

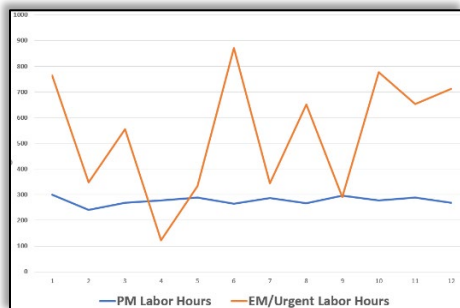
Tool-Box Talk

Preventive Maintenance 101

Preventive Maintenance - Actions performed on a time- or machine-run-based schedule that detect, preclude, or mitigate degradation of a component or system with the aim of sustaining or extending its useful life through controlling degradation to an acceptable level.
(Definition Source: SMRP Best Practices)

Fundamentals of PM

1. All Equipment PMs are focused on specific "Failure Modes"
2. All PM Procedures should have the following:
 - Step by Step Instructions (initial each step)
 - Specifications
 - Space available for extra information
 - Condition as found
 - Condition as left
 - Recommendation to changes to Procedure
3. When a PM Work Order is given to Maintenance Techs the following should be attached:
 - Equipment Failure history since last PM Executed
4. If a piece of critical equipment fails between PM cycles an RCA should be initiated
5. Post the following metric in Maintenance Shop on a line graph
 - PM Labor Hours vs EM/Urgent Labor Hours



Steps to take if PMs are not Effective or meeting expectations

Step 1: Acknowledge you have a problem with your PM Program not meeting expectations

"you cannot solve a problem without admitting you have a problem"

Step 2: Assemble a team of Maintenance Techs, Maintenance Supervisor and operators


Step 3: The PM Optimization Team establishes their Vision, Mission, and Guiding Principles approved by Maintenance, Production and Plant Leadership and meet weekly for 30 minutes max (**FOCUS**)

Step 4: Identify the equipment experiencing the most losses, ie. OEE, Production loss, EM/Urgent Labor hrs., etc.

Step 5: Post a Dashboard to measure progress and effectiveness of the Program



Step 6: Create a PM Problem/Solutions Board using the A3 Approach to problem solving

<p>Problem:</p> <p>Line 3 - Gearbox Failure (Asset Criticality - High)</p> <ul style="list-style-type: none"> • Production Losses - 330 Unit • 4 Hours downtime (\$7450)  <p>Asset Number: AP-3214</p>	<p>Resolution:</p> <ol style="list-style-type: none"> 1. Replaced Gearbox to specifications 2. Sent gearbox out for rebuild and forensics "ID Root Cause", why it failed, replaced parts returned for view by all Maintenance Techs 3. Review all PM frequencies on gearbox 4. Review past oil sample results 5. Cost of Gearbox Replacement, Labor \$200, Gearbox \$800
<p>Root Cause:</p> <p>The Facts -</p> <ol style="list-style-type: none"> 1. Known gearbox noise 2. Reported on daily check list for 2 weeks 3. Production needed to run, could not take downtime to replace gearbox 	<p>Measurement /Sustainment:</p> <ol style="list-style-type: none"> 1. PM Compliance +/- 10% of time frequency on critical assets 2. Oil Sample Time from Sample taken: <ul style="list-style-type: none"> • To Results Received and Review Measured • If resample - require 3 days to resample • If out of specs found, CMWO written, Replacement Planned and Scheduled

It is critical to manage Preventive Maintenance as a continuous improvement process which results in optimal equipment reliability if managed effectively.