

Zero Breakdown Maintenance Training Course

Overview

If your operating equipment fails you can lose an absolute fortune in lost production and knock-on costs. It inconveniences customers and they will want to go to another supplier. People get aggressive with superiors, peers and employees and destroy workplace friendships. It can send operations broke from hasty, poor decisions. People lose their job because of seemingly poor performance. All this can come to pass if plant and equipment fail.

There is a difference between maintenance and repair. A repair is done when something has failed. A repair means equipment is not performing its function. Maintenance is done to stop a thing from breaking. Maintenance is proactive prevention of failure. Maintenance is cheap; it is repairs which are expensive.

Learn to do the right maintenance rightly and not have any repairs. Increase reliability by doing maintenance well, doing it completely and doing it on time so that your equipment parts remain reliable. Failure prevention needs better design, better assembly, better installation and better operation. A repair is a very stressful situation for all involved, whereas maintenance is just a normal part of life.

Zero Breakdown Maintenance is built on three key premises. The first is that equipment will only work properly if its parts work properly. The better the condition of the parts, the better and longer the equipment will run. The second premise is that people use plant and equipment. The better the people interact with the plant and equipment, the better and longer the equipment will run. The third premise is that you are using the plant and equipment to build a business. The better the plant and equipment operate; the stronger and more competitive is your business.

Successful Zero Breakdown Maintenance involves developing systems and skills that ensure the people and parts always work well together for the benefit of the business. People and parts: these are what make your product. Zero Breakdown Maintenance focuses on ensuring equipment parts are always in good health so your machines are always reliable.

From the Speakers Desk

This 3-day course is for persons wanting to know how to make their plant and equipment run consistently at highest availability; produce at full capacity with 100% first-pass-quality, who want the most operating profit and need to be sure of how to get there. Over the three days you will discover new facts and specific details that prevent equipment breakdowns, reduce your production costs and wastes, give the utmost throughput, and make higher productivity inevitable.

In this course you discover the little understood facts, the fatally important details and the totally critical requirements that get the plant availability, production costs and throughput of a best-in-class performer.

Come to the course prepared to discover new methods, practices and knowledge. Best-in-class producers know exactly what to do to keep productivity high and costs low. It takes a plan and it takes practice, but it is not difficult. You simply need to be doing the right things, rightly. This is where most operations get lost – they don't know what is right and end-up focusing on the wrong things that bring no lasting improvements. The course takes you through those critically important details you need to have in place, and in use. The course will give you a clear appreciation of where to focus your efforts to get maximum results. And, most importantly, you will know exactly what to do and how to do it.

You will cover the total solution to the life-cycle issues affecting your operating plant and equipment performance. You will discover simple, certain methods that produce the highest pay-offs from industrial and manufacturing plant and equipment. You will learn how to involve and motivate your workforce to minimize your operating risks and maintenance problems while consistently producing maximum throughput. And you will discover how to really make your plant and equipment phenomenally reliable with zero breakdowns.

Mike Sondalini
Course Presenter

Day 1 – Introduction to Equipment Reliability Concepts

- **Activity 1 – Identify failure problems and issues Attendee are facing at work**
- **Limitations of Machines and Materials**
 - Understand How Machines are Designed and the Limits They Must Live Within
 - Strength of Materials Limitations
 - The Degradation Cycle
 - The Overload Cycle
- **Determining the Reliability of Parts**
 - What is Reliability?
 - Drawing the Reliability Curve
 - Failure Rate Variation
 - 'Reading' Failure Curve Shapes
- **Reliability of Complex Parts**
 - Modelling Reliability of Complex Parts
 - Reliability Mathematics in 'Random Failure' Zone
 - Failure Rate and Reliability Curves
 - The Odds of a Part Surviving For Longer
- **Reliability Prediction**
 - Using Weibull Curves for Failure Prediction
 - Maintenance Strategies for Parts and Components
 - Reliability of Series Systems
 - Reliability of Parallel Systems
 - *Activity 2* – Calculate reliability of processes
- **Reliability of Machines**
 - Reliability of Machines in Series Process
 - Improving the Reliability of Machines
 - Meeting The Reliability Challenge
 - Modelling Machine Reliability
- **Instilling Reliability Principles into Maintenance**
 - Best Practice Reliability Engineering Application
 - Quality Function Deployment – The Voice of the 'Customer'
 - Failure Mode and Effects Analysis
 - Crow–AMSAA Reliability Growth Plotting

Day 2 - Introduction to Profit Centred Maintenance

- **The Business of Maintenance**
 - Turning Maintenance into a Profit Centre
 - Develop a Plan to Reach Mastery
 - Turn Objectives into Systematic Activities
 - Elements of a Good Management System
 - Strategic Business Importance of Reliability
- **Maintenance Strategy Choices**
 - Maintenance Strategies for Risk Reduction

- Maintenance Strategy Selection
- Move from Reactive... to Proactive... to Risk Reduction
- **Selecting Maintenance To Deliver Reliability**
 - Equipment Reliability Strategies
 - Precision Operation Extends Productive Life
 - Failure Prediction Mathematics – Weibull Reliability of Parts and Components
 - Implications of Reliability on Maintenance
 - Strategies for Reliability Improvement
- **Maintenance Is a Risk Management Strategy**
 - Base Maintenance on Operating Risk Matrix
 - Match Maintenance and Operating Practices to Equipment Criticality
 - *Activity 3* – Match operating and maintenance requirements to criticality
 - Condition Monitoring to Optimise Availability
 - Determine Component-Based PM Frequency by Statistical Analysis
 - *Activity 4* – Imbedding good practice PM and PdM into organisations
 - Benefits of Failure Elimination
- **Continually Improving Maintenance and Reliability Results**
 - Root Cause Failure Analysis (RCFA)
 - How RCFA Contributes To Improvement
 - Risk Identification and Removal Worksheets
 - Journey from Repair-focused to Reliability-focused Culture
 - Improving Reliability by Setting Maintenance KPIs and Measuring Outcomes

Day 3 – Maximum Life Cycle Profit Maintenance

- **Run Your Maintenance for Profit**
 - When You Design a Plant You are Designing a Business
 - Design and Operating Cost Totally Optimised Risk (DOCTOR)
 - Eliminate Defects to Prevent Problems
 - Defects and Failures True Costs
 - Benefits of Reducing Operating Risk
- **Managing Risk in Your Business And Operations**
 - Quantify the Financial Cost of Risk
 - Determine Your Acceptable Failure Domain
 - The Application of Risk Based Principles to Managing Maintenance
 - Reduce Risk with Chance Reduction and Consequence Reduction Strategies
- **Use Precision Maintenance and Precision Practices for Failure-Free Operation**
 - Precision Maintenance: Ultra-High Reliability Strategy
 - Precision across entire 'equipment system'
 - Typical Precision Maintenance Program Content
 - Typical Standards for a Precision Maintenance Program
 - Accuracy Controlled Enterprise (ACE) Procedures
- **Getting Operators To Drive Equipment Reliability**
 - Operator and Maintainer Watch-keeping Tools
 - Use Visual Management to show Progress and Feedback
 - Train Operators and Trades in Precision

- **Modernize, Systematize and Standardize Your Maintenance Processes**
 - Quality Management System for Continual Maintenance Improvement
 - Remove variation ... by setting standards and measuring accuracy
 - Prevent failure ... by defect elimination
 - Risk control ... by chance reduction risk management
 - Accuracy control ... by precision domain practices
 - Measure/Monitor/Improve Performance ... by process step value contribution
 - The Continuous Improvement Journey
- **Open discussion of means to address Attendees problems from Day 1**
- **Review Course Learning**
- **Close-out and Finish**

Target Audience

- Maintenance Engineers
- Plant Engineers
- Maintenance Managers
- Maintenance Supervisors
- Maintenance Planner
- Project Engineers
- Operations Managers
- Operations Supervisors
- Industrial Engineers
- Maintenance Service Providers

Learning Outcomes

After this training you will be able to:

- Understand how you create reliable equipment
- Know the right systems that deliver zero breakdown maintenance
- Know what practises to introduce into your operation to achieve zero breakdowns
- Identify where to target your efforts in preventing breakdowns
- Develop an operations-wide strategy to eliminate defects that cause failures
- Convince others to improve equipment reliability with compelling new information