Saber Electrical System Designer

Quickly and reliably design and verify vehicle electrical systems

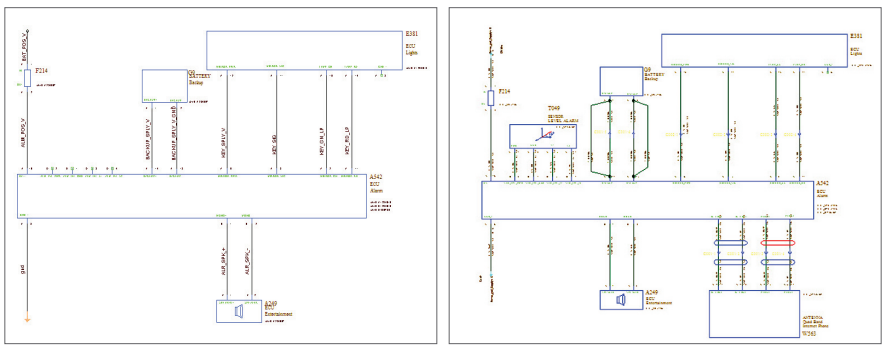
Overview

Vehicle electrical systems distribute power and data amongst electrical subsystems and components enabling safe, efficient, and cost-effective vehicle operation. With its myriad of complexities and interdependencies on all connected sub-systems, the electrical system design process poses significant technical and logistical challenges to make it function reliably.

SaberES Designer™ enables design teams to address these challenges by providing an integrated process for electrical system design from concept to manufacturing. SaberES Designer minimizes data entry, manages complex, system-wide design variants, enables concurrent engineering, maintains data integrity, and allows efficient exchange with 3D CAD systems.

SaberES Designer is the Only Completely Unified Tool for Electric System Design and Verification

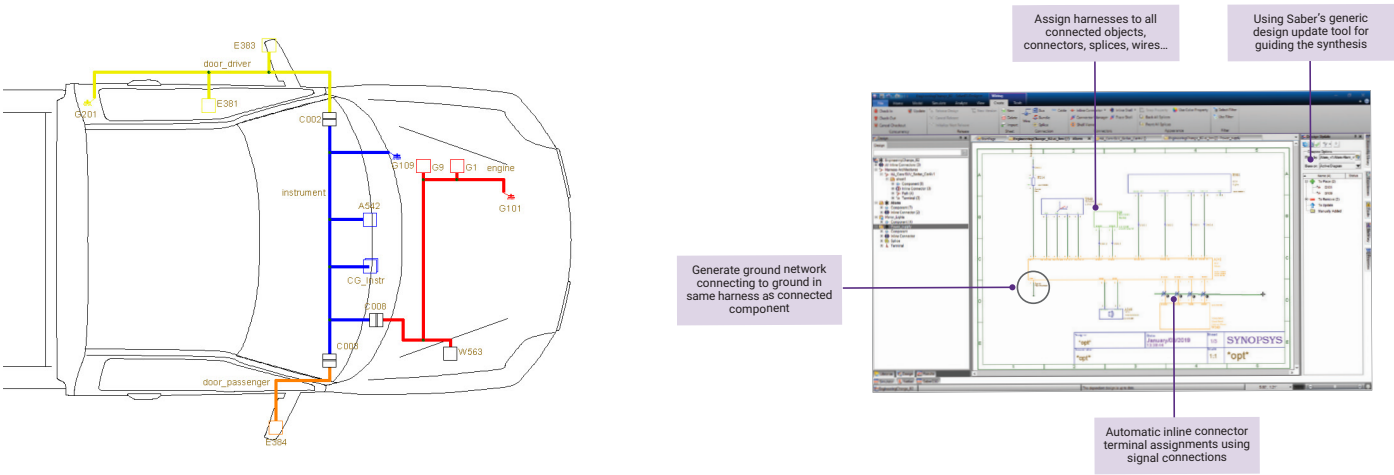
- Intuitive tool for developing functional and physical electrical system designs
- Integrated data flow for electrical system design from concept to manufacturing
- Single database ensures correct by construction and eliminates data translation errors
- Robust sheet check-in/check-out for efficient concurrent engineering
- Built-in and extensible design verification



SaberES Designer functional and physical designs

Functional and Physical Electrical System Design

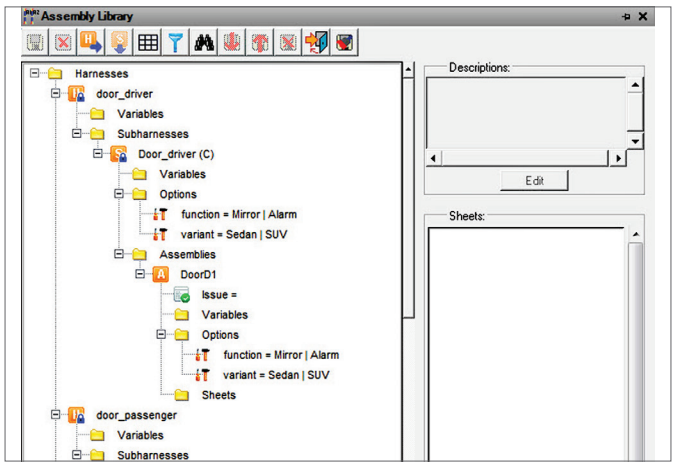
- Create component symbols and save to Parts Library for reuse
- Design functional subsystems by connecting symbols with logical signals
- Place functional subsystems from the Subsystem Library to create whole vehicle electrical system designs
- Filter/exclude variant dependent functionality from sub-systems
- Generate wiring designs from functional system designs
- Assign physical attributes from corporate database including: wires, shells, inline connectors, splices, etc.
- Use Shell Viewer to quickly ensure correct inline cavity occupation
- Use Automatic Parts Selector to determine required passive components for each connector shell and cavity
- Check basic design rules for disconnected wires or missing properties for shells, splices, wires, etc.
- Use Harness Architecture to add physical vehicle architecture to your design, adding synthesis to the design integration



Harness architecture design and design synthesis

Variant Handling and Filtering

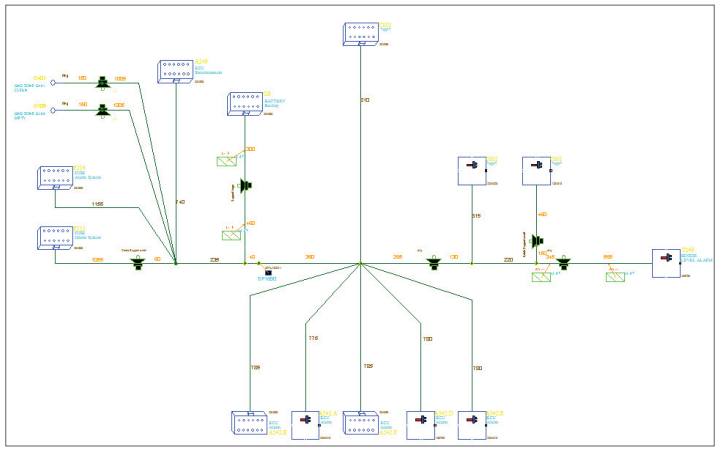
- Generate 150% wiring designs for electrical systems with different variations
- Assign feature options to components and wires in wiring designs
- Use Assembly Library to graphically select feature options and generate variant-dependent buildable harnesses



SaberES Designer assembly library

Harness Design

- Easily export wiring design data to 3D MCAD tools
- Conversely, import placement and routing data from 3D MCAD tools
- Use SaberES Designer Table Manager to quickly generate ASCII files for custom export, like bill of material tables



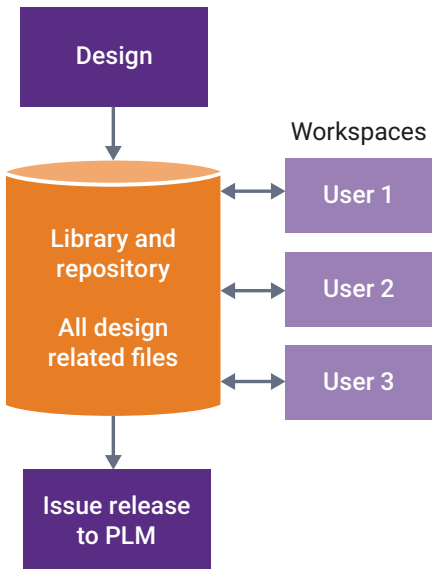
Bundle design

Generated Drawings

- Generate wire harnesses from connectivity, wiring design, and variant information
- Set connector symbol position and define desired harness segment routings
- Reuse geometrical information, such as length, from the 3D MCAD tools
- Project 3D information from 3D MCAD tools in 2D drawing
- Select viewing perspective, rotation, and scale of the projection

Concurrent Engineering

- Optimize engineering investments by spreading design tasks across different sites
- Check-in/check-out design sheets to eliminate data integrity issues



SaberES Designer on-design database

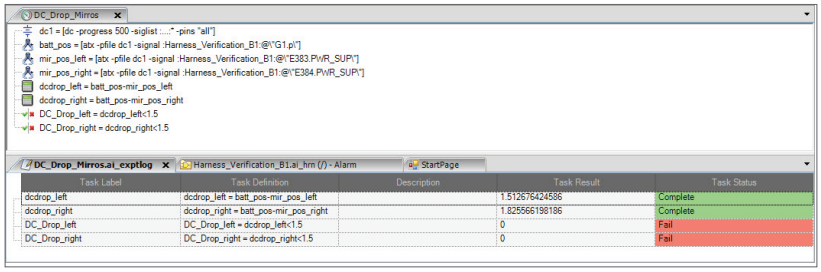
Correct by Design

- Avoid conflicts and eliminate synchronization and merging tasks by working from a single design database
- Auto generate bill of materials from same database used for electrical system design and verification

Verification of Electrical Systems

Voltage Drop and Over-current

- Implement reusable verification simulations using SaberES Designer Experiment Analyzer
- Use built-in DC simulation capabilities to verify voltage drop and overcurrent to determine fuse sizes, cross-sectional areas of all wires, existence of sneak paths, etc.
- Back-annotate simulation data and probe critical nodes to quickly identify problem areas



Simulation experiment

Advanced Transient and Robust Design

- Add optional Saber Simulator for transient verification of high-speed systems including vehicle networks
- Add optional Saber Inspecs to optimize the design for component variations and shifts in operating conditions

Functional Safety

- Add optional Saber Functional Safety to verify functional safety of electrical systems
- Quickly select and configure hardware faults directly from the SaberES Designer wiring design
- Export functional safety simulation results From SaberES Designer Experiment Analyzer to document fault coverage and support functional safety flows

Supported Operating Platforms

- Windows 7
- Windows 8
- Windows 10

For more information about Synopsys products, support services or training, visit us on the web or at synopsys.com/saber or contact your local sales representative.