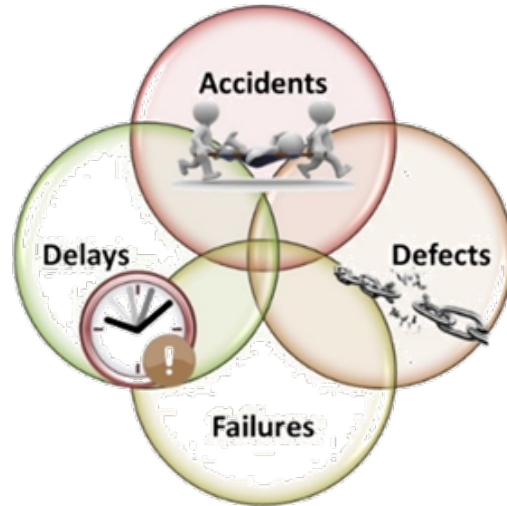


Why Total Productive Maintenance?

Total Productive Maintenance is a set of activities that involve both operators and maintenance staff in the care of all equipment to achieve zero related machine trouble.

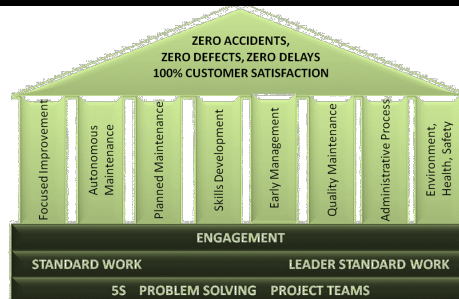
Benefits associated with PM include:

- Achieve 100% customer satisfaction
- Eliminate quality problems caused by equipment wear and tear
- Stop accelerated deterioration of equipment
- Eliminate costly/catastrophic unexpected failures
- Reduce/eliminate buffer inventory necessary for protection against unpredictable equipment
- Achieve 100% machine availability
- Improve process predictability
- Zero accidents, defects, failures and delays



The Eight Pillars of TPM

Total Productive Maintenance is built on eight pillars as follows:



Focused Improvement	<ul style="list-style-type: none"> • Stabilization of the process in preparation for next phases 5S, Project Teams and problem solving using PDCA.
Autonomous Maintenance	<ul style="list-style-type: none"> • Operator performed includes cleaning, inspection, tightening, lubrication and identification and some repair of deterioration.
Planned Maintenance	<ul style="list-style-type: none"> • Mechanic performance maintenance – breakdown, preventive, predictive.
Skills Development	<ul style="list-style-type: none"> • Structured training and application of skills necessary for operators/mechanical to performance maintenance as well as operate equipment as designed.
Early Management	<ul style="list-style-type: none"> ▪ Equipment design to achieve vertical start-up of new products or equipment. Includes ease of maintenance, operation, set up, low cost.
Quality Maintenance	<ul style="list-style-type: none"> ▪ Eliminate the occurrence of defects and improve controls to sustain zero defect operation.
Administrative Process	<ul style="list-style-type: none"> ▪ Ensuring the administrative and business processes collect, process and distribute information needed to promote zero losses in the process.
Environment, Health, Safety	<ul style="list-style-type: none"> ▪ Assuring safety and preventing adverse environmental impacts in all TPM activities.

How Do I Structure a TPM Program?

Total Productive Maintenance consists of five major implementation steps as follows:



Step 1: Select Equipment

Select equipment candidates that are:

- Important for productivity/quality
- Unpredictable due to breakdowns
- A throughput constraint/ bottleneck
- Create unsafe working conditions

Candidates should be supported through factual data, not assumptions.

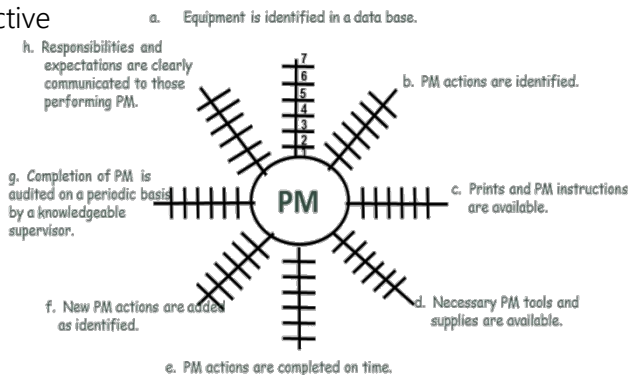
Step 2: Create Plans to Maintain Normal Conditions

Ensure plans are created for all critical equipment:

- Routine inspections
- Cleaning schedules
- Diagnostic checks
- TBO
- Cleaning schedules
- Part/fluid replacement

Step 3: Implement/Sustain PM Measures

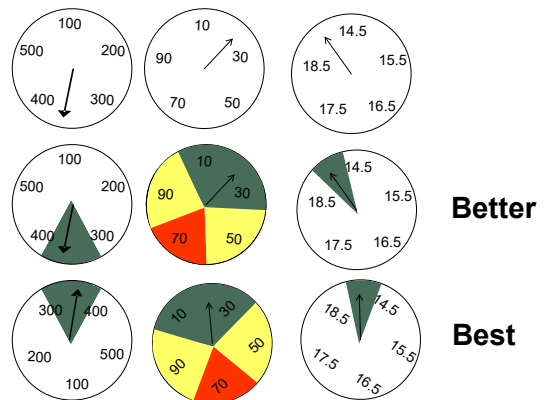
- Use team information boards to communicate PM tasks and results
 - Monitor equipment uptime and throughput to ensure plans are correct
 - Create an audit process to monitor PM program
- Monitor percentage of tasks that are reactive vs. proactive



Step 4: Detect Abnormal Conditions

Implement techniques that will enable quick detection of abnormalities that include:

- 5S
- Inspections
- Condition Monitoring
- Visual Management



Step 5: Develop Countermeasures to Maintain Normal Conditions

Use problem solving techniques to develop countermeasures such as:

- 5-Why
- Pareto Charts
- Fishbone Diagram
- A3 Problem Solving

