

## Why HALT?

To remain competitive in a global marketplace, businesses must continue to seek ways to deliver products at the lowest possible cost, faster, and at a higher quality level than their competition. The continuing trend of moving manufacturing to offshore locations in order to cut costs has impacted the entire product design and manufacturing cycle. The trickle down effect of this trend can negatively impact the research, design, engineering, and reliability testing of these products. The result is a need to effectively manage the development, design, and testing cycle, and to provide a high level of confidence that the product will meet the consumer and business expectations that are critical to long-term success.

A cost-effective means of assuring a high level of confidence in the development, design, and reliability of a new product is through HALT testing. HALT testing is an inexpensive and time-efficient method for significantly reducing the product learning cycle and development phase by quickly identifying product weaknesses. HALT testing can empower the designer with the knowledge necessary to develop a product that meets robustness requirements, and improve the overall product quality **before** production.

From design to manufacturing and beyond, the absolute value is in the opportunities for improvement in all aspects of the product life cycle. HALT testing can also support current validation programs by offering insight that typical reliability strategies may not capture.

Although HALT testing is best used to discover the weaknesses of a product by incrementally controlling variables such as temperature, vibration, and power loading, it also explores the product's operating and destruct limits and its effects from vibration and thermal shock.

Since the introduction of HALT testing methodologies, the process has grown and evolved to serve many roles. For example, a major issue facing many companies moving manufacturing overseas is process control and assurance. A side-by-side HALT comparison test, comprised of samples from different locations, can offer a quick comparison, helping to quantify damage and give a good status of the production quality level at the new location. With proper failure analysis techniques, failure modes can quickly be detected and analyzed to determine root cause.

HALT can also act as a vehicle to test and verify RoHS compliant products. It can supplement Tin Whisker reliability test programs and provide customers with a comprehensive, cost-effective, and straightforward means of comparing "old vs. new."

As HALT technology continues to evolve, the gap in "comparing apples with oranges" will narrow and the process will replace traditional test qualifications. HALT testing now serves a broad



ISO/IEC 17025





# Technical Spotlight

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range of industries including automotive, consumer products, military, telecommunications, medical, aerospace, and many others. Trace Laboratories, Inc. has two HALT chambers and a highly experienced staff with nearly 10 years of involvement in these industries.

For more information and a complete listing of all our capabilities, please visit us on the web at [www.tracelabs.com](http://www.tracelabs.com) or email us at [info@tracelabs.com](mailto:info@tracelabs.com).

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