

SOLIDWORKS 3D CAD

OBJECTIVE

SOLIDWORKS 3D CAD product development solutions provide engineers, designers, and manufacturers with the design, simulation/verification, manufacturing, file management, and collaboration tools they need to develop and manufacture innovative products and equipment—all in one package. All SOLIDWORKS software products provide single-window, fully associative integration with SOLIDWORKS 3D CAD software. As a result, all SOLIDWORKS products work together using the same design data so each design change is updated automatically across all applications.

SOLIDWORKS is easy to use so engineers, designers, and manufacturers get up to speed quickly, thereby allowing them to become productive almost immediately. In addition, SOLIDWORKS is powerful and industry-proven. It provides the depth of functionality needed to handle the most complex designs and largest assemblies.

With over 3 million users today, SOLIDWORKS has become a critical tool for streamlining the design and manufacture of products in all industries around the world. And with a matching worldwide network including online and onsite support, you can be confident that you will always find the help you need, when you need it.

OVERVIEW

As the foundation of the entire SOLIDWORKS suite of product development solutions—covering design, simulation/verification, cost estimation, manufacturability checks, CAM, sustainable design, technical communication, and data management—SOLIDWORKS 3D CAD solutions provide easy-to-learn, extremely powerful functionality that shortens product development time, reduces costs, and improves quality.

- Enable design and manufacturing teams to work concurrently in one seamlessly integrated system.
- Make design changes at any time that can flow quickly and easily to all downstream departments.
- Create designs faster and more accurately, including 3D models and 2D drawings of complex parts and large assemblies.
- Work more efficiently with application-specific tools for holes, fasteners, sheet metal, injection molds, plastic and cast parts, weldments, surfacing, mesh models, reverse engineering, piping, and electrical routing.
- Output accurate Bills of Materials (BOMs) needed by manufacturing with the click of a mouse.
- Eliminate design errors and rework before designs get to manufacturing by using automatic interference checking and virtual testing of designs with integrated motion and stress analysis tools.

- “Design for cost” and “design for manufacturing” by using automatic manufacturing cost estimation tools and manufacturability checks.
- Automate CAM programming with embedded, easily customizable, rules-based machining strategies.
- Open and work with most 3D CAD data with the option to link to and work with the model in its original CAD format or convert it automatically to a SOLIDWORKS file.
- Communicate ideas more effectively using tools to create, publish, and view lifelike, photorealistic images, and videos of designs.
- Manage interactions between team members and control revisions using data management tools.

BENEFITS

- Streamlines product development process from design through manufacturing.
- Eliminates rework, the duplication of work, and data translation errors.
- Significantly reduces costs associated with supporting multiple design and manufacturing tools by implementing one seamlessly integrated design-to-manufacturing solution.
- Enables fast and easy learning with online help and tutorials, live technical support, and training.
- Works directly with CAD data created in any major 3D CAD system.
- Updates documentation and BOMs automatically when designs change.
- Uses estimation tools and manufacturability checks to “design for cost” and “design for manufacturing”.
- Speeds the creation of 2D drawings, possibly eliminating the need altogether.
- Provides CAM programming for CNC machining with SOLIDWORKS CAM, powered by CAMWorks.

CAPABILITIES

SOLIDWORKS CAM Standard

SOLIDWORKS CAM Standard allows users to quickly program individual parts and configurations without leaving the SOLIDWORKS 3D CAD environment. You have full access to defining rules within SOLIDWORKS CAM to create and build to company standards. The use of knowledge-based machining and tolerance-based machining allows for:

- Recognizing any updated geometry as the model changes through feature updates or newly imported parts.
- Assigning machining strategies based on features that are recognized.
- Updating machining strategies if a design's tolerance changes.
- Rules-based machining enables designers and engineers to:
 - Catch design errors and new part setups through Automatic Feature Recognition.
 - Quote components quickly using company standards captured as rules.

SOLIDWORKS CAM Professional

SOLIDWORKS CAM Professional builds on the capabilities of SOLIDWORKS CAM Standard to increase programming capabilities. SOLIDWORKS CAM Professional adds the following functionality:

- Assembly Machining: Users who are looking to design fixturing or machine a group of parts can create the tables, vises, clamps, or any other holding mechanisms using a SOLIDWORKS assembly. Once the design is complete, programmers can define what components are used for machining and which ones are fixtures. SOLIDWORKS CAM will automatically make adjustments to the toolpaths to avoid the fixtures. This level of automation allows the programmer to focus on the entire machining process quickly.

- Turning: SOLIDWORKS CAM will support single turret turning inside the SOLIDWORKS part environment. Similar to part milling, users can take advantage of Automatic Feature Recognition, Knowledge-Based Machining, and configurations. A predefined library of tools and machining strategies are loaded into the Technology Database. These can be customized at any time to enhance the programming process. Users have the ability to create custom tools and holders for specific machining operations. Simultaneous mill/turn or live tooling functionality is not available with SOLIDWORKS CAM.
- 3+2 Milling: Programmers can take advantage of 4- and 5-axis machining centers with SOLIDWORKS CAM Professional. These machines can have the fourth and fifth axis' pre-positioned into place before running 2.5-axis milling strategies. This allows users to create multiple fixtures and work holding to reduce setup time. This type of programming allows companies to produce large production runs with minimal operator interaction.
- High-Speed Machining: With the advancements in machine tools and tooling it is necessary to optimize machining toolpaths to get the most out of your equipment investment. SOLIDWORKS CAM Professional utilizes VoluMill 2.5-axis milling routines from Celeritive™ Technologies. The advantages of using these machining strategies are
 - Up to 75% savings on cutting tool costs.
 - 50% to 80% reductions in machining cycle times.
 - Easy-to-learn machining strategies
 - No special machine tools are required
 - Reduced wear and tear on your equipment due to smoother transitions in toolpaths

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