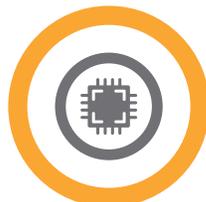


HALT/HASS Testing

An Industry Insight Paper



Introduction to HALT/HASS

The best way to understand HALT/HASS testing is to start with the basics. We could get into details about temperature ramp rates, test fixtures and more, but the technical details won't matter until you understand what these tests can offer: stronger, more consistent products.

In this paper, you'll find a non-technical description of some very technical processes. It will help you gain an understanding of what the terms HALT and HASS really mean, and you can then decide if it is something you want to invest in.

What do HALT and HASS really mean? Why do they matter to designers and manufacturers?

Overview

HALT and HASS are testing types that evaluate a product's resistance to environmental stresses, including temperature, humidity, and vibrational stress. To perform the testing, we place the products in a chamber and heat/cool/shake them, learning their tolerances and weaknesses and ultimately proving their durability.

- **HALT (Highly Accelerated Life Testing) is performed during the design phase, pushes the product to failure, and teaches us which components fail first.**
- **HASS (Highly Accelerated Stress Screening) is performed throughout manufacture, immediately identifying any weaknesses introduced by changes or flaws in the manufacturing process.**

Now that you know the basics, we'll explain a bit more about HALT and HASS.

This is our Qualmark HALT/HASS testing chamber.



What is HALT?

HALT stands for Highly Accelerated Life Testing. It is a technique in which you expose your product to high environmental stress levels in order to quickly find the weakest links in your design. These weak links are latent defects in your product that will ultimately fail, probably at the worst possible time: in the field with your customer.

Why should I perform HALT?

By stressing your product and exposing the weakest links in your design, you have the opportunity to improve upon your product before the design is completely locked in.

When should I perform HALT?

HALT is usually performed when your product is in the prototype phase. At this point you can quickly make cost-effective changes before the final product is dialed in. HALT is a relatively fast process. It takes days, not weeks or months.

What do I gain from investing in HALT?

- You gain reliability for your product.
- You gain cost savings by avoiding costly warranty returns.
- You gain additional lifetimes of use for your product by making it more robust from your corrective actions.
- You gain satisfied customers that will return for more of what you are offering.
- You gain larger margins in your product as a result.

HALT is one of the few times when failure equals success. By forcing your product to the point of failure during testing, you can apply corrective action that will lead to ultimate success.

Knowing when your product fails lets you make informed improvements.

What is HASS?

Highly Accelerated Stress Screening is a production screening technique to quickly identify weaknesses that could be introduced by changes or flaws in the manufacturing process (including process-related or supplier discrepancies). While this screening is aggressive and meant to be performed on every product, it is fine-tuned to detect weaknesses while leaving many lifetimes of field use in your shipped product.

Continuous quality testing identifies defects and reduces out of box failure.

Why should I perform HASS?

By stressing your product during HASS you detect any weaknesses or infant mortality in your manufactured product. During the lifecycle of your product, manufacturing changes ultimately occur (whether intentional or not). Product reliability should be continually evaluated with HASS to ensure that this reliability has not been compromised.

When should I perform HASS?

HASS is performed during the production phase. In highly regulated industries such as Aviation, Military, Medical and others, HASS testing can occur on every piece produced. Other strategies could include testing a unit from each "batch" or run to ensure that nothing changed that affected the robustness of the design. At a minimum you can perform HASS when you deliberately make a change or need to make a change as a result of a component or supplier change.

What do I gain from investing in HASS?

- You gain assurance that the reliability of your product has not been compromised.
- You gain cost savings by avoiding costly warranty returns.
- You gain the ability to take corrective action before shipping a large quantity of flawed product.
- You gain confidence that your processes have remained consistent.
- You gain satisfied customers.

With HASS, you have security and continued quality assurance.

The importance of quality

It's a challenge to design long-lifecycle products. It's especially a challenge to create these products in such a way that they will continue to provide valuable margins, even through manufacturing changes.

HALT can help ensure the quality of your design. And HASS can ensure that each product run is as perfect as the first. Whether you are challenged with a complicated supply chain, regulated industry, or environmental ruggedization, HALT and HASS can improve your product and increase customer satisfaction.

Together, HALT and HASS let you design and build better, more reliable products.

Interested in HALT/HASS testing services at Videon?

Call Customer Account Representative Tina Angellotti today at (814) 235-1111 x303.