



ZIN Technologies

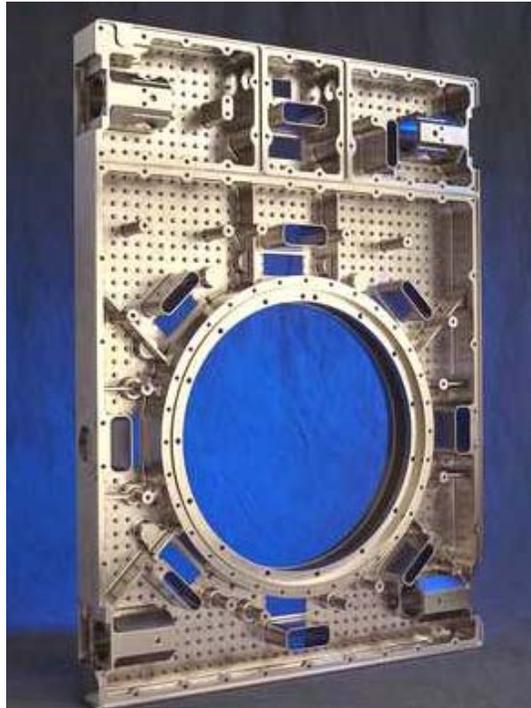
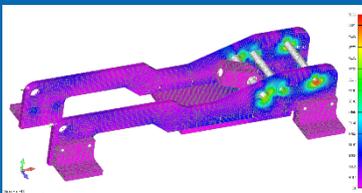
## Mechanical Design Capabilities

### Mechanical Design Capabilities

Our team is capable of designing complex aerospace products. CAD model data is used downstream in finite element analysis, thermal analysis, rapid prototyping, tooling design, and CNC manufacturing. Electrical board designs developed in Mentor Graphics are seamlessly translated to the Mechanical CAD package via Intermediate Data Format (IDF) file export. This allows verification of potential component interferences and PWB attachment points. Cable routing, performed during mechanical modeling, is directly related to the wiring diagram within the mechanical CAD software.

#### TOOLS:

The primary tool set for mechanical design is Pro-Engineer Creo 2.0 and Siemens NX 9.0. These are 3D CAD/CAM/CAE feature-based, associative solid modeling software packages. They provide the platform for solid modeling, assembly modeling and engineering drawing development.



ZIN employees skilled engineers who can support the mechanical design of space-rated hardware. ZIN provides design, development, and manufacturing of new electro-mechanical hardware for aerospace application. These include materials selection, detailed design, analysis, verification, and validation. Verification of that hardware is to requirements as defined in ZIN generated verification tests. ZIN has developed plans and conducted vibration, shock, thermal testing, pressure system design, proof pressure and leakage test plan development and test execution. Designs are completed with the tools as described in Section 1.3.

ZIN has extensive experience in design for manufacture including 3D printing additive manufacturing, fixture design, low volume and high volume manufacturing.

- ❑ Complex fluid system development is achieved using the piping application within the mechanical CAD software.
- ❑ Advanced surfacing tools allow for the generation of complex shapes such as those used in an exercise harness developed for astronauts aboard the International Space Station.
- ❑ Kinematic and Dynamic analysis are performed within the mechanical CAD software to evaluate real-world behavior of designs without the need for physical prototypes.
- ❑ Dimensioning and tolerancing per ASME Y14.5M – 1994 insure that design geometry is clearly and uniformly described.
- ❑ Detailed stack-up analysis ensures proper fit of all parts and assemblies within the allowable tolerance variation.
- ❑ Hardware design tolerances are specified to ensure proper fit and function while minimizing fabrication costs.



**ZIN Technologies Inc.**

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Founded in 1957, ZIN provides multidisciplinary engineering services to NASA and the aerospace industry and has managed the development of space flight and ground system hardware (aerospace/space systems) from formulation, design, and development through to fabrication, integration, testing, verification, and mission operations.

Our experience includes the development and validation of new technologies (sensors, inertial navigational measurement units (IMUs), composites, advanced acoustic resonant attenuation, optics, power, additive manufacturing and wireless/RF), ISS research investigations, space launch systems (Orion, commercial crew/resupply), satellite (IMU) accelerometer systems, and space based human research projects enabling future space and science missions.



**Focus on Quality - Certified and Compliant with Industry and Government Quality Standards**



**ZIN Technologies, Inc. is an experienced developer of ground and flight systems for manned and unmanned aerospace applications. Marking history for almost five decades, we have provided integrated hardware and software development products and services to NASA, DoD and Fortune 500 companies.**

## OUR PRODUCTS & SERVICES

|   |  |   |                                    |   |                                   |
|---|--|---|------------------------------------|---|-----------------------------------|
|  | SPACE SYSTEMS<br>INTEGRATION &<br>OPERATIONS |   | MANUFACTURED<br>PRODUCTS           |  | ADDITIVE<br>MANUFACTURING         |
|  | ENGINEERING &<br>TECHNICAL SERVICES          |  | HARDWARE & SOFTWARE<br>DEVELOPMENT |  | HUMAN HEALTH &<br>MEDICAL DEVICES |

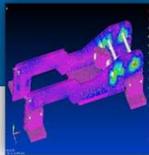
**Research & Technology**



**Systems Concepts**



**Systems Design & Analysis**



**Engineering & Manufacturing**



**Systems Assembly**



**Systems Integration & Test**



**Management & Mission Operations**



**Logistics & Sustainment**



- Minority Owned-SDB
- AS9100 certified
- Experienced Team of scientists, engineers, designers, and technicians
- DCAA Approved Forward Pricing
- Headquartered Cleveland Ohio
- Award Winning Capabilities

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