

Solid Edge Wire Harness Design

A dedicated process-driven environment for creating and routing wires and cables

fact sheet

Siemens PLM Software

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► Summary

Solid Edge® Wire Harness Design software utilizes electrical circuit diagrams from popular eCAD systems to automate the creation of routed wiring and cable harnesses. Electrical and mechanical design teams can now collaborate more closely and create a complete digital mockup that includes cables and wires. Dedicated tools deliver streamlined ways to create wires, cables and bundles. Correct cut-length information is easily accessible for manufacturing.

Benefits

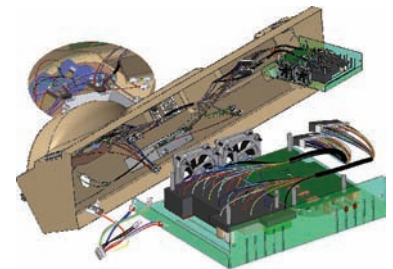
- Reduce product costs through improved communication
- Reduce the need for costly physical prototypes
- Make faster and more informed design decisions
- Improve service and maintenance documentation
- Reduce overall time-to-market

Features

- Automatic wire harness tools*
- Wire device and terminal assignment
- Rats nest created from a net list (wire harness)
- Wire harness output to manufacturing
- Wire harness reports
- Harness creation tools*
- Wires, cables and bundles

Seamless collaboration

Solid Edge Wire Harness Design is a dedicated process-driven environment for the efficient creation, routing and organization of wires, cables and bundles in a Solid Edge assembly. Wire Harness Design allows electrical and mechanical design teams to collaborate on designs to create complete and accurate digital mockups containing both mechanical and electrical components, and removes the need for expensive physical prototypes. Design violations, such as exceeding physical bundle size or a bend radius being too tightly routed, are constantly monitored as the harness is being designed; live feedback immediately displays any problems. Reporting of cable and wire cut length and attributes (allowing for a slack percentage and wire stripping) are captured during the harness design process. The export of ready-to-use 'net list' files adds these mechanical attributes to generate harness designs that are ready for manufacturing.



Automatic wire harness design

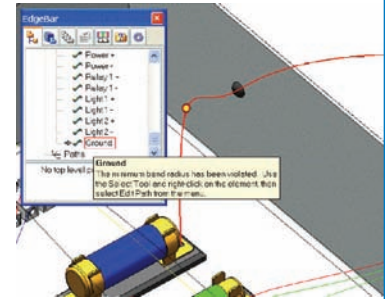
Once electrical engineers have developed and proven their designs using electrical prototypes (a task becoming increasingly important as the size and complexity of electrical systems increase), the harness wizard allows mechanical engineers to automatically generate and route physical wires and cables. The harness wizard uses input from dedicated electrical schematics applications such as Cimteam and Vesys to automatically transfer any net-list components and connections to Solid Edge. Using the wizard, engineers can quickly establish a "rats nest" of wires from a predefined connector on one component to a corresponding connector on another.



Flexible routing tools

Companies without a dedicated eCAD system can still enjoy the benefits of Solid Edge Wire Harness Design. Efficient creation and editing tools are used to ensure the best routing for cables and establish correct cable lengths. With the "create wire" command, both path and wire attributes are

created in the same process. Solid Edge Wire Harness Design uses “smart” path technology to create wires in free space, quickly routing them around a design and accurately threading them through other components such as clips or trucking (conduit). Single wires can be collected together to form a cable. Cables and wires may be bundled together to form the harness, ensuring the correct wire length and checking for design violations.



Live feedback of design violations

Individual wires can be grouped into cables and wires and cables grouped into bundles to neatly route them within a design. Built-in design-error checkers provide persistent live feedback, warning of design violations, such as minimum bend radius violations or exceeding maximum bundle size of cables and wires. Violations are relayed to the user by showing a graphical symbol next to the wire in EdgeBar, highlighting the wire. A tool tip offers advice on how to fix the problem. Any design violations are easy to fix, components can be easily repositioned and wire paths can be adjusted easily using keypoint curves and blue dots as required.

Auto placement and terminal assignment

When using the harness wizard with a predefined net-list file, electrical components and connection information is automatically assigned to preconfigured Solid Edge parts. If no mechanical parts are present in Solid Edge, the components can be selected and will be automatically placed using a predefined grid. Wires are automatically connected. Components can be easily positioned using Solid Edge assembly tools. All wires remain connected to their original components, and wire length is updated in any manufacturing reports. For electrical components that have not had terminals assigned or connection information attributed, users can assign this information “on the fly” while the harness is created, allowing customers to capture knowledge while they build their component libraries. Once electrical components have been assigned, the information is stored for future designs.

Realistic wire representation for complete digital mockups

Wires created with Solid Edge Wire Harness Design contain all of the information required for manufacturing and do not require a 3D representation for the wire design. This approach speeds the initial design and editing of the wire harness. However, for a more realistic 3D mechanical view, or if a detailed drawing is required, designers can choose to generate an associative 3D model of the wires, including individual wires, cables and bundles with colors. Automatic tangency of wire paths from terminals and through wire clips ensures wires look natural as they are routed.

Output to manufacturing

Mechanical properties not present in the electrical wire design and circuit simulation package, such as wire length, can be fed back to the eCAD system with the additional information captured in Solid Edge, in order to build a nail board.

► For more information, contact your local Velocity Series™ portfolio representative:

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