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## TPM Focused Improvement

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### GOALS

**Short Term:**

- o Create a Daily Operator PM “walk-around”
- o Develop / Enhance a Maintenance PM activity list
- o Clean to Inspect & Repair Equipment issues
- o Increase Employee Skill Set - Equipment knowledge
- o Develop Equipment Critical Spare Parts List
- o Develop Understanding of Overall Equipment Effectiveness
- o See how 5S, Set-Up Red., Root Cause Analysis all Tie to TPM

**Long Term:**

- o Improve OEE (Capacity) to >90%
- o Create Enthusiasm / Changing culture
- o Enhance Consistency of Quality in the Process
- o Incorporate Preventive / Predictive Maintenance
- o Reduce Manufacturing Costs
- o Dramatically Improve Manufacturing Effectiveness

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## Zero Equipment Stoppages

# 4 Phases of TPM

1. Stabilize Failure Intervals
2. Improve Equipment Productivity
3. Maintenance Excellence
4. Predict Equipment Life



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## Zero Equipment Stoppages

**Phase 1**

### Stabilize Failure Intervals

1. Establish Basic Conditions by Cleaning, Lubricating & Tightening - Inspection.
2. Expose Safety Concerns Through Cleaning/Inspection
3. Expose Abnormalities & Restore New Conditions.
4. Understand & Simplify Operating Conditions and Operate Accordingly.
5. Eliminate the Environment Causing Accelerated Deterioration (Control Contamination Source).
6. Establish Daily Inspection & Lubricating Standards.
7. Initiate and Implement Extensive Visual Controls.
8. Gather OEE Data & Prioritize Improvements



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# Zero Equipment Stoppages

## Phase 2

### Improve Equipment Productivity

1. Determine failures by seriousness.
  - Prevent major breakdowns from recurring.
2. Correct equipment design weaknesses.
  - Develop countermeasures
    - against contamination
    - make equipment more accessible for adjustment, inspections & lubrication
3. Eliminate the 6 major losses per OEE roadmap.



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# Zero Equipment Stoppages

## Phase 3

### Maintenance Excellence (Quality Maintenance)

1. Evaluate & develop Maintenance Excellence
  - Maintenance Mapping (VSM)
  - Maintenance / Area 5S
  - Skills matrix
  - Skills training
  - Critical spare parts
2. Develop a planned maintenance system
  - Perform periodic (PM) servicing & inspection
  - Perform condition based servicing & inspection
  - Establish work standards/Precision Maintenance
  - Computerize maintenance management systems
3. Develop an Early Equipment Management process
  - Maintenance specifications for new equipment
  - Procedure for new installations



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# Zero Equipment Stoppages

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**Phase 4**

## Predict Equipment Life

1. **Develop a Predictive Maintenance System.**
  - o **Introduce Predictive Equipment & Techniques.**
  - o **Train Equipment Diagnostics.**
  - o **Perform “Condition Based” Monitoring.**
  
2. **Consolidate Improvement Activities.**
  - o **Perform Failure Analysis Using Specific Engineering Techniques.**
  - o **Extend Equipment Life by Developing New Materials and Technologies.**



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## 1st DAY ACTION ITEMS

- **Classroom Training, Phases 1 & 2**
- **Identify your current Equipment Conditions**
- **Evaluate Equipment History**
- **Perform OEE Observations**
- **Evaluate Visuals & Countermeasures**



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## **2nd DAY ACTION ITEMS**

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- **Classroom Training Phases 3 & 4**
- **Perform 5S Assessment of Equipment & Area**
- **Using PdM tools – Identify Opportunities**
- **Create Action Plan for Machine Improvements**



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## **3rd DAY ACTION ITEMS**

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- **LOCKOUT/TAGOUT EQUIPMENT**
- **FOCUSED CLEANING & INSPECTING**
- **SORTING, SET IN ORDER & SHINE**
- **REPAIRS AND PLANNED MAINTENANCE**
- **COUNTERMEASURES / MODIFICATIONS**
- **LAYING OUT AREAS, FOR BETTER OPERATOR & MAINTENANCE WORKFLOW.**

**CREATE ACTION PLAN FOR DAY #4**



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## **4<sup>th</sup> DAY ACTION ITEMS**

- **COMPLETE INSPECTION / CLEANING**
- **ADDRESS COUNTERMEASURES**
- **IMPROVE SAFETY, CALIBRATION, DATA COLLECTION & LUBRICATION IN FACILITY AND MAINTENANCE AREAS. EVALUATE & MEASURE.**
- **DEVELOP DAILY OPERATOR PM**
- **DEVELOP / ENHANCE MAINTENANCE PM'S**

**CREATE ACTION PLAN FOR DAY #5**



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## **5<sup>th</sup> DAY ACTION ITEMS**

- **WRAP UP ALL ONGOING WORK & OPEN WORK ORDERS FOR ALL UNFINISHED JOBS**
- **PLAN LONG TERM IMPROVEMENTS**
- **PRESENTATIONS TO CO-WORKERS AND MANAGEMENT**
- **CELEBRATE - Share LESSONS LEARNED And BEST PRACTICES!!!**



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