

Managing and Improving Reliability across the Entire Life Cycle
From prototype into volume manufacture



Martin Shaw – Reliability Solutions
www.reliabilitysolutions.co.uk

Reliability Solutions – Background

Biography

Martin Shaw (BSc Hons), Reliability Solutions

18 Hillside, Houston, PA6 7NT, Scotland, UK

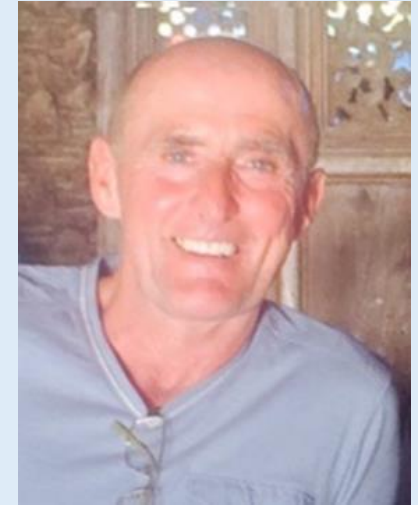
Reliability Solutions focuses on providing the complete range of Reliability Improvement tools and Application Solutions to Significantly Reduce your product failure levels at the most expensive end of the product cycle , the Consumer

Reliability Solutions was formed in 1997 by Martin Shaw, previously of IBM as Quality and Reliability Specialist within PC business unit. Martin Shaw 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. These companies include many Blue-Chip companies: Daewoo Electronics, LiteOn, Astec Power, Philips, TPV, Vestel, Acer, LiteOn Power, LG, Amtran, Fairchild Semiconductors, Atmel Semiconductors, Wolfson Microelectronics, ULTRA Electronics, Melexis, IDEAL Heating, SKY TV, Hua Wei, Emerson Power, EE Phones, TCL, SMART Technology, Singapore Technology Kinetics, Eetc.

He provides a range of 2-3 day Reliability Improvement Seminars and Application consultancy to meet the exact needs of any Electronic Manufacturer. He can be contacted at

www.reliabilitysolutions.co.uk

reliabilitysolutions@yahoo.co.uk



DAY 1 - AM Agenda

- Introduction and welcome from Reltech MD, Mark Ashley
- Understanding Basic Reliability Theory
 - Application of Bathtub Curve theory , 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 effect on Product Level Fail Rates
- Understanding Accelerated Testing to set up Predictive Testing Models for all products at Design Stage
 - High Temp Arrhenius model and Activation Energies used for key component failure modes
 - Maximising Acceleration Factors by combining Temperature, Thermal Cycling, Power Cycling and Humidity
 - Real Life examples of how to calculate Activation Energy level from experimental work at Product and Component level
- 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
 - **Using the FREE Reliability Solutions calculation models to combine Acceleration Factors / Sample Sizes / % confidence predictions**



DAY 1 - PM Agenda

Activity 1

- Classroom session where students use the Reliability Solutions calculation models to define an Early Life Reliability Test for their own products and share experience with class
- 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
 - Making Reliability more effective at Sub-Assy level
 - How to Accelerate Failures by stress testing at PCBA levels to drive FAST, EFFECTIVE, LOW COST, Reliability Testing that provides FAST RESULTS – Control Board and Power board case studies



DAY 2 - AM Agenda

- Tour of Reltech Reliability Test facilities
- LCD Panel Accelerated Stress Testing using a more effective sequential stress test approach with failure rate prediction modelling – Real Life Case Study
- Weibull Analysis of Failure data and how to apply to any product failure data and understand how standard software packages actually work
- 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 calculation model to measure and monitor your own Design Maturity during the critical development cycle
- Predicting Field fail Rates using development test Information from a Design Quality Engineering Test programme
 - Combining Electronic simulation predictions with Accelerated Test data and Design Maturity Measurements to make efficient Reliability Predictions BEFORE Mass Production



DAY 2 - PM Agenda

- Setting up 'Holistic' approach to New Product Introduction scoring and the scoring model used to manage NPI more effectively and Objectively to drive World Class Reliability
 - Multiple Case Studies of Electronic and Electro Mechanical products
 - SMART Meter, Automotive Sensor products, LCD TV, Power Supply, etc Case Studies
 - Using the **FREE Reliability Solutions** calculation model to measure the % NPI Score
- Q & A Session

