INSTITUTE OF MAINTENANCE MANAGEMENT EDUCATION

Virtual
Training Programme

Maintenance Cost & Downtime Reduction

Introduction

Cost reduction in maintenance operations seeks to add value, eliminate waste of materials, man power, energy, plant downtime and improve maintenance quality and productivity. Maintenance cost reduction thus stands for arresting all kinds of waste across maintenance function that adds unnecessary cost to the company. Maintenance cost reduction requires continuous efforts to assist in reducing the consumption of excessive resources in a plant – it's all about achieving maximum value added goals with minimum resources.

In order to survive and make progress, companies need to necessarily keep tab on the consumption of their resources and generation of any wastage in their plant and the related costs. The companies who would continue to stand in the forefront will probably be the ones who have embraced "Cost Reduction" strategy across functions including maintenance. Maintenance cost reduction focuses on preventing unproductive elements and waste from being built into the maintenance system. According to a well known Japanese expert, Shigeo Shingo, "the most dangerous kind of waste is the waste we do not recognize." A fundamental principle of maintenance cost reduction is therefore to make the maintenance wastage problems identifiable in the first place. It facilitates reducing costs both direct and indirect, increase productivity, maintain high levels of quality and thus help making a significant rise in company's profits.

The structure of maintenance cost is very similar to an iceberg. The maintenance department's apparent expenses make up the tip of the iceberg – part seen clearly by everyone. But bulk of the costs lie hidden submerged within water – part rarely seen by plant people. Managements are often obsessed with cost cutting rather than ensuring resources that are properly deployed to add value. Well targeted, value-adding maintenance cost reduction needs to be driven by each maintenance department in order to reduce the volume of their maintenance cost iceberg. Maintenance cost reduction not only means cutting down the roots of the excessive costs but also to optimize the overall maintenance costs through meaningful efforts and action plans.

Downtime is costly to businesses and their profit margins in many ways. In a large plant, downtime means a big cost both in terms of maintenance spending and production losses. However, unplanned and unexpected downtime coming up due to equipment failures always results in higher costs. According to a research conducted in USA, almost every industry loses at least 5% of profit due to unplanned downtime—although some industries lose up to 20%.

Maintenance department primarily owes responsibility for controlling and reducing downtime and the costs associated with it. The cost of downtime representing the loss of profit is often colossal and found varying in large proportions depending on the size of the plant. The first step towards reducing downtime should be to reduce unplanned downtime. Working towards this goal involves employing thoughtful and thorough downtime analysis to understand exactly what, when, why and how the plant experiences the downtime due to failures. Once unplanned downtime gets effectively controlled, it will require managing planned downtime due to planned maintenance jobs in a way that results minimally.

The training programme is aimed to inculcate a better sense of cost-effectiveness and equip participants to work on fruitful approaches and techniques to minimize maintenance cost and reduce troublesome downtime in their plants.

Methodology

The methodology for conducting the Virtual Training Programme is briefly described as below:

- Focused Presentation
- Interactive Discussions
- Case Studies
- Question - Answer Sessions
- Practical Exercises

Programme Coverage

- Insights into Maintenance Resources & Maintenance Cost
- Lean Maintenance Concepts
- Maintenance Cost Reduction
- Terotechnology and Life Cycle Costs
- Total Integrated Approach to Maintenance Cost Reduction
- Maintenance Productivity Improvement
- Maintenance Wastage Reduction
- Case Studies on Maintenance Cost Reduction
- Controlling Wastage of Maintenance Man Resources
- Reduction of Downtime due to Breakdowns
- Minimizing Shutdown Time of Planned Maintenance Jobs
- Analysis and Improvement of Maintenance Methods

- Reducing Wrench Time & Delays in Maintenance Jobs
- Systematic Failure Analysis
- Practical Exercise

Focal Points of the Training Programme

- **Insights into Maintenance Resources and Maintenance Cost:** Develop deeper insights into various issues related to maintenance resources and maintenance cost. Learn how resources are utilized and how cost is incurred. Any loss, wastage, inefficiency, delay, leakage, spillage, abnormality, or any kind of such problems in the utilization of maintenance resources assist in incurring higher costs.

- **Lean Maintenance Concept and Maintenance Cost Reduction:** Understand the right concept of lean maintenance and the objectives of maintenance cost reduction in the plant. Recognize the elements of direct and indirect maintenance costs and importance of total maintenance cost in economic decision-making. Develop clear understanding of several related issues that help in controlling maintenance costs to meet company's goals.

- **Maintenance Productivity Improvement and Wastage Reduction:** Learn to augment productivity of maintenance materials and labour resources. Comprehend the basic ways of improving productivity of maintenance resources. Low productivity and high wastage in maintenance operations add to unnecessary costs and consequently lower down profitability of the company.

- **Terotechnology and Life Cycle Costs:** Know how the concept of terotechnology was evolved in 1970s in Britain. It gave birth to the idea of economic life cycle costs (LCC) of the assets. Understand that the concept of life cycle costs provide the right approach for selecting the most economical asset.

- **Controlling Wastage of Maintenance Man Resources:** The average productive utilization of maintenance workers is found around 25% in most industries. Get to understand the elements of unproductive time of the maintenance workers. Learn how to evolve efficient maintenance methods with minimum work content to keep control on equipment downtime.

- **Systematic Failure Analysis:** Understand from the root cause finding tools to identify the root of the failure problems and take corrective actions accordingly. Know the details of systematic failure analysis and assimilate ideas for reducing plant failures and downtime.

- **Practical Exercise:** Gain some invaluable experience by working on practical exercise based on minimizing maintenance cost and reducing downtime in industry.

Benefits of Attending the Training Programme

Benefits of attending the training programme will include the ability to:

- Learn how resources are utilized and how cost is incurred in maintenance operations. Develop clear concepts how wastage of maintenance resources adversely impact maintenance costs.

- Grasp in-depth concepts related to maintenance cost and various initiatives to begin maintenance cost reduction in your plant.

- . Gain deeper insights and understanding of various losses & wastage occurring in maintenance resources and the ways to control them in order to minimize maintenance costs.

- Get to know in detail the related concepts of terotechnology and the importance of life cycle costs (LCC) of equipment.

- Recognize the importance of higher productivity and lower wastage in maintenance. Imbibe the significance of improved maintenance productivity in achieving maximum plant availability at minimum cost.

- Understand various delays in maintenance work, elements of breakdown time of a job, components of downtime cost and impact on the profitability of the company.

- Get clear understanding about wrench time and how unproductive time of maintenance workers gets accumulated on account of various factors.

- Gain useful practical ideas in dealing with maintenance cost problems by way of group discussions and practical exercises.

Participation

- Maintenance Engineers & Managers
- Team Leaders
- Technical Executives from operation, reliability, asset management, etc.

Course Contents

MODULE I: Insights to Maintenance Resources & Maintenance Cost

- How Cost is incurred!
- How Resources are utilized!
- Maintenance Aim
- Elements of Maintenance Cost
- Maintenance Strategies for Developing & Developed Nations
- Losses & Wastage in Maintenance Resources

MODULE II: Maintenance Cost Reduction

- Components of Downtime Cost
- Maintenance Cost Comparison in Breakdown & Planned Maintenance System
- Maintenance Impact on ROI
- Calculation of Payback Period - Example
- Maintenance Cost Reduction
- Total Maintenance Cost Reduction Concept

MODULE III: Terotechnology and Life Cycle Costs

- Concepts of Terotechnology
- Life Cycle of a System
- Equipment Life Cycle Costs (LCC)
- Example on LCC
- A Case of Bad Equipment Buy

MODULE IV: Maintenance Productivity Improvement, Wastage Reduction and Case Studies

- Concepts of Productivity
- Ways to improve Productivity
- Maintenance Productivity Improvement
- Controlling Wastage of Maintenance Materials
- Case Studies

MODULE V: Controlling Wastage of Maintenance Man Resources

- A Case Study on Maintenance Workers Utilization
- Wrench Time & Unproductive Time of Maintenance Workers
- Components of Downtime on a Breakdown Maintenance Jobs
- Evolving Efficient Maintenance Methods
- Reducing Delays in Maintenance Work
- A Case Study

MODULE VI: Reduction of Downtime due to Breakdowns

- Maintenance Strategies to reduce Downtime
- Building Preventive, Predictive & Proactive Maintenance
- Downtime Reduction of Breakdown Maintenance Jobs
- Documentation & Analysis of Failure Data
- Root Cause Failure Analysis
- Systematic Breakdown Analysis

MODULE VII: Minimizing Shutdown Time of Planned Maintenance Jobs

- Learn to avoid Unnecessary Maintenance Work
- Better Maintenance Planning
- Analysis and Improvement of Maintenance Methods
- Gantt Charts for Planning Overhaul Jobs
- PERT / CPM Charts for Major Maintenance Jobs

MODULE VIII: Practical Exercises, Appraisal and Conclusion

- Practical Exercise on Minimizing Maintenance Cost and Initiatives for Downtime Reduction
- Presentation of the Ideas by the Participants and Interaction with the Faculty
- Closing Remarks by the Faculty
- Feedback from the Participants
- Appraisal and Conclusion

IMME and Maintenance Reliability Training Programmes

Institute of Maintenance Management Education (www.immeinstitute.org) commenced operations in late 70s as a leading training and consultancy organization to facilitate paving way for excellence in maintenance function in industry. Since then IMME has conducted a large number of top quality maintenance reliability training programmes on different themes and topics. Tens of thousands of candidates from various reputed companies in the corporate sector have participated in different training programmes & courses conducted by IMME in a period of over 30 years.

Maintenance reliability of plant equipment is a key activity in any manufacturing organization. In order to attain top performance in maintaining its assets, a company needs a comprehensive approach that depends on the integration of people, plant and processes. The maintenance reliability organization needs to be efficient, well organized, cost-effective and innovative to realize higher plant availability and smooth operations. Through maintenance reliability training, coaching and mentoring, Institute of Maintenance Management Education (IMME) provides value to the clients by focusing on creation of organic teams who understand asset performance management at strategic reliability level to help improve business profitability.

IMME helps companies reach their maintenance reliability goals by way of building capacity and competency – knowledge, skill, motivation, initiative, team work, etc. of maintenance managers, plant engineers, maintenance supervisors, technicians, etc. through training on various themes related to maintenance reliability function. Identifying and embracing the best practices in maintenance reliability management enables an organization to avoid failures, breakdown maintenance work and other barriers to success while maintaining safe, reliable operations and minimizing costs.

EXCELLENCE IN TRAINING FOR OVER 30 YEARS

Some of our Clients

☐ **Tens of thousand of maintenance engineers, managers, plant executives and other engineering personnel from various reputed companies in the corporate sector have participated in different in-house / virtual training programmes, distance courses, outbound programmes, workshops, seminars, etc. conducted by IMME in a period of over 30 years.**

☐ Some of the companies who have participated in various short-term training programmes conducted by IMME in the past are shown below:

ABB India Ltd.
Addverb Technologies Pvt. Ltd.
Ador Welding Ltd.
Alfa Laval (India) Ltd.
Amaraja Batteries Ltd.
Ambuja Cements Ltd.
Anshupati Textiles
(A Divn. of Vardhman Polytex Ltd.)
Antifriction Bearings Corporation Ltd., The
Ashok Leyland Ltd.
Asian Cables & Industries Ltd.
Asian Paints (India) Ltd.
Atul Limited
Bajaj Auto Ltd.
Balkrishna Industries Limited
Balmer Lawrie & Co. Ltd.
Bata India Limited
Bellary Steels & Alloys Ltd.
Bharat Dynamics Ltd.
Bharat Electronics Ltd.
Bharat Heavy Electricals Ltd.
Bharat Petroleum Corporation Ltd.
Bharat Refractories Ltd.
Bhuruka Gases Limited
Birla Corporation Ltd.
(Unit: Satna Cement Works)
Blue Star Limited
Bombay Dyeing & Mfg. Co. Ltd., The
Borosil Glass Works Ltd.
Brakes India Limited
Bridge and Roof Co. (India) Ltd.
Britannia Industries Ltd.
Cable Corporation of India Ltd.
Carborundum Universal Ltd.
Castrol India Limited
Ceat Limited
Central Electronics Limited
Cetex Petrochemicals Limited
Chennai Petroleum Corpn. Ltd.
Chittaranjan Locomotive Works
Cipla Limited
Coal India Limited
Colgate-Palmolive (India) Ltd.
Continental Device India Ltd.
Coromandel Fertilizers Ltd.
Cosmo Ferrites Limited
Cosmo Films Limited
Crompton Greaves Limited
Cutfast Abrasive Tools Ltd.
Dabur India Limited
Daurala Sugar Works
Deepak Fertilisers and Petrochemicals Corporation Ltd.
Deepak Nitrite Limited
Denso India Ltd.
Dhampur Sugar Mills Ltd., The
Dharamsi Morarji Chemical Co. Ltd., The
E.I.D. Parry (India) Ltd.
Eicher Tractors
Emco Transformers Ltd.
Enercon (India) Limited
Esab India Limited
Escorts Limited
Ester Industries Limited
Eveready Industries India Ltd.
Fertilizers and Chemicals Travancore Ltd., The
Finolex Industries Ltd.
Gabriel India Ltd.
Gharda Chemicals Ltd.
Godrej & Boyce Mfg. Co. Ltd.
Goodyear India Limited
Graphite India Limited
Grasim Industries Limited
Greaves Cotton Limited
Gujarat Mineral Development Corporation Ltd.
Gujarat State Fertilizers Co. Ltd.
Hawkins Cookers Limited
Heavy Vehicles Factory
Hindalco Industries Ltd.
(Renusagar Power)
Hindustan Aeronautics Limited
Hindustan Everest Tools Limited
Hindustan Fertilizer Corporation Limited
Hindustan Unilever Limited
Hindustan Newsprint Limited
Hindustan Organic Chemicals Ltd.
Hindustan Petroleum Corporation Ltd.
Hindustan Wires Limited
ITC Limited
ITI Limited
India Glycols Ltd.
India Pistons Limited
Indian Farmers Fertilizer Co-operative Ltd.
Indian Oil Corporation Ltd.
Indian Ordnance Factories
Integral Coach Factory
JSW Ispat Special Products Ltd. *(Formerly Monnet Ispat & Energy Limited)*
Kalyani Steels Ltd.
Karnataka Antibiotics & Pharmaceuticals Ltd.
Kirloskar Brothers Limited
Kirloskar Copeland Limited
Kirloskar Electric Company Ltd.
Kirloskar Oil Engines Ltd.
Kirloskar Pneumatic Co. Ltd.
Lakshmi Electrical Control Systems Ltd.
Larsen & Toubro Limited
Lubrizol India Pvt. Ltd.
Lupin Limited
MRF Limited
Maharashtra Seamless Limited
Mahindra & Mahindra Ltd.
Malayala Manorama Co. Ltd.
Malwa Cotton Mills Ltd.
Manali Petrochemical Ltd.
Mark Auto Industries Ltd.
Mineral Exploration Corporation Ltd.
Mother Dairy
Mysore Paper Mills Ltd., The
NTPC Limited
Nagarjuna Fertilizers and Chemicals Ltd.
National Aluminium Company Ltd.
National Engineering Industries Ltd.
National Fertilizers Limited
National Steel Industries Ltd.
Neyveli Lignite Corporation Ltd.
Nuclear Fuel Complex
Nuclear Power Corporation of India Ltd.
Orient Cement
Orient Paper Mills
Oriental Carbon & Chemicals Ltd.
Panchmahal Steel Limited
Panyam Cements & Mineral Industries Ltd.
Parle Biscuits Pvt. Ltd.
Philips India Ltd.
Poona Shims Pvt. Ltd.
Prakash Industries Ltd.
Pyrites, Phosphates & Chemicals Ltd.
Radico Khaitan Ltd.
(Unit: Rampur Distillery)
Rajasthan State Co-operative Spg. & Gng. Mills Federation Ltd.
Ranbaxy Laboratories Ltd.
Rane Brake Linings Ltd.
Rashtriya Chemicals & Fertilizers Ltd.
Raymond Limited
RCCPL Pvt. Ltd.
(Formerly Reliance Cement Co. Pvt. Ltd.)
Reckitt Benckiser (India) Ltd.
Reliance Industries Ltd.
SRF Limited
Samcor Glass Limited
Samtel Color Limited
Saraswati Sugar Mills, The
Shiram Pistons and Rings Ltd.
Siemens Ltd.
Simbhaoli Sugar Mills Ltd., The
Sona Steering Systems Ltd.
Steel Authority of India Ltd.
Stumpp, Shuele & Somappa Springs Pvt. Ltd.
Sud-Chemie India Pvt. Ltd.
Sudarshan Chemical Industries Ltd.
Sunflag Iron & Steel Co. Ltd.
TAFE Motors and Tractors Limited
(Formerly Tractors and Farm Equipment Ltd.)
TVS Motor Company Ltd.
Tamilnadu Petroproducts Ltd.
Tata Chemicals Limited
Tata Coffee Ltd.
Tata Power Company Ltd.
Tata Motors Ltd.
Tata Steel Ltd.
Technova Imaging Systems (P) Ltd.
Tega Industries Ltd.
Thermax Limited
Traco Cable Company Limited
Travancore Titanium Products Limited
U.P. Twiga Fibreglass Ltd.
USV Pvt. Limited
United Phosphorous Ltd.
Usha Martin Ltd.
Vadilal Industries Ltd.
Videocon Appliances Ltd.
Vikram Cement
(A Unit of Grasim Industries Ltd.)
Vindhya Telelinks Ltd.
Voltas Limited
Walchandnagar Industries Limited
WIL Car Wheels Ltd.
(Formerly Wheels India Ltd.)
Wipro Limited
Wockhardt Limited