Applied Electronics Training
TRAINING & CONSULTANCY

HRD CORP CLAIMABLE

Get the chance to experience and experiment wide range of free proven xl calculation models to apply in your own environments

Back by popular demand!

Managing & Improving Electronics Product Reliability across the Entire Lifecycle

From Prototype into Volume Manufacture

20th – 21st February 2023 |Penang Malaysia | 09:00 – 17:00 (GMT+8) Daily

Set up and manage World Class Electronic Reliability Improvement Programmes to drive Failure Rate Reduction

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

"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

Energy1asia.com

CPD MEMBER
The CPD Certification Service

Managing & Improving Electronics Product Reliability across the Entire Lifecycle from Prototype into Volume Manufacture | 2 Days

What could an unreliable product really cost your company?

Your credibility? Your reputation? Your future?

Markets are demanding cheaper, more reliable electronic products and systems and many manufacturers find that traditional, established procedures and processes. Yet in today's market-driven climate you need, even more, to review procedures, examine options and pursue cost-effective solutions that will allow you to stay competitive and profitable, and increase your market credibility.

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.

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

These 2 days masterclass will have a good balance of Practical and theory. Initial theory to set the scene goes quickly into multiple case studies so participants learn quickly how to do similar on their own product types.

Why you should attend ENERGY1 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.

PRACTICAL INVOLVEMENT: Wide range of free proven xl calculation models to apply in your own environments:
Participant will get the chance to experience how the models are used and experiment as training progresses hence gaining familiarity in Real time. The xl files show in a very simple organized way how to do the required reliability modelling for accelerated stress testing and prediction of reliability which participant can then start applying and modifying them to suit their own needs.

- Acceleration Factor Modelling High Temperature, Temperature / Humidity, Thermal Cycling to use in Accelerated Life Test (ALT) Planning.
- Test Strength Modelling to define strongest possible Early Life Reliability Stress Test and how to apply different stress test methods.
- Design Quality Test Maturity Measurement to allow measured performance of Design Quality during development cycle.
- Early Life Failure Escape predictions from Manufacturing Yield data to assess escape levels to customer.
- MTTF prediction models with sample size definition calculations using binomial and poisson statistical models.
- New Product Introduction (NPI) scoring model to assess product suitability for volui

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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

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.

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DAY 1 (AM Agenda)

Introduction to Basic Reliability Understanding

- 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

- 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

Setting up typical Early Engineering Level Reliability Stress Testing to 'Find and Fix' for information purpose and preparing more robust design for Stress Testing at later Design Stages before Design is Frozen

- Electronic sub-assemblies
- Electromechanical type products
- 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

Component level Stress Testing and the typical methods for Key device qualification

- Defining how to Qualify NEW / ALTERNATE components in an effective manner with the 'right' type of accelerated stress test to MINIMISE RISK.

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 Vibration and Thermal Cycling.
- Product Level Case Study with real life examples using the FREE Reliability Solutions calculation models.

DAY 1 (PM Agenda)

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 JEDEC test specs and sample sizes are **OUT OF DATE!**
- Understanding the 'real' cost of minimising reliability test budgets
- Real Examples of NOT testing enough products and the negative impact

Workshop with class to discuss the main challenges they face in their own organisations when asked to develop Effective Reliability Test Plans which last Shortest Time

Participant should try to bring examples of the difficulties they face which can be discussed openly

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Participants are encouraged to bring examples of the difficulties they face which can be discuss openly.

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DAY 2 (AM)

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

DAY 2 (PM)

Developing a packaged semiconductor Sequential Reliability Stress Test Approach

- Applying a matrix approach to select MOST EFFECTIVE SEQUENTIAL STRESS TEST approach for semicon packaged devices
- Making Reliability Testing EFFECTIVE compared to INEFFECTIVE JEDEC non sequential stress test approaches

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

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

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

Quality Manager

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.

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Registration Form

Managing & Improving Reliability across the Entire Lifecycle from Prototype into Volume Manufacture	3 or more participants	Per Participant
Full 2 Days	SGD 2499 ( )	SGD 2799 ( )

- Please note that all registrations must be made at the same time to qualify.
- The above investment fee is inclusive of course material, tea breaks and lunch.
- The above investment fee is excluding of SST 6%.

PROGRAM DETAILS
Location: Penang, Malaysia
Date: 20th – 21st Feb 2023
Time: 09:00 – 17:00 (GMT+8) Daily

STEPS TO REGISTER:
Simply fill up the registration form and email it to:
Email to : harn@energy1asia.com
Call us : +603 7727 3952
Mobile /Whatsapp: +6012 568 4696 (Harn)

If you or your company is facing travel restrictions, we may be able to arrange the training at your preferred location for remote participation or conduct the training in-house with minimum 10 pax. Please contact ihtraining@petro1.com.my to discuss this possibility.

Delegate Details

1. Name:_____Mr☐Mrs☐Ms☐Dr☐

Job Title: _____

Email : _____

Contact No: _____

Department:_____

2.Name:_____Mr☐Mrs☐Ms☐Dr☐

Job Title: _____

Email : _____

Contact No: _____

Department:_____

3.Name:_____Mr☐Mrs☐Ms☐Dr☐

Job Title: _____

Email : _____

Contact No: _____

Department:_____

Head of Department:_____

Invoice Details

Invoice Attention to:_____

Company:_____

Industry:_____

Address:_____

Postcode:_____ Country:_____

Telephone:_____ Fax:_____

Email:_____

Authorized Signature : _____

Payment Method
By Direct Transfer: Please quote invoice numbers on remittance advice.
ACCOUNT NAME : PETRO1 SDN BHD
BANK : United Overseas Bank (Malaysia) BHD
ACCOUNT NO : 2029003191 (SGD)
All bank charges to be borne by payers. Please ensure that PETRO1 SDN BHD received the full invoice amount.

CREDIT CARD PAYMENT
Credit card payment will include a charge 3.1%.

Sales and service Tax (SST):
The above investment fee is excluding of SST 6%. The SST charges of 6% will be include during issuance of the invoices.

Payment Policy: Upon receipt of a completed registration form, it confirms that the organization is registering for the seat(s) of the participant(s) to attend the conference or training workshop. Payment is required with registration and must be received prior to the event to guarantee the seat. Payment has to be received 7 working days prior to the event date to confirm registration.

DATA PROTECTION
The information you provide will be safeguarded by Petro1 that may be used to keep you informed of relevant products and services. We take it seriously when it come s to protection of our client data.

Cancellation & Substitutions:
Should you be unable to attend, substitutes are always welcome anytime at no additional cost. Please inform us as early as possible. Payment is non-refundable if cancellation occurs 7 working days prior to event commencement. However, delegates will receive a 100% credit on the amount paid which can be used in another PETRO1 SDN BHD training course for up to one year from the date of issuance. The credit is transferable to other persons in the same company and applicable against any future PETRO1 SDN BHD public course/ Online Live Webinar. If cancellation occurs 7 working days prior to the registration date and there is no substitute, the organizer reserves the right to charge 50% of the total investment from your organization.

In the event that, PETRO1 SDN BHD. postpones or cancels a course, delegate payments at the date of cancellation or postponement will be credited to a future PETRO1 SDN BHD course. This credit will be available for up to one year from the date of issuance, and it is transferable to other persons in the same company and applicable against any future PETRO1 SDN BHD public course.

PETRO1 SDN BHD is not responsible for any loss or damage as a result of a substitution, alteration or cancellation/postponement of an event. PETRO1 SDN BHD shall assume no liability whatsoever in the event this training course is cancelled, rescheduled or postponed due to a fortuitous event, Act of God, war, fire, labor strike, extreme weather or other emergency.

Program Change policy:
The organizer reserves the right to make any amendments and/or changes to the webinar, Date/ time, facilitator replacements and/or modules if warranted by circumstances beyond its control.