Lean Tool Information Sheet

What is …Total Productive Maintenance

Total Productive Maintenance

What is Total Productive Maintenance and how will it help my workplace?

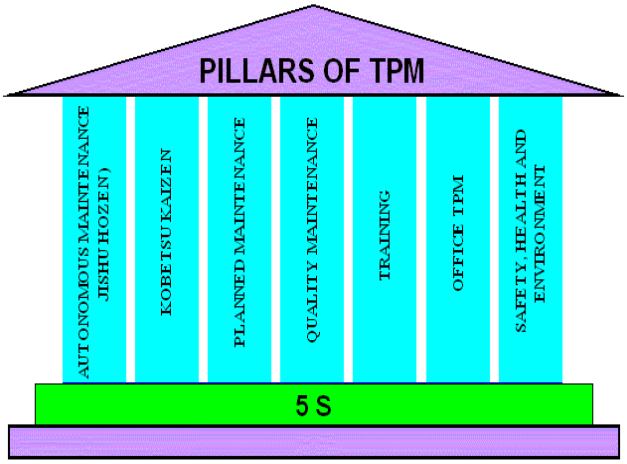
It can be considered as the medical science of machines. Total Productive Maintenance (TPM) is a maintenance program which involves a newly defined concept for maintaining plants and equipment. The goal of the TPM program is to markedly increase production while, at the same time, increasing employee morale and job satisfaction. TPM brings maintenance into focus as a necessary and vitally important part of the business. It is no longer regarded as a non-profit activity. Down time for maintenance is scheduled as a part of the manufacturing day and, in some cases, as an integral part of the manufacturing process. The goal is to hold emergency and unscheduled maintenance to a minimum.

Step 1 (includes getting ready)

- ✓ Learn the tools and Techniques in Planned Maintenance
- ✓ Understand the 7 steps of Planned Maintenance (ref. Japan Institute of Planned Maintenance)
- ✓ Apply Step 1 of Planned Maintenance at your workplace.

Step 2 and 3 (includes Workshop)

- ✓ Countermeasures (based on Equipment Failure Map)
- ✓ Why-Why Analysis
- ✓ Zero component/equipment failure due to forced deterioration
- ✓ Identify and determine Cleaning, Inspection and Lubrication (CIL) checkpoints
- ✓ Incorporate functional machine cleaning into Autonomous Maintenance (AM) operating procedures
- ✓ Understand and implement Visual Control Systems (ACS)



Machines and people make money, only together can they improve!

Key Points / Outcomes:

- ✓ Step 1 : Line of sight PM Board, Team ormation, Master Plan generation, MTBF, MTBA, MTTR, OEE, A-tagging, Planned Maintenance Schedule, Maintenance Standard, Minor restoration, One Point Lesson(OPL), Kanban systems, Workplace organization (WPO)
- ✓ Step 2 : 5 Failure factors, Why-Why Analysis Tool knowledge, Documentation, Team Assessment, Understanding equipment and its components intimately.

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Total Productive Maintenance – Further Information

Total Productive Maintenance (TPM) is a methodology for ensuring optimal machine performance, and Overall Equipment Effectiveness (OEE) is a measure whereby the performance of equipment can be effectively measured.

Machines form a large part of many business processes and hence the performance of these machines is incredibly important to the efficiency and effectiveness of the business. TPM brings maintenance into focus as a necessary and vitally important part of the business.

The machine wastes caused by poor machine performance are:

1. Breakdowns
2. Changeovers
3. Idling & Minor Stoppages
4. Speed Losses
5. Quality Defects & Rework
6. Start-Up and Reduced Yield

Most organisations are well aware of these wastes but see them as a necessity of working with machines. Maintenance is often regarded as a non-profit activity that only evokes negative thoughts when mentioned. When these wastes are put on the table and studied, rather than accepted, the impossible can be achieved!

Developing an Overall Equipment Effectiveness metric should be a first step, to allow you to measure your current TPM performance. OEE takes into account all machine wastes and is constructed from:

(1) The Availability of a machine (wastes 1 & 2)
(2) The Performance Level of a machine (wastes 3 & 4)
(3) The Quality Level of a machine (wastes 5 & 6)

In a highly effective workplace that practices Total Productive Maintenance, down time for maintenance is scheduled as a part of the manufacturing day and, in some cases, as an integral part of the manufacturing process. Operators are trained in visually checking equipment and identifying problems and often actually perform basic preventative maintenance tasks.The goal of TPM is to hold emergency and unscheduled maintenance to a minimum, to ensure a smooth and predictable manufacturing system.

There are 7 steps to implement Total Productive Maintenance, which provide a structured methodology to reduce your machine waste. As you implement TPM, you should see an improvement in your Overall Equipment Effectiveness (OEE).

1) Perform initial machine cleaning and inspection
2) Repair machine defects and leaks
3) Develop Operator and Maintenance PM schedules
4) PM activity performed by the Operator
5) PM activity performed by Maintenance Personnel
6) Build 5S system for all machines
7) Monitor OEE and set improving goal & actions