



## **Reliability Improvement Webinar Training Agenda**

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### **CASE STUDIES & PAST PARTICIPANTS ACHIEVEMENT:**

- Realize how world class companies manage Reliability and make major cost savings in Field Failure costs.
- Understand how to make your Accelerated Testing most efficient and low cost.
- Making Reliability Testing much more effective and NOT generic according to Military Std specs which many companies follow due to lack of knowledge.
- Realizing the need for making Accelerated Testing unique to the product type to maximise effectiveness.
- Ability to drive 50% REDUCTION in Field Failures within 12-18 months once a new and effective low cost programme set up.

## Introduction

Martin shaw of Reliability Solutions are now starting to provide their worldwide renowned Reliability Training programme to a wide range of clients and individuals via a webinar programme using Zoom Technology.

Classroom Training performed across Asia and in Europe has been successfully provided over the last 23 yrs to a wide range of electronic and electromechanical design / manufacturing companies. This is now being provided via a 3 session webinar programme, each session of 4.5 hrs duration, plus follow up assignments which are then sent directly to Martin for review and direct feedback to help student learning in a very pragmatic manner

Multiple feedback comments clearly highlight the benefits and importance of this training to ensure engineers and management can learn quickly and be in a position to make change / improvements immediately after the 'solution' based training.

## Comments from past participants:

"The course really applicable to most company. Not only necessarily for, reliability guy only. Designer should know also."

Plexus Manufacturing

"Martin is surely an expert in this field. I would recommend it to others who would need this training."

NI Malaysia

"Instructor credentials and evident in training"

Infineon Technologies

"Good presentation skills and have a lots of experience in this course."

Premium Sound

"Learn a lot of new knowledge "

Clarion

"Im specialist of statistical analysis, I know theory background. However martin can share some points in practical that make me more understand and, find out the way to apply in future"

Sanmina (Thailand)

"Fantastic. Gain a lot of knowledge from the course."

Finisar

"Very good! Definitely learn new things"

Bose System

"Very good! Definitely learn new things"

Bose System

"Martin is a serious guy and in reliability testing and with his last experience able give better insight and approach for NPD/NPI reliability testing."

Dyson Manufacturing

"Course was informative, new technique and modeling Instructor is very affective"

Sandisk Storage

"Well-versed with the training course and able to learn from its experience"

QAV Technologies

"The instructor have in depth knowledge in Reliability and Management"

Sandisk Technologies

"Very Knowledgeable on the topic and have increased my overall understanding of importance of reliability "

Dominant OPTO Technologies

"Actual cases sharing good for audience. Trainer very knowledgeable in the topic that being addresses "

Amkor Technology

"Good Knowledge on the industry and the needs to improve design for cost effectiveness"

Muehlbauer Technologies

"Simplify complicated reliability subject into practical model for electronics industry"

EDMI Meters

## Session 1

### Introduction to Basic Reliability Understanding

- Importance of Early Life Reliability and the Importance of Exponential and Normal Distributions in Reliability Prediction
- Definition of Hazard Rate and its importance in Reliability estimation at RD stage
- Understanding MTTF and why it is NOT a meaningful measure of 'Real Reliability' but how it is used in Reliability Planning

### Understanding Accelerated Testing to set up Predictive Testing Models for all products at Design Stage

- Maximising Acceleration Factors by combining Temperature, Thermal Cycling, Power Cycling, Humidity and Vibration
- Setting up the shortest, lowest cost accelerated life test models with stress type combinations

### Applying Accelerated Test models and optimising reliability testing

- Electronic and Mechanical product real life examples

### Evaluating the effectiveness of different stress test types with the Hughes Test Strength Equation to optimise Early Life Test programmes

- Developing an Effective Reliability test Strategy, using Modern stress techniques, including Random Vibration and Thermal Cycling
- Product Level Case Study with real life examples using the FREE Reliability Solutions calculation models

### Life Test Planning

- Theory behind classical Life Testing set up and how to meet targets more effectively via properly planned accelerated stress testing
- Using the FREE Reliability Solutions XL models to combine Acceleration Factors / Sample Sizes / % confidence levels

## Session 2

### Understanding the Statistics and Probability of Failure to define optimum Reliability test Sample Sizes

- Facing the challenge of not being able to afford statistically valid sample sizes
- Understanding the 'real' cost of minimizing reliability test budgets

### Relationship of Manufacturing Yield with Early Life Failure Rate

- Using yield performance data from PCBA and Product Assembly processes to Predict Warranty Field Fail Rates
- How to predict and control Early Life Failure Rates using manufacturing data, Case Studies using the FREE Reliability Solutions calculation model

### Electronic Sub-Assy Reliability Stress Testing

- How to Accelerate Failures by stress testing at sub-assy levels to drive FAST, EFFECTIVE, LOW COST, Reliability Testing that provides FAST RESULTS – Control Board and Power board case studies
- Mechanical and Electro Mechanical device application Case Studies

**The benefits of Sequential Reliability Stress Testing and how gradual cumulative stress testing finds more 'real' defects**

- LCD Panel Accelerated Stress Testing using a more effective sequential stress test approach with failure rate prediction modelling

**Developing a packaged semiconductor Sequential Reliability Stress Test Approach**

- Summary of defect types and types of Reliability Tests that are most effective in stimulating Latent Semicon defects

Understanding the best way to combine JEDEC test standards SEQUENTIALLY to maximise defect detection capability

**Session 3**

**Weibull Analysis of Failure data and how to apply to any product failure data and understand how standard software packages actually work**

- **Real Life Case Studies using FREE Reliability Solutions Weibull development models**

**Setting up strong Design Quality Test Programme and using Design Maturity Measurement to measure Design Capability**

- Understanding how this will benefit your organisation
- Making use of the FREE Reliability Solutions model

*On line workshop with groups developing a full reliability test solution for electronic consumer / commercial product*

*Direct on line and written Feedback from Martin Shaw on groups / individual effectiveness and where they could have improved their approach*

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# Principal Program Facilitator

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## **Martin a 35 years veteran expert:**

- Developed wide range of solutions for many companies on how to perform effective Reliability testing very unlike traditional standard approaches which are very weak and ineffective, his solutions have been applied at multiple World Class Companies; Artesyn Power, Acbel Power (World's 3rd biggest Power Supply maker), TPV China (World's biggest contract TV / LCD Monitor maker), Melexis Germany (Supplier of sensor devices to top Auto makers BMW, Mercedes, Porsche, Audi), GE, Bosch Automotive Products, Hua Wei Telecommunications, Range of semiconductor manufacturers including Renesas, Toyota, Hyundai Electronics, Fairchild, Atmel, etc)
- Provides solutions to the problems electronic and electro mechanical designers / manufacturers face when not being able to stimulate failure of design or manufacturing weaknesses which are later found in the field as major failing items
- Focuses on applying UNIQUE measurements in Design Cycle and during manufacture to accurately estimate and predict future failure levels.
- Enables designers and manufacturers to OPTIMIZE time spent on Reliability testing and REDUCE costs and avoiding old style wasteful testing, replaced by his more effective and lower cost proven methods
- Is an energetic and enthusiastic teacher who is able to inspire students to think totally differently and be able to quickly add real value to their own businesses.
- Works with range of low cost test companies who can provide services to companies which do not have relevant equipment to do proper and effective Reliability Stress Testing, enables companies to perform best possible testing at lowest cost based on reliability Solutions models
- Previously of IBM as Quality and Reliability Specialist within PC business unit.
- Worked as specialist in Product and Commodity Quality / Reliability optimisation for the Electronic Product Suppliers to IBM between the years of 1982-1997.
- During this time he worked extensively throughout Asia, USA and Europe with wide range of suppliers. Since 1997 he has worked with a wide range of companies Worldwide and provided solutions to ensure RAPID improvement in a dynamic environment.
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## **Reliability Solutions**

Reliability Solutions focuses on providing the complete range of Reliability Improvement tools and Application Solutions to Significantly Reduce your product failure levels at the most expensive end of the product cycle, the Consumer.

## **Martin's Blue Chips Clients:**

Daewoo Electronics, LiteOn, Astec Power, GE, Bosch Automotive products, Philips, TPV, Vestel, Acer, LiteOn Power, LG, Amtran, Fairchild Semiconductors, Atmel Semiconductors, Wolfson Microelectronics, ULTRA Electronics, Melexis Germany, IDEAL Heating, SKY TV, Hua Wei Telecommunication, Emerson Power, EE Phones, TCL, SMART Technology, Singapore Technology Kinetics, Artesyn Power, Acbel Power, Range of semiconductor manufacturers including Renesas, Toyota, Hyundai Electronics, Fairchild, Atmel, etc) and etc.

