



Adaptive Innovations

Adaptive Innovations offers infinite possibilities for HALT/HASS fixturing solutions. We commit to provide the highest quality of service and engineering solutions. A-I continuously exceeds our customer's expectations by cost effectively applying our experience and resources to each project's unique demands.

Use an A-I engineer to drive your fixturing project to production, and learn the advantage of working with Adaptive Innovations Corporation!

About Adaptive Innovations Corporation

A "Turn Key" Design House, A-I offers development services from initial fixture conception through proof of screen.

Experience ranging from simple bench top HALT fixtures to modular HASS production fixtures optimized for throughput and pre-HASS functional screens.

A-I maintains in-depth knowledge of test chamber vibration and thermal performance.

We utilize Solidworks 3D Solid Modeling to assure our design meets all of our customer requirements.

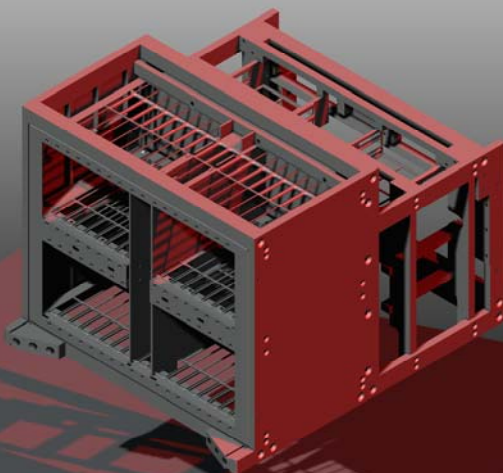
We also use Cosmos software to analyze our designs, both for strength and airflow dynamics.

Superior customer service is our primary objective.

Avoid costly time and errors by using Adaptive Innovation's experience. A-I will get your project completed on time, to specification, and optimized for cost.

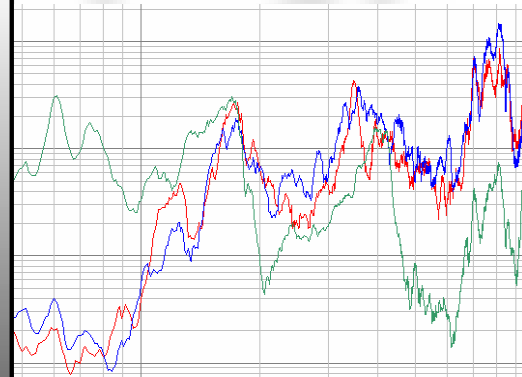
Adaptive Innovations commits to provide rapid response to fixture inquires.

HALT/HASS Fixture Solutions



Services

- ❑ Free Quotations and Rough Order of Magnitude (ROM) estimates
- ❑ HALT/HASS Fixture Design and Development
- ❑ HALT/HASS Fixture Build from Prototype to Production
- ❑ HASS Process Consulting
- ❑ HASS Development Consulting
- ❑ Proof of Screen Consulting
- ❑ Manufacturing Integration Consulting
 - ❖ Implementation
 - ❖ Ramp Up
 - ❖ Process Development and Procedures
- ❑ Troubleshoot and Analyze Existing Fixtures



Industries Served

- ⊕ Aerospace
- ⊕ Defense
- ⊕ Communications/Telecom
- ⊕ Consumer Products
- ⊕ Medical
- ⊕ Scientific
- ⊕ Industrial Products
- ⊕ Automotive
- ⊕ Information Technology

Bring your toughest problems in HALT/HASS Fixturing and Manufacturing Integration, and learn the advantage of using Adaptive Innovations!

Adaptive Innovations' engineers use their broad experience to accurately determine solutions for many common fixture challenges. By incorporating lessons learned we maintain the highest quality of service and engineering solutions.

Typical Fixture Challenges and Solutions

Inadequate Resources, Experience and/or Project Timing

Adaptive Innovations has the experience and resources needed to support any fixture project, no matter what the project timing may be. In most cases, experience is the difference when implementing HASS into program timing. Often, even the most resourceful engineering departments lack experience in the design and development of high rate of change thermal and 6 DOF vibration fixturing. Lack of experience can lead to project delays, increased design iterations and increased costs. Let Adaptive Innovations apply our experience to help your project succeed.

Maximizing UUT (Units Under Test)

Depending on product geometry and production volumes, increasing/maximizing UUT is ideal for HASS testing. Large UUT quantities can range from a few large assemblies, to over 500 small PCB cards. Designing a fixture to utilize available chamber volume, and functional testing abilities, is critical in optimizing any HASS program.

Large Product Size/Weight

Massive product assemblies can be challenging to fixture efficiently for HASS. In some cases, a highly engineered fixture (that can hold 4-8 large "server style" products, for example) can save tremendous amounts of HASS dollars by optimizing LN2 usage and available chamber volume. Fixturing can be the difference in determining how many chambers are required for HASS, as well as keeping the cost per test cycle to a minimum. Adaptive Innovations engineers fixtures for large and heavy UUT while optimizing operator ergonomics and overall plant safety.



Airflow Difficulties

Although not optimal for HALT/HASS testing, some products that must be tested in their case can create a challenge for ensuring uniform airflow across UUT. We utilize fixture layout, optimal material selection, and airflow dynamics to ensure that airflow is optimized. Our approach and experience can determine the difference between a fixture that works, and a fixture that simply holds the specified UUT.

Quick Change-Out Solutions (Thru-put)

Minimizing the time between tests results in optimal chamber utilization. Modular UUT inserts, cartridge and/or drawer systems can be designed to allow faster loading and unloading of massive and/or complex UUT quantities. UUT's can be pre-loaded into inserts, keeping the actual chamber loading/unloading time to a minimum. By having two sets of inserts, loading and unloading of product can be done while tests are underway. Automated loading and unloading of UUT is also possible.

Product/Assembly Response (Transmissibility)

Not all products are constructed in a way that vibration is easily transmitted throughout the product. Oversized cards and integrated chassis are just two examples of product that do not typically respond with traditional vibration fixturing. The result of inadequate fixturing is poor stimulation and an ineffective screen. Rely on Adaptive Innovations' experience to determine the best possible fixture design, and get the most of your HASS screen.

Out of Enclosure Assemblies / Mid-Plane Assemblies

Some of today's large telecommunication assemblies are designed around a "mid-plane." This design usually requires the assembly's chassis to be present, during all functional testing, resulting in poor transmission of vibration and thermal energy into the sub-assemblies. To improve the response of the mid-plane and its subassemblies, custom "inserts" can be designed to carry the assembly in final chassis configuration. The insert travels, assembled with product, through Pre-HASS, HASS, ESS, Burn-In, Functional Testing, and even open troubleshooting. Chamber change-out time is minimized and efficient.

HALT/HASS Fixture Design Capabilities & Considerations

- Design Conception through Fixture Implementation.
- Each Fixture Custom Designed per Specific Product Requirements.
- All Projects Cost Optimized.
- Vibration and Thermal Performance Optimization.
- Human Factors Incorporated.
- Product Thru-Put Maximized.
- Change Out Time Minimized.
- Manufacturing and Test Procedure Development.
- Plant and Personnel Concerns.
- Dependability and Reliability.
- Longevity beyond Project Life.
- Integration with other Production Tests.
- Pre-HASS or RMA Troubleshooting Fixtures.
- Cable Management Systems Design and Development.
- Validation and Verification of Fixture Designs including: Vibration Response, Thermal Response, and Documentation.

HALT/HASS Fixture Solutions



**Developing HALT/HASS Fixturing Solutions is our primary business.
Work with Adaptive Innovations to find out why!**