Accelerated Life Testing (ESS, HALT/HASS, Time Stress Tests (Models, Applications) Examples - Jim McLinn

Abstract(s)

Here are several options for classes; pick one that best fits your needs

Class 1 - Accelerated Life Testing (can cover set up, implementation and data analysis)
Class 2 - HALT/HASS setup and successful completion
Class 3 - Weibull Analysis

Short Abstracts of each proposed session follow (Select 1)

Accelerated Life Testing can be a difficult to implement especially when the intrinsic life is long or sample few. Engineers, usually, do not understand the critical methods required to plan, to set up and run effective accelerated life tests. We can show you how to quickly recognize the common pit-falls and avoid them when improving your testing. Learn the value of these costly tests and benefit from their applicability. Topics include test set up, optimum sample size selection, or administration of the test and subsequent data analysis.

HALT/HASS can be an important step in any corporate improvement process as it complements many other tests. HALT has value because a small sample stressed to a high level will reveal about 85% of the intrinsic failure modes that would occur in the field. This knowledge presents an opportunity to identify the failures modes early at low cost. HALT is not without its limits. Set up of a HALT program with careful selection of stress and dwell times will be discussed. HALT works best with electrical circuits, but can also be used on small electromechanical systems or components. HASS (Highly Accelerated Stress Screen) is a similar tool that can be used in conjunction with HALT as a screen for the manufacturing process. Find out why HALT and HASS are being adopted by more and more companies.

Weibull Analysis is the basis for analyzing field data, in-house data, accelerated life testdata and many receiving inspection problems. Modern software tools allow one to quickly analyze problems, project the future performance or assess risk of a current situation. It takes time to learn the many uses of Weibull. Discover how to handle difficult or incomplete data, know when to select a distribution and why confidence limits are not always helpful. Shorten the time to problem resolution. The elements of creating a reliable mechanical design for parts, materials, processes or systems are more complex then commonly believed. Most companies learn slowly through trial and error which can be very costly. Computer controlled systems often make this situation worse since they involve software control of hardware. Avoid the common mechanical mistakes and discover how to roll out new products with greater assurance. Methods include Miner’s rule, irregular stresses and turning a stress into a reliability calculation.

Speaker BIO

Systems Engineer, Beckman Coulter

Mr. McLinn graduated from U of Minnesota with an MS in Solid State Physics. He is a Systems Engineer at Beckman Coulter working on resolving field problems on complex Immuno Assay systems. Previously, he was a consultant with Rel-Tech Group. Mr. McLinn has helped companies create overall improvement framework for products and processes. His clients represented a diverse array of industries ranging from medical instruments, flexible circuits, radios, appliances, household goods, farm implements, automobiles, industrial safety controls, and space systems. He had led teams in creating reliability predictions, completing FMEAs, running HALT, and working with international subsidiaries. Jim has experience in large scale CMOS devices, hybrid components, and appliance applications. Jim has served on the IEEE Reliability Society Administrative Committee from 2004 to 2010. He achieved ASQ-Certifications in Reliability Engineering (CRE) and Quality Engineering CQE. Jim was named Minnesota's "Young Quality Engineer of the Year (1982)" and was named Distinguished Engineer by the Minnesota Federation of Engineering Societies in 2000. He served in multiple ASQ offices, including Minnesota's section chair. He is an ASQ Fellow. Jim was chair of the ASQ Reliability Division of ASQ (1993-1995 and 2006-2008). Jim has published three monographs: Weibull Analysis, Mechanical Reliability, and Accelerated Life Test. He taught classes on reliability basics, accelerated life testing, Weibull Analysis and HALT/HASS performance