

Training Course

**PREVENTIVE & PREDICTIVE MAINTENANCE OF ROTATING EQUIPMENTS**

Training Duration

5 Days

Training Venue and Dates

REF RM025	Preventive & Predictive Maintenance of Rotating Equipments	5	01-05 March, 2020	\$ 4,500	Dubai, UAE
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In any of the 5 star hotel. Exact venue will be informed once confirmed.

Training Fees

- 4,500 US\$ per participant for Public Training including Course Materials/Handouts, Tea/Coffee, Refreshments & International Buffet Lunch

Training Certificate

Define Management Consultancy & Training Certificate of course completion will be issued to all attendees.

TRAINING OVERVIEW

This is a five-day course on Rotary Machinery Preventive and Predictive Maintenance. Different maintenance strategies will be discussed; elements of each maintenance strategy, their advantages and disadvantages will be explored. The selection of the appropriate strategy that fit the mode of failure and results in the minimum time between repair and that leads to least down time and maintenance cost is one of the maintenance engineer duty that must be mastered. Tools and measurements involved in each maintenance strategy must also be recognized and deeply understood. To apply the above techniques effectively on the Rotary Machinery, one should be aware of their failure modes, and methods of troubleshooting. The above will applied on different type of Rotary Machinery like pumps, compressors, and Turbines.

WHO SHOULD ATTEND:

Engineers, technicians and managers responsible for selection, installation, machinery failure analysis, troubleshooting and maintenance of different rotary machines like pumps, compressors, fans, blowers, steam turbines, gas turbines will benefit from this course.

TRAINING METHODOLOGY:

A highly interactive combination of lectures and discussion sessions will be managed to maximize the amount and quality of information and knowledge transfer. The sessions will start by raising the most relevant questions, and motivate everybody find the right answers.

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You will also be encouraged to raise your own questions and to share in the development of the right answers using your own analysis and experiences. Tests of multiple-choice type will be made available on daily basis to examine the effectiveness of delivering the course.

Very useful Course Materials will be given.

- 30% Lectures
- 30% Workshops and work presentation
- 20% Group Work & Practical Exercises
- 20% Videos & General Discussions

**COURSE CONTENTS:**

The following topics will be covered in the course over five working days

**Ch 1 Maintenance Strategies**

Maintenance Strategies  
Corrective Maintenance  
Breakdown Maintenance  
Preventive Maintenance  
Predictive Maintenance  
Corrective Maintenance  
Effective Preventive Maintenance  
Planning & Scheduling  
Mode of Failures  
Coordination with Production  
Opportunity Preventive Maintenance Activities  
Predictive Maintenance Techniques  
Vibration monitoring  
Themography  
Tribology  
Visual inspections  
Ultrasonics  
Process Parameters

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**Ch 2 Causes of Machinery Failure**

Improper Specifications  
Improper Sizing  
Material Deterioration  
Overstressing  
Material Corrosion  
Overheating  
Fatigue Failure  
Brittlement Failure  
Misalignment

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Cold versus Hot Alignment  
Alignment Tolerances  
Imbalance  
Causes of Imbalance  
Level of Balancing  
Vibration due to Imbalance  
Off-design Operation  
Range of Acceptable Operation  
Limits of Operation  
Controlling Systems  
Loop Oil Systems  
Bearings  
Seals  
Control Systems  
Installation Problems  
Piping Stresses

**Ch 3 Root Cause and Troubleshooting**

Failure Consequences  
Failure Modes  
Age-related Failure  
Failure which are not age-related  
The Failure Process  
The Six Failure Patterns  
Technical History Data  
Failure Finding Task

**Ch 4 Failure Prevention**

Proper Specifications  
Codes and Standards  
Proper Operation  
Protective and Safety Devices  
Proper Training  
Monitoring Systems  
Maintenance Planning

**Ch5 Applications and Case Studies**

Pumps  
Fans and Blowers  
Compressors  
Steam Turbines  
Gas Turbines

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**NOTE:**

**Pre & Post Tests will be conducted**

**Case Studies, Group Exercises, Group Discussions, Last Day Review & Assessments will be carried out.**

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