

## HIGHLY ACCELERATED LIFE TEST - HALT

- ✓ Measure Product Robustness (Margins)
- ✓ Increase Robustness (Expand Margins)
- ✓ Prepare for Screening & Demonstrations

HALT (accelerated stress testing) is an extraordinarily powerful tool which substitutes stress level for time. This is different from DVT in that HALT does not attempt to simulate a field environment, it stimulates aggressively to find weak links. Stresses are applied in an incremental fashion gradually to discover weak links (failures). Those weak links are the same as would be found in the field over time (see S-N diagram). The purpose of HALT is to determine the margins and expand them by identifying design weaknesses and helping to solve them.

Ops A La Carte pioneered the introduction of HALT over ten years ago. Today we help new users adopt HALT and assist in improving the quality of established programs.

### PRE-TEST PLANNING

HALT is not a specification driven test, it is guided based on experience. Users attempting to apply HALT in a cookbook fashion easily skip crucial steps and miss key failure modes. Technology specific expertise is crucial in tailoring procedures to match unique technologies in each product tested. Proper pre-test planning ensures maximum effectiveness. Ops A La Carte meets with the client's staff to develop a comprehensive Plan incorporating all of the information to conduct a successful HALT such as stresses to be applied, number of samples, functional tests, failure criteria, thermocouple and accelerometer locations, etc. It also identifies the personnel required to participate, to perform troubleshooting, and to take corrective action.

- Typical Product ~\$ 1,000

### TEST EXECUTION

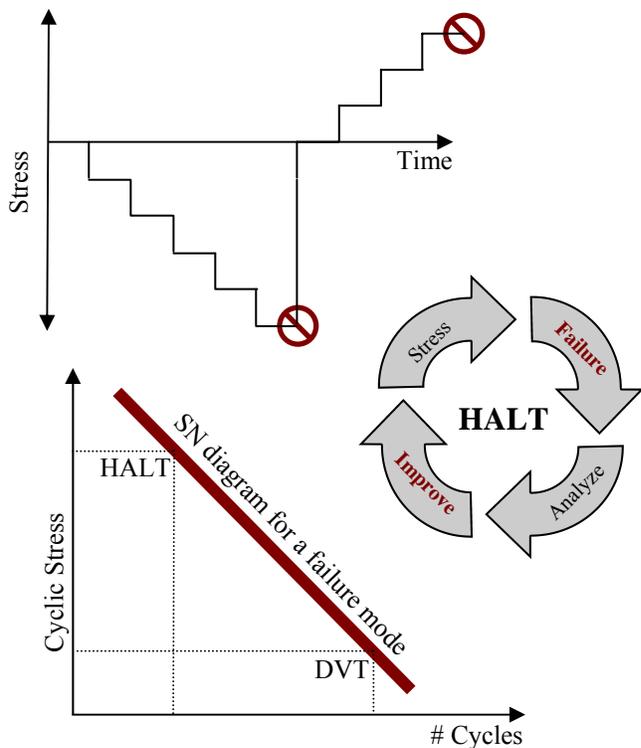
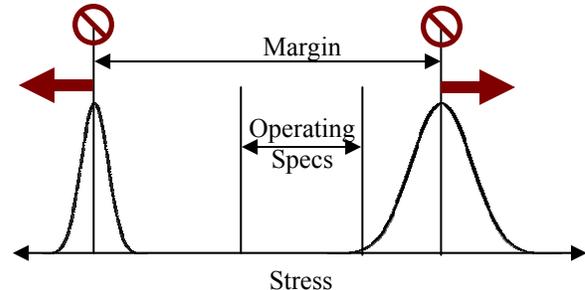
Ops A La Carte performs the HALT test, guiding and adjusting as necessary to ensure success. The operating and destruct limits will be determined (if possible) for each of the stresses applied, test data and HALT results are documented in a comprehensive report. The report contains all of the test results, the setup information, a management summary, product recommendations, and a recommended HASS screen profile.

- Typical Product ~\$ 5,000 - 7,500
- Complex Product ~\$ 7,500 - 12,500

### PRESENTATION

One to two hour On-Site review of test procedures, results and recommendations with What-If analyses of the effects of changes to the product.

- Typical Product ~\$ 500



### OTHER RELATED SERVICES

- ✓ Estimate product Failure Rate (MTBF) with Reliability Predictions at Component Level and System Level
- ✓ Establish risks associated with failures via Failure Modes Effects and Criticality Analysis (FMECA)
- ✓ Measure the product's reliability with Reliability Demonstration Tests (RDT)
- ✓ Eliminate infant mortalities with production screening (HASS)

### TERMS

Expedited (rush) service available at nominal fee  
 Formal quotes: Fixed Price or Time and Materials basis  
 Invoicing: On progress basis  
 Payment due: Net 15 days after invoice