

The logo consists of the lowercase letters 'ae' in a bold, rounded, sans-serif font. The letters are light blue with a dark blue shadow effect, giving them a 3D appearance. The background of the entire image is a blue-tinted photograph of an astronaut in a white spacesuit working on the exterior of a spacecraft, with various mechanical components and cables visible.

**AEi Systems, LLC**

*"When Failure is Not an Option"<sup>sm</sup>*

**[www.AENG.com](http://www.AENG.com)**

**Analog Engineering  
Circuit Design & Simulation  
Worst Case, Failure & Reliability Analysis  
WCCA Tools and Templates  
SPICE Modeling  
Power IC Model Library**

# Analog Engineering Solutions

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In your business, you can't afford to take chances. That's why the most trusted technology companies in the world rely on AEi Systems to support their most critical requirements.

AEi Systems' meticulous analysis helps find and eliminate design flaws before they reach production. Our many years of experience in all forms of circuit analysis enable us to quickly fulfill your projects' needs and satisfy your most exacting customers.

You will be impressed with our engineering expertise, responsiveness, and competitive rates.

## Analysis Services

- Worst Case Circuit Analysis
- Reliability Analysis / MTBF
- Failure Analysis / FMECA
- Stress and Derating Analysis
- Monte Carlo Analysis
- Tolerance Database Compilation
- Magnetics Analysis
- RSS / Extreme Value Analysis
- Radiation Analysis

**“AEi Systems enables us to save on costs by providing us with on-demand qualified professionals seasoned in circuit design and worst case analysis.”**

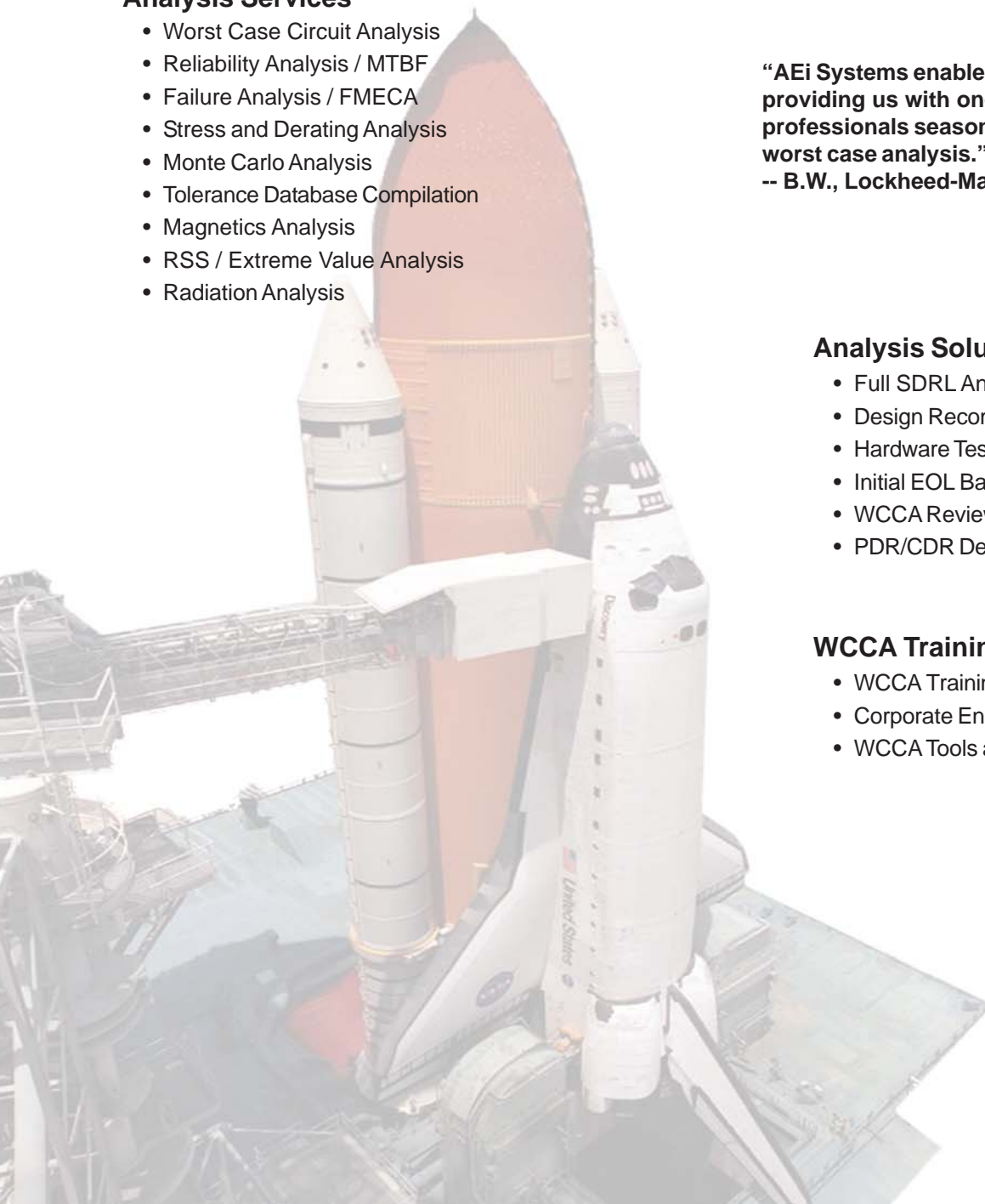
**-- B.W., Lockheed-Martin**

## Analysis Solutions

- Full SDRL Analysis Packages
- Design Recommendations/Fixes
- Hardware Testing and Evaluation
- Initial EOL Based Design Review
- WCCA Review / Audit
- PDR/CDR Design Review Support

## WCCA Training Solutions

- WCCA Training Courses
- Corporate Enabler WCCA Process Guide
- WCCA Tools and Templates Software



# Worst Case Circuit Analysis

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## When your top goal is mission success

Worst Case Circuit Analysis (WCCA) is not an after-the-fact exercise but a cost-effective integral part of the design process. When a WCCA is performed properly, the results often save millions of dollars, dramatically lessen the possibility of human injury, and avert potential disasters, both monetary and political.

WCCA is a cost-effective means of ensuring with a high degree of confidence that potential design defects and deficiencies are identified and eliminated PRIOR TO and DURING test, production, and delivery.

The typical cost of performing a rigorous WCCA is generally less than 1% of the program cost. The cost of not doing the WCCA can cost 100% of the program cost.

Worst Case Circuit Analysis doesn't cost money. It saves it!

## Representative Clients

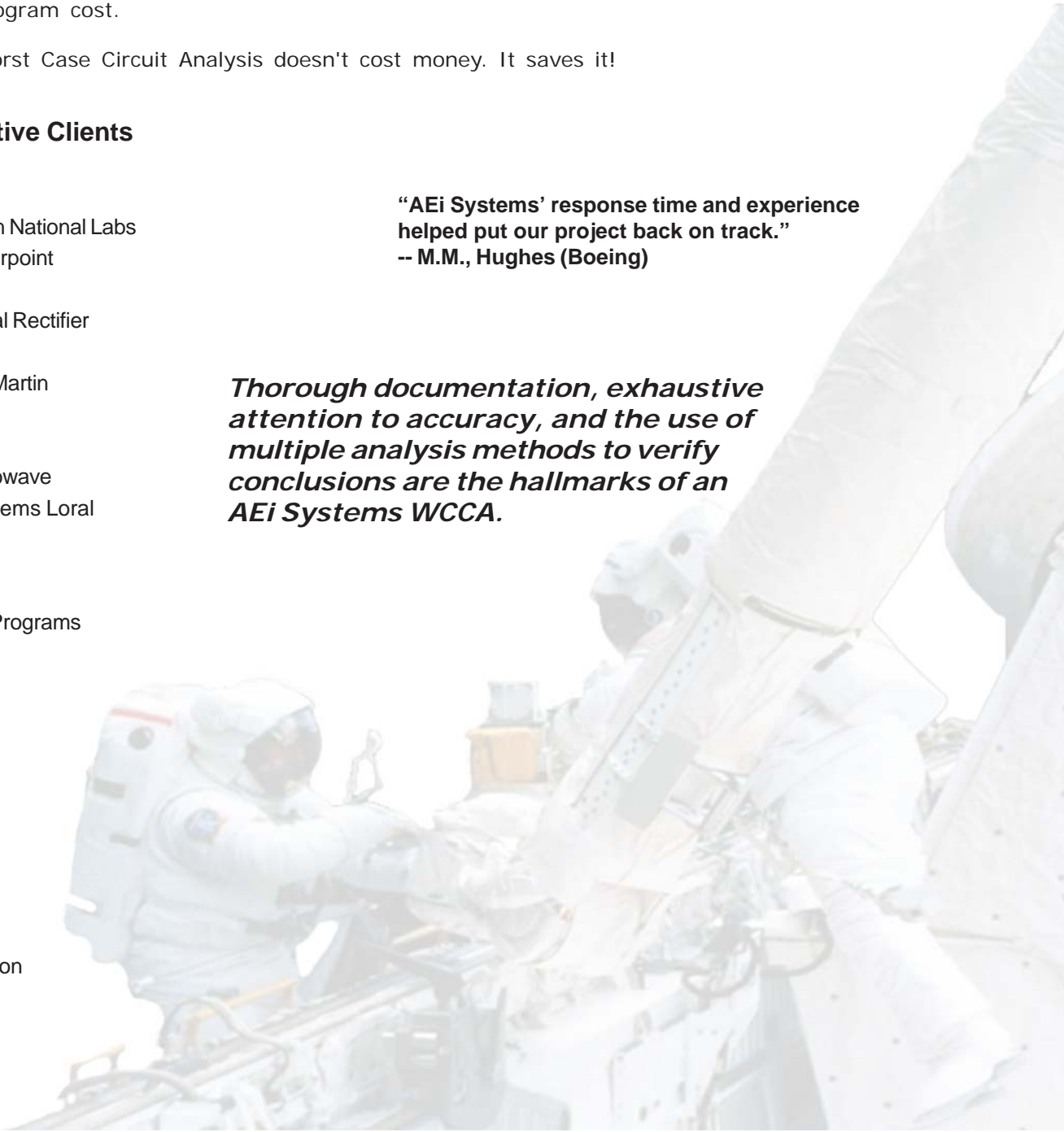
- Aeroflex
- Boeing
- Brookhaven National Labs
- Crane / Interpoint
- Honeywell
- International Rectifier
- ITT
- Lockheed-Martin
- Lucix
- Raytheon
- Sierra Microwave
- Space Systems Loral

**“AEi Systems’ response time and experience helped put our project back on track.”**  
-- M.M., Hughes (Boeing)

***Thorough documentation, exhaustive attention to accuracy, and the use of multiple analysis methods to verify conclusions are the hallmarks of an AEi Systems WCCA.***

## Projects

- Classified Programs
- CMIS
- CRIS
- HS-702
- Intellsat
- Juno
- Milstar
- MUOS
- NPOESS
- Omegasat
- P-81
- Space Station
- XPC



# SPICE Modeling

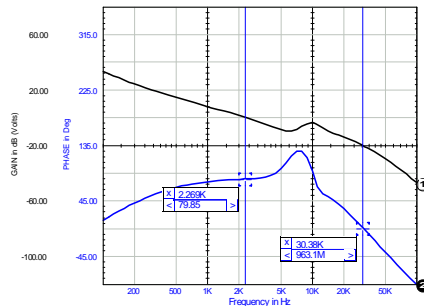
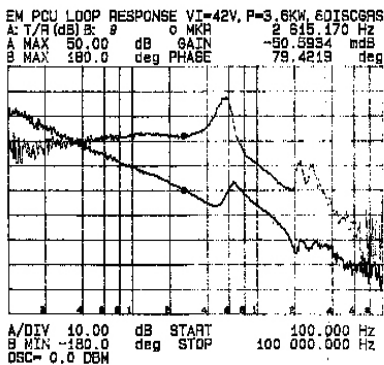
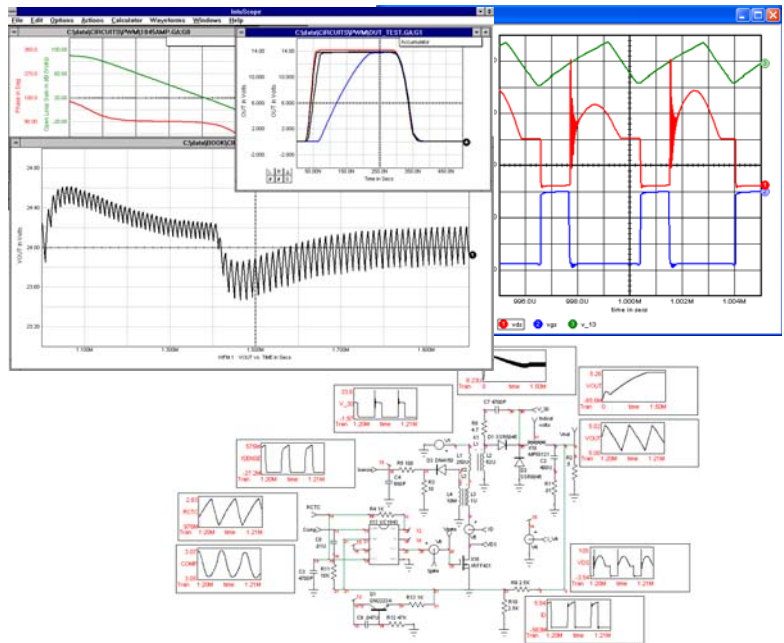
If SPICE can simulate it, AEi Systems can develop an efficient model that provides the accuracy and performance you require. AEi Systems has developed hundreds of SPICE models for discrete semiconductors, RF devices, PWM ICs, magnetic cores, linear regulators and dozens of other types of devices.

SMPS applications today are much more demanding than ever. Today's designs require increases in switching frequency, higher efficiency and lower standby current. State space based models simply do not reveal many important nonlinear factors that influence these performance characteristics. To address the needs of today's power supply designer, more advanced SPICE models are required.

**AEi Systems is the only source for accurate transient SPICE models of today's advanced Power ICs.**

## SPICE Modeling & Simulation

- PSpice, IsSpice, HSpice, & LTSpice
- Component, Circuit, System Level
- Analog/Power ICs
- Discrete Semiconductors
- Power Devices
- IBIS Models
- Magnetics & Transformers
- Inductors, Capacitors
- Mechanical and Solid-State Relays



## Recent Clients

- Texas Instruments
- Vishay/Siliconix
- Analog Devices
- Central Semiconductor
- National Semiconductor
- Intersil
- Renesas
- Micropac
- EMC
- Intusoft
- International Rectifier
- ON Semiconductor
- SSDI
- EMA Design Automation

**“AEi Systems’ models provide exceptional results. Their models correlate consistently with our hardware!”**

**-- L.J., ON Semiconductor**

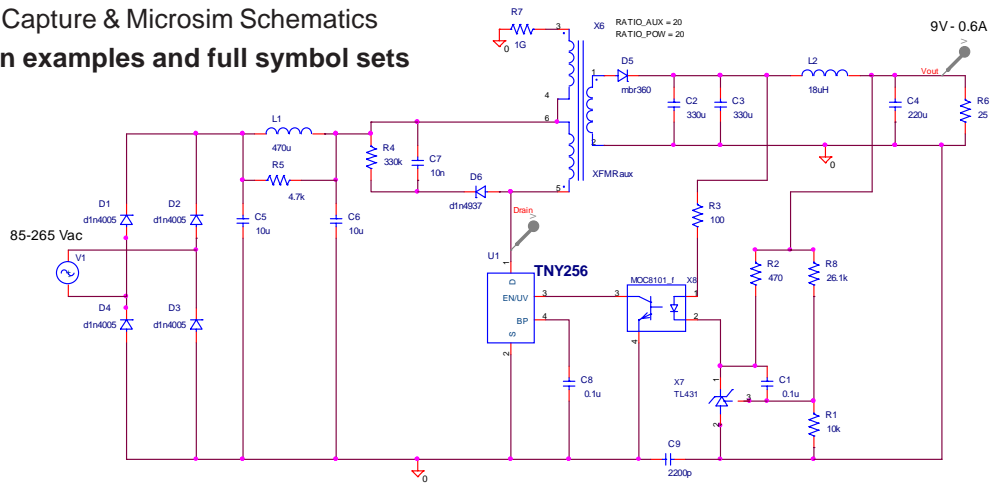


# The Power IC Model Library

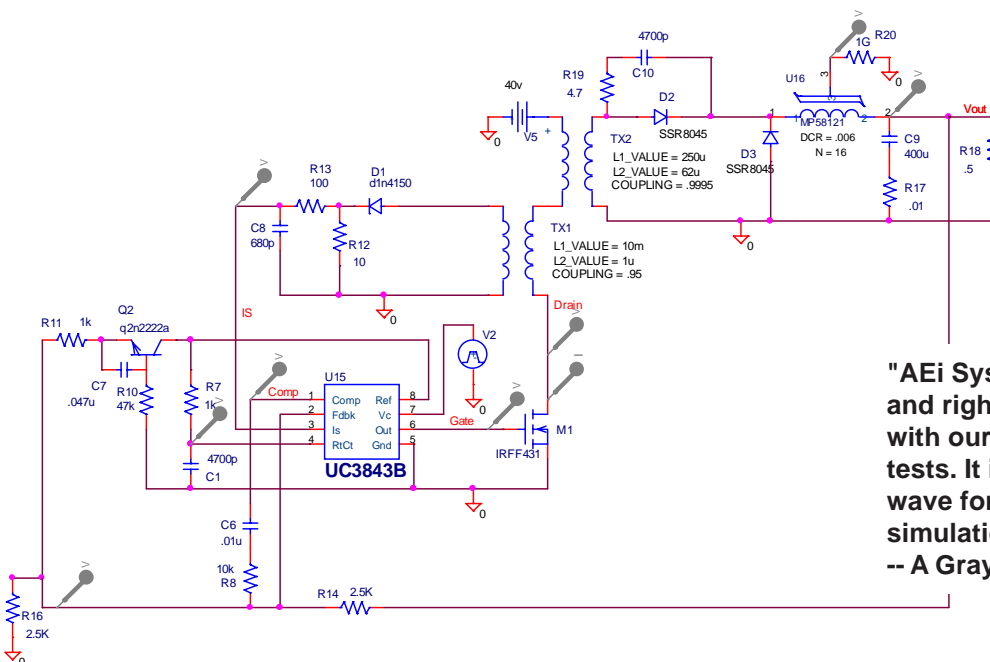
**“SPICE Models for the Power Electronics Designer” *sm***

## A Powerful Solution for Power Supply Designers

- Enable Your PSpice Power Simulations
- Popular parts: UC384x, UC152x, LT124x, UC182x, TL431, IR2110, UC3854, HS117R, UCC3895, UCC380x
- TI, Intersil, ON Semiconductor, Linear Technology, National Semiconductor, IR, Micrel, Vishay
- Accurate and Verified Against Bench Data
- Supports BOTH OrCAD Capture & Microsim Schematics
- Comes with application examples and full symbol sets



- Perform cycle-by-cycle simulations to show true large-signal performance
- Analyze large signal effects: start-up transients, power stage stress, step-load response
- Compute component stresses and test for excessive power dissipation
- PWM controllers, Switching regulators, PFCs, LDOs
- Magnetic Cores, Transformers, Opto-Couplers, Mosfet Drivers, Spark Gap



**“AEI Systems’ models are a real treat and right on the button compared with our scope waveform bench tests. It is a delight to see identical wave forms on the scope and in the simulation. Excellent job thank you.”**  
**-- A Gray Restech, NZ**

# Hardware Design & Analysis

AEi Systems provides design and analysis of power conversion and communications circuits for satellite systems and all commercial or military, ground-based and airborne, analog, digital and mixed-mode applications.

Our years of power supply analysis work have led to development of our own line of rad-hard Space-worthy DC-to-DC power converters. AEi Systems DC-to-DC converters bring our commitment of quality and durability to low-cost power systems hardware. Highly efficient units are available from 1W to 1.5kW ratings, with Space, military, commercial and custom screening available.

**“AEi Systems’ converters meet or exceed all of our expectations.”**

**-- C.E., - Northrop Grumman**

## DC-to-DC Converters

- Low-Cost and High Reliability
- 1W to 1.5kW
- Single & Multiple Output
- Mil-Std 461 / 1547
- Rad-Hard
- High Efficiency / Low Noise

## Representative Clients

- Aeroflex
- Alstom
- CERN / Brookhaven National Labs
- Lockheed-Martin
- Northrop Grumman



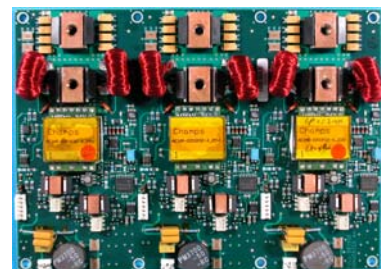
## Hardware Design Solutions

- Analog/Digital Circuits to Specification
- Complete Power Systems
- EMI Filters
- Magnetics
- Precision AC Power Sources



## Power Systems for Particle Accelerators

- Rad-Hard to High TID/Neutron Levels
- Magnetic Field Robustness
- Ultra High Reliability
- COTS Components
- High Power Levels



# About AEi Systems

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AEi Systems is the world leader in worst case, failure and reliability analysis, SPICE modeling, and power systems analysis and design.

Established as Analytical Engineering in 1995 to support increasing demand for Worst Case Circuit Analysis in the Space market, AEi Systems provides an array of on-time engineering design and analysis services to a demanding international clientele that includes nearly every significant IC and aerospace manufacturer and many of their respective customers.

AEi Systems' core strengths in circuit analysis and simulation have enabled us to expand into several areas of product design and development.

As we grow into the 21st Century, AEi Systems continues the tradition of service to a demanding clientele. Our offerings continue to grow dramatically through repeat business and referrals.

AEi Systems maintains a talented staff of full-time analysts, electrical engineers and a strong network of experts and consultants. This enables us to deliver our products and services on time, under budget and to customer specification.



**AEi Systems, LLC**

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info@AENG.com

### **Analog Engineering**

Analog Circuit Analysis and Simulation  
Worst Case Circuit Analysis  
MTBF, FMECA, Stress and Reliability  
Failure Analysis  
WCCA Training

### **SPICE Modeling**

Power ICs, RF, Discrete, Analog, Systems  
PSpice®, IsSpice®, HSpice®, LTSpice®  
Power IC Model Library

### **Design & Manufacturing**

Power Systems  
DC-DC Converters  
Transformers and Magnetics  
Breadboard Fabrication and Evaluation  
Source Control Drawing Generation  
Preparation of Design Review Packages

*Specializing in Military & Aerospace Needs*

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