Best Technology Soultions **(BTS)**

Training Program

MAINTENANCE PLANNING, SCHEDULING, AUDITING & BENCHMARKING

Introduction:

Planning and scheduling of maintenance work is central to a well functioning maintenance organization. In order for maintenance planning and scheduling to work many other systems need to work well. Most importantly equipment inspections, predictive maintenance, technical database including bill of materials, work order history, and standard job plans have to be in place. The maintenance function must also be supported by an efficient spare parts procurement, storage and control function.

Ensuring basics are in place such as good backlog practices, an effective prioritization system, proficient planning practices, and a functioning scheduling system between operations and maintenance. The effectiveness of planning and scheduling and the often strained relationship between maintenance and operations must improve dramatically. Maintenance must assume its rightful place as a high leverage contributor to business performance. Data recorded in the CMMS must be structured in such a manner that it can feed the decision makers with decision support information. Performance indicators relevant to maintenance must highlight deficiencies and the underlying detail can then be used to pinpoint the causes.

Who Should Attend?

Delegates should represent a wide range of personnel in the organization who are involved in, or dependent on, effective maintenance planning, scheduling and work control.

These should include:

- Maintenance Managers
- Maintenance Engineers and Engineers in Training
- Maintenance schedulers
- Maintenance planners
- Planning and Scheduling Support Staff
- Heads of Maintenance and Superintendants
- Senior Operations Supervisors
- CMMS Administrators and Super users
- Other stakeholders in the Work Planning Function.

Methodology:

This interactive Training will be highly interactive, with opportunities to advance your opinions and ideas and will include;

- Lectures
- Workshop & Work Presentation
- Case Studies and Practical Exercise
- Videos and General Discussions

Certificate:

BTS attendance certificate will be issued to all attendees completing minimum of 80% of the total course duration.

Course Objectives:

After completing these workshop learners will better understand:

- How physical assets and physical asset management affects the business
- The eight major losses and where they originate from
- Why maintenance has to maintain the functions and performance standards of assets
- How functions and performance standards are lost or degraded
- The risks associated with failure and degradation
- How degradation occurs in terms of normal and accelerated
- How to apply failure management policies/tactics/strategies to reduce the risk of failure and degradation
- How the defiance and neglect of optimal equipment conditions causes PM programmes to fail
- The role of the operations in the early detection of defects and deterioration
- The role of the maintainer as coach and provider of specialised maintenance services
- The importance of reporting all forms of abnormality and deterioration using a formal system
- The elements of job planning including standards, logistics, documentation, spares, quality, etc
- How to determine scheduling capacity and exploit opportunities for maintenance
- How to develop a weekly maintenance schedule with the commitment of operations and all role players to ensure compliance with the routine maintenance programme and the reduction of risk
- Assign work to the most appropriate level of maintenance
- The importance of maintaining the maintenance backlog at an optimum levels
- How recording structured data enables chronic failures and losses to be identified
- How to develop and implement a set of performance indicators for physical asset management
- The focused improvement process

Course Outline:

Module One

- **INTRODUCTION**

  what do organizations generally expect from physical assets?

  How physical asset management affects the capability of an organization to make money. What does making money mean?

  What happens when organizations defy best practice physical asset management?

  Physical asset management facts and fallacies

- **FAILURE MANAGEMENT PROCESS**
- **Physical Asset Identification and Classification**

  Functional Location

  Rotables

  Bill of Material

  Documentation

  Criticality Grading

- **Functions and Performance Standards**

  Primary and inherent functions

  Protective devices

  Performance standards

  Design or desired standards?

- **Functional Failures**

  Total failure

  Partial failure

Failure Modes and Mechanisms

Practical Exercise: Failure Modes

- **Failure Effects and Risk**

  Effects

  Consequence

  Probability

  Types of risk

  Risk grading

  Hidden failure risk

- **Understand Failure Mechanisms and Their Causes**

  Normal deterioration

  Accelerated deterioration

  Age/usage related failure patterns and related mechanisms

  Abrasion, erosion, corrosion, fatigue, contamination, additive depletion, etc.

  Random failure patterns and related mechanisms

  Infant mortality pattern and related mechanisms

  Human error

- **Failure Management Policies/Strategies/Tactics**

  Routine Maintenance

  Operate to failure

  Once-off changes

- **Failure Management Policies Selection Diagram**

  Practical application of the diagram

- **Types of Routine Maintenance**

  Preventive maintenance

Condition based (Predictive)

Function testing / failure finding

Module Two

- **Preventive Maintenance**

  Feasibility criteria

  Advantages/disadvantages

  Practical

- **Condition Based Maintenance**

  Condition Monitoring

  Performance Monitoring

  Product Monitoring

  Inspection using human senses

  Degradation analysis

  Feasibility criteria

  Practical application

  The role of the operator and user

- **Function Testing/Failure Finding**

  Fail-to-safe devices

  Feasibility of function testing

  Feasibility of failure finding

  Practical application

- **Once-off Changes**

  Improve capability of maintainer or operator

  Improve procedures (Operating, maintaining, procurement, etc)

Improve design (configuration change)

Maintainability improvements

- **Operate to Failure**

  Feasibility

  Physical and financial risks

- **Role Clarification**

  Operations

  Maintenance

- **Review PAM Facts and Fallacies**

  Why Failure Management Policies Fail

  Legacy conditions render policies ineffective

  Correcting the sins of the past

- **Audit checklists to support the auditing process**

  Practical Exercise Lowest Risk Policy Selection

Module Three

- **WORK PLANNING AND CONTROL**

  Obtain the Resources to Implement Failure Management Policies Effectively

  Develop RASCI matrix for all PAM activities including levels or repair

  Determine skill requirements, assess current skills and design training to bridge gap

  Determine facilities, specialised tools, support equipment requirements, procure and deploy as required

- **Implement Systems to Ensure that Resources are Managed Efficiently**

  CMMS master data for physical assets, BOM and documentation

  CMMS master data for resources

  CMMS master data for spares and materials

CMMS master data for routine maintenance

CMMS master data for work status progression

- **Notifications, Work Requesting and Defect Reporting**

Identify work by means off notifications or corrective action requests (CARs)

Notification process, roles and principles

Problems with notifications

Work priority policy guideline

- **Notification/Corrective Action Request System Characteristics**

Why a standard system for the whole organization?

Accessible 24/7 to all people that interface with physical assets

Only means of raising work, reporting deviations, failures, abnormalities

- **Planning**

Reasons and benefits of planning

The three critical outcomes of a maintenance job

Planning for quality

Job scoping

Standards

Condition found, condition left criteria

Job templating

Planning checklist

- **Schedule Work**

Reason and benefits of scheduling

Scheduling success factors

Role of operations, planning and supervisor in scheduling

Capacity planning

Exploiting windows of opportunity

Develop Draft Master Schedule

Conduct Master Schedule Review Meeting

Final Master Schedule and Implementation

Backlog Management

Spares reservations and procurement

Schedule Work Practical Exercise

- **Allocate Work**

Options for allocation, allocation and scheduling boards

Resources per section

Resource pooling versus resources dedicated to sections

- **Work Execution and Feedback**

Organise the daily workload and logistics

Dealing with breakdowns and unplanned work

Fault finding and cause identification

Work quality control measures

Recommission and sign over

Job card feedback and analysis

Module Four

- **PERFORMANCE MANAGEMENT AND FOCUSED IMPROVEMENT**

Information and Control

Sources of PAM information

- **Management Levels and Information**

RASCI specific information

- **Audits**

  The role of auditing

  Types of audits

  Advantages of auditing

  Disadvantages of auditing

  Types of audits

- **Performance Indicators**

  Performance indicator criteria

  Setting Targets

  Setting Ranges

- **PAM Balanced Scorecard**

  Workload Performance Indicators

  Planning Performance Indicators

  Effectiveness Performance Indicators

  Cost Performance Indicators

- **Performance Indicator Practical Exercise**

- **Focused Improvement**

  Identify improvement topic

  Understand situation

  Expose and eliminate abnormalities

  Analyse causes

  Plan improvement

  Implement improvement

  Evaluate results

  Consolidate gains