</i></p>	▶	▶	▶	▶	▶	▶
<p>Design Comparison with Parametric Simulation</p> <p><i>Determine the best design option by comparing strengths, design life and weight for SolidWorks Simulation or by comparing fluid flow results for SolidWorks Flow Simulation</i></p>	▶	▶	▶	▶	▶	▶

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<p>Linear Static Simulation for Assembly</p> <p><i>Test the performance of assembly in terms of stress, strain, displacements or Factor of safety. Compare product behavior under static loads to determine critical uses cases and to ensure adequate design strength</i></p>	▶	▶	▶			
<p>Trend Tracker</p> <p><i>Detect trends in results from different iterations of a static study</i></p>	▶	▶	▶			
<p>Time Based Mechanism Simulation</p> <p><i>Test the motion of assembly under time based real-world operating conditions. Visualize the calculated force, velocity, accelerations...during the assembly motion to ensure adequate behavior of product. Use results as a loading for a structural assembly simulation.</i></p>	▶	▶	▶			
<p>Fatigue Simulation</p> <p><i>Evaluate the consumed life of a design submitted to repeated loading (phenomenon known as fatigue). Consider cycles of stress fluctuation which weaken products to ensure adequate design quality. Fatigue curves are available through the SOLIDWORKS Material Web portal</i></p>	▶	▶	▶			
<p>Event-Based Motion Simulation</p> <p><i>Test the motion of assembly with a simulation based on process not time. Actions can be triggered by the completion of a previous task, on time or the activation of a new motion sensor.</i></p>		▶	▶			

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<p>Design Optimization Simulation</p> <p><i>Optimize the design by automatically modifying parametric model geometry to seek a design goal</i></p>		▶	▶			
<p>Frequency Simulation</p> <p><i>Predict and control products natural modes of vibration (frequencies) to avoid potential damaging resonant frequencies. Study the effects of both loads and material choices on product performance</i></p>		▶	▶			
<p>Buckling or Collapse Simulation</p> <p><i>Determine the effect of forces, pressures, gravity and centrifugal loads on thin and slender components maximum buckling strength. Study the effects of material choices on product performance</i></p>		▶	▶			
<p>Thermal Simulation</p> <p><i>Study the impact of thermal loads on designs. Compare temperatures, temperature gradients, and heat flow based on heat generation, conduction, convection, and radiation conditions to ensure the best design option and avoid undesirable thermal conditions like overheating.</i></p>		▶	▶	▶	▶	▶
<p>Pressure Vessel Design Simulation</p> <p><i>Test the performance of Pressure Vessel designs combining the results of static studies with the desired factors.</i></p>		▶	▶			

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<p><b>Drop Test Simulation</b></p> <p><i>Test the performance of a product dropped on a rigid or flexible floor. Define drop height, surface type and orientation to reduce the number of physical prototypes with the virtual drop test simulation.</i></p>		▶	▶			
<p><b>Submodeling Simulation</b></p> <p><i>Analyze the structural performance of critical parts within an assembly with Submodeling Principles. Focus the simulation on a group of bodies in a larger assembly structural analysis by refining the properties of those bodies and ensure a precise performance simulation.</i></p>		▶	▶			
<p><b>2D Simplification</b></p> <p><i>Plane Stress, Plane Strain, Axisymmetric</i></p>		▶	▶			
<p><b>Load Case Manager</b></p> <p><i>Evaluate the effects of various load combinations on your model</i></p>		▶	▶			
<p><b>SOLIDWORKS Material Web Portal</b></p> <p><i>Offers rich library of material properties for linear and non linear analysis as well as Fatigue data</i></p>		▶	▶			
<p><b>Plastic Deformation And Residual Stresses Simulation</b></p> <p><i>Predict and control residual stresses and deformation for non linear material models</i></p>			▶			

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<p>Plastic and Rubber Components Simulation</p> <p><i>Capture the real world behavior of your plastic and rubber parts. Compare the impact of different non linear material choices on design performance. Reduce material costs while still ensuring overall product compliance</i></p>			▶			
<p>Large Displacement Structural Simulation</p> <p><i>Test product performance taking into account geometrical non linearities, large displacements effect on the overall geometric configuration of the structure.</i></p>			▶			
<p>Composites Components Simulation</p> <p><i>Investigate the application and performance of composite materials to design. Compare strength, weight and life or product made of composites</i></p>			▶			
<p>Forced Vibrations Simulation</p> <p><i>Predict and control vibrations or dynamic responses of products. Determine maximum load cases using a choice of integrated studies, including Transient, Harmonic response, Random Response and Response Spectrum Analysis</i></p>			▶			
<p>Nonlinear Dynamics</p> <p><i>Test the performance of products under real world conditions coupling non linear assumptions (displacement, buckling, material) with dynamic response analysis.</i></p>			▶			

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<p><b>Fluid Flow Simulation</b></p> <p><i>Study the flow of liquids (including non Newtonian liquids such as toothpaste, slurry and blood) and gasses inside and around designs, with or without thermal effects. Test the performance of electronic components, cooling systems, valves and regulators, drug delivery systems submitted to fluid flow.</i></p>				▶	▶	▶
<p><b>Comfort Parameters Simulation</b></p> <p><i>Predict the general thermal sensation, degree of discomfort (thermal dissatisfaction) of people in a given environment and estimate air quality by calculating comfort criteria.</i></p>					▶	
<p><b>Advanced Radiation Simulation</b></p> <p><i>Study the impact of thermal loads, in particular based on radiation, on designs containing semi transparent materials such as glass.</i></p>					▶	
<p><b>Electronic Cooling Simulation</b></p> <p><i>Test and improve the thermal performance of your PCBs and electronic components with dedicated electronic cooling tools such as two-resistor component compact module or heat pipe compact module.</i></p>						▶



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