

Certified by Data  
Trak Systems Inc,  
Canada

# Maintenance Management Compendium

## Course Director: Ben Stevens

- President, DataTrak Systems Inc.
- Former President, OMDEC Inc.
- Former Consultant at Physical Asset Management Group, PWC Consulting
- Over 25 years of cross-industry experience at key positions
- Delivered well over 100 training programs

## Optimizing Maintenance Tactics

April 29 & 30, 2013 - Karachi | May 6 & 7, 2013 - Lahore

## Understanding and Managing RCM

May 2, 3 & 4, 2013 - Karachi | May 8, 9 & 10, 2013 - Lahore

## Effective Project Management for Maintenance

June 3, 4 & 5, 2013 - Karachi

## Machinery Failure and Reliability

June 6 & 7, 2013 - Karachi



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Learning Partner



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# Optimizing Maintenance Tactics

## Logical Selection of Maintenance Tactics and their Usage

April 29 & 30, 2013 - Sheraton Hotel, Karachi | May 6 & 7, 2013 - PC Hotel, Lahore

### Course Overview:

The use of the correct maintenance tactics lays the foundation for effective delivery of reliability. This two day program will examine the logic behind the selection and use of the right tactics, and show how to measure the results of employing them. Delegates will go through the basics of reliability and equipment failure - focusing on understanding the underlying causes and their implication. Next delegates will examine the various maintenance tactics that can be used, such as Condition Based Maintenance, Run to Failure, Time Based Maintenance, etc, what their impact is and how they can best be selected.

### Key Learning Outcomes:

- ✓ **Understand** different Maintenance Tactics and how they best fit the types of equipments and equipment failures
- ✓ **Learn** how to select the right Tactic and when to use it to increase reliability and reduce cost
- ✓ **Examine** the underlying cost measurement principles and how to apply them to your own maintenance business
- ✓ **Discover** the key concepts in understanding & visualising failure, cost of failure and prevention of failure
- ✓ **Review** different types of performance and failure curves & how to use them for the benefit of the organization
- ✓ **Understand** the process of balancing the risk and cost of failure with the cost of prevention

### Course Agenda:

Session 1:

#### Introducing Maintenance Tactics

1. Practical implications of maintenance alternatives
2. How to convert static maintenance procedures into the ultimate goal of Living Reliability
3. Why do we care about Tactics
4. How Tactics are fundamental to Continuous Reliability Improvement

Session 2:

#### Selecting the RIGHT Maintenance Tactics for Best Results

1. Linking Tactics with the Maintenance strategy
2. Types of Tactics – Inspections, CBM, TBM, Redesign, Run to Failure, Detective/Corrective
3. Laying the Foundation for Selection and use of Maintenance Tactics
4. Tactics - their selection and use;
  - a. Which tactic fits which failure
  - b. Conditions to apply in selecting tactics
  - c. When is “run to failure” good maintenance
  - d. Workshop – validating the rules for selecting tactics
5. Frequencies and scheduling of tactics

Session 3:

#### Impact of Tactics on Equipment Reliability

1. How the right Tactics will improve equipment reliability
2. Linking Tactics to Performance Curves & Failure Curves
3. How Performance Curves and Failure Curves guide us to the right maintenance
4. Why wrong tactics make things worse and cost more

Session 4:

#### The Bottom Line in Tactics

1. Measuring Tactical Effectiveness
2. Risk and Cost of Tactics - Developing a cost structure to compare the effectiveness of different tactics
3. Best Practices in Maintenance Tactics - their selection and use; which tactic fits which failure; conditions to apply in selecting tactics; when is “run to failure” good maintenance
4. Best Practices in Preventive Maintenance - why PM's are preferred, and when they are not
5. Identifying and evaluating the costs of failure
6. Value in Maintenance, the true objective of maintenance; introducing and measuring risk in maintenance
7. Measuring the Costs of Prevention and Failure - preventing or allowing failure as a business decision; comparing the costs of different maintenance tactics



# Understanding and Managing RCM

## Using RCM to Select Tactics and Reduce Equipment Failure

May 2, 3 & 4, 2013 - Sheraton Hotel, Karachi | May 8, 9 & 10, 2013 - PC Hotel, Lahore

### Course Overview:

Many significant advances in equipment reliability analysis in recent years have been based on RCM. This program will start with a practical model of how RCM fits in with equipment reliability. The course focuses on thorough review of what RCM is and the process necessary to put it into place. Traditional approaches to RCM carry a number of pitfalls and difficulties that delegates will be introduced to - along with techniques to avoid them.

Participants will gain an insight and experience of RCM and the conditions that should surround it. Delegates will gain a solid understanding of RCM and how to effectively use it by working through a ten step process over the 2-day program. Delegates will work in small groups and will focus on practical case studies so that the results can be applied in their workplace.

### Key Learning Outcomes:

- ✓ **Learn** & practice RCM fundamentals
- ✓ **Identify** the pitfalls of RCM and develop strategies to avoid it
- ✓ **Understand** the process of planning and implementing RCM.
- ✓ **Develop** an understanding of functional & potential failures
- Understand** how to turn RCM into Living Reliability
- ✓ **Complement** RCM with other maintenance techniques

### Course Agenda:

#### Session 1:

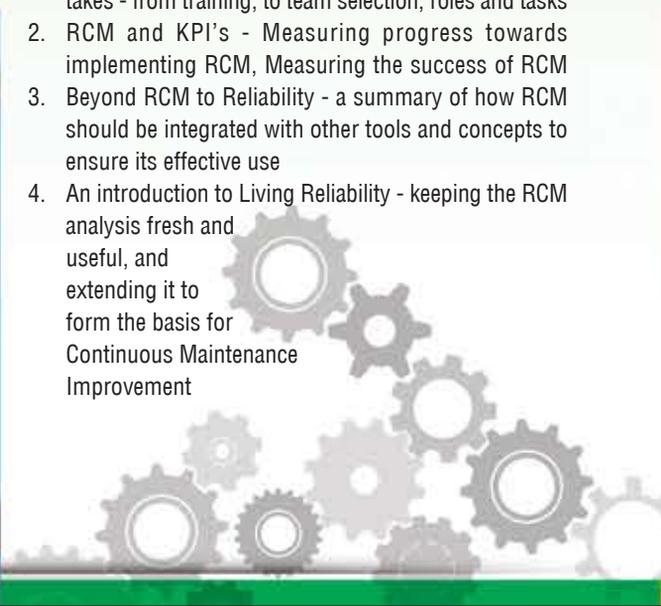
1. Introduction, history and role of RCM – the background of RCM and how it fits into the range of tools available to the modern Physical Asset Manager. Also, what it will not do, and why many companies RCM implementation do not deliver the goods
2. How RCM supports into Continuous Maintenance Improvement
3. Identifying Critical Equipment and selecting target equipment for RCM, practical techniques for selecting the critical equipment
4. Determining Equipment Functions - each asset is designed to perform specific functions. Examples for understanding these functions will be discussed which will prompt right action to prevent equipment failures
5. Defining Failures is not simple - each function has several different ways of failing and each may be important to reliability. Participants will develop understanding of “Failure”, Functional Failures, Potential Failure and Total failures

#### Session 2:

1. Defining Failure Modes - once the functional failures are identified, we need to define the process that results in the lost performance; i.e. what actually happens to the machinery. Examples will continue to follow the practicality of the delegates' workplace
2. Analyzing Failure Effects - Each failure mode can have one or more ways of showing up; these will be defined and explored. Here we also apply the economic test - is it worthwhile taking any action?
3. Selecting the right Tactics to prepare the Tasks - here we use the Consequences of Failure and the RCM logic tree to select the right tactic - which then is converted into a work order task
4. Maintenance Tactics & their criteria for selection review

#### Session 3:

1. Implementing RCM - a step by step review of what it takes - from training, to team selection, roles and tasks
2. RCM and KPI's - Measuring progress towards implementing RCM, Measuring the success of RCM
3. Beyond RCM to Reliability - a summary of how RCM should be integrated with other tools and concepts to ensure its effective use
4. An introduction to Living Reliability - keeping the RCM analysis fresh and useful, and extending it to form the basis for Continuous Maintenance Improvement



# Effective Project Management for Maintenance

## Key components of successful Projects and their Inter-relation

June 3, 4 & 5, 2013 - Sheraton Hotel & Towers, Karachi

### Course Overview:

Demands on Maintenance Departments are now becoming more and more complex - whether it be building and installing new capacity, managing shutdown maintenance or managing complex rebuilds. The demands show themselves in the requirement to strictly control costs while improving quality, project turnaround and reducing risk.

The focus of this course is to apply Project Management best practice techniques to the Maintenance environment. Through a well - planned series of presentations and discussions, delegates will be exposed to the best practices in project management, and will have the opportunity to practice the key techniques in the workshops.

### Key Learning Outcomes:

- ✓ **Identify** techniques to minimize negative impacts on vulnerable areas of a project
- ✓ **Experience** different valuable project management techniques that can be adopted your workplace
- ✓ **Understand** the importance of human element and learn techniques for turning it into a positive force
- ✓ **Address** the post-completion review process and how it pays dividends in future projects
- ✓ **Practice** the key project control techniques essential for on-time, on-budget, on-quality project completion

### Course Agenda:

#### Session 1:

##### **The Basic Building Blocks**

The focus of this session will place the maintenance project within the overall framework of the daily work schedule and explore how and the project management process differs from regular work order planning, scheduling & execution.

1. The role of Project Planning, its key elements & what happens if the planning process fails to be completed adequately
2. Where Contingency Planning fits and how it can be used to advantage
3. Defining Project Objectives that match the organization's goals, benefits and pay-offs
4. Stage for measuring success or failure
5. Building "Project Methodology" - Do we need one? Start from scratch? Any alternatives?
6. Defining attributes & skills of Project Leader and Project Team responsible for what & who needs to be involved

#### Session 2:

##### **Managing Project Scope**

One of the most contentious issues in the project management process is to prevent the seemingly inevitable delays caused by changes in the scope of the project.

Controlling the nature and impact of these changes then becomes critical to minimize the impact on the delivery date, project costs and project objectives. In this session, delegates will focus on:

1. Control scope creep & manage scope changes
2. How to track and resolve issues
3. Ways in which negative impact can be controlled & minimised

#### Session 3:

##### **Time, Cost and Quality**

"On-time, on-budget"-organizations typically place a heavy emphasis on these twin elements. What is too frequently ignored is the third piece of this puzzle-"on-quality". All three need to be optimized in the context of the project objectives-and so the question is how the three conflicting goals are kept in balance. In this session, delegates will explore:

1. Process of Project Time Management, how it is planned, measured and tracked
2. Techniques of Work Breakdown Structures for Cost Control
3. Quality Management and the impact of trading it off against time and cost
4. Role of a Recovery Plan and when should it be used

#### Session 4:

##### **The Human Dimension**

Project success is dependent upon the all-important Human Dimension. With the pressure to deliver on-time, on-budget and on-quality, this Human Dimension frequently takes a back seat. This leads to resentment & resistance. It jeopardizes the success of the project and often causes the organization to defer or avoid new projects. In this session delegates will:

1. Understand the fundamentals of good People Management in the context of a project
2. Explore how to apply these principles to the project team
3. Look at the role of staff who are involved or affected, but not part of the core team
4. Concepts of sound Change Management
5. Productive approach to Communications within a project.

#### Session 5:

##### **Keeping Track**

Measuring and reporting progress on a project is a key element that is all-too-frequently ignored. If progress is not properly tracked, then projects will drift and not meet their time, cost and quality targets. Also the question of the risk to the organization needs to be addressed carefully. Where the risk increases, then this must be reflected in the reporting and in the follow-up. In this session delegates will explore:

1. Fundamentals of Project Reporting - who to, who by, content, frequency, with a specific focus on measuring results against objectives
2. Develop reporting profiles-structure and content
3. Pitfalls of inadequate reporting
4. Issues of risk - how to define it, how to report it and how to develop and implement a risk reduction plan

#### Session 6:

##### **The Admin Process**

To be judged successful a Project needs to be underpinned by solid and effective administration. This is a complex subject running from Procurement within the project to Project Documentation and the Post-Completion Review. In the discussion on Procurement, delegates will review the RFP and RFQ process, leading to pre-qualification and selection of vendors. For the Statement of work, plus the specification for materials, lead times, acceptance criteria etc. A checklist will be developed & a Post-Completion Review will be held which includes:

1. The objectives of the project, its successes and failures
2. Areas where successes can be grafted into the organization's internal project management process
3. Issues that can be addressed to improve future projects

# Machinery Failure and Reliability

## Problems and Solutions surrounding Equipment Failure

June 6 & 7, 2013 - Sheraton Hotel & Towers, Karachi

### Course Overview:

This course is focused on prevention and diagnose of equipment failures. The first part of the course covers RCM-its process and benefits as well as its pitfalls and requirements. In particular, how the easily understood RCM concepts can be used as part of a broader and practical understanding of reliability, and the tactics that are available to secure it. Each of the commonly used maintenance tactics will be examined - which to select and when, plus the pros and cons of each.

Following this, attendees will look at the process of diagnosing machine failure, understanding the application of condition-based maintenance and some of the new practices that have recently been introduced. There will be many practical workshops and discussions, with Attendees being encouraged use examples from they are familiar with so that they may apply the techniques to their own work environment.

### Key Learning Outcomes:

- ✓ **Be introduced** to some of the newer trouble-shooting and Condition-based Monitoring methods being used in equipment failure diagnosis
- ✓ **Learn** how to apply some of the core concepts of RCM
- ✓ **Be exposed** to two of the newer analytical systems for predicting and diagnosing equipment failure techniques
- ✓ **Identify** the pitfalls of these systems tools and develop strategies to avoid them
- ✓ **Understand** the process of planning and implementing the tools.

### Course Agenda:

Session 1:

#### Reliability Introduction

1. Understanding and measuring reliability
2. Overview of continuous reliability
3. How RCM fits into continuous reliability improvement
4. Using RCM principles as the basis for the reliability (this course will not provide detailed training in RCM)
5. Exploring equipment reliability, its implications and impact on the selection of asset management tactics
6. Examination of the different maintenance tactics
7. Selection of Tactics and criteria for use

Session 2:

#### Analytical Failure Analysis

1. The steps in Diagnostic Decision-Making, applied to:
  - a. Metallurgical failure analysis
  - b. Machine component failure analysis
  - c. Causes of bearing failure
  - d. Gear failures
  - e. Mechanical seals etc
2. Importance of Failure Reporting
3. Successful format for Failure Reporting
4. Case studies in Failure Analysis

Session 3:

#### Failure Prediction and Avoidance

1. Condition based maintenance advantages and disadvantages
2. Relevant case studies from industry
3. Three sub-processes of an effective CBM task:
  - a. Acquisition of reliable, accurate and consistent data at modest cost
  - b. Processing of that data to ensure its integrity is maintained
  - c. Use of that data in decision making
4. Analytical programs - the next big step into the realm of reliability analysis
5. The data collection process - how to avoid the usual cry "We don't have the right data"
6. Demonstration of a simple high level data model
7. Expert systems - core usage and recent developments

### All these Maintenance Courses are for:

Maintenance Managers, Directors, Heads, Superintendents, Supervisors, Engineers, Senior Analysts, Specialists and Senior Technicians. Contractors and Sub-contractors in Maintenance, Preventive Maintenance, Breakdown Maintenance, Inspections, Condition Monitoring and Maintenance Performance Management, Plant, Mechanical, Electrical and Utilities, Planning, Scheduling and Quality.





# Certified by DataTrak Systems Inc, Canada

DataTrak Systems Inc, was founded in 1984 as a high-tech startup company designing, manufacturing and marketing both the hardware and software for bar-code-based Production Monitoring, Time and Attendance Systems. Subsequently, Data Trak won the Canadian Distributorship for two leading CMMS (Computerized Maintenance Management Software) systems, being responsible for all customer-related activities.

Fast forward to the present - DataTrak's focus is the improvement of Maintenance and Reliability Management through consulting and training. It covers a broad range of supervisory, senior management and executive subjects including EAM/CMMS Analysis and Business Process Improvement, RCM, Expert systems, Performance management, Asset management strategy and tactics, Data collection, Best Practices, etc.

In the interim, DataTrak was on contract with Price Waterhouse Coopers (a major management consultancy) and OMDEC (innovators in reliability software). DataTrak has to its credit many recent maintenance and reliability projects in power generation, the steel industry, property development, public utilities, construction and other heavy maintenance-oriented industries around the world.



Participants will also be awarded a **DataTrak Systems Inc, Canada certificate** once they have successfully cleared the **assessment at the end of the workshop**.

## Maintenance Excellence Series Effective Work Management in Maintenance

Facilitated by Ben Stevens on  
March 21 & 22, 2013 | Karachi



## Maintenance Excellence Series Maintenance Best Practices

Facilitated by Ben Stevens on  
March 18, 19 & 20, 2013 | Karachi



## Course Director: Ben Stevens

Ben Stevens, President of DATA TRAK SYSTEMS Inc, Ontario, a company dedicated to developing and selling products and services focused on training and consulting in equipment reliability and maintenance improvement.

He has been fully involved with the maintenance and reliability business for more than 25 years and has experience in all aspects of Maintenance and Physical Asset Management and CMMs/EAM systems, built on the base of a blend of a post-graduate degree in economics, CFO and CAO positions in several manufacturing companies, entrepreneurial experience in the high tech sector and business development.

His prior experience included **President of Data Trak Systems** - a CMMS Distribution, Sales and Implementation company. He was the Vice President Finance for a number of manufacturing companies. He was a Business Development Manager of Price Waterhouse Coopers, Canada for International Centre of Excellence in Maintenance Management. And was a Senior Associate Consultant at the same company. In addition, he was CFO and CAO of Nanotec Limited and Atomic Energy of Canada Ltd.

He is a frequent speaker at conferences, has chaired the International Maintenance conferences in Dubai on numerous occasions, and has been published in several languages. He is well-known for his work around the world, having delivered many successful workshops over the past twelve years.

He completed long term engagements with a power generation company in Indonesia, a leading steel company in Japan and a resort development company in Bahrain during the time he served as President of OMDEC Inc. Optimal Maintenance Decisions Inc ([www.omdec.com](http://www.omdec.com)) is a spinoff of the CBM (Condition Based Maintenance) Laboratory at the University of Toronto.



“Ben introduced new and innovative techniques for effective utilisation of planning in plant maintenance.”

**Pakistan Petroleum Limited**

“I learned about the improved maintenance practices that can actually be implemented at my workplace”

**Engro Polymer & Chemicals**

Workshop by Ben Stevens was a good source of Professional Training. He had put together everything about RCM & work planning in a very logical manner.

**MOL**

“Practical and relevant! Maintenance tactics and relative calculations were expertly taught by Ben.”

**International Power Global Development**

**Ben Stevens' work has been featured in prominent publications including:**

- MRO Handbook - PEM 1998 (Contributing Author)
- CMMS and Productivity Improvement- Entek 1999
- Reliability Handbook - PEM 2000 (Contributing Author)
- Standard Software for Maintenance,- PWC (Contributing Author)
- Maintenance Excellence - Dekker 2001 (Contributing Author)
- Numerous magazine and web articles



# Four separately bookable courses

## April – May 2013

### Optimizing Maintenance Tactics

(Two Days Course)

April 29 & 30, 2013 - Sheraton Hotel, Karachi  
May 6 & 7, 2013 - PC Hotel, Lahore  
9:00 am - 5:00 pm

Course Investment:

PKR **49,999** (per participant)

### Understanding & Managing RCM

(Three Days Course)

May 2, 3 & 4, 2013 - Sheraton Hotel, Karachi  
May 8, 9 & 10, 2013 - PC Hotel, Lahore  
9:00 am - 5:00 pm

Course Investment:

PKR **74,999** (per participant)

Book your seat in both courses for **PKR 100,000**

## June 2013

### Effective Project Management for Maintenance

(Three Days Course)

June 3, 4 & 5, 2013 - Sheraton Hotel, Karachi  
9:00 am - 5:00 pm

Course Investment:

PKR **74,999** (per participant)

### Machinery Failure & Reliability

(Two Days Course)

June 6 & 7, 2013 - Sheraton Hotel, Karachi  
9:00 am - 5:00 pm

Course Investment:

PKR **49,999** (per participant)

Book your seat in both courses for **PKR 100,000**

### 5 Easy Ways to Register

Address: Octara Private Limited 2/E-37, Block-6, P.E.C.H.S., Karachi.

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Note: Full payment must be received in advance to confirm enrollment.

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### Customized Maintenance Courses with Ben Stevens

Ben Stevens can be made available to deliver customized workshops to suit specific needs of your organization at significant savings. Specialized areas of Ben Stevens are:

- KPIs for successful Maintenance
- CMMS/EAM for Maintenance Improvement
- Effective Project Management for Maintenance
- Maintenance Planning Scheduling & Control
- Financial Management in Maintenance
- Machine Failure & Reliability
- Building Maintenance Strategy
- Total Productive Maintenance
- Effective Maintenance Procedures
- Maintenance Best Practices

For further details, please contact

Jason D'souza at [jason.bosco@octara.com](mailto:jason.bosco@octara.com) or call at 0332-2422732.

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