

Fatigue & Spectrum Analysis 2007

Learn new professional skills that will enhance your screening program. The seminar is focused on reducing costs through an understanding of the basics of fatigue and how Spectrum Analysis is used to improve the HALT/HASS Process.

- Presented with minimum math, and focused on applications -
The Speaker is a recognized pioneer in 6DOF Machine Vibration Control and Spectrum Analysis.

Class Syllabus

Power Spectral Density - PSD	Typical PSD spectrums
PSD is sum of Fourier spectra	Random vs quasi-random
Grms facts	Basic Grms Problem
Fatigue rules	Fact: Equal Grms does not mean equal fatigue
Screening bandwidth requirements	Ford case history
Different 6DOF machine spectrums	Time to failure on different 6DOF machines
Lessons learned from Ford case History	Fatigue is related to velocity not acceleration
Relationship of acceleration to stress	Defect $f(r)$ is most critical
The response curve	Miner's beta rule
Why defects fail early, degraded S/N	DP(f) fatigue spectrums
DP(f) assumptions	Signature analysis for maintenance
The fatigue equation	The generalized damage equation
Break	
Table uniformity survey case history	Survey method details
QualMark tripod sensor plate	Details of QualMark tripod
Using 4 zones for table survey	PSDs showing triaxial zone differences
Statistical survey analysis using Grms	Statistical survey analysis using fatigue
Resultant triaxial magnitude analysis	Resultant triaxial magnitude analysis
Resultant triaxial magnitude method	Measurement process
Resultant Grms plot	Use Spectrum Analysis for surveys
Are there 6DOF?	Benefits of spectrum analysis to HALT/HASS
Summary	

Attendees will receive a CDROM containing presentation slides, reference material, and a spectrum analyzer simulator loaded with actual digitized 6DOF machine recordings is provided to demonstrate the analysis functions described in the seminar.

*Half-day Seminar. Additional time for lab measurements may be arranged
Contact sponsor to register. Or call 800-444-7978*

The Presenter is George Henderson, pioneer of 6DOF machine control and spectrum analysis systems. He has been active in the shock and vibration for over 30 years, and published many papers in the field. He also conducts seminars on Shock Response Spectrum (SRS). George has consulted for IBM, Textron Defense Systems, Boeing, Ford Motors, Dell Computers, Maxtor Corporation, Medtronic, and U of Maryland CALCE. In the late 1970's he pioneered the field of PC based computer -aided testing (CAT) systems. He also developed the first PC based SRS software product in cooperation with Sandia Corporation under the US DOE Technology Transfer Program. Mr. Henderson is a member of several professional associations including ASTM, IEST, ISA and SAE.

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