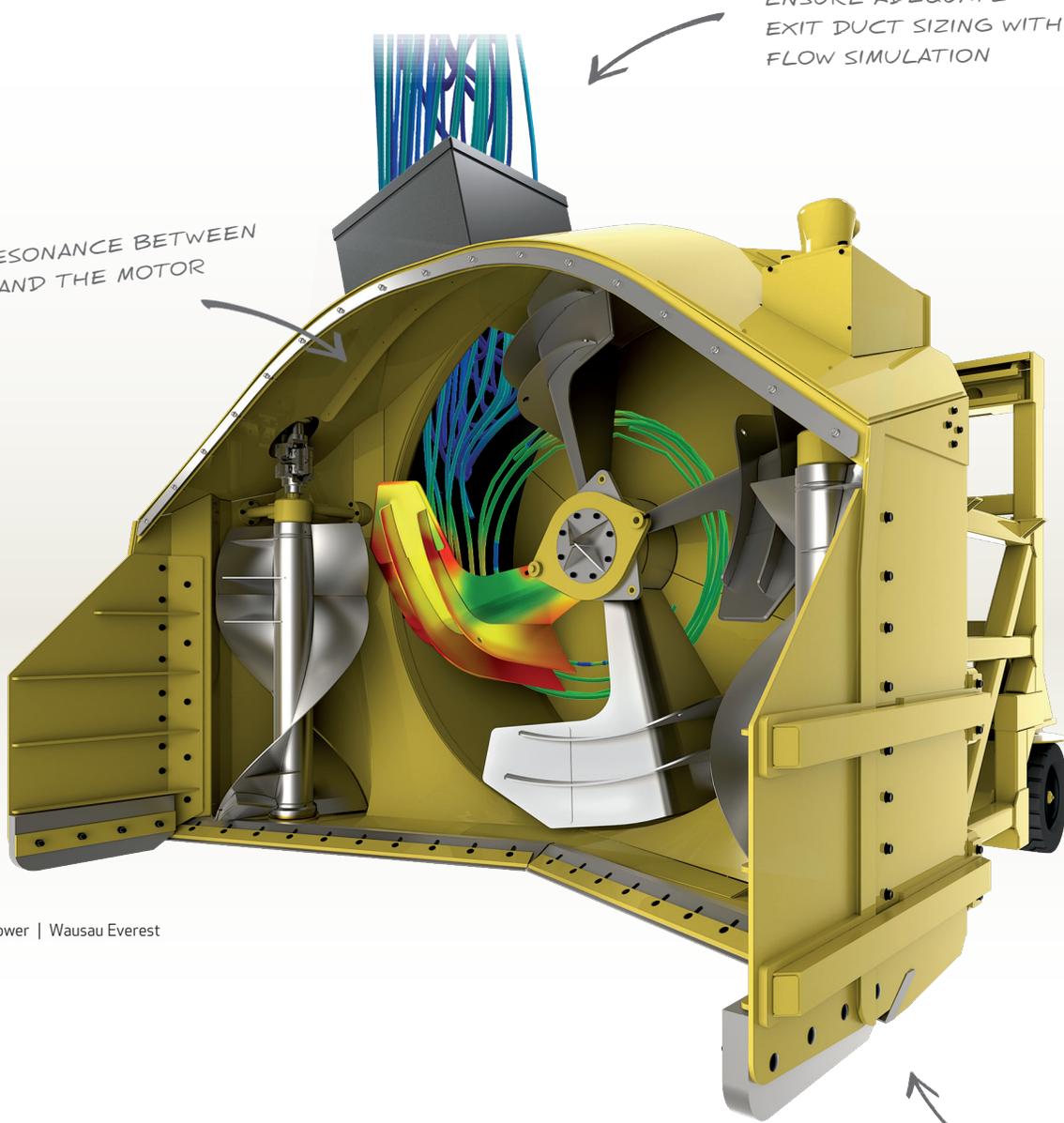


SOLIDWORKS SIMULATION

Drive market-winning innovation without risk

ENSURE ADEQUATE
EXIT DUCT SIZING WITH
FLOW SIMULATION

CHECK RESONANCE BETWEEN
THE FAN AND THE MOTOR



VALIDATE FRAME
STRENGTH FOR IMPACT

Truck Mount Snowblower | Wausau Everest

ADVANCED SIMULATION IS NO LONGER JUST FOR SPECIALISTS

“What if?” It’s the inspiration that fuels innovation—and with SolidWorks® Simulation software, you remove the risk and replace it with a workspace to virtually test your new ideas, develop new designs, and accelerate your products to market.

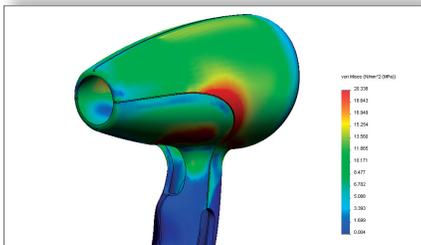
SOLIDWORKS SIMULATION PROFESSIONAL

Perform virtual testing and analysis of parts and assemblies

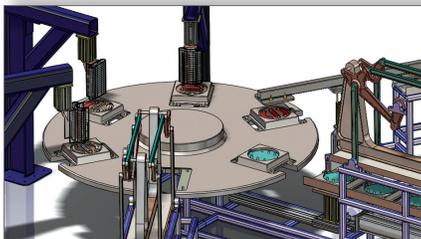
SolidWorks Simulation Professional gives you a powerful virtual testing environment for advanced simulation, so designers can evaluate difficult issues like the lifespan of their designs, complex load scenarios, and multi-physics problems.



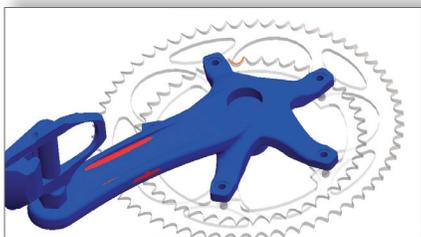
Drive your design with optimization technology to improve product performance.



Determine the structural impact of thermal loads on your design.



Virtually prototype the most challenging machines with event-based motion simulation.



Estimate component life based on calculated or SolidWorks Motion loads.

Verify your design with powerful structural analysis

- Evaluate forces and stresses between contacting parts, including friction
- Apply bearing loads, forces, pressures, and torques
- Optimize designs based on structure, motion, or geometry
- Use connectors or virtual fasteners to model bolts, pins, springs, and bearings
- Activate the Trend Tracker and Design Insight plots to highlight optimal design changes while you work
- Evaluate complex problems early in the design cycle with plane stress, plane strain, and axisymmetric linear static analysis

Understand the effects of temperature on your design

- Study conduction, convection, and radiation heat transfer
- Utilize isotropic, orthotropic, and temperature-dependent material properties
- Determine thermal stresses due to temperature distributions and varying materials

Analyze assembly motion for process and task workflow with event-based simulation

- Define motion studies based on model event and assembly actions
- Trigger actions through new motion sensors, time, or the completion of a previous task
- Evaluate characteristics like actuator force and joint loads for motion optimization
- Gain greater control of model actuators with servomotors

Study the effects of cyclic loading on product life

- Check a system's expected life or accumulated damage after a specified number of cycles
- Import load history data from real physical tests to define loading events

Simulate vibration or buckling in your designs

- Examine how vibrating or unstable modes can shorten equipment life and cause unexpected failures
- Assess the effects of load stiffening on frequency and buckling response

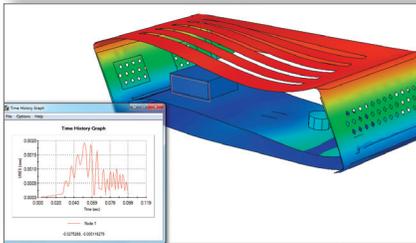
SOLIDWORKS SIMULATION PREMIUM

Get a deeper view of your design with a comprehensive simulation solution

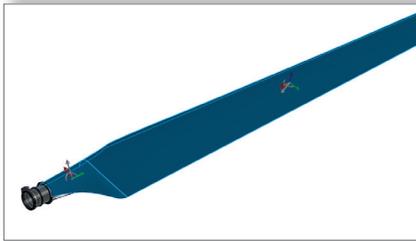
SolidWorks Simulation Premium includes all of the capabilities of SolidWorks Simulation Professional, plus additional features like composite materials and powerful analysis tools for simulating nonlinear and dynamic response.



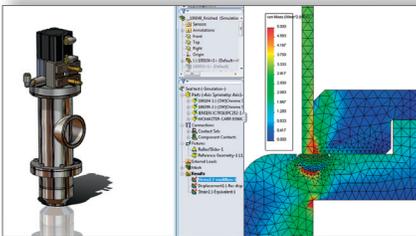
Study nonlinear problems that involve large displacement and complex material models.



Plot product response versus transient loads.



Validate the performance of composite materials, including stiffness and ply failure results.



Study a whole class of problems quickly and easily with the 2D planar simplification tool.

Analyze your design in the nonlinear world

- Easily transition between linear and nonlinear simulations for comprehensive evaluation
- Examine deformations caused by overloads, contact, and flexible materials
- Determine residual stresses and permanent deformations in metals after material yield
- Study nonlinear buckling and snap-through events
- Investigate designs with hyperelastic materials, such as rubbers, silicones, and other elastomers
- Conduct an elasto-plastic analysis to study plastic deformation and the onset of yield
- Examine creep effects and material changes with temperature

Perform dynamic analyses of parts and assemblies

- Simulate time history, steady-state harmonic, response spectrum, and random vibration excitations
- Study stress, displacement, velocity, and acceleration variations with time, as well as RMS and PSD values
- Carry out impact analysis using the nonlinear dynamic capabilities

Simulate composite materials

- Study multilayer composite components to examine the effects of layer material, thickness, and orientation on product performance
- Use the revolutionary user interface to dynamically control and display ply orientation
- Determine the correct composite lay-up and orientation for the operational loads
- Utilize sandwich and graphite or carbon-fiber composites, including honeycomb and cellular foam

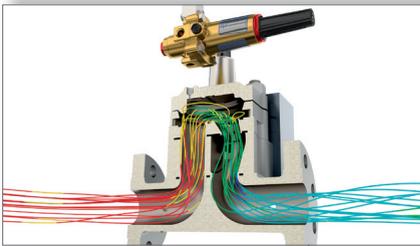
Easily tackle complex problems with the 2D planar simplification tool

- Create plane stress, plane strain, and axisymmetric nonlinear analysis
- Solve complex contact problems in a fraction of the time with no loss of accuracy
- Use 3D CAD models without modification to generate 2D sections for analysis

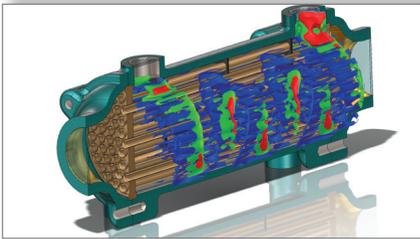
SOLIDWORKS FLOW SIMULATION

Thorough liquid and gas analysis made easy

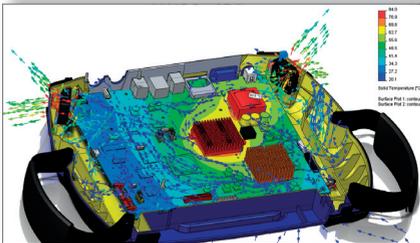
SolidWorks Flow Simulation software is a powerful CFD (computational fluid dynamics) tool that takes the complexity out of flow analysis and enables you to easily simulate fluid flow, heat transfer, and fluid forces so you can investigate the impact of a liquid or gas on product performance.



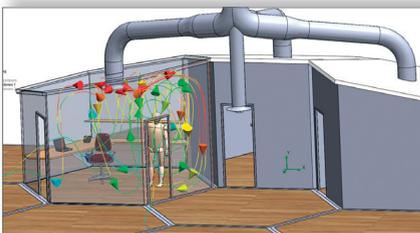
Examine complex flow in and around components to detect turbulence and recirculation issues and determine flow conditions.



Prevent heating problems by inspecting temperature distribution and heat fluxes.



Use the Electronic Cooling Module to optimize thermal performance of PCBs.



Improve air and temperature flows in living and working environments with the HVAC module.

Evaluate and optimize complex flows

- Examine complex flows through and around your components with parametric analysis
- Align your model with flow conditions, such as pressure drop, to satisfy design goals
- Detect turbulences and recirculation issues with animated flow trajectories
- Understand the flow of non-Newtonian fluids, such as blood and liquid plastic
- Assess the impact of different impellers and fans on your design
- Include sophisticated effects like porosity, cavitation, and humidity

Reduce the risk of overheating in your designs

- Visualize and understand temperature distribution in and around your products
- Couple flow with thermal analysis, simulating convection, conduction, and radiation effects
- Apply time- and coordinate-dependent boundary conditions and heat sources
- Find the best dimensions to satisfy your design goals, such as heat exchange efficiency

Optimize the thermal performance of your PCBs and electronic components

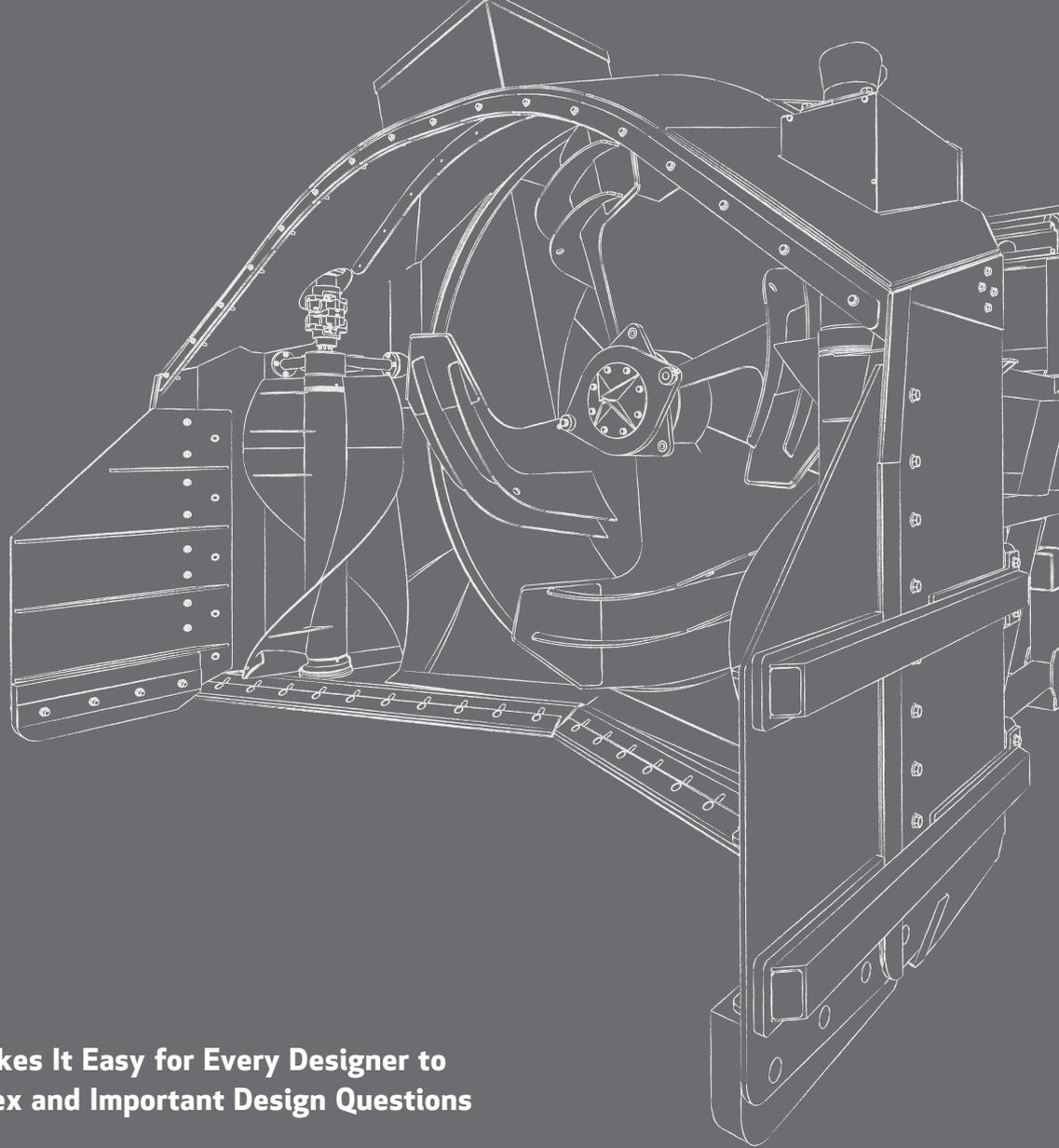
The Electronic Cooling Module includes Joule heating simulation, a two-resistor component compact module, a heat pipe compact module, and a printed circuit board (PCB) generator to evaluate thermal properties and cooling requirements for electronic components.

Predict and achieve airflow and comfort parameters in working and living environments

The HVAC Module includes advanced radiation modeling, comfort parameters, and a large database of building materials to evaluate gas movement and temperature in working and living environments.

Gain valuable insights with powerful and intuitive results visualization tools

- Utilize Section or Surface plots to study the distribution of resultant values, including velocity, pressure, vorticity, temperature, and mass fraction
- Measure results at any location with the Point, Surface, and Volume Parameter tool
- Graph results variation along any SolidWorks sketch
- List results and automatically export data to Microsoft® Excel®



SolidWorks Simulation Makes It Easy for Every Designer to Ask—and Answer—Complex and Important Design Questions

With SolidWorks Simulation you'll reduce the risk involved in exploring new and innovative design solutions, and get products to market faster—and with less prototyping. By understanding product performance early in the design process, you avoid costly over-design and reduce the risk of warranty issues.

This powerful set of simulation tools is fully integrated within the SolidWorks environment, with seamless operation for designers and simulation experts alike at every stage of product development. Through powerful results visualization you can study the forces affecting your design—displaying stresses, displacement, fluid velocity, pressures, and temperature. You can calculate measurements for any point, surface, or volume, and then graph and list results.

SolidWorks Simulation provides a complete range of tools for analyzing the structure, motion, and multi-physics of your parts and assemblies, or exploring fluid dynamics and heat flow around and through your design. As part of the SolidWorks suite of product development solutions—covering design, simulation, sustainable design, technical communication, and data management—SolidWorks Simulation is easy to use, yet powerful enough to tackle the most complex design issues. You can predict the performance of your design under real-world operating conditions to detect problems and correct them before prototyping, tooling, and production.

SOLIDWORKS PRODUCT DEVELOPMENT SOLUTIONS

SolidWorks software creates an intuitive 3D experience that maximizes the productivity of your design and engineering resources to create products better, faster, and more cost-effectively. See the full range of SolidWorks solutions for design, simulation, sustainable design, technical communication, and data management at www.solidworks.com/products2013.

▶ SYSTEM REQUIREMENTS

- Windows® 7 (32- or 64-bit) or Windows Vista®
- 2 GB RAM (minimum)
- 5 GB disk space free (minimum)
- Video board (certified recommended)
- Intel® or AMD® processor
- DVD or broadband Internet connection
- Internet Explorer 8 or later

For additional details, visit
www.solidworks.com/systemrequirements

.....

▶ LEARN MORE

To learn more about SolidWorks Simulation, visit
www.solidworks.com/simulation or contact your
local authorized SolidWorks reseller.



Dassault Systèmes SolidWorks Corp.
175 Wyman Street
Waltham, MA 02451 USA
Phone: 1 800 693 9000
Outside the US: +1 781 810 5011
Email: info@solidworks.com

www.solidworks.com

SolidWorks is a registered trademark of Dassault Systèmes SolidWorks Corporation in the US and other countries. Other brand and product names are trademarks of their respective owners. ©2012 Dassault Systèmes. All rights reserved. MKSIMDSENG0612