

PRESENTED BY
RICKY SMITH. CMRP.
CMRT. CRL

PARTNERSHIP WITH
THE MAINTENANCE
COMMUNITY BY UPKEEP

14 STEPS OF A PREVENTIVE MAINTENANCE OPTIMIZATION PROCESS (PMO)

BY RICKY SMITH CMRP, CMRT



**WORLD
CLASS
MAINTENANCE Inc.**



Checkout our website for Maintenance/Reliability Best Practices information which may meet your needs,
with no email addresses required at: www.worldclassmaintenance.org

Follow us on Facebook at <https://www.facebook.com/worldclassmaintenance.org>
Follow us on LinkedIn at: <https://www.linkedin.com/company/world-class-maintenance>

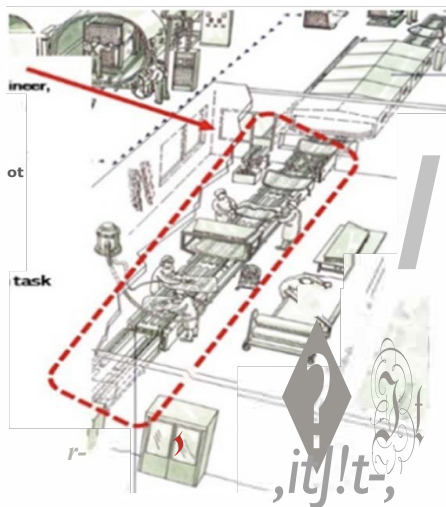


14 STEPS OF A PMO PROCESS

Step 1: Establish a baseline using current metrics or data from maintenance and production/operations.

Asset	PM Compliance "20% Rule"	Schedule Compliance	EM/Urgent Labor Hrs.	Maintenance Rework	Less than 6 Minute Stops
Chipper	56%	56%	232	32	14
Extruder	67%	75%	321	8	22
Septet	25%	34%	98	45	38
Crimper	88%	88%	74	12	23
Baler	45%	34%	129	38	18
Strapper	100%	100%	13	7	2

Step 2: Identify which asset/functional area the PM Optimization will be executed.



14 STEPS OF A PMO PROCESS

Step 3: Identifying a cross-functional team (Operator. 2 Maintenance Tech, Reliability Engineer. Maintenance Planner. etc.).



Step 4: Establish expectations from everyone engaged in this process.

Step 5: Define the end goal of this process.

Step 6: Define roles and responsibilities for all members of the PMO Team.

Preventive Maintenance
"Roles and Responsibilities"

Task ↓	Position →	Maint Mgr.	Rel Engr.	Maint Sup.	Maint Techs	Maint Planner	Prod Mgr.	Plant Mgr.
Create / Manage Asset Criticality		C	R	C	I	I	C	A
ID all Components		A	R	C	R	C	R	I
ID how each Component will Fail		A	R	C	R	R	C	
Write Repeatable PM Procedures		A	R	C	R	C	C	
Measure / Monitor PM Effectiveness		A	R	C	C	R	C	I
Modify PMs		A	R	R	R	C	C	I
Manage Maintenance Dashboard (Leading / Lagging KPIs)		A	R	R	I	C	I	I

Responsibility "the Doer" (could be more than one)

Accountable "the Buck stops here" (One person only)

Consulted "two-way communication" (in the Loop)

Informed "one-way communication" (kept in the picture)

Step 7: Define how you'll measure if the PM Optimization process has been effective or not.



14 STEPS OF A PMO PROCESS

Step 8: Present copies of PMs to all parties.

PM Procedure Example

Equipment Block ID: Line 101			
Equipment Hierarchy: E560XXX Septet Process Line			
Project Description: Perform PM on Septet Process Line			
Job Description: Perform PM on Hydraulic System			
Frequency: Monthly			
Estimated Craft Hours: 2 techs x 3.0 hrs		Estimated Elapsed Time: 3.0	
Estimated Production Downtime: 3.0			
Originator:	Dave Stone	Origination Date:	03/12/2012
Owner:	Plant Maintenance	Version #:	1.0
Previous Version(s) Modifications:			
Approval:	DS	Version #:	1.0
Warnings: Failure to follow instructions could lead to death or serious injury			
Cautions: Failure to follow procedure could result in early equipment failure			
Personal Protective Equipment Required: Gloves, face shield, hearing protection			
Part # (Stores ID)	Part Description	Quantity	Quantity Description
#B3214	Hydraulic Filter	2	Each
#B2543	Zinc Anode	1	Each
Consumables Needed: Degreaser, lint free towels, thread seal			
Special Tools Required: 1 Torque Wrench			
Mobile/Special Equipment: None			
Required Departmental Coordination: Production Line shutdown / Hydraulic Cylinder Extended / One Operator to Assist Maintenance			
Other Procedures Referenced: Job Preparation / Lockout Procedure #XXX			

Page 1 of 3

Step#	Description	Craft	# of Crafts	Clock Hours	Craft Hours	Craft Initials
1	Inspect Hydraulic System Running • Does the Pressure Fluctuate more than 5psi? Yes / No • Number of Hydraulic Leaks	Mech	2	.5	1.0	
2	Lockout/Tagout Hydraulic System Caution: Failure to Clean inside reservoir will result in premature valve failure	Mech	2	.25	.5	
2	Clean inside Reservoir with Lint Free Rags	Mech	2	1.0	2.0	
3	Replace Hydraulic Filters (2)	Mech	1	0.3	0.3	
4	Torque Fasteners on Filter Fasteners to ()	Mech	1	.5	.5	
4	Replace Zinc Anode on Water Cooled Heat Exchanger	Mech	2	1	2	
5	Inspect 5 Hydraulic Hoses for wear or leaks • Hose 1.1 Yes / No • Hose 1.2 Yes / No • Hose 1.3 Yes / No • Hose 1.4 Yes / No	Mech	1	0.3	0.3	
6	Inspect Hydraulic Cylinder for Leaks • Inspect Rod Seal for Leaks (Circle One) - No Leaks - Weeping Oil - Oil Stream • Inspect Rod Voke for break in thread seal on threads Break? Yes / No	Mech	2	.5	1.0	
7	Inspect all work after production is up to rate "Do not leave equipment until production is up to rate"					
TOTAL Hours				4.35	7.0	
Condition (As Found):						
Condition (As Left):						

Page 2 of 3

Comments / Findings:
Craft's Feedback on Procedures:
Craft's Signature(s):
Date:

Page 3 of 3

Page 3 of 3

Step 9: Review equipment history for the past 30. 60. and 180 days. This includes:

- Root Causes of critical breakdowns
- PM Labor Hours vs. EM/Urgent Labor Hours.
- PM Compliance vs OEE
- Rework

14 STEPS OF A PMO PROCESS

Step 10: Review current PMs and PdMs for these reasons:

- PM procedure may need to be rewritten
- Training may be required
- PM frequency may be inaccurate and need adjustment
- Checking if equipment is in "maintainable condition"

Step 11: Rewrite PMs or write new PMs (ensure they are repeatable)

Step 12: Monitor and measure to ensure new PMs are effective and adjust as needed.

Step 13: Post results for all to see.

Reliability Dashboard by Asset - Gypsy Paper

Line Assets	# Failures	Production Losses	EM/Urgent Labor Hrs.	PM Compliance Using 10% Rule
Board Infeed	12	32	47	100%
Press Unit	0	0	14	100%
Total	12	31	61	100%

Maintenance Scorecard			
	Best practice	10/12/2020	YTD
Maintenance Schedule Performance	>70%	62%	67%
Maintenance Break In Work	<15%	38%	33%
PM/PdM Work Scheduled	> 30%	18%	35%
PM/PdM Compliance	>80%	36%	67%
Notification Entered from PM/PdM find	1 for every 6 inspections	2	3
Equipment Not Available	Weekly	0	1.45
P1 Notifications	Weekly	12	11.43
Core Shift Mechanic	Weekly	4	3.95
Polymer Shift Mechanic	Weekly	9	6.22
No Information P1's (Still open)	Weekly	0	1.55
		Shift & Core worked on 1 P1 together	

Step 14: Once concept has been proven move to the next asset/area.



PM Optimization Results Example:

PM Task Action Recommendation	# of Tasks	% of Tasks	Man-Hours Represented
Non-Value Added (Delete)	1,640	8.2%	6,661
Reassign to Operator Care	1,380	6.9%	5,605
Reassign to Lube Route	2,856	14.3%	11,600
Replace with PdM	6,437	32.2%	28,222
Reengineer	5,200	26.0%	26,221
No Modifications Required	2,487	12.4%	8,987
Totals	20,000	100.0%	87,296

**Join me May 17-19, 2022 for "Maintenance Excellence for Maintenance Excellence for Maintenance Supervisors LIVE in Asheville, NC
(PM Optimization is taught in this workshop)**

Interested? Send your request to rsmith@worldclassmaintenance.org

**Maintenance Excellence
for
Maintenance Supervisors**

**May 17-19, 2022
Asheville, NC**

Interested? Email Ricky Smith CMRP for a brochure or more information, rsmith@worldclassmaintenance.org

www.worldclassmaintenance.org