Applied Electronics Training
TRAINING & CONSULTANCY

HRD CORP CLAIMABLE

Build a Holistic Reliability Model to Predict Product Failures — Before They Happen.

Next-Gen Electronics Reliability:

Apply proven Holistic Reliability Improvement Model to Guarantee Success from Prototype into Volume Manufacture

4th – 5th June 2026 | Penang, Malaysia | 09:00 – 17:00 (GMT+8) Daily
8th – 9th June 2026 | Johor Bahru, Malaysia | 09:00 – 17:00 (GMT +8) Daily

Set up and Manage World-Class Reliability Improvement Programmes that Deliver Measurable Failure Rate Reduction and ROI

Comments from past participants:

"Very good knowledge & experience in consulting industry leading companies in REL modelling. Will suggest to WD management to have a semicoductor specific REL assessment modelling."
Western Digital

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

"Martin is very specialize and experienced"
Emerson

"This course suggested to do reliabiliy test at PCBA level which guide me to design new system."
Netgear (Hong Kong)

"Provide an overall idea of how to set up reliability test requirement & quantities way of ensuring the test is suitable & able to detect defects."
Flextronics

"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)

"He was an eye opener towards product reliability approach. Stress out product reliability is beyond marketing and conventional, importance of a good quality product."
Flextronics

"Very good! Definitely learn new things"
Bose System

"Workshop, It can let me clearly know how to set up / evaluate the reliability experiments for a new products."
Foxconn DCN

"Course was informative, new technique and modelling 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

"Approaches & techniques of Reliability Testing by considering early life failure."
Microchip Technologies

CPD MEMBER
The CPD Certification Service

What could an unreliable product really cost your company?

Your credibility? Your reputation? Your future?

Today's reliability leaders go beyond test-and-react approaches. They apply the **Holistic Reliability Improvement Model** — a proven framework that connects design, manufacturing, and field data to achieve measurable reliability gains. In this training, you'll see how to use practical, ready-made Excel models to predict, prevent, and control failures throughout the product lifecycle.

Next-Gen Reliability Enhancement is Now Within Everyone's Reach
Leading-edge reliability enhancement technologies used to be regarded as solely the province of safety-critical avionics and aerospace applications. But things change. These technologies are now within the grasp of all electronic designers and manufacturers; crucially the benefits in reliability that they bring are now expected by the market are now being questioned.

The idea of running months of extensive reliability testing is fast becoming a luxury – and one that few can justify.

Global customers seek out suppliers whose enhanced reliability performance improves their own market penetration and consolidates their own position – the rewards are substantial for those suppliers ready to meet the new demands.

The future belongs to those ready to predict and prevent failures across the entire product lifecycle.

How will this course benefit your company?

- Streamline your Reliability Testing and ensure only the most effective testing is performed
- Greatly Increase your capability of defect detection
- Drive Lowest field failure rates very quickly
- Drive Down cost of Failure in the field
- Lower the cost of your Reliability testing
- Bring engineers together in their understanding of reliability and how to improve it at all levels
- Provide a focused approach to Continual Improvement
- Bring BETTER quality new products into the market quicker
- Improve Customer Satisfaction

Learn Reliability in Record Time
Unlike traditional training where only 20 % of learning is applied, the Reliability Solutions method ensures over 80 % practical application. Real-life case studies, hands-on modelling, and guided workshops enable you to implement improvements immediately on return to work.

Why you should attend Next Gen Electronic Reliability:

- Learn about the REAL EFFECTIVE ways to test out your product reliability.
- Realize you should NOT rely on old standards to qualify your product reliability.
- Mix with like-minded engineers and managers interested in understanding more about reliability.
- Understand how NOT to miss defects in your reliability test.
- Understand how to get an edge on your competitors.
- Learn how to improve reliability at lowest cost.
- Discover what reliability means to the world's most successful companies.

Attend this to Master:

- Different reliability tests to detect the different failure mechanisms.
- Why Early Life reliability is so critical to new product success.
- Applying Test Strength models to make sure you MAXIMISE the defect detectability of your reliability testing.
- How to set up Design Reliability testing in totally different way to your existing approach.
- How to perform reliability testing at sub assembly level and AVOID the HIGH COST of complex product reliability testing.
- How to develop unique Accelerated Life Testing for any Electronic or Electro-Mechanical Product.
- How to set up Design Quality Testing and measure Design Quality Maturity measurement as Key Performance Indicator (KPI) during development.
- Taking Process Failure data and converting into Early Life failure rate prediction and AVOID the need for expensive Ongoing Reliability Testing (ORT) during volume manufacture.
- How to make your Reliability test approach WORLD CLASS.
- Learn how to develop a holistic reliability model at the NPI stage — combining all key reliability factors to accurately predict product performance and prevent costly failures.
- NEW: Understand the Cost of Quality (CoQ) and how reliability improvements directly reduce failure costs, warranty claims, and drive measurable ROI—supported by real customer case studies and practical tools.
- Understand how NPI reliability scoring and Cost of Quality (CoQ) analysis fit within the Holistic Reliability Improvement Model to achieve quantifiable ROI.

Next-Gen Reliability Excel Toolkit

Every participant receives the complete Excel Toolkit developed by Reliability Solutions — a complete set of proven calculation models aligned with the **Holistic Reliability Improvement Model.** These templates simplify complex reliability tasks — from accelerated-stress planning to yield-based field-failure prediction and Cost-of-Quality analysis — so you can customize and apply them directly to your own products and processes.

These ready-to-use templates simplify complex reliability modelling, allowing you to plan accelerated stress tests, predict product life, and quantify reliability performance with clarity. Each toolkit file is fully editable, enabling you to customize formulas and parameters to match your own products, processes, and environments.

Category / Concern	Modelling tools and activity	Purpose / outcome
Accelerated Life Testing (ALT) Planning	Acceleration Factor Modelling (High Temp, Humidity, Thermal Cycling)	Build realistic stress-to-time acceleration models (Arrhenius/Peck/Coffin-Manson) to shorten test duration while maintaining predictive accuracy.
Stress Test Optimization	Test Strength Modelling & Hughes Equation Application	Define the strongest possible early-life stress levels that maximize defect detectability and reveal weak design margins.
Design Quality Measurement	Design Quality Test Maturity Index & Scoring Template	Quantify design-reliability maturity throughout development and establish KPI tracking for continual improvement.
Manufacturing Reliability Prediction	Yield-to-Field Escape Model & Failure Rate Calculator	Convert yield data into early-life failure-rate predictions to identify latent defects before customer shipment.
Reliability Statistics & Sampling	MTTF Prediction Models with Binomial & Poisson Calculators	Right-size life-test sample plans and define confidence levels; avoid outdated JEDEC sample-size assumptions.
NPI Reliability Integration	NPI Scoring Model for Reliability Readiness	Evaluate new designs' readiness for pilot and mass production based on holistic reliability scoring.
Sequential Stress Testing	Matrix Approach Tool for Cumulative Stress Sequencing	Plan efficient multi-stress test sequences (thermal → vibration → humidity) to find realistic field failures faster.
Statistical Failure Analysis	Weibull Distribution Fit & Life Data Analyzer	Model time-to-failure data for reliability projections and visual failure-rate trends.
Holistic NPI Reliability Model	Integrated Reliability Prediction Framework (Excel)	Combine design, process, test, and field data to forecast reliability at the NPI stage and prevent costly post-launch issues.
Cost of Quality (CoQ) Evaluation	CoQ Analysis Workbook & ROI Calculator	Quantify reliability-driven savings by linking failure reduction to warranty, rework, and service-cost improvements.

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.

"This reliability training is the most practical one to solve my difficulties on driving the design team on decision for reliability"

Quality Manager

Next-Gen Electronics Reliability: Predicting and Preventing Failures Across the Lifecycle from Prototype into Volume Manufacture | 2 Days

The Course is designed to:

- Reliability engineers
- Test engineers
- NPI engineer / Manager (New Product)
- R&D engineers.
- Research Team.
- Electronic and electromechanical designers / manufacturers
- Quality Assurance/Quality Lab/Quality Engineers / Departments.
- Design Team / Hardware engineer / Product engineer
- Manufacturing
- Design reliability section.
- Electronic Team.
- Testing companies provides reliability stress testing.
- Anyone who is doing reliability testing at design stage.
- Contract manufacturers - There remains a need to understand reliability to add value to the service being provided to the client. This knowledge would be a big advantage for doing in-house. By in-house mean, they benefit from being able to analyse their test data themselves. Analysis of test data and being able to discuss results in more professional manner.

Learning outcomes for other disciplines:

NPI / Project Manager
Understand how important it is to ensure high reliability BEFORE Mass production begins, otherwise product cost of failure can be excessive and kill the profit margin. NPI engineers will understand the quickest, low cost methods to assess product reliability enabling them to move forward with confidence into MP. Also will learn how a detailed NPI scoring mechanism is developed which allows NPI engineers to benchmark different designs / product's state of 'health' before the final decision to move into Mass Production.

R&D (Research & Development)
Learn how the strongest Design Quality and Design Reliability Testing programmes are set up which allow fail rate predictions to be made from earliest design stages. Learn how to measure and score Design Quality Maturity which is a unique tool R&D can use to assess their own designs throughout the development cycle giving them fundamentally sound measurements for benchmarking designs and driving continual improvement. R&D engineers will learn quickly how the 'old' standards of reliability testing are meaningless in today's complex electronic and electromechanical products

Test Engineer
Test engineers will learn how Reliability Testing is closely aligned to product test and how the test coverage will greatly affect the 'escape' of Early Life defects into the field. Test engineers will learn how to make predictions of Field Early Life Failure Rates from Process Yield data which is a key measure for Test Engineering in any company/ they will also learn how functional testing coupled with accelerated stress testing optimises the ability to detect latent defects. Test engineers will learn why end of line burn-in is ineffective in today's manufacturing and is wasteful in cost.

Quality Engineer
Quality Engineers will learn so much from the seminar as they will learn an excellent amount about the best ways to perform reliability testing that will provide them with ability to drive defects back to source and MINIMISE effects on the end customer and Field Failure Returns. They will understand the optimum reporting methods that carry most power with management and be able to get their voice heard. They will understand the need for process yield management in minimising process escapes that cause Early Life failure in the field.

Contract Manufactures
In today's market of fast-moving companies and new technology companies starting up at an unprecedented rate, there is a greater need than ever to understand reliability of the new products that come onto the market so quickly. Unfortunately, many smaller companies and even the larger contract manufacturers do not possess the required reliability skills. **Contract manufacturers** are being given a much wider responsibility than before where they are being asked to provide warranty, manage warranty failures and have overall responsibility for product reliability from Design through to Mass production and throughout product lifetime. This of course means they MUST understand and manage reliability very effectively to ensure maximum profit and maintain strong client relationship for future business expansion

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For achieving World Class Reliability and Customer Experience we should always think of 2 famous phrases.

1. **You cannot manage something you cannot control and you cannot control something you cannot measure**
   - Main reasons is most complex Product Manufacturers commonly LACK GOOD OBJECTIVE MEASUREMENT of their design and Reliability / Quality levels
2. **Transform data into information and information into strategic decision**
   - Any Reliability Improvement Programme requires deeper thinking and making some major changes in how we use a wide range of information and measurements to drive improvement

DAY 1 (AM Agenda)

Introduction to Basic Reliability Understanding and what failure rates mean, the importance of specifying Reliability in a precise manner and how hazard rates can change over life of the product

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

- Modeling Acceleration Factors using range of models and how to combine, Arrhenius, Peck's, Coiffon Manson, etc and focusing on 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 and develop OPTIMUM Accelerated Test profiles

Evaluating the effectiveness of different stress test types with the Hughes Test Strength Equation to optimize Early Life Test programs

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

Understanding the Statistics and Probability of Failure to define optimum Reliability test Sample Sizes When is a sample size TOO SMALL to evaluate and qualify product reliability

- Understanding WHY Reliability test standards like JEDEC , Military Stds and sample sizes are OUT OF DATE !

DAY 1 (PM Agenda)

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

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

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 strong Sequential Reliability Stress Test Approach

- Applying a matrix approach to select MOST EFFECTIVE SEQUENTIAL STRESS TEST approach with examples of semiconductor packaged devices and electro-mechanical and electronic modules

DAY 2 (AM Agenda)

Using DFMEA p-diagram approach to develop Key Reliability Test needs for critical modules and illustrate how this can combine with the Sequential Stress Test profile development matrix approach

- Making DFMEA simple for Reliability focus
- Use of Real-Life case studies to illustrate the importance and how easy it can bee

Weibull Analysis of Failure data and how to apply to any product failure data and understand how standard software packages provide very simple output

- Understanding the key Weibull parameters, what they mean and how to interpret them in data analysis

Developing an HOLISTIC RELIABILITY model to truly predict Product Reliability at NPI stage using all the key contributors which directly impact Reliability

- Learn from Reliability Solutions unique model and how it could fit into your own company
- Build your own model and understand how to make use of much information which already may be available but never used when making Reliability Predictions for new products

DAY 2 (PM Agenda)

Class Activity

Classroom session where students split into groups and develop their plan for New Product Reliability Management from Design Stage using the FREE Reliability Solutions measurement and prediction models they have learned in the training

- Developing Eng Level stress testing with confidence
- Setting Longer Life Test model for predicting failure levels
- Acceleration Modelling and Acceleration Factor
- Feedback from each team of workshop summaries and their key points
- 20 min feedback summary from each group

Review of Reliability Solutions Test Plan for Workshop product example plus how the various tools are best applied to define sample sizes for testing, accelerated test plan, Test Strength modelling for Early Life Test approach, etc

- Will show students how to develop a TOTAL reliability and Robustness test plan

General Q & A session

RATED ONE OF THE BEST AND PRACTICAL COURSES ATTENDED 7 YEARS IN A ROW IN ASIA PACIFIC (Singapore, Australia, Malaysia, Thailand, Philippines and China)

LIST OF COMPANIES THAT HAD BENEFIT FROM THIS TRAINING:

Amkor
Analog Devices
Artesyn Embedded Technologies
Apple
Beckman
Benchmark Electronics
BOSE
Bel Fuse
BI Technologies
BBOXX Business consultancy
Clarion
Cypress manufacturing
Celestical Electronics
Channel well technology
Design Pool
Domino OPTO Technologies
Dyson Manufacturing
Delta networks
EDMI Electronics
Electrolux
Emerson
Finisar
Fisher & Paykel
Fitbit
Freescale Semiconductor
Funing precision
Flextronics
Foxconn
Hayco
Honor Eletronics
Harman Automotive
HGST
Infineon Technologies
Jilin WeEn Semiconductors
Johnson Electric
Kaertech Electronics
Kitron Electronics
Logitech
Lumentum
Laird Technologies
Littlefuse
Mattel
Macom
Microhip technology
Microsoft
Mircosemi
Muehlbauer Technologies
NXP Seimiconductors
National Instrument
Netgear
Nexteer Automotive
NOTE Electronics
On semiconductor
Osram
Plexus Manufacturing
Premium Sound
QAV Technologies
Qorvo
Quasar Eletronics
Sandisk Storage
Sanmina System
Schaffner EMC
Schneider Electric
Sernet Technologies
SharkNinja
Sky-Light
Smith Medical
Sony Technology
ST Microelectronics
TF-AMD Microelectronics
Traxton Technologies
Tridonic
Vishay Semiconductors
Vtech Communication
WD Media
Western Digital
Wistron NeWeb
Leica

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Martin China experiences:

- 'Martin has extensive experience of working in the demanding fast-moving electronics market of China over a period of 20 years and understands very well how chinese companies need fast and strong solutions, this is what Reliability Solutions has provided to a wide range of companies manufacturing in China. His energetic and strong approach has helped many companies greatly improve their Reliability and reduce Field Failure service costs significantly in very short and aggressive time frames'.
- High Volume companies he has consulted with include TPV, Atmel, Amtran, LtreOn, Hua-Wei, Emerson, TCL,etc.

Martin's 34 years Professional Achievements

√ Success with several of the top 3 LCD TV makers and Personal Computer power supply makers in implementing strong Design Quality / Reliability Testing to reduce no. of Design Repeat Testing by more than 2X, saving significant costs and more importantly reducing overall development cycle.

√ Reduction in Field Return Rates of more than 60% within 18 months period of starting to implement Reliability Solutions unique Reliability Test and Defect Prevention processes.

√ First 30-day Customer Failure Rates reduced by 50% within 12 months period.

√ Cost Reduction by removal of wasteful testing such as ineffective ORT and low stress ALT programmes which rarely stimulate Early Life Defects.

√ Development of Sub -System Reliability Test programmes for complex products to guarantee stimulating wide range of latent defects and reduce excessive full assy test costs.

Martin a 34 year 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 (Worlds 3rd biggest Power Supply maker), TPV China (World's biggest contract TV / LCD Monito 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 electromechanical 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 OPTIMISE 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.