SOLIDWORKS ELECTRICAL
REAL-TIME INTEGRATION OF ELECTRICAL SCHEMATICS AND 3D CAD
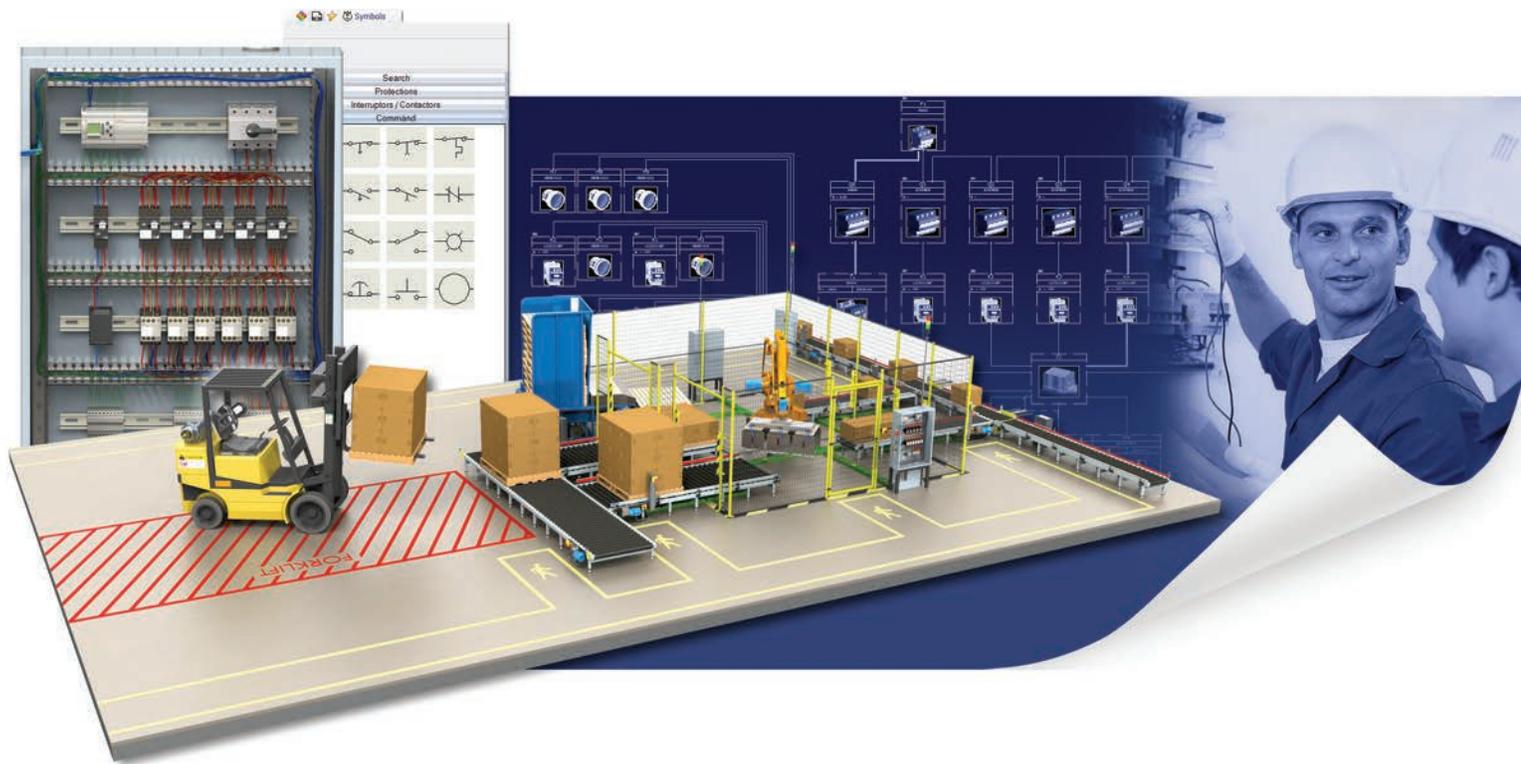
INTEGRATED ELECTRICAL SYSTEM DESIGN

SolidWorks® Electrical simplifies electrical schematic creation with an intuitive interface for faster design of embedded electrical systems. Bidirectional integration in real time with SolidWorks 3D CAD provides better collaboration and productivity, resulting in fewer product delays, more consistent and standardized designs, lower costs, and faster time-to-market. Create schematic-driven harness designs with powerful routing, flattening, and automated documentation.
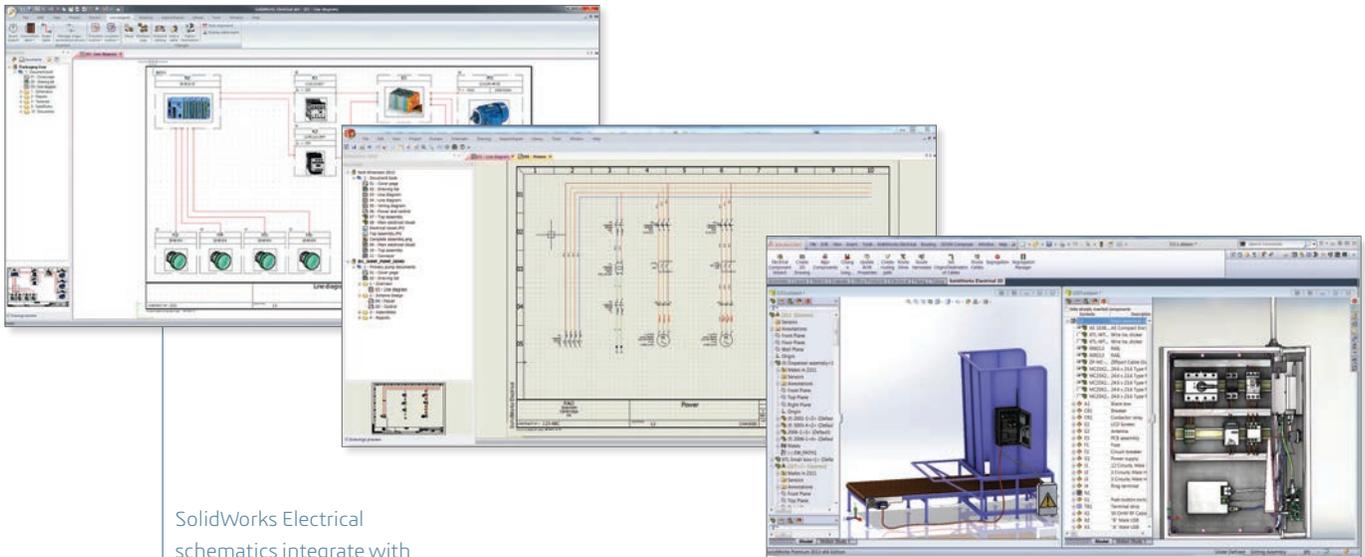
SolidWorks Electrical schematics integrate with SolidWorks 3D models to enable true concurrent electromechanical design.

Modernize your electrical system design

In the complex world of electromechanical design, creating an electrical system using 3D CAD can be a demanding and daunting task. Developing design elements and defining the electrical interconnect of wires, cables, and harnesses is often laborious and error-prone.

3D CAD electrical development has typically been done with the interchange of design data via external files and manual design. Using external files can cause electrical and mechanical designs to become unsynchronized, resulting in design, manufacturing, and supply chain discontinuities. Current practices also do not provide easy collaboration between design disciplines.

SolidWorks Electrical 3D™ technology enables faster development of schematically defined electrical systems that can be readily implemented in the 3D CAD model in a **3D**EXPERIENCE environment synchronized between the electrical and mechanical design teams. Real-time synchronization of the electrical schematic and 3D CAD model enables unification of the bill of materials (BOM) between the electrical system and the mechanical design, eliminating errors from design changes.
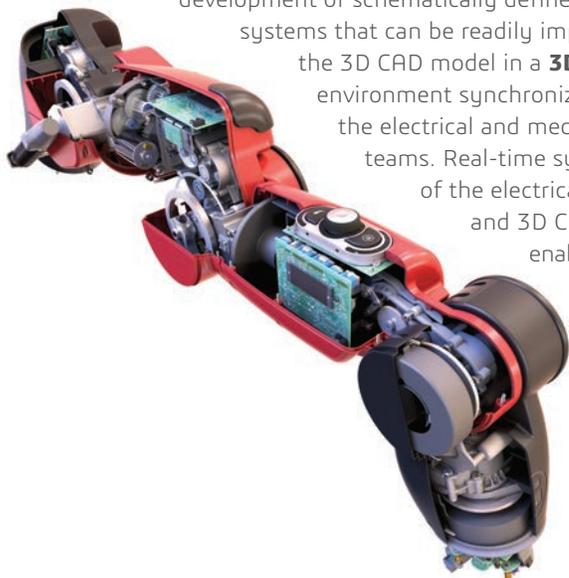
SolidWorks Electrical packages provide a range of electrical schematic and 3D design capabilities:

- **SolidWorks Electrical Schematic** A powerful, easy-to-use suite of collaborative, schematic design tools that help drive the rapid development of embedded electrical systems for equipment and other products. Built-in libraries of symbols, manufacturer part information, and 3D component models provide common, reusable materials that optimize design reuse. Automated design and management tools streamline and simplify an array of tedious design tasks, from PLC and terminal block to contact cross-reference assignments.

- **SolidWorks Electrical 3D** Integrate electrical schematic design data with the SolidWorks 3D model of a machine or other product—bidirectionally and in real time. SolidWorks Electrical 3D enables you to place electrical components and use advanced SolidWorks routing technology to automatically interconnect electrical design elements within the 3D model. Determine optimal lengths for wires, cables, and harnesses, all while maintaining design and BOM synchronization between electrical and mechanical designs.

- **SolidWorks Electrical Professional** Combine the electrical schematic functionality of SolidWorks Electrical Schematic with the 3D modeling capabilities of SolidWorks Electrical 3D in one powerful, easy-to-use package. SolidWorks Electrical Professional is ideally suited for the user that supports both electrical and mechanical design integration with 3D models.

CHOOSE THE SOLIDWORKS ELECTRICAL PACKAGE THAT'S RIGHT FOR YOU

SolidWorks Electrical Schematic

Create schematics for electrical and control systems for your projects.

Key features include:

- Advanced database architecture enables multiple users to work on projects concurrently

- Integrated single line, multiline, and mixed schematic development tools

- Design rules checks (DRC) reports, providing feedback on design integrity

- Intelligent copy-and-paste circuits to reuse designs across projects

- Smart Search and filter capabilities, simplifying design element searching within and across projects

- Enhanced content management, including web-based content portal, for ease of content selection

- Electrical calculation reports for circuit power properties, e.g., voltage and power loss of cables

- Auto insertion of origin destination arrows for multipage circuit distribution

- Generate eDrawings® documents for projects, providing seamless integration with mobile devices

- One-touch integration with SolidWorks Enterprise PDM to manage project data and documents, generate reports, and create PDF and DWG™ exports (SolidWorks Enterprise PDM sold separately)

- Generate DWG, DXF™, and intelligent PDF documents for projects, with smart navigational capabilities

- Dynamic context-sensitive user interface provides only the commands that make sense based on where you are in the design process so you can focus on design

- Ability to define cable harness in schematic drawing

- Direct import of existing DWG and DXF symbols with existing attributes and connections

- Circuit symbol creation wizard to easily prepare custom schematic symbols

- Customizable symbol and macros palettes for the most frequently used symbols and saved circuits

- Fully automated generation of PLC schematic, terminal strip drawing, and support documents

- Simple-to-use library managers for symbols, footprints, title blocks, macros, cables, and part references, including customizable ERP connectivity for standard parts

- Configurable to support industry standards (DIN, JIS, ANSI, ISO)

SolidWorks Electrical 3D*

Add SolidWorks Electrical Schematic data to your SolidWorks 3D model.

Key capabilities include:

- **Electrical 3D** CAD-embedded interface bidirectionally integrates electrical schematic design data from SolidWorks Electrical with the SolidWorks 3D CAD model.

- **Harness development** Create schematic-driven harness designs in the 3D model, utilizing real-time bidirectional functionality coupled with powerful routing, flattening, and automatic documentation capabilities.

- **Autorouting technology** Advanced SolidWorks routing technology provides highly simplified autorouting of wires, cables, and harnesses from within a 3D CAD model. The routing detail information is available instantly to all project users.

- **Collaboration** SolidWorks Electrical enables multiple users to work on the same project simultaneously in a real-time environment.

- **Real-time synchronization** Project design data is synchronized in real time, bidirectionally between schematics and the 3D model within a multi-user collaborative environment. This synchronization allows key information, such as BOM and design data, to be unified between design disciplines and users.

SolidWorks Electrical Professional*

Combine both schematic creation and 3D electrical system modeling.

- SolidWorks Electrical Schematic and SolidWorks Electrical 3D in one convenient package

- Single installation and licensing step

*Requires SolidWorks CAD software (sold separately)
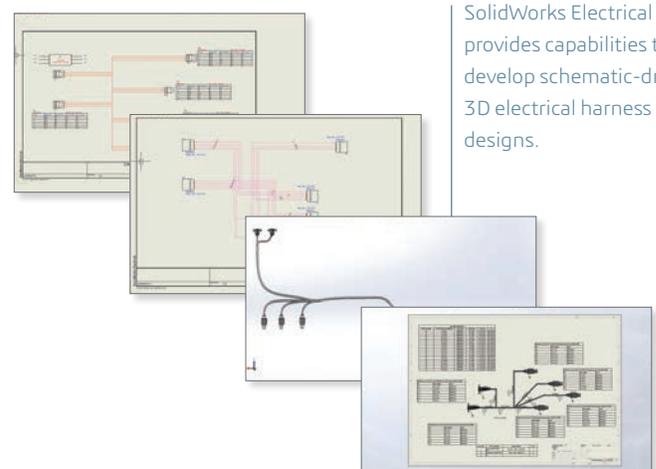
SolidWorks Electrical 3D provides capabilities to develop schematic-driven 3D electrical harness designs.

THE BENEFITS OF INTEGRATING ELECTRICAL SCHEMATICS WITH 3D MECHANICAL

Increase collaboration and synchronization between electrical and mechanical design

Eliminate Hidden Costs

With your 3D model and schematic linked bidirectionally in real time, you prevent mistakes and additional costs, as well as creating a combined bill of materials (BOM) for electrical and mechanical.

Reduce Manufacturing Defects and Scrap

With items selected during schematic creation added to the 3D model, you can ensure fit, check for collision/clash, calculate lengths, plan for efficient material usage, and reduce scrap. Documentation is better and more consistent throughout development, reducing mistakes.

Improve Time-to-Market

Coordinating electrical and mechanical functions enables teams to work in parallel to save time. Specific time-saving benefits include combining mechanical and electrical BOMs to streamline production planning and faster planning of cable/wire/harness paths using the 3D model.

Ensure Consistent Manufacturing and Assembly

Including electrical information from the schematic in the 3D model enables detailed planning, documentation, and visualization of overall product design, helping to ensure consistent assembly from unit to unit.

Streamline Development to Reduce Costs

Faster design, better communication between departments, synchronized plans, up-to-date documentation, and shorter time-to-market all add up to reduced costs throughout the product lifecycle.

SOLIDWORKS PRODUCT DEVELOPMENT SOLUTION

SolidWorks software provides users with an intuitive **3D**EXPERIENCE development environment 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 software for design, simulation, sustainable design, technical communication, and data management at **www.solidworks.com/products2014.**

Our **3D**EXPERIENCE Solutions powered by our brand applications serving 12 industries

Dassault Systèmes, the **3D**EXPERIENCE Company, provides business and people with virtual universes to imagine sustainable innovations. Its world-leading solutions transform the way products are designed, produced, and supported. Dassault Systèmes' collaborative solutions foster social innovation, expanding possibilities for the virtual world to improve the real world. The group brings value to over 150,000 customers of all sizes in all industries in more than 80 countries. For more information, visit www.3ds.com.

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