ENERGY1
TECHNICAL CONSULTANCY FOR ENERGY & UTILITIES

Back by popular demand!

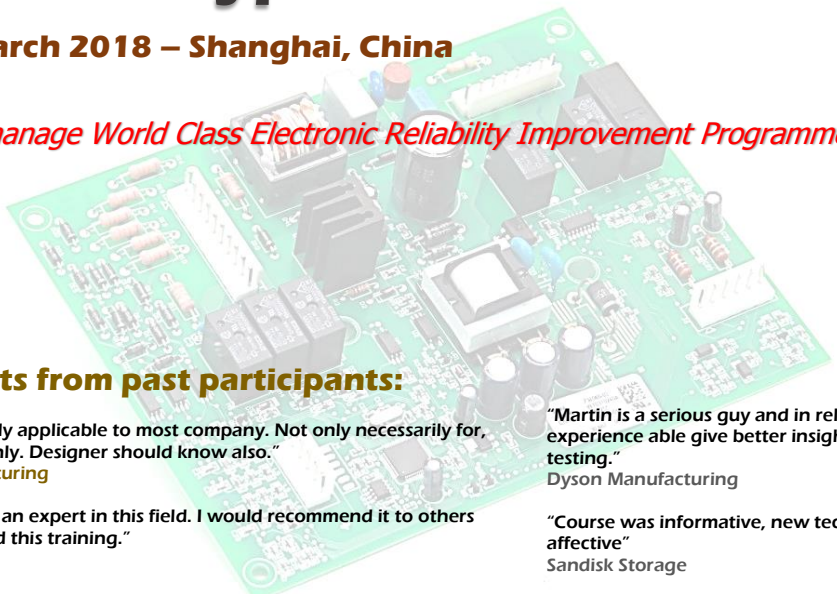
Get the chance to experience and experiment wide range of free proven xl calculation models to apply in your own environments

Managing & Improving Electronics Product Reliability across the Entire Lifecycle

From Prototype into Volume Manufacture

8th – 9th March 2018 – Shanghai, China

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



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

"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

www.energy1asia.com

Program Overview

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 benefits 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.

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

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.

This program is intended

The Course is designed to:

- Reliability engineers
- Test engineers
- NPI engineer / Manager (New Product)
- R&D engineers.
- Research Team.
- Electronic and electro mechanical 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 electro mechanical 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.

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.

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

DAY 1 (AM Agenda)

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

- **Semiconductor Defect Types Review**
  - Summary of defect types and types of Reliability Tests that are most effective in stimulating Latent Semicon defects
  - Understanding why JEDEC test standards alone are simply not enough

- **Testing Package Devices to Failure to model life reliability, case study based on Smart Memory Devices**

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DAY 2 (AM Agenda)

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
- Mechanical and Electro Mechanical device application Case Studies

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

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

Day 2 (PM Agenda)

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
- Using the FREE Reliability Solutions calculation model in your own environment

Setting up 'Holistic' approach to New Product Introduction scoring and the scoring model used to manage NPI more effectively and Objectively

- 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

Activity 2

Classroom session where students split into groups and develop their plan for New Product Reliability Management from Design Stage through to Volume production and Ongoing production using the Reliability Solutions measurement and prediction models they have learned in the 2 day training

Each group will be given 15 minutes to show their plan and assumptions

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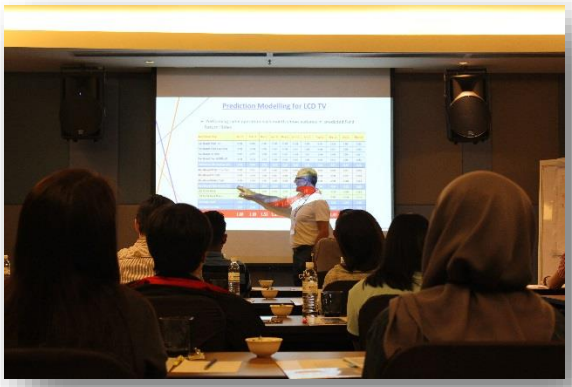
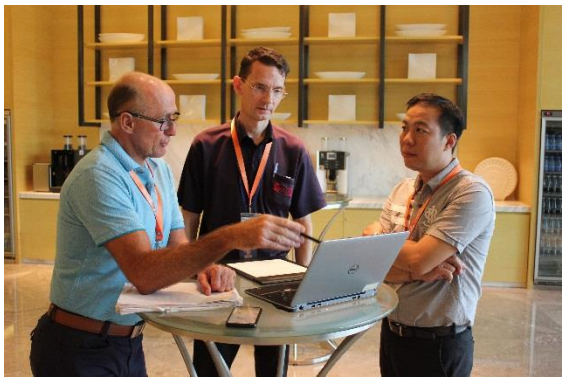
Energy1 is a sub-division of PETRO1 focus on provide trainings & technical Consultancy services. We have now expanded our horizon of Reliability consultancy in the oil industry to include electronics and have therefore partnered with Reliability Solutions to market the total offerings of Reliability Solutions to companies in Southern China, Taiwan and South East Asia. With this partnership we had successfully made an impact to the electronics professional from the top 50 electronics players in the region.

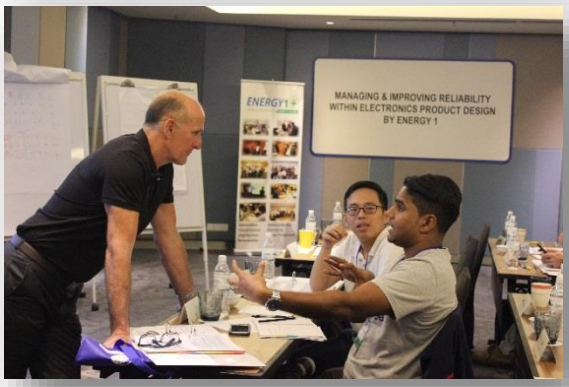
- Vishay Semiconductor
- Celestica ELectronics
- Vteh Communications
- Mattel
- Suzhou Asen Semiconductors
- Freescale Semiconductor
- SMT Technologies
- SONY
- ST Microelectronics
- Flex
- Hayco
- HGST
- Infineon Technologies
- QAV Technologies
- Clarion
- Dyson Manufacturing
- Plexus
- National Instrument
- Premium Sound
- Renesas Semiconductor
- Apple
- Osram
- Sandisk Storage
- Muehlbauer
- Dominant OPTO Technologies
- Finisar Malaysia
- Sanmina System
- Bose System
- Amkor Technology
- EDMI Electronics
- AUO SUNPOWER
- Tridonic

ENERGY1 ELECTRONICS RELIABILITY COURSE IN ASIA PACIFIC

MALAYSIA & CHINA







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