



The methods, practices and techniques of successful plant and equipment reliability improvement that you use to get falling rates of failure and greater equipment MTBF

# Applied Reliability Engineering for Industrial Operations Improvement Training Course

**Email us to register for the next course in your city**

*(Save money by running the course in-house if you have 4 or more people.)*

**World class reliability training with practical solutions and methods you use to lift your operating assets' uptime and equipment reliability and save yourself \$100,000's in maintenance costs and downtime losses**



A 3-day applied reliability engineering course for operations and maintenance managers, engineers, and supervisors who want practical solutions and techniques to lift the efficiency, productivity and output of their production and operating assets. You learn useful, effective methods and tools to boost equipment reliability, lift plant availability, and get higher production output. The reliability concepts and math involved are covered in a simple, clear way that allows you to appreciate the basic ideas and apply the techniques without getting bogged down in theory. The focus of your applied reliability training is on using practical reliability engineering methods to employ every day that improves your operating and production

performance through lower maintenance costs, less downtime, fewer plant and equipment failures and higher throughput.

## Learn the reliability training that improves your plant and equipment performance & gives maintenance optimization

If you want a highly effective maintenance program you use reliability engineering to understand the cause and effect relationships of equipment and operational problems. Where the consequence of failure is important you need to put into place the right actions to prevent the failure. These include introducing defect eliminating practices, timely overhauls of parts suffering usage-based failures, replacement of equipment when key parts approach end-of-life, and equipment redesign to remove failure modes. This reliability training helps you make effective and good decisions for each of those choices. With it you'll optimize your maintenance interventions and apply sound maintenance strategy.

### MORE TRAINING

Plant Wellness Way to Maintenance Management Mastery

Maintenance Planning and Scheduling for Reliability

Lifecycle Asset Management Excellence the Plant Wellness Way

Operational Excellence the Plant Wellness Way

World Class Machinery and Rotating Equipment Reliability

SEE DETAILS AND PRICING AT WEBSITE

[www.lifetime-reliability.com](http://www.lifetime-reliability.com)

#### Learn to get more reliability and operating profit:

- Improve operating & maintenance methods & practices to get least life cycle cost (LCC) from your assets.
- Optimise and develop reliable, low LCC plant and equipment designs to give you higher plant and equipment availability.
- Identify how your equipment parts and systems fail so you can select the ideal maintenance strategies for your

#### Benefits you get from applied reliability training:

- Understanding the practical methods and useful features of Reliability Engineering and how they can help you.
- Knowing when to use reliability engineering to get the most benefit for your operation.
- Learning which reliability engineering techniques to use to improve your operating equipment performance



<p>operation.</p> <ul style="list-style-type: none"> <li>• Build and apply Reliability, Availability and Maintainability (RAM) processes for production improvement.</li> <li>• Improve reliability of equipment designs with data analyse of the historic failures affecting your equipment.</li> </ul>	<p>and profits.</p> <ul style="list-style-type: none"> <li>• Recognising how to use reliability professionals to deliver better operating outcomes and plant availability.</li> <li>• Realising where reliability engineering can deliver simple and low-cost reliability improvements to your operation.</li> </ul>
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Learn how to deliver equipment reliability improvement using every-day reliability engineering to enrich your operating and maintenance processes. This applied reliability engineering course provides you with valuable and insightful knowledge, along with practical case studies and hands-on data analysis activities you learn from. After a basic introduction to reliability engineering and equipment operational risk you see how reliability engineering is practically applied and used to achieve equipment reliability growth and optimise your maintenance management strategy.



## The Applied Reliability Course that brings you new, powerful Plant Wellness Way Solutions and Answers

### Day 1 – Reliability Engineering Basics

- Physics of Equipment Failure
- Risk Analysis and Risk Management
- Frequency and Consequence
- Event Trees and Fault Trees
- Risk Matrix and Risk Triangle
- Equipment Criticality
- Activity 1 - Equipment Criticality Example
- Basic Reliability Math explained
- Series/Parallel systems
- Probability and Distributions
- MTBF/MTTF/MTTR/Availability
- Activity 2 – Equipment Reliability Performance Indicators
- Reliability and Hazard Functions
- Failures and Survivors data analysis
- Failure mode distributions
- Stability of historic data
- Failure data goodness-of-fit
- Introduction to Weibull Analysis
- Introduction to Reliability Block Diagram basics
- Activity 3 – Building Basic Reliability Models
- Open forum discussions

### Day 2 – Reliability Improvement

- Reliability Loss and its Causes
- Reliability Growth and its Causes
- Human Factors and Human Error
- Component and equipment stress reduction
- FRACAS process
- RCFA/5 Whys dos and don'ts

- Pareto Charts focus effort
- See your chance of success
- Timelines and failure modes
- Separating failure modes
- Weibull graphs and parameters
- Activity 4 – Failure Data Plotting example
- FMECA/FMEA
- Activity 5 – FMEA example
- Reliability, Availability and Maintainability (RAM)
- Crow-AMSAA plots for measuring reliability growth
- Open forum discussions

### Day 3 – Reliability, Maintenance, Asset Management

- Building world class reliability creation processes
- Introduction to Life Cycle Modeling
- Component Failure Data Modeling
- Activity 6 – Failure Distribution Curves
- Cost Benefit Analysis
- Activity 7 – Cost-Benefit example
- Optimising Preventive Maintenance
- Activity 8 – PM optimisation example
- Optimising Predictive Maintenance (Condition Monitoring)
- Activity 9 – PdM optimisation example
- Repair-Replace decisions
- Activity 10 – Replacement decision example
- Reliability Centered Maintenance for Operating Risk Reduction
- Activity 11 – RCM the Plant Wellness Way example workshop
- Open forum discussions

## Details of Your Presenter:



Applied Reliability Engineering Course presenter, Mike Sondalini B Eng (Hons), MBA, CP Eng., is a maintenance manager, project manager, mechanical tradesman, professional maintenance engineer and a maintenance planner. In engineering and maintenance since 1974, his career extends across original equipment manufacturing, beverage production, steel fabrication, industrial chemical manufacturing, quality management, reliability improvement, project management, industrial asset management and industrial training. His book 'Plant and Equipment Wellness' is published by Engineers Media, a subsidiary of Engineers Australia.

Mike takes attendees through a carefully structured, practical industrial plant and equipment reliability training course during which he imparts key reliability understandings, tools and skills needed for successful reliability



improvement. But more than that, he uses his years of experience as a maintenance manager in industry to focus on the critical success factors of what to do, and how to do it quickly and well, so your maintenance strategy and maintenance crew swiftly and safely minimise operating cost and production time loss. He helps organizations build sound business risk management, introduce world-class reliability practices, develop ultra-high reliable enterprise asset management systems and instill the precision maintenance skills needed to continually improve plant uptime. Mike helps attendees do improve the reliability skills and tools that they need to use in their workplace roles so they can improve maintenance and reliability performance through wise use of resources, in less time, for the least downtime and lowest maintenance costs.

## Those **EARLY BIRDS** who register secure their seats and save **20%**

For **EARLY BIRDS** who book and pay a month in advance, the 3-day applied reliability training for operating plants course costs \$2,400 plus GST. The standard price is \$3,000 plus GST and payment must be received before the course start date. Included in the price are softcopy of the presentation slides and course notes, arrival tea/coffee, morning and afternoon tea/coffee with finger food and a light lunch. **YOU MUST BRING YOUR OWN LAPTOP OR PAD** to view the slides, as there is no printed course book handed out during the training.



Call now to get a place and then make your payment in time to get a seat. It is best to register immediately for the course if you want to be sure of a seat. Seating is limited and is allocated on a first-come-first-served basis. Complete your registration form then choose your payment option and scan the registration form into an email to [info@lifetime-reliability.com](mailto:info@lifetime-reliability.com). Book yourself and your key people into the course now. You can contact us on mobile 0402 731 563 to confirm places are still available.

## You get Full Protection of a **100% Money Back Guarantee**

All Attendees are afforded maximum protection at our seminars, courses and workshops by a 100% Money Back Guarantee. If, for whatever reason, you believe your expectations have not been met, your attendance fees will be totally refunded in full. As further compensation you are also allowed to keep all materials handed out during the presentation. (Guarantee is subject to booking fee being received in full by the due date.)

## More Course Information Details You Need to Know

Confirmation of your registration goes by email to the address on the registration form and includes all venue details. Course registration is from 8am on the first day, with the course starting at 8.30am and finishing at 4.30pm each day. Morning and afternoon teas are 15 minutes long and lunch is 45 minutes duration.

A softcopy of the full PowerPoint presentations and course book are given to every attendee for future reference and unlimited use within their company. **YOU MUST BRING A LAPTOP OR ELECTRONIC PAD TO THE COURSE.** Please check local road maps, or the venue website, to find nearby parking locations.

A certificate of training is provided at the end of the course.

We can also run our training course on-site in your operation. Ask for a free quotation and practical advice.

Contact us by email at [info@lifetime-reliability.com.au](mailto:info@lifetime-reliability.com.au) or by telephone on +61 8 9457 6297, or cell/mobile +61 8 (0) 402 731 563 to get more information and answer any questions that you have.

