

# Maximum Life Cycle Profit Maintenance and Reliability Training Course Content

This is a two-day course for managers, engineers and supervisors who want robust methods and insightful knowledge that improves plant and equipment maintenance and reliability performance.

## A) Equipment Reliability Concept

### Reliability Theory

- Series and Parallel Systems
- Age at Failure Patterns
- Designers view Load Strength
- Maintainers View (Reliability in time domain) Abuse, Infant Mortality, Random Failure
- People failures
- Failure Density Function
- Exponential / Weibull / Normal Distributions
- Examples and Exercises

### Data Analysis

- Failure and Survivor / Censoring
- Standard Analysis Assumptions and limitations
- Trend Plots

### Data Analysis to Business Plan

### Open Discussion Forum

## B) Max Life Cycle Profit Maintenance

### Life Cycle

- Productive Equipment Life
- Plant Life Cycle
- Project Management Phases
- Project Management (Front End Loading)

### Designing For Reliability

#### System Reliability Modelling

- Block Diagrams
- Event Trees
- Fault Trees
- Markov Models
- Simulation
- Examples and Exercises

#### System Design Review

- HAZOP Concept
- Formal Design Review

### Installation/Construction

- Documentation
- QA Systems

### The Big Picture – Maintenance in Plant Finance Concepts

- Deming
- Lean
- Overall Equipment Effectiveness

### Cost/Benefit Analysis

- Cost Benefit Balance
- Criterion Function
- Cost Effectiveness
- Hidden Costs
- Selection of Restoration Interval
- Selling Good Maintenance
- Examples and Exercises

### Open Discussion Forum

## C) Profit Centred Maintenance

### Maintenance Excellence

- Role of Reliability Engineer
- Journey to Maintenance Excellence
- Defect Elimination / Remove Variability
- Root Cause Analysis
- Incident Problem Management
- Reliability Improvement Wheel (8 Step Process)
- Reliability Growth
- Management of Change
- Total Productive Maintenance

### Maintenance Audit

- Best Practice Benchmarking

### Reliability Improvement Tools

- FMECA (Failure Mode, Effects and Criticality Analysis)
- Reliability Centred Maintenance
- Criticality Ranking
- Examples and Exercises

### Maintenance Strategy Concepts

- Mastering Maintenance Process
- Maintenance / Different Age to Failure Distributions
- Maximise Life with Minimum Risk
- Optimal Replacement
- Optimal Inspection Interval
- Maintenance Strategy Review
- Examples and Exercises

### Open Discussion Forum