# Maintenance & Reliability Management:

## Planning, Estimating, Scheduling and Control

*(Cost Effective Maintenance Management)*

### TRAINING METHODOLOGY

This interactive training workshop includes the following training methodologies as a percentage of total tuition hours:-

50% Lectures
30% Workshops, Group Work & Practical Exercises
20% Videos & Software

### WHO SHOULD ATTEND

- Maintenance Managers, Planners , Engineers, Superintendents and Supervisors
- Plant Managers , Engineers, Superintendents and Supervisors
- Routine Work Managers, Engineers, Superintendents and Supervisors
- Operations Managers, Engineers, Superintendents and Supervisors
- Technical Maintenance Managers, Engineers, Superintendents and Supervisors
- Production Managers, Engineers, Superintendents and Supervisors
- Building Supervisors, Engineers and Superintendents
- Engineering Managers
- Team Leaders

**TO REGISTER CALL NOW!**
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**EMAIL:** admin@worldwidetank.com.au


### COURSE DESCRIPTION

This five-day course is designed to assist maintenance management personnel responsible for delivering maximum reliability and availability of equipment at the lowest possible cost. The course will present techniques designed to improve the effectiveness of maintenance management activities, to ensure that physical assets perform their required functions, operate reliably, and support corporate goals. The sessions will focus on the modern methods and techniques on the most critical aspects of maintenance management such as Organizing maintenance resource, Selecting the right maintenance work, Analyzing failures, Setting and conducting a maintenance plan, Planning spare parts, Estimating and controlling maintenance costs, Computerizing maintenance planning and measurement operations. The delegate will also be introduced to Reliability tools and the effect human reliability has on plant availability.

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**Course Objectives**

Upon the completion of this course, participants will be able to:-

- Develop an understanding in the field of maintenance excellence by familiarizing the its frame work, philosophy and establishing the environment for improvement
- Recognize the aspects of maintenance today through the various types of maintenance including maintenance strategy development and productive maintenance
- Identify the different equipment failure patters and know the reasons why and equipment fails
- Determine several maintenance management by being aware of the maintenance business model, maintenance organization, and business elements
- Know the process of developing maintenance objective setting in accordance to the business plan, R&M policy and maintenance plans
- Discuss the significance of equipment plans in maintenance planning and be able to identify several equipment plans development, approaches, and plan options Employ the methods of condition monitoring in line with vibration monitoring, pump monitoring frequency, and infrared thermography
- Become aware of the procedure of work selection in accordance with work screening procedure, work request requirements, prioritization systems, and cost benefits
- Know the various strategies of work planning and scheduling by identifying the planning effectiveness, planners and staffing, routine maintenance planning and use of various planning tools
- Specify the different proven turnaround practices in accordance with success factors and management practices
- Understand the purpose of work execution in job completion and be able to characterize its advantages and disadvantages
- Apply the various stewardship and performance metrics such as performance work management KPIs, maintenance effectiveness metrics, and work force utilization metrics
- Know the process of continuous R&M improvement through bad actors and RCFA
- Distinguish the factors of human reliability through classification of human error and human reliability analysis
- Familiarize the different reliability tools using life cycle cost analysis and life data analysis
- Discuss the key elements of reliability and R&M program according to asset management of projects
- Apply the methods of computerized maintenance management systems in accordance to its components, benefits, implementation plan and issues

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**NOTE TO DELEGATES:**

To maximize the benefits of the course, delegates should be prepared to actively participate in the course and bring examples of standard work plans, a list of plant performance metrics, the work priority system in-place, and any other planning or scheduling material they would like to review and discuss.

**DAY 1**

0730 - 0800 Registration & Coffee
0800 - 0815 Welcome & Introduction
0815 - 0830 PRE-TEST
0830 - 0930 Course Overview

Course Objectives
Delegate Expectations
Overview Discussions

What are the strong points of your maintenance organization?
What areas do you see needing improvement?
What concerns about planning and scheduling?

0930- 1000 Maintenance Excellence
- Framework for maintenance excellence
- Overall Philosophy

1000 - 1015 Break

1015 - 1230 Maintenance Excellence (cont'd)
- Maintenance Principles
- Work environment
- Equipment
- Information systems
- Elements for Effective Maintenance
- Establishing the Environment for Improvement

**DAY 1 cont.**

1230 - 1330 Lunch

1330 - 1445 Maintenance Today
- Types of Maintenance
- Maintenance strategy development
- Productive maintenance
- Discussion

What type of maintenance is your plant doing?

1445 - 1500 Break
1500 - 1630 Equipment Failure Patterns
- Types of equipment failures
- Why equipment fails
- Discussions:

How does most of your equipment fail?

1630 End of Day One

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**DAY 2**

0730 - 0900 Maintenance Management
- Managing Maintenance
- Basic Principles
- Maintenance business model
- Business elements
- Maintenance organization
- Discussion

Do you have a maintenance model?
What is your organization structure?

**0900 - 0915 Break**

0915 - 1015 Maintenance Objective Setting
- Business plan
- R&M Policy
- Maintenance Plans
- Discussions:

Does your plant have an R&M Policy?
Are the yearly goals disseminated throughout the plant?
- Objectives

**1015 – 1030 Break**

1030 - 1230 Equipment Plans
- Equipment plans development
- Plan options
- Approaches
- Discussion:

Do you have equipment plans prepared?
How were they developed?
Have you applied RCM?

**1230 - 1330 Lunch**

1330 - 1530 Condition Monitoring
- Types of condition based monitoring
- Vibration monitoring
- Pump monitoring frequency
- Infrared thermography
- Physical effects monitoring
- Lube oil analysis
- Discussion:

What kinds of monitoring are being used today?
Has the monitoring program been effective?
Is the monitoring scheduled being adhered to?

1530 End of Day Two

**DAY 3**

0730 - 0900 Work Selection
- Mission
- Work screening procedure
- Work request requirements
- Prioritization systems
- Cost benefit analysis
- Discussion:

What systems are you using to identify and prioritize work?
Do you have a plant-wide risk matrix?
Is the same risk matrix used throughout the plant?

0900 - 0915 Break

0915 - 1015 Work Planning and Scheduling
- Planning objectives
- Planning effectiveness
- Planning metrics
- Planners and staffing
- Routine maintenance planning
- Work plan
- Planning tools
- Scheduling & Considerations

1015 - 1030 Break

1030 - 1130 Work Planning and Scheduling (cont'd)
- Types of schedules
- Work execution packages
- Maintenance backlog
- Discussion:

How effective is your planning?, What metrics are tracked for planning and scheduling?
Is backlog a concern?

1130 - 1230 Proven Turnaround Practices
- Success factors
- T/A Concern areas
- Management practices
- Milestone plan
- Work scope
- Projects & Material procurement

# Maintenance & Reliability Management:

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**DAY 3 CONT.**

1230 - 1330 Lunch
1330 - 1400 Proven Turnaround Practices (cont'd)

- Process operations
- Pre-T/A reviews
- Discussions:

How are you approaching turnarounds?
Who does the planning? Self? Contractor?
Does planning started early enough?

1400 - 1530 Work Execution

- Objective and Actions
- Job completion
- Supervisor
- Contracting types
- Advantages and Disadvantages
- Discussions:

How effective is work execution?
Are you using mixed crews, contractors, or own crafts men?
What kind of contracting is most done by your plant?

1530 End of Day Three

DAY 4

0730 - 0900 Stewardship and Performance Metrics

- Performance indicator characteristics
- Business results indicators
- Process unit run-length goals
- Work management KPIs
- Maintenance effectiveness metrics
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0900 - 0915 Break
0915 - 1015 Stewardship and Performance Metrics (cont'd)

- Equipment specific indicators
- Work force utilization metrics
- Discussion:

What KPI or indicators is your plant tracking?
Have they been effective in improving reliability and reducing maintenance cost?
How frequently are they being reported or tracked?

1015 - 1030 Break
1030 - 1230 Continuous R&M Improvement

- Objectives and implementation
- Data to be screened
- Bad actors and RCFA
- Discussion:

Does your plant have a continuous improvement program in place for R&M?, How effective is it?
What is monitored to identify improvement opportunities?

1230 - 1330 Lunch
1330 - 1530 Human Reliability

- Classification of human error ●Human reliability analysis
- Discussion:

Has your plant experience human error and how has it gone about resolving it?

1530 End of Day Four

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**DAY 5**

0730 - 0900 Reliability Tools
- Life cycle Cost Analysis
- Discussion:

Does your plant use Life Cycle Cost Analysis?

0900 - 0915 Break
0915 - 1030 Reliability Tools (cont'd)
● Life data analysis ("Weibull analysis")
● Discussion:
Does your plant use Life Data Analysis?

1030 - 1045 Break
1045 - 1230 Asset Management of Projects
- Key elements of reliability
- Establish reliability during design
- Why build reliability into a project
- Work process for implementing
- Overall reliability goals
- Elements of an R&M Program
- Exercise

Make a list of 10 questions that should be asked during design to ensure that Reliability, Availability and Maintainability (RAM) is being considered.
- Discussion

Does your organization consider RAM during designing and engineering of projects?

1230 - 1330 Lunch
1330 - 1430 Computerized Maintenance Management Systems
● Components ● Benefits ● Implementation Plan and issues ● Discussion
What system installed? , Are all the features used?
How long did it take to implement?

1430 - 1445 POST-TEST
1445 - 1500 Summary & Open Forum
1500 - 1530 Presentation of Certificates
1530 End of Course

**Dress Code:**
Smart casual wear is suggested along with a sweater or jacket in case the conference room is cool.

**Payment Terms:**
Payment must be made prior to the event or admittance will not be permitted. A tax invoice and confirmation letter will be emailed to the attendee upon completion of a valid registration. Payment may be made by EFT, cheque or credit card.