



3D CAD

BUYER'S GUIDE

Selection of product design software can often be a daunting task. For any given situation there are multiple software products, technologies, and underlying strategies that can be considered to increase product innovation performance and reduce time to market. Each software product comes with its own set of limitations, assumptions, and methodologies that may or may not be appropriate for a problem.

Software providers don't make the task much easier – normally providing a list of capabilities that is heavy on technical jargon. Finding a resource that provides clear, concise information about what is actually possible in each tool set, and what the differences between options really mean to you as an engineer or designer can often be more challenging than completing the analysis itself.

This Hawk Ridge Systems 3D CAD Buyer's Guide aims to cut through all the clutter and jargon and present clear, actionable decision points to help you select what software is right for your application. We provide a range of software solutions available from SOLIDWORKS and Dassault Systèmes that help address different types of design problems, and identify the pros, cons, assumptions and limitations of each method.



Our Design Philosophy

At Hawk Ridge Systems and SOLIDWORKS, we believe that design tools should be accessible, accurate, and powerful, and in the hands of every engineer or designer who wants to use them.



We are mindful of three central philosophies:

- Design tools should be powerful, yet easy to use. Workflows should be clean, logical, and easy to learn for designers and engineers across many different disciplines and industries.
- Whatever it is you're creating, we have the expertise and the solutions to get you there. We work with companies across many industries, facing many different engineering and business challenges. From Medical to Aerospace and from Consumer to Education, the challenges are different to get your products out the door and delivered to your customers.
- We are a single source solution for everything you might need. We support, train, and implement everything that we sell. Whatever it is you're creating, we have the expertise and the solutions to get you there. We work with companies across many industries, facing many different engineering and business challenges. From Medical to Aerospace and from Consumer to Education, the challenges are different to get your products out the door and delivered to your customers.

SOLIDWORKS CAD tools are the result of 20 years of development and the feedback of over two million users. This rock-solid software helps you get your job done faster and easier, no matter what industry you work in.

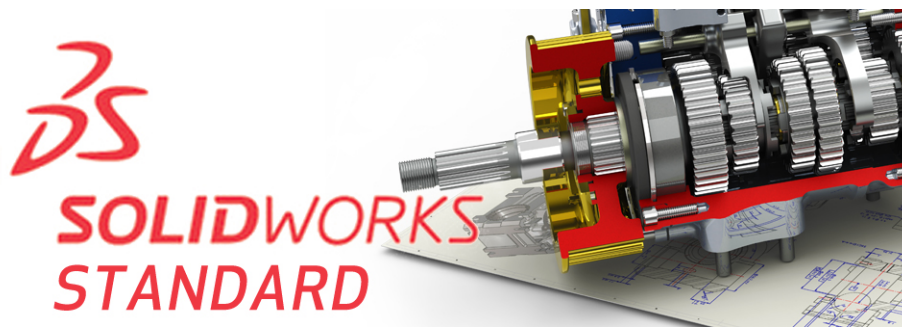
Using SOLIDWORKS is the fastest and easiest way to create production-ready designs. Industrial designers can use SOLIDWORKS to create stunning product concepts using freeform surfacing and reverse engineering. Design engineers use SOLIDWORKS to add function to the form. Manufacturing engineers use SOLIDWORKS to create molds, dies, jigs and fixtures that reference the product geometry.

We know that many of you currently employ a 2D-based design approach, and we have a rich set of tools to re-use that data, and a full suite of capabilities for you to create the production documentation that you need. SOLIDWORKS provides the tools you need to be more productive and get your products to market faster.

Which SOLIDWORKS package is right for me?

There are myriad design tasks in the world of product design. Some products may require a vast array of different types of geometry, validation, and manufacturing support. Others may only need a few very specific types of functionality.

Rather than a long list of add-in modules for each and every specific task or discipline, SOLIDWORKS comes in three distinct packages to address your needs:



SOLIDWORKS® Standard is a powerful 3D design solution for rapid creation of parts, assemblies, and 2D drawings. Application-specific tools for sheet metal, weldments, surfacing, and mold tool and die make it easy to deliver best-in-class designs. SOLIDWORKS Standard also has tools to help convert imported geometry and utilities that search designs for errors.





SOLIDWORKS PROFESSIONAL



SOLIDWORKS® Professional gives you all the power of SOLIDWORKS Standard with additional capabilities that increase productivity, ensure accuracy, and help you communicate your design information more effectively.

SOLIDWORKS Professional includes libraries of standard parts and fasteners, tools to automatically estimate manufacturing costs and realistically render your designs with PhotoView 360 or SOLIDWORKS Visualize software and then share them with others using eDrawings® Professional. Ensure manufacturability and resolve complex assembly issues early in the design process with tolerance stack-up analysis tools. Quickly incorporate printed circuit board data into your 3D model or import scanned data to enable reverse engineering. SOLIDWORKS Professional also gives you integrated file management tools that securely store all project information and track all design changes. Streamline your design process and increase design productivity with SOLIDWORKS Professional.



SOLIDWORKS PREMIUM



SOLIDWORKS® Premium is a comprehensive 3D design solution that adds to the capabilities of SOLIDWORKS Professional with powerful simulation, motion, and design validation tools, advanced wire and pipe routing functionality, and much more.

Users can test product performance against real life motion and forces with our rich simulation capabilities. Create and document layouts for electrical wiring, piping, and tubing with the extended toolsets of SOLIDWORKS. Automatically flatten complex surfaces and interrogate an interactive deformation plot. Total the cost of calculated parts with Assembly Level Cost Rollup. Experience all the benefits of a complete 3D design solution with SOLIDWORKS Premium.

We characterize applicable design tasks into one of six categories and then discuss the capabilities available in the 3 packages in detail. Skip to the section that corresponds to the design tasks that are most important to your company.



Design Task	Definition	Pg.
Part and Assembly Modeling	Flexible 3D modeling tools cover the full range of design tasks to quickly develop your product concepts.	5
2D Drawings	Create production-ready 2D drawings that communicate how your design should be manufactured and assembled.	6
Design Reuse and Automation	Easily find and leverage existing engineering data to create new designs and speed up product development.	8
3D Animations and Photorealistic Renderings	Quickly and easily create powerful images and animations to communicate your design intent and functionality.	10
Design Validation	Verify that components can be manufactured and assembled properly before going into production, as well as meeting cost targets.	12
Design Analysis	Verify operation and performance while creating your design with fully integrated simulation and analysis tools.	15

Part and Assembly Modeling

Overview

Effective product design involves a wide range of tasks that demand flexibility in your software. 3D solid modeling offers several advantages over traditional 2D design, but you want 3D CAD tools that you can use every day while being powerful enough to handle all the aspects of your design process.

With SOLIDWORKS, you get an intuitive 3D CAD system that combines ease-of-use with powerful modeling capabilities that can handle your most complex design projects. SOLIDWORKS accelerates your design, saving time and development costs, and making you more productive.

- 3D solid modeling: create and edit 3D part and assembly models and create 2D drawings that automatically update with design changes
- Conceptual design: create layout sketches; apply motors and forces to check mechanism performance; import images and scans to use as a reference for creating 3D geometry
- Large assembly design capabilities: create and manage extremely large designs, and work in either detailed or simplified modes
- Advanced surfacing: create and edit complex solid and surface geometry, including stylish C2 surfaces
- Sheet metal: design from scratch or convert your 3D part to sheet metal; includes automatic flattening of sheet metal parts with bend length compensation
- Weldments: quickly design welded structures composed of structural members, plates, and gussets; includes a library of predefined structural shapes



- Mold design: design molded parts and the tooling to create them, including core and cavity, draft, automated parting surfaces, and mold base components

SOLIDWORKS Professional software package provides extended geometry creation tools, including:

- Import scanned data: use SOLIDWORKS ScanTo3D to convert scanned data into SOLIDWORKS CAD geometry to facilitate reverse engineering

SOLIDWORKS Premium software package provides extended geometry creation tools, including:

- Piping/tubing design: generate and document 3D mechanical systems, including pipe/tube paths, pipe spools, pipe slope, and a complete bill of materials (BOM)
- Electrical cable/harness and conduit design: import electrical connection information, generate and document 3D electrical route paths, and complete the BOM for your design
- Rectangular and other non-round section routed systems like ducting, trunking, cable trays, etc.



Decision Points

Is reverse engineering a significant part of the design and manufacture of my product?

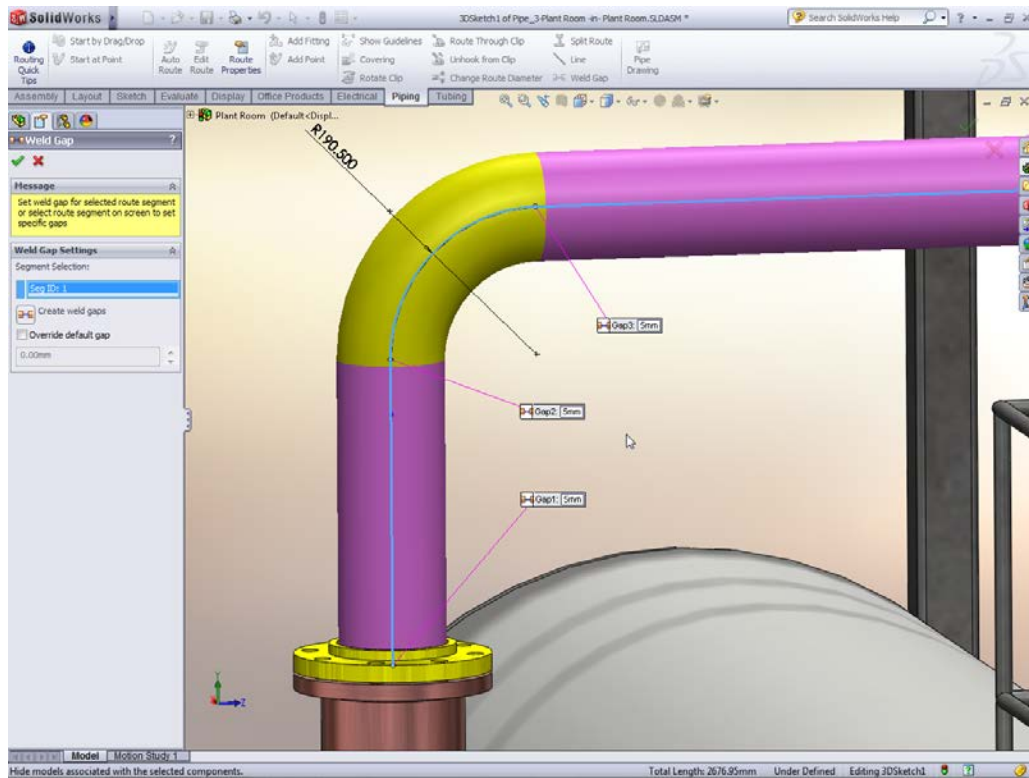
ScanTo3D reduces the time required to build complex 3D models of real-world items, such as sculpted objects, and anatomical items. 3D data such as point clouds and mesh (which is attained from laser scanners and other devices) can be imported, parsed, manipulated, modified, and ultimately turned into 3D solids and surfaces. ScanTo3D functionality includes the ability to import point cloud data and convert imported 3D scan data to a SOLIDWORKS 3D CAD model.

If you need to be able to import point cloud and scanned data in order to facilitate reverse engineering in your design process – Choose **SOLIDWORKS Professional**



Does my product consist of a substantial portion of routed systems?

It is possible to manually create pipe, tube, cable, wiring, and conduit routes in SOLIDWORKS Standard. However, the dedicated tools in SOLIDWORKS Premium make it extremely fast and efficient to create this type of geometry. Also, the accuracy of the downstream manufacturing information such as cut lists for pipes, tubes, and wires as well as output for CNC pipe bending data can make all the difference in whether your project wins the bid, or comes in on budget, or gets manufactured correctly the first time.



Typical industries where this functionality would be invaluable are Industrial Machinery, Energy, Plant and Process, Oil and Gas, and Engineering Services.

If you compete in one of the above mentioned industries, or if piping/tubing runs and/or cabling/wire harness design make up a substantial portion of your design or product – Choose **SOLIDWORKS Premium**

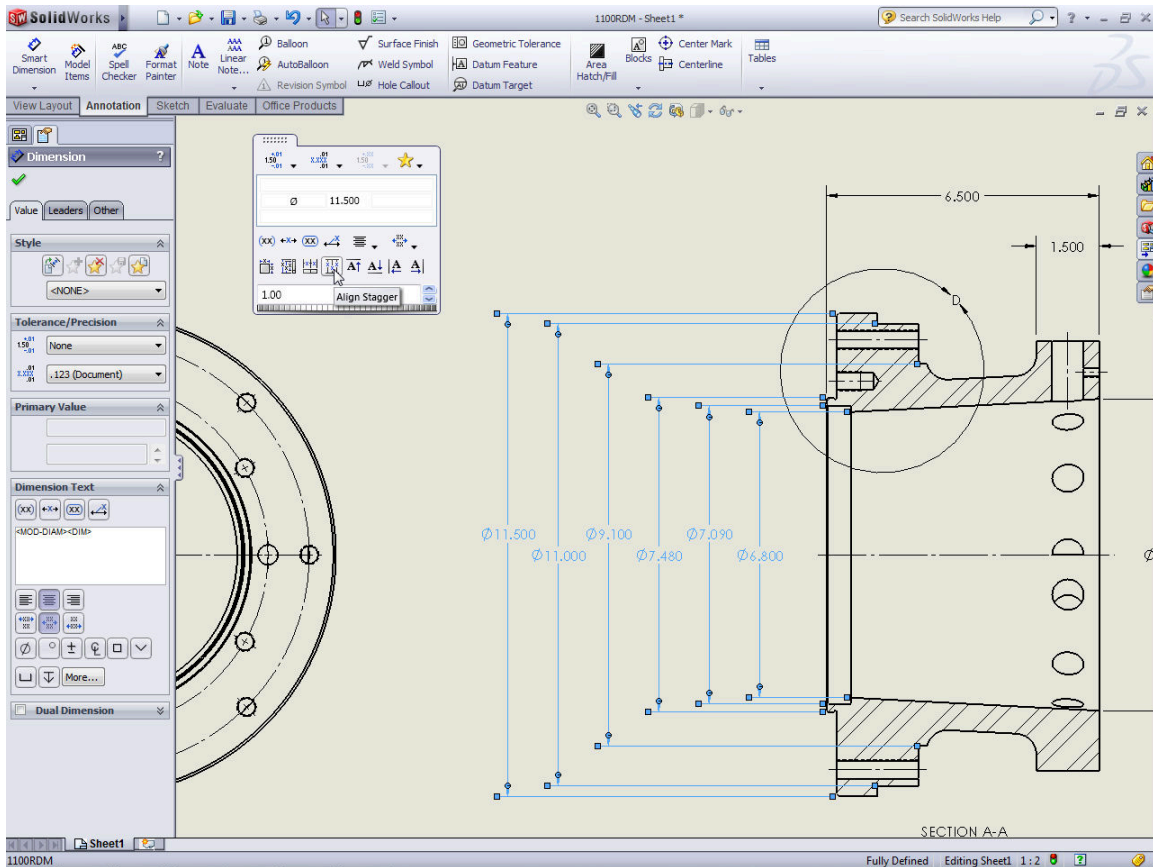
2D Drawings

Overview

Use SOLIDWORKS 3D CAD to quickly create production-ready 2D drawings that are always current, and clearly communicate how your design should be manufactured and assembled.

SOLIDWORKS associativity links a 2D drawing directly with a 3D solid model, so updates to the 3D model can be automatically reflected in the 2D drawing. SOLIDWORKS accelerates your design process, saving time and development costs while increasing productivity.





With traditional 2D CAD, drawings are often out of date and/or drawing views do not accurately reflect the design, leading to expensive manufacturing errors that slow down product delivery. Without an automated update system, all drawing views must be updated manually whenever a design change occurs. This becomes an even bigger problem when a component or assembly exists in many different assemblies or at many different levels of the same assembly, because it requires that all the drawing views containing the modified components be updated.

- Automatic Drawing View creation: simply drag and drop the 3D model into a drawing to create views that are either wireframe (with or without hidden lines) or shaded; automatically create any view type, such as isometric, section, partial section, or detailed
- Automatic Drawing View updates: keep drawing views in sync with automatic drawing view updates any time the 3D part and assembly models are modified
- Dimensioning: automate the generation and placement of dimensions and tolerances with industry-proven, production-ready, 2D drawing capabilities
- Bill of materials (BOM): generate automated BOMs with balloon note callouts and cut lists that update with model changes; output BOM to Microsoft® Excel directly from an assembly or drawing for printing or upload to ERP/MRP systems
- Annotations: create a complete drawing by adding all necessary tolerances, symbols, notes, hole callouts, and tables



SOLIDWORKS Professional software package provides extended drafting productivity tools, including:

- Standards checking: compare your drawings to company standards to ensure consistency using the SOLIDWORKS Design Checker tool
- Drawing control: control drawing revisions and graphically compare drawings to understand their differences

Decision Points

Do errors or inconsistencies in production drawings take up an inordinate amount of time in your design cycle?

Design Checker in SOLIDWORKS Professional allows you to establish design standards, and then check drawings against them as you design to ensure consistent and complete drawing outputs. It is extremely tedious and time consuming to do this manually.

If shop drawing consistency is critical and currently taking too much time – Choose **SOLIDWORKS Professional**.

Do you have problems with multiple copies and versions of design files causing confusion or manufacturing errors?

SOLIDWORKS Workgroup PDM tracks changes, manages project data, and provides secure, centralized file storage for all project files and documentation. Functionality such as automated revision control and access control ensure that the right person has the right file and the right time.

If revision control or file management is necessary to the smooth operation of your manufacturing – Choose **SOLIDWORKS Professional**.

Design Reuse and Automation

Overview

New products are often variations of existing products, with current designs tweaked or reconfigured to meet a new customer's need or requirement. At other times, major sections of one or several designs need to be reused in other designs.

SOLIDWORKS search, automation, and configuration tools simplify the reuse of existing design data to create new designs. Designers and engineers can find and configure design data and documentation quickly to create new designs, which reduces product development time so they can put their focus on developing innovative new products rather than manipulating a CAD system.

SOLIDWORKS 3D CAD software also provides libraries of prebuilt 3D CAD models and other CAD data that help accelerate the design process, save time and development costs, and increase productivity.

The ability to share the information needed to make thousands of parts and components for your designs—from screws and bolts, to washers and bearings, and more—reduces redundancies, mistakes, and inconsistencies. It also eliminates duplication, and helps your company standardize its CAD data.



SOLIDWORKS design reuse and automation tools include:

- SOLIDWORKS Search: search for any file—on your computer, network, SOLIDWORKS PDM system, or the Internet
- Design automation: automate repetitive design tasks— including part, assembly, and drawing generation—using DriveWorksXpress
- Configurations: automatically create multiple versions of parts and assemblies and save them in the same file for easy reference
- Design Library: save frequently used parts, features, templates, and more in the
- Online libraries in 3D ContentCentral®: reduce design time by using 2D and 3D catalog components provided by suppliers
- Smart Components: parts or assemblies that automatically create necessary clearance holes or cuts, and assemble necessary associated components when added to a design (snap rings that cut their own mounting grooves, for example).

SOLIDWORKS Professional software package provides extended automation tools, including:

- Design Library for easy access; SOLIDWORKS Toolbox contains over one million hardware components and other items to add to your assemblies
- Smart Fasteners: Toolbox fasteners that automatically assemble and adjust length appropriately for part thickness, washers, and nut stack up

Decision Point

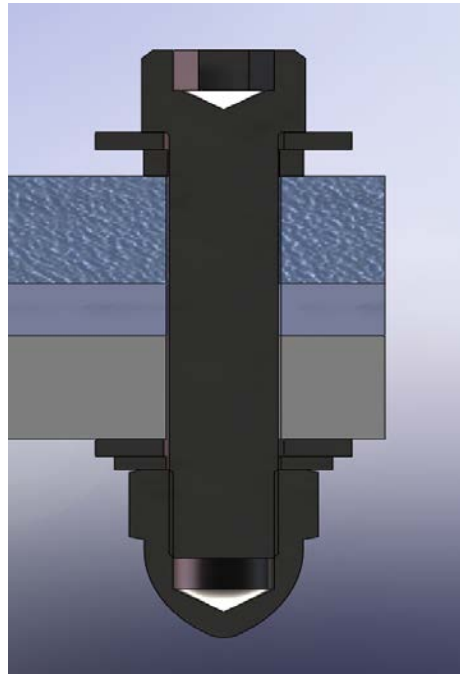
Do my designs and products use a large amount of standard fasteners, hardware, and components?

If your products have minimal hardware, it may be appropriate to manually create and configure the components in SOLIDWORKS. However, once you get into large numbers or different families of standard parts, you'll be spending too much time creating things that already exist and are available off the shelf, rather than on innovating your design.

SOLIDWORKS Toolbox is a vast component library containing over a million standard hardware items. These components can be used “as is” or can be customized to meet your specific company standards. Hardware items can be easily dragged and dropped into your assembly, speeding your design work and helping complete your bill of materials (BOM).

SOLIDWORKS Toolbox includes over one million machine components and hardware—bolts, screws, washers, nuts, bearings, jig bushings, keys, O-rings, pins, power transmission components, retaining rings, and structural members corresponding to a wide range of international standards. Also included are some proprietary components from SKF® Torrington, PEM® Fasteners, Truarc®, and Unistrut®.





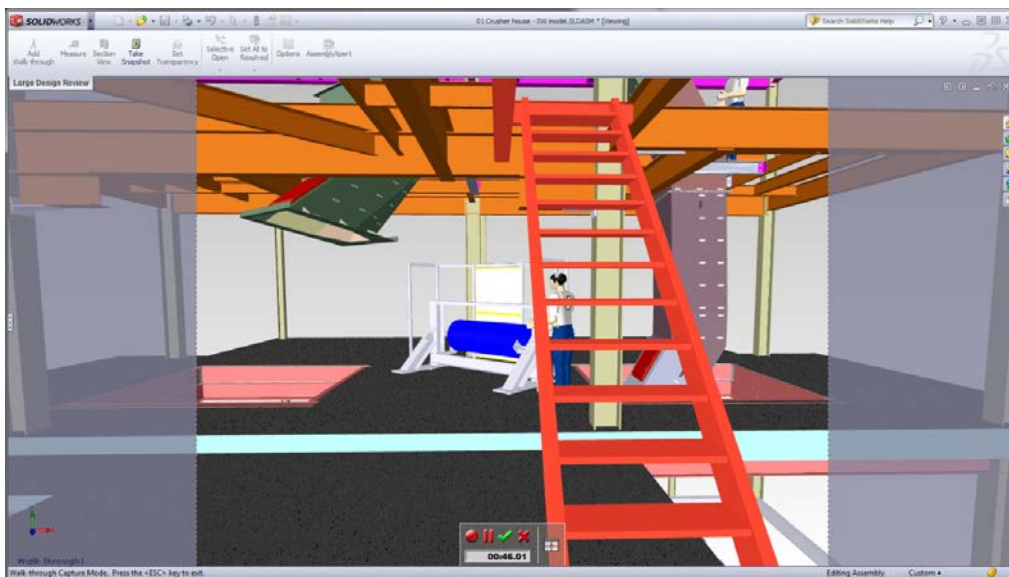
Furthermore, the Smart Fasteners function works with SOLIDWORKS Toolbox to save you a large amount of time by automatically assembling into place and sizing correctly.

If your products use a substantial amount of standard hardware – Choose **SOLIDWORKS Professional**

3D Animations and Photorealistic Renderings

Overview

Moving from 2D to a 3D CAD system improves how your ideas and concepts are communicated inside and outside your company. It's just easier to understand a design when you see it in 3D, as opposed to a static 2D drawing. Potential customers and internal company decision makers want a virtual experience with a design that is as close to the “real life” experience as possible.



People want to see the design in action, moving and performing the tasks it is designed to do. They want to see the 3D model as they would the real life product, with its specific colors and materials—even the environment or setting of their choosing, be it sitting on a picnic table on a sunny day or on a coffee table in a lamp-lit living room. They also want to interact with, maneuver around, and even go through the design to gain perspectives impossible to capture in 2D.

- Assembly animation: demonstrate your design’s basic operations by applying motion, gravity, and component contact, or by manually moving components; record and save a video
- Walk-through/fly-through animations: take a virtual walk-through of your design or record a video to help explain it to others

SOLIDWORKS Professional software package provides extended rendering tools, including:

- PhotoView 360 and SOLIDWORKS Visualize: create photorealistic images and animations quickly, without being a graphics expert

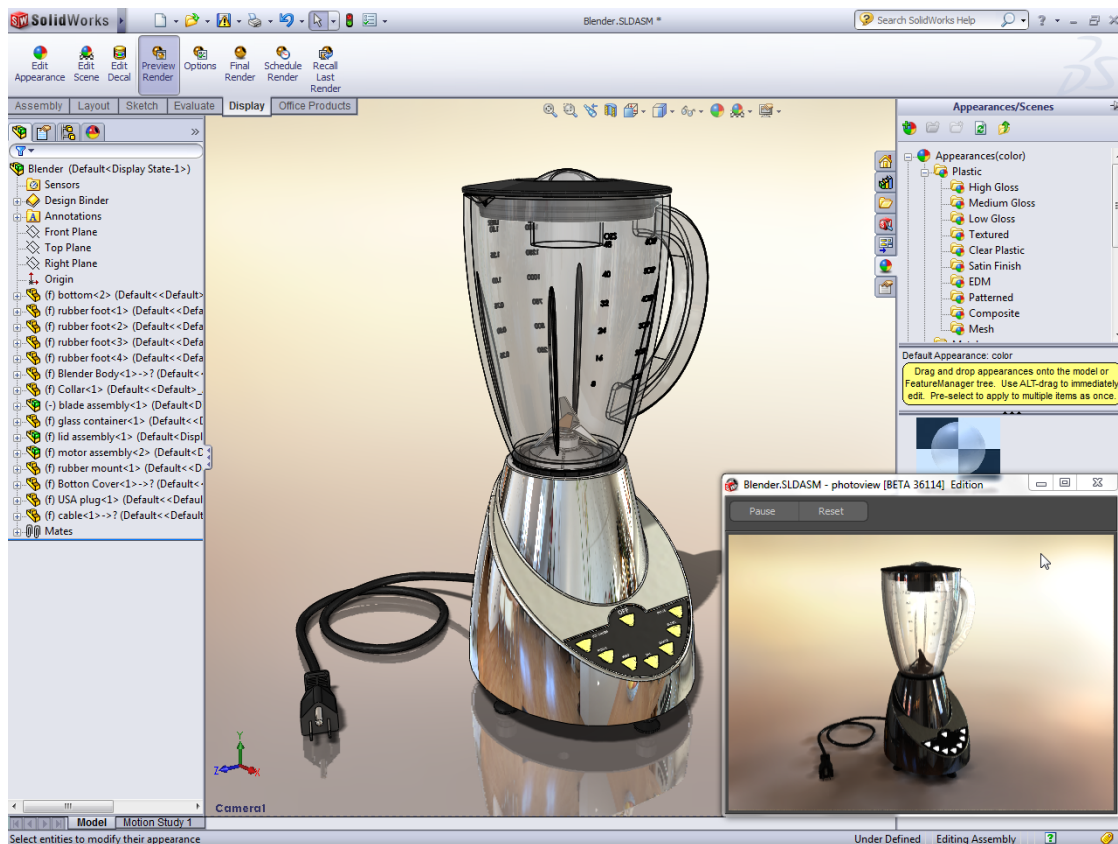


Decision Point

Do you require high quality, life-like images and animations for proposals, presentations, and submissions?

The ability to experience the design as it would be in “real-life” helps win more business by providing a more engaging way to present proposals. It helps guide critical internal decisions earlier in the design phase, without a need for building costly physical prototypes. And it’s a faster, more cost-effective way to get feedback and confirmation from potential customers and buyers, ensuring you are making the right product decisions.





If you require high-quality, life-like images of your products *before* they are manufactured – Choose **SOLIDWORKS Professional**

Design Verification

Overview

SOLIDWORKS 3D CAD software makes it possible to verify that your parts and assemblies will fit, assemble, and operate correctly before going into production. Fully integrated with CAD, you can use these functions while you design to accelerate your product development process, save time and development costs, and increase productivity.

Component interference, misaligned and mismatched holes and fasteners, and incorrect tolerancing of manufactured parts are the main causes of high rework and scrap costs on the assembly floor. When using only a 2D CAD tool, it is very difficult to uncover these issues before going into manufacturing.

SOLIDWORKS tools help you verify your designs will fit, assemble, and operate correctly before you make any parts. Design validation finds issues early in design, giving you more time to make less costly fixes.

SOLIDWORKS automatic cost estimation tools are fully integrated with 3D CAD, enabling designers and engineers to continuously check their designs against cost targets.

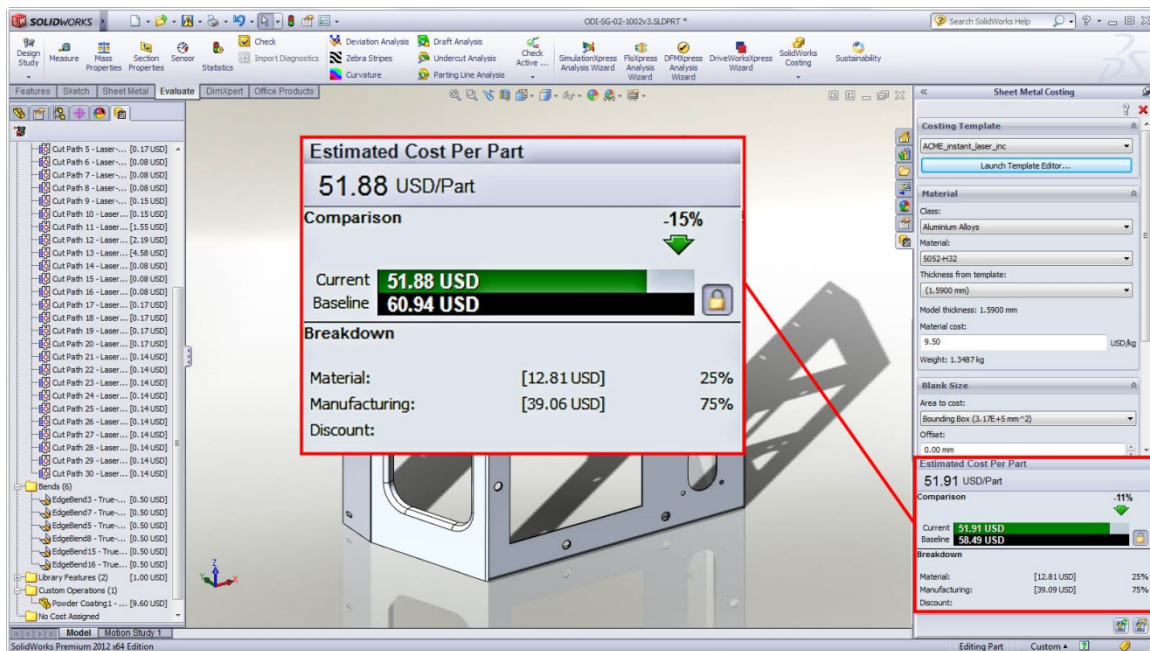
- DFMXpress: use SOLIDWORKS DFMXpress to check manufacturability and cost aspects
- Draft, undercut, and wall thickness checks: automatically check for draft, undercut, and wall thickness issues in molded, cast, and forged parts and tooling



- Collision and interference detection: check for interferences, collisions, and clearances between components to ensure proper operation
- Hole alignment checks in assembly design: eliminate misalignments between holes in mating components to ensure proper fastener fitment prior to manufacturing

SOLIDWORKS Professional software package provides extended design validation tools, including:

- **Cost Estimation and Quoting:** automatically estimate part manufacturing costs automatically using built-in cost templates; designers can make faster, repeatable, and more informed design decisions based on cost; manufacturers can automate their quoting processes. Customizable manufacturing settings: customize templates to enter specific manufacturing costs and data, such as material, labor, machine speed and feeds, and setup costs



- ECAD-MCAD data exchange: use CircuitWorks™ to provide two-way data exchange between mechanical and electrical designers
- **Tolerance Stack-up Analysis**—SOLIDWORKS TolAnalyst™ automatically checks the effects of tolerances on parts and assemblies and allows you to assess min/max tolerances, perform root-sum-squared (RSS) tolerance analysis, and determine the contribution of features and tolerances categorized by percent impact.

SOLIDWORKS Professional software package provides extended design validation tools, including:

- **Advanced Surface Flattening:** Often products like leather goods, sports equipment, footwear, and products made from composite materials, like carbon fiber and fiberglass, have complex shapes, but are manufactured from materials that start out as flat stock, such as cow hides, nylon, cloth, and flat composite sheet. Therefore, it is necessary to accurately determine or estimate the size and shape of the surfaces in their flattened state in order to be able to cut the material from the flat sheet. SOLIDWORKS advanced surface flattening functionality provides control and flexibility to easily flatten more complex surfaces.



Decision Points

Do you need to monitor manufacturing costs as you design or cost estimation tools to automate your quoting process?

SOLIDWORKS Costing allows you to assess manufacturing cost for sheet metal and machined parts in real time as you design, with automatic updates every time the design is changed. This makes it easy to monitor manufacturing costs as you design, thereby, avoiding costly redesigns and production delays later on.

Manufacturers can also utilize SOLIDWORKS cost estimation tools to automate their quoting process. This lets you focus more on getting the jobs you have out the door, and less on quoting jobs that may never come.

For cost estimation and quoting of sheet metal and machined parts – Choose **SOLIDWORKS Professional**

Do your products integrate electrical components such as printed circuit boards?

Efficient sharing of CAD data is one of the biggest challenges for mechanical and electrical designers. In a consumer product, such as a laptop, where reducing size and weight while preserving aesthetics are all important criteria, the electrical engineer designing the printed circuit board (PCB) and selecting components (such as fans and power supplies) must clearly communicate ECAD data to the mechanical engineer. In turn, the mechanical engineer needs to clearly communicate back mechanical design changes affecting the design of the PCB.

CircuitWorks efficiently promotes this two-way data exchange. Design teams can work together to resolve ECAD-MCAD integration problems and move faster to create innovative, higher quality products. Designs can start with mechanical aspects of PCB design and then be passed to electrical engineers to create the electronic design. The overall design can then be passed back to the mechanical engineers. This process repeats continuously during the product design and development process.

For sharing mechanical and electrical CAD data – Choose **SOLIDWORKS Professional**

Do you experience a high rate of rework or scrap due to tolerancing issues?

SOLIDWORKS ToAnalyst™ automatically checks the effects of tolerances on parts and assemblies to ensure consistent fit of components and to verify tolerancing schemes before the product goes into production. The tolerance analysis can be rerun instantly if a dimensioning or tolerancing change is made, enabling you to get to an optimized tolerancing scheme more quickly.

This also helps you control the cost of your product by knowing where to tighten things up and where they can be looser and cheaper.

For tolerance analysis – Choose **SOLIDWORKS Professional**

Is it necessary to accurately determine the flattened shape of complex surfaces?

You can automatically flatten highly curved surface and interrogate an interactive deformation plot to graphically view stretch and compression concentrations and relieve material stresses due to flattening by creating relief cuts. Then the flattened surface outlines or patterns can be exported for material cutting in a variety of formats

For advanced surface flattening – Choose **SOLIDWORKS Premium**



Design Analysis

Overview

Verify operation and performance as you create your design with easy-to-use simulation and design analysis tools that are fully integrated with SOLIDWORKS 3D CAD software, accelerating your design process, reducing the number of prototypes, saving time and development costs.

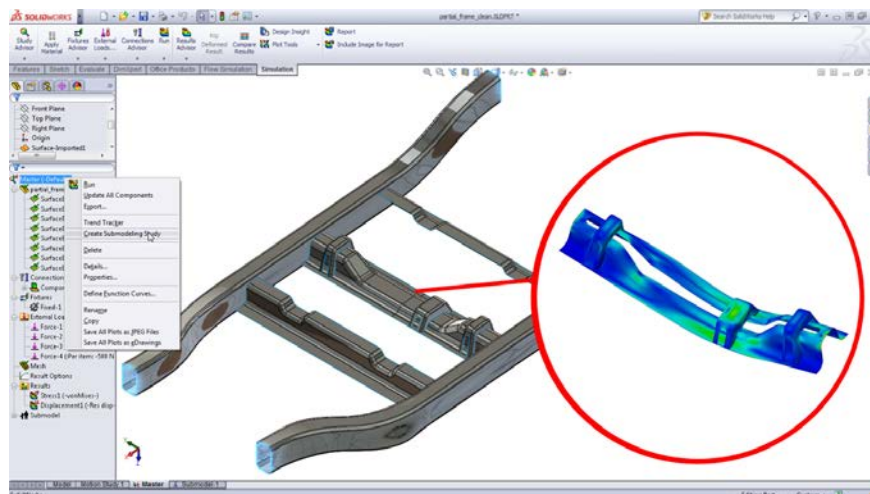
SOLIDWORKS integrates easy-to-use analysis tools with design to verify operation and performance during product development. SOLIDWORKS design analysis increases product innovation by reducing risk in design, significantly reduces the number of physical prototypes needed, and helps lower material and other costs.

Design analysis and simulation functionality provided with all SOLIDWORKS 3D CAD packages:

- [Basic Structural Analysis](#) —with SimulationXpress you can perform basic linear part-level structural analysis of forces and pressures with fixed restraints; outputs for stress, factor of safety (FOS), resultant displacement, plus animation of results and eDrawings® output
- Basic Motion—Make your designs move, taking into account simple contacts between parts, as well as gravity
- [Basic Flow Analysis](#) —FloXpress allows you to perform basic air (standard atmosphere) or water flow analysis for assemblies with single inlet and single outlet; outputs for velocities and pressures, plus animated results showing flow lines and color plots
- Basic Environmental Impact Analysis —Quantify the environmental impact of your design, and optimize material selection, part geometry, and sourcing with SustainabilityXpress

SOLIDWORKS Premium software package provides extended analysis tools, including:

- [Structural Analysis](#) —with SOLIDWORKS Simulation you can carry out structural simulation on parts and assemblies with finite element analysis (FEA) and determine impact of material selection. Take into account variable forces and pressures, full restraint sets (sliders and pins, etc.), connectors (springs, bolts, spot welds), bolt check to help determine the correct number and size of fasteners, results (complete control over definition of results), contacts, materials model (linear, isotropic, orthotropic). For assemblies, easily identify areas prone to failure and evaluate design changes to enhance product quality.



- [Motion Analysis](#)—using SOLIDWORKS Motion you can perform physics-based kinematic and dynamic analysis, using existing SOLIDWORKS mates together with motion features such as forces springs and dampers to calculate true motion behavior. Determine part and/or assembly displacements, velocities, and accelerations. Calculate forces and torques at the part connections, which can be used in a subsequent structural analysis. Show results as an animation or a graph. Selecting a point on the design allows creation of a trace path that can be used in subsequent design processes. Check the kinematics and dynamics of your product design throughout the operating cycle.
- Environmental Lifecycle Analysis - a systematic method for measuring the environmental impacts of products and processes, and this screening-level analysis provides important environmental impact information during product design, including carbon footprint, total energy consumption, air impacts, and water impacts.

Note: Hawk Ridge Systems and SOLIDWORKS offer more specific and advanced analysis tools for things such as dynamics, nonlinear, fluid flow, and sustainability. See the Hawk Ridge Systems Analysis Buyer's Guide for more assistance with choosing the right design analysis solution for your application.

Decision Points

Do you need to verify the operation and performance of your products early in the design cycle?

CAD-embedded SOLIDWORKS Simulation enables the designer and engineer to carry out structural simulation on parts and assemblies with finite element analysis (FEA). This helps to improve and validate performance early in the design cycle and reduce the need for costly prototypes or design changes later on.

For advanced linear, static analysis of parts and assemblies – Choose **SOLIDWORKS Premium**

Do you need to verify the operation and performance of your products early in the design cycle?

You can easily evaluate how your product will perform and move throughout its operational cycle with motion analysis using [SOLIDWORKS Simulation](#). It makes it possible to visualize your product moving as it would in the real world and measure the forces and loads on your design. Plus, you can use the data to correctly size motors and create the 'correct' mechanism to ensure performance, product quality, and safety.

It's tightly integrated with SOLIDWORKS CAD, so motion analysis using can be a regular part of your design process—reducing the need for costly prototypes, eliminating rework or delays, and saving time and development costs.

For kinematic motion analysis of your designs – Choose **SOLIDWORKS Premium**

For advanced linear, static analysis of parts and assemblies – Choose **SOLIDWORKS Premium**

Do you need to verify the environmental impacts of your design to help you develop more sustainable designs?

SOLIDWORKS Sustainability provides a screening-level life cycle assessment (LCA) of the environmental impacts of your full design, with seamless integration to your design process. It includes the diverse tools of SustainabilityXpress (parts assessment, alternative materials search, and environmental impact dashboard) with additional capability to assess both parts and assemblies, using parameters such as transportation mode and distance, assembly energy, and use-phase energy consumption.



Flexible inputs, such as recycled content level and end-of-life scenarios, enable more detailed assessments. You can even perform time-dependent environmental comparisons using the varying lifetimes of different design solutions.

Assessment results are saved for each design configuration, helping you easily compare versions. Seamless integration and automatic report generation allow you to quickly communicate your sustainable design solution.

SOLIDWORKS Sustainability uses the gold-standard GaBi LCA environmental impact database from PE International. You can download updates as they become available, and even request new LCA datasets for your custom materials and processes as a premium service in partnership with PE International. For kinematic motion analysis of your designs – Choose **SOLIDWORKS Premium**

Conclusion and Summary

Below is a quick summary of the key takeaways for each available design package.

Package	Key points
SOLIDWORKS	A powerful 3D design solution for rapid creation of parts, assemblies, and 2D drawings. Application-specific tools for sheet metal, weldments, surfacing, and mold tool and die make it easy to deliver best-in-class designs.
SOLIDWORKS Professional	Build on the capabilities of SOLIDWORKS Standard to increase design productivity, with file management tools, photorealistic rendering, automated cost estimation, a sophisticated components and parts library, as well as ECAD/MCAD collaboration, reverse engineering, and tolerance analysis.
SOLIDWORKS Premium	The most comprehensive 3D design solution adds powerful simulation and design validation to the capabilities of SOLIDWORKS Professional, advanced pipe/duct/wire routing functionality, and advanced surface flattening.

The information presented here represents a simple summary of some of the key decision points that can go into selecting between the different packages of 3D design software available from Hawk Ridge Systems and SOLIDWORKS.

While we hope the information here provides some useful information in making your design decision, more information can be found on the 3D CAD product pages of our website at www.hawkridgesys.com. Please don't hesitate to contact us or your local Hawk Ridge Systems account representative to discuss your application in more detail.

Hawk Ridge Systems | www.hawkridgesys.com | 877.277.4468 – US | 866.587.6803 - CANADA

