

# Electrical Design Capabilities

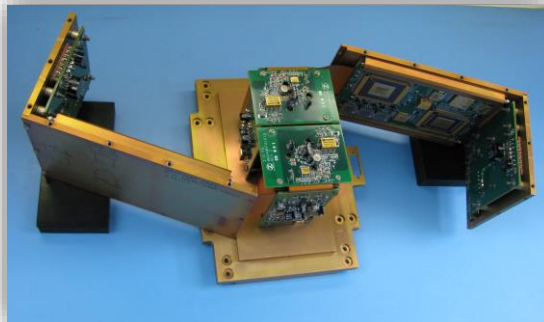
## Multi-Disciplined Engineering: Electrical Design Capabilities

Performance - For the NASA Goddard Space Flight Center, ZIN designed, built, tested, and delivered the MMSAMS Flight Inertial Navigation avionics units for GSFC. For this instrument ZIN designed a mixed-signal Rigid-Flex PWA to IPC-6013 specifications.

This design allowed for signals to be collected, filtered, digitized and processed to allow for digital transmission of high dynamic range data with real time temperature and bias stability.

### TOOLS:

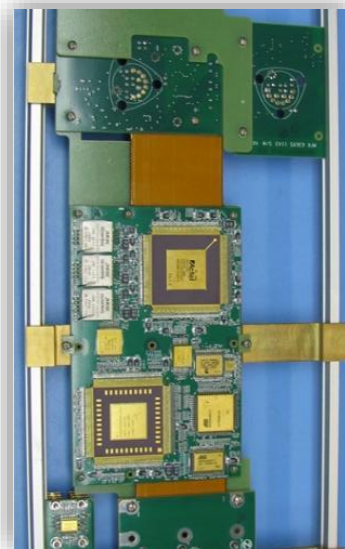
- Altium Designer
- Mentor Xpedition Designer and Layout VX2.5
- OrCAD
- Pro E – Wildfire 5.0.
- Siemens – NX 9.0
- Hyperlynx, BoardSim and LineSim
- TMG: Thermal Analysis
- NX Nastran: Structural Analysis
- PowerSIM : Power Electronics Simulation



ZIN has design experience for space-rated digital design, mixed signal instrument systems, RF, Microwave electronics, and power products. The primary ECAD tool set for electrical design is Altium Designer. The schematic design is done concurrently with LineSim analysis (or other simulation where appropriate) to ensure performance. Concurrent with Layout, BoardSim analysis is completed. For specialty products additional analysis such as PowerSIM may be applied. Rules are applied to insure compliance with IPC and NASA requirements for pad sizing and inspection requirements. Concurrent with design, parts controls are planned for the product. Part requirements are assessed, and nonstandard and source controlled part procurements are planned.

Before procurement of EEE parts or bare PCB's the team performs additional analysis including worst case circuit analysis (WCA), part stress analysis, and radiation assessment against requirements. WCA typically includes: Memory Bus Timing Analysis, Timing Analysis, FPGA Static Timing Analysis, Signal Integrity Analysis, Temperature Sensitivity, Power Up Sequence / Power-On-Reset, and Analog Circuit Error Analysis.

- ❑ ZIN develops circuits, mixed signal boards, and single board computers for embedded systems.
- ❑ This involves the design, analysis, and fabrication of digital and mixed signal based solution for space-rated, radiation tolerant systems.
- ❑ In addition, ZIN has experience with power electronics circuits for mission and life critical spaceflight applications.
- ❑ Total Ionizing Dose and Single Event Upset / Effect are typically reported as a separate analysis.



**ZIN Technologies**



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