Saber Aerospace Overview

Proven Robust Design Solution for Aerospace Mechatronic Systems

Saber® is the proven standard for mechatronic system design and verification. Aerospace design teams worldwide use Saber to develop complex mixed-technology systems that must meet stringent performance and reliability requirements. Saber accelerates robust design with leading edge tools for design entry, device modeling, simulation, post-processing, and wire harness design and layout. Production proven, with hundreds of designs in multiple industries and disciplines, Saber is the leading solution for advancing aerospace system development from concept to reality.

▶ Model and analyze complete aerospace systems

▶ Simulate Power Networks, Flight Controls Systems, Avionic Networks and Wire Harnesses

▶ Choose from over 30,000 ready to use models

▶ Use industry standard modeling languages (MAST®, VHDL-AMS)

▶ Verify hardware and software interactions in embedded systems

▶ Fine-tune system performance and improve reliability using robust design

▶ Reduce development costs and shorten design cycles with virtual prototypes and advanced analyses

Design Capture and Simulation

Saber's easy to use design editor gives engineers the ability to design and simulate complete aerospace systems at any level of design hierarchy. Design teams can choose parts from Saber's large model library, or easily integrate their own models into the system. Once the design is complete, Saber's detailed analyses are accessed directly from the design editor. Simulation results can be overlaid on the schematic for quick viewing, or loaded into Saber's waveform analyzer for detailed analysis. Creating design documentation is quick and easy with graphics export in standard documentation formats including TIFF, JPG, EMF and BMP.
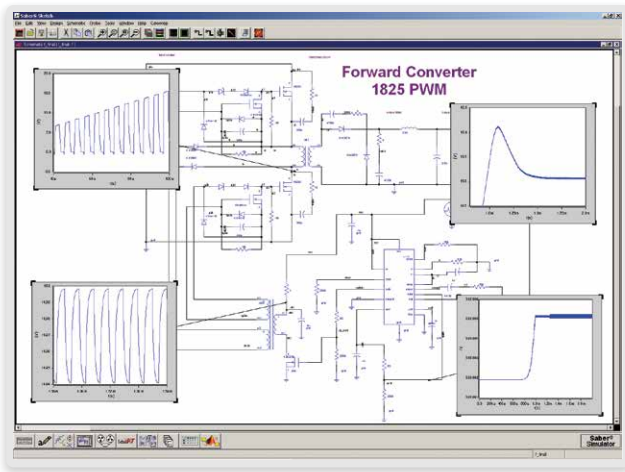

Data Visualization and Analysis

Aerospace design teams need powerful post-processing tools to quickly and completely analyze their simulation data. Saber's full featured waveform analyzer includes over 60 standard measurements, including time and frequency domains and statistical investigations. With Synopsys' patented Waveform Calculator, users can easily perform complex mathematical operations on entire signals. To extend Saber's post-processing capabilities, design teams can quickly create custom macros that automatically measure signals, perform calculations, and format plots. All graphs are easily exported for documentation.

Models and Modeling
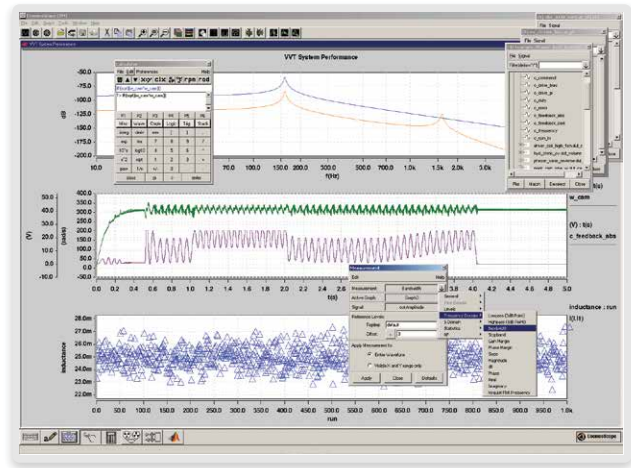
Aircraft design requires accurate model libraries and advanced modeling tools. Saber has the largest library of mixed-technology models in the industry. Models are available at various levels of abstraction, from high-level idealized transfer functions to precise, physics-based devices. These models are optimized for accuracy and performance and are based on the industry standard MAST and VHDL-AMS modeling languages. Complementing the extensive model library, Saber supports a wide range of modeling capabilities to meet the specific simulation and analysis needs of the aerospace industry. These capabilities include:

▸ Industry-standard modeling languages
  – MAST, VHDL-AMS, C, FORTRAN
▸ Model generation
  – State-AMS, Table lookup
▸ Model characterization
  – Diode, MOSFET, Magnetic, Battery, Fuse, Motor, Thermal
▸ Model import
  – SPICE, Simulink®
▸ Model re-use through co-simulation
 – Industry-standard VHDL and Verilog simulators, Simulink
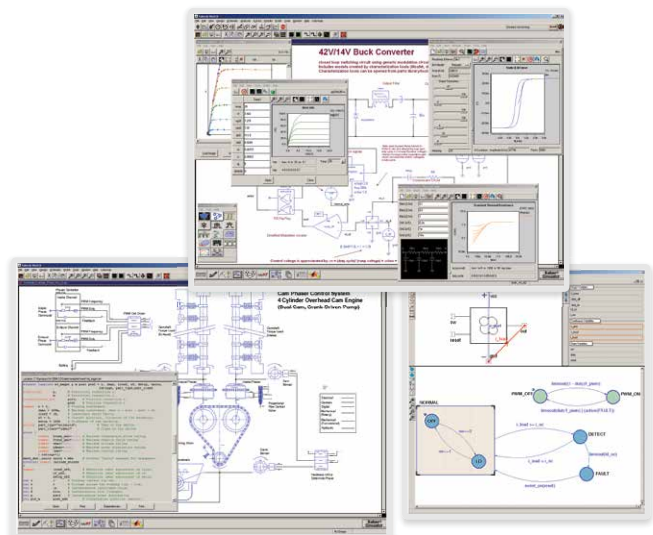
Robust Design Methods

Robust design methodologies help aerospace design teams identify, and compensate for, the effects of parameter change on aircraft system performance. Saber's advanced analyses (sensitivity, parametric, statistical, stress) give design teams the tools needed to implement robust design techniques. With these analyses, design teams can identify the parameters that most affect system performance, establish tolerances for the most critical parameters, investigate how performance is affected by random changes in tolerances, and analyze the operational stresses placed on system components.

Stress   Statistical   Parametric
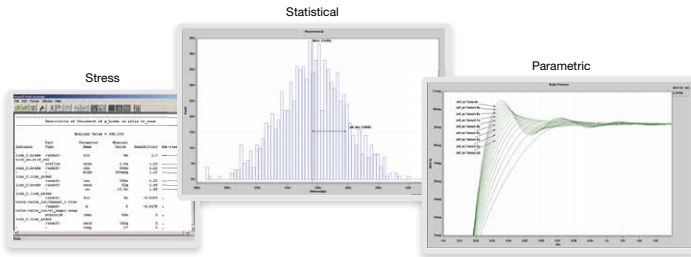
Failure Mode Effects Analysis (FMEA)

Modern aerospace systems are dependent on electrical control. Design teams must understand how electrical failures affect system performance. Saber's advanced analyses can be used to simulate and analyze systems under electrical fault conditions. A matrix of faults representing electrical device failures (e.g. system shorts or opens) is automatically created to evaluate system performance during each fault condition. Fault reports are automatically generated and used to assess the reliability of the complete design.
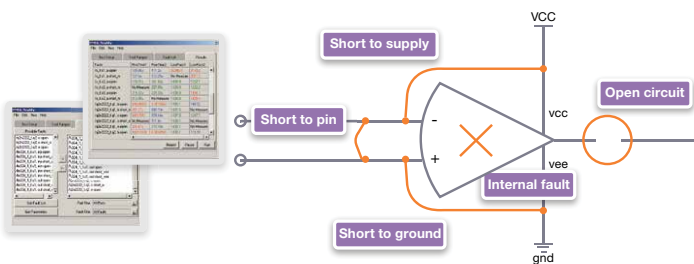

Wire Harness Design

Complete system design requires that cabling be included as part of the development process. Saber provides industry-leading capabilities for wire harness design, layout, and analysis. Tightly integrated with the simulator for complete system simulation, Saber's wire harness design solution incorporates functional, electrical, and physical design with full system verification in a single tool flow. Advanced features include:

▸ Complete data flow for electrical system design from concept to manufacture

▸ Single database architecture–all tools work from a common database

▸ Advanced design variation handling

▸ Utilities to streamline the design process, including connector management, automatic parts selection, and design rule checks

▸ Saber simulation support including time domain, frequency domain, and failure mode analyses

▸ Automatic generation of 2-D harness layout drawings and manufacturing information (e.g. DSI)

▸ Integration with leading MCAD tools (Catia®, NX,™ Pro/ENGINEER®)

3-D MCAD

Saber Harness

Saber Bundle
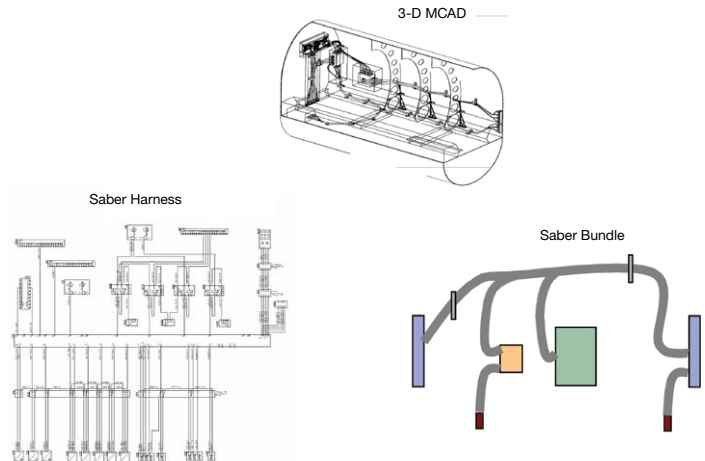
Summary

Saber is the leading, industry-proven solution for mechatronics system design and verification. Aerospace design teams around the world depend on Saber to improve the performance and reliability of their systems. Saber accelerates robust design and verification with state-of-the-art design and analysis capabilities. These capabilities span the aerospace system development process with leading edge tools for design entry and editing, device modeling and simulation, data visualization and analysis, and wire harness design and layout. With its comprehensive simulation and analysis capabilities, Saber is the preferred design solution for aerospace system development.