Improved Reliability Through Environmental Stress Screening

May 11 - 13, 2011
Orlando, FL
CANCELED

A Three-Day Seminar on How to Boost Reliability, Productivity and Profits

Increase Product Reliability
Decrease Manufacturing Costs
Optimize Production Cycle Times
Improve Market Share
Increase Profitability

Presented by: Dr. Andrew Kostic

Components Technology Institute, Inc.
904 Bob Wallace Avenue / Suite 117, Huntsville, AL 35801
256-536-1304     256-539-8477     www.cti-us.com
Improved Reliability Through Environmental Stress Screening

About This Course:
This course teaches practical ways that manufacturing cost can be reduced and product reliability improved. It explores ways to reduce or eliminate the impact of life limiting failure mechanisms in design and manufacturing processes. Participants will have opportunities to review actual reliability case studies and to develop solutions for their own products.

What You Will Learn:
The basics of reliability and how to apply them in your company’s screening, quality enhancement and reliability improvements programs.

Why, how and when to perform environmental stress screening (ESS) and other forms of accelerated testing.

How to use ESS to enhance product robustness and manufacturability.

How to evaluate and specify supplier reliability performance.

Leading edge reliability improvement approaches including Parametric Screening and STRIFE (Stress Testing for Reliability Improvement).

Who Should Attend:
Designers, Manufacturing Engineers, Quality Engineers, Reliability Engineers and others involved in improving product quality and reliability will benefit from attending this course.

Course Materials and Notes:
Each student will receive a copy of the seminar notes, reference to materials used and CD of reliability software used in the course.

Principal Instructor:
Dr. Andrew D. Kostic has been in electronics industry for over 35 years. Andy has been involved in semiconductor production, medical electronics, computer manufacturing, and aerospace systems. He has participated in all phases of the product life cycle, including: design/development, component sourcing, manufacturing, failure analysis, supplier auditing, testing and reliability.

Dr. Kostic holds B.Sc. & M.Sc. degrees in Physics and a Ph.D. in Engineering with Reliability Specialization. He is a Senior Member of the IEEE and has been the chair of local IEEE Reliability Groups and has authored over thirty technical papers.

He is a recognized authority on environmental stress screening (ESS) and has taught classes in screening of electronics for over 20 years for many organizations including Motorola, University of Wisconsin-Milwaukee and Hong Kong Productivity Council.

Schedule:
Class runs from 8:00 AM to 4:30 PM each day. Lunch is from noon to 1:00 PM.

NOTES:
1) The schedules will vary according to individual class need.
2) Software will be demonstrated as the relevant concept is discussed.

Registration:
Register before April 18 for discount and assure enough attendees to hold the Seminar.

Do not book non-refundable services until you receive notice the Seminar is definite.

CTI reserves the right to amend the program should circumstances warrant such action.
In the event of course cancellation, CTI will reschedule the course or refund course fees. Liability for course cancellation is specifically limited to the amount of pre-paid course fees and excludes any incidental or consequential damages. Please, do not book non-refundable services until the course is confirmed.
# Improved Reliability Through Environmental Stress Screening

## Day One

- **7:45 AM** Registration/Check-in
- **8:00 AM** WELCOME & INTRODUCTION

**Course Overview:**
- Electronic Product Reliability Life
- Infant Mortality - Its Causes and Duration
- Random Life - Its Causes and Duration
- Wearout - Its Causes and Duration
- Mechanical Product Reliability Life - Its Causes and Duration
- Physics of Failure
  - Arrhenius equation & its proper application
  - Electromigration
  - Voltage accelerated mechanisms
  - Humidity
  - High cycle fatigue
  - Low cycle fatigue
  - Crack growth
  - Random vibration and related types
- Mechanisms
  - Thermal cycling
  - Solder cracking
  - Thin film cracking
  - Creep
- Reliability Impact of RoHS
  - Tin whiskers
  - Tin plaque
- Failure Rate Calculations
  - Confidence limits and intervals
  - Multiple failure mechanisms
  - Probability of failure free operation
  - MTBF, MTTF vs FIT
  - Coffin Manson
- Homework on Concepts

## Day Two

- Review Homework
- Demonstration of Reliability Software
- Basic Screening Concepts
- Benefits of Stress Screening
- Effects of Bad Parts on a PCB Yield
- Destruct Limits of Products and How to Define Them
- Why Good Units aren’t Harmed During Stressing
- Cost of Failure
- Types of Screening
- Screen Levels - Pros & Cons
- Designing a Good Screen
- Checking for Screen Effectiveness
- STRIFE
- Screened for Common Failure Mechanisms and Their Effectiveness
- Recommendations for Card Assemblies and Unit Screening
- Parametric Screening - What, How, and Why
- Additional Sources of Information
- Homework on Concepts

## Day Three

- Review Homework
- Review of Actual Product Screening - Part and Unit
- Screen Development Session in Teams
- Screen Program Presentation and Critique by Teams.
Improved Reliability Through Environmental Stress Screening

Enrollment:
Course enrollment is limited. Please reserve your place now!
For questions call 256-536-1304
Fax registration to 256-539-8477 or email to info8@cti-us.com

Fee Covers:
Training Notes, program materials, break refreshments and networking lunches. Lodging and other meals are NOT included. A Certificate of Attendance will be presented to each attendee at the end of Seminar.

Cancellations/Substitutions:
Cancellation can be made by April 18, 2011 and is subject of a cancellation fee or you may apply the enrollment fee to a future course. Substitutions can be made at any time.

Location:
Hotel will be announced when seminar is definite.

Lodging:
You are responsible for making your own lodging arrangements at the facility of your choice. Hotel information will be emailed with your enrollment confirmation. When contacting the hotel, mention that you will be attending the Improved Reliability Through Environmental Stress Screening to obtain any reduced room rate.

Suggested Attire:
Casual business dress is appropriate. Please be prepared for a moderate temperature variation in the seminar room.

Mail to: CTI, Inc.
Bob Wallace Ave., Suite 117
Huntsville, AL 35801
Fax to: 256-539-8477
Email: info8@cti-us.com

Please enroll me in the: Improved Reliability Through Environmental Stress Screening
May 11 - 13, 2011 - Orlando, FL

 _____ Fee: $1,500
 _____ Early Special: $1,200 before April 18

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