SYNOPSYS®
Silicon to Software™

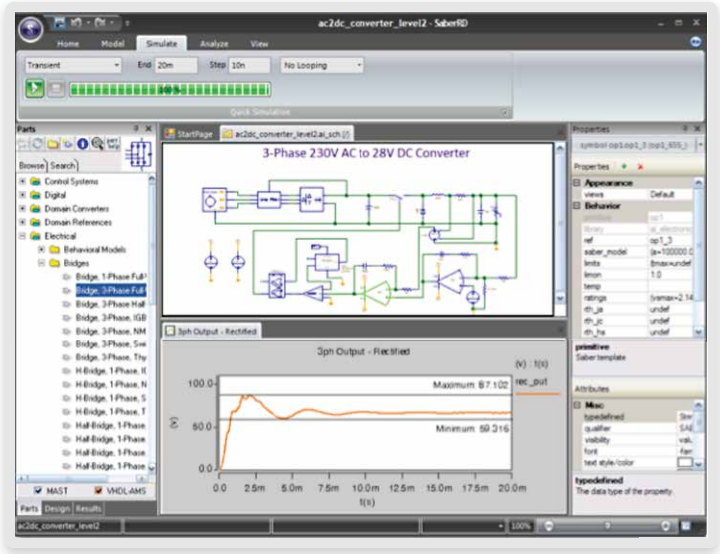
Desktop Design of Power Systems and Multi-domain Physical Systems

Overview

SaberRD is an intuitive, integrated environment for designing and analyzing power electronic systems and multi-domain physical systems. With the proven Saber® simulation technology at its core, SaberRD combines ease of use with the power to handle today's complex electrical power problems, allowing engineers to explore design performance, optimize robustness and assure system reliability for a broad range of generation, conversion and distribution applications. SaberRD's true multi-domain physical modeling capability and unmatched analysis capabilities provide engineers with a virtual prototyping platform that supports complete system design. With an intuitive and flexible user interface for casual and expert users alike, SaberRD accelerates design for engineering organizations in automotive, aerospace, defense and industrial power.

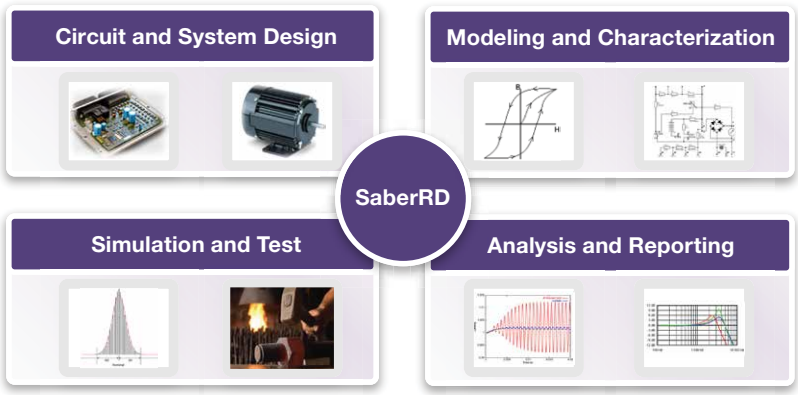
Quick Virtual Prototyping of Complex Power Electronic Systems

- **A True Integrated Design Environment:** Schematic design, mixed-signal multi-domain circuit simulation, waveform analysis and report generation capabilities
- **Built-in Design Flow:** A modern and streamlined interface guides the user to results, stepping through the key steps of a simulation-based workflow, including design, modeling, simulation and analysis
- **Proven in Production:** Over 25 years of success in behavioral modeling, simulation and design for automotive, aerospace and industrial power applications



Explore, Measure and Optimize Power System Performance

- **Simulate the Complete System:** Capture all the device effects and multi-domain interactions critical to power system design
- **High Accuracy Results, Faster:** Robust simulation technology and distributed processing capabilities come standard with SaberRD
- **Design for Robustness and Reliability:** Built-in capability for analyzing effects of variation, parameter sensitivity, worst-case behaviors, faults and more



Unmatched Multi-Domain Modeling Capabilities

- **Comprehensive Libraries:** With over 250 man years invested, ready-to-use model libraries include over 30,000 parts to support architectural exploration through detailed physics-level studies of system behavior
- **Graphical Modeling Tools Make It Easy:** From state diagrams and look-up tables to detailed characterizations of power devices and magnetic cores, SaberRD's suite of modeling tools allows users to quickly create behavioral models of devices and blocks found in power systems and other multi-domain physical systems
- **Modeling Options to Suit Your Needs:** SaberRD is the only environment that natively supports MAST and VHDL-AMS, two of the most powerful and widely-used hardware description languages for behavioral modeling of power systems. In addition, models created for SPICE or Simulink can be reused easily within SaberRD

One Environment for the Enterprise

- **Serving Occasional Users and Experts Alike:** Intuitive capabilities minimize the ramp-up time for occasional users and allow them to quickly get to results. Advanced configurability, support for scripting and automation and flexible APIs meet the needs of the analysis experts
- **A Standard for Model Exchange:** Within an organization or across a supply chain, SaberRD supports industry-standard modeling languages and practices used successfully in automotive, aerospace, and industrial power
- **Protecting Your Investment:** SaberRD is backed by class-leading product support, extensive documentation, design examples and a Demo/Student version

Extend SaberRD for Functional Safety and Robust Design

- **Saber Functional Safety Add-on:** Design and Safety Engineers can validate safety levels and fault recovery and mitigation systems using Saber Functional Safety Add-on. Users quickly select and configure hardware faults from the SaberRD Schematic to model different functional safety scenarios. Real-world hazards can be simulated by setting fault timing and injecting multiple faults to match a particular failure mode. Exported functional safety simulation results via SaberRD Experiment Analyzer are used to document fault coverage and support functional safety flows.
- **Saber Inspecs Add-on:** The Saber Inspecs Add-on enables system engineers to move beyond nominal design practice to model and simulate how design performance changes with manufacturing variation and shifting operating conditions. Saber Inspecs Add-on extends SaberRD to include Robust Design modeling and simulation capabilities including Monte Carlo and sensitivity analysis required to improve system yield and reduce field failures.
- **Saber Runtime:** Saber Runtime parallelizes and distributes iterative simulations across computing resources to dramatically improve throughput and reduce simulation time. The Saber Runtime library works with SaberRD, Saber Functional Safety Add-on, and Saber Inspecs Add-on to minimize the time spent running valuable performance and safety simulations. With Saber Runtime, engineering and safety teams can simulate thousands of scenarios that would otherwise have been too costly to perform.

Supported Operating Systems

- Windows XP
- Windows 7
- Windows 8
- Windows 10

For More Information

Learn more about SaberRD and the rest of the Saber product family at www.synopsys.com/saber.

SaberRD Capability Highlights

Switching power supplies	Aircraft power networks	Automotive electrical systems	Hybrid electric vehicle systems	Renewable energy applications
• Converters, inverters, rectifiers for single- and three-phase applications • Optimize system efficiency with detailed device models • Stabilize feedback loops and evaluate switching transients	• Complete design of AC and DC generation systems and ground/current return networks • Validate steady-state, transient behaviors and power quality • Fault analysis and worst-case analysis	• Alternator, generator and battery sizing • Load balancing, voltage transient and fault analysis • Validate power management strategies	• Electric machines and drive electronics • Component sizing • Power electronic and electromechanical integration	• Wind power generation, conversion and control electronics • Solar array characterization, MPPT control design and system integration

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Aircraft power networks

- Complete design of AC and DC generation systems and ground/current return networks
- Validate steady-state, transient behavior and power quality
- Fault analysis and worst-case analysis

Automotive electrical systems

- Alternator, generator and battery sizing
- Load balancing, voltage transient and fault analysis
- Validate power management strategies

Hybrid electric vehicle systems

- Electric machines and drive electronics
- Component sizing
- Power electronic and electromechanical integration

Renewable energy applications

- Wind power generation, conversion and control electronics
- Solar array characterization, MPPT control design and system integration

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Synopsys, Inc. • 690 East Middlefield Road • Mountain View, CA 94043 • www.synopsys.com

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