

# PREVENTIVE MAINTENANCE BEST PRACTICES

LEARN PM BEST PRACTICES  
THROUGH CLASSROOM LECTURE,  
EXERCISES, AND GROUP DISCUSSION

October 19-21, 2020  
Southern Wesleyan University  
Clemson, South Carolina  
Virtual or Live

FOR MORE INFORMATION SEND YOU REQUEST TO:

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Prepared by: Ricky Smith  
World Class Maintenance



In Partnership With: UpKeep  
The Maintenance Community

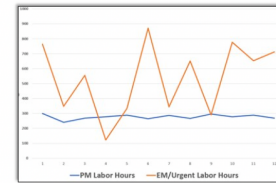
# 02

## ABOUT THIS WORKSHOP

This workshop is activity based and hands-on, with focus on the “Best Practices in Preventive Maintenance”,

### Best Practices in Preventive Maintenance The Fundamentals

1. All 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 PM Work Order is given to Maintenance Techs the following should be attached:
  - Equipment Failure history since last PM Executed
4. Post the following metric in Maintenance Shop on a line graph
  - PM Labor Hours vs EM/Urgent Labor Hours



“Measure what you Manage”

An Example of the Hawthorne Effect for Behavior Change in PM using this metric

## WHO SHOULD ATTEND?

- > Maintenance Planners
- > Maintenance Supervisors
- > Senior Maintenance Technicians (*influential techs*)
- > Maintenance Managers
- > Maintenance Engineers
- > Reliability Engineers
- > TPM Coordinators / SME

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## COURSE OBJECTIVES:

*Knowledge is the foundational requirement in all skills.*

- Share Known PM Best Practices
- Definition of Preventive Maintenance
- How PM Compliance can be misleading
- Learn how write an effective PM Procedure
- Create a Continuous Improvement Process for PM
- Learn how to know if a PM or PM Program is effective or not
- Share Known Maintenance and Reliability Best Practices
- Describe the objective of PM
- Execute hands-on PM exercises in a group environment
- Learn how to measure if a PM function is effective
- How to engage Production / Operators to execute simple PMs
- Create a Proactive PM Workflow model to manage asset and process reliability
- Create and understand Leading and Lagging PM Metrics
- How to transition from current state to a proactive PM function
- Define how to measure and manage change
- Learn to implement a new way of thinking by and for plant staff
- Create a Master Plan, with timeline for PM implementation

*...and so much more!*



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# 04

## DAY 1 TRAINING SCHEDULE

### Introduction to PM Best Practices

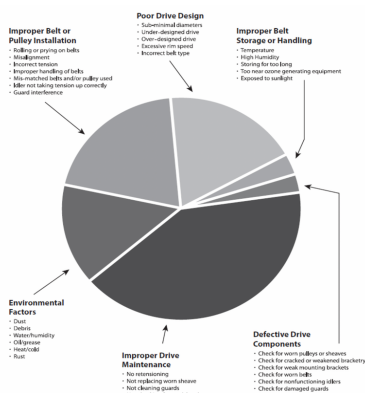
- Instructor and Attendee Introductions
- Your Current PM Program - 2 Ups / 2 Downs per attendee
- Expectations from each attendee and instructor
- Course Overview: Objectives, Daily Training Schedule
- Why PM is not working in most organizations
- Proactive Maintenance Workflow Model/Process
- World Class Maintenance Case Study (Alumax/Alcoa Mt Holly – John Day PE)
- Definition of key terms:
  - Maintenance
  - Reliability
  - Operator Care
  - Preventive Maintenance
  - Predictive Maintenance
  - Maintenance Planning
  - Maintenance Scheduling
  - Work Execution
  - Work Order Close Out
- Creation of the a Vision Statement, Mission Statement, and Guiding Principles for Successful Preventive Maintenance
- What are the expectations from PM?
- Failure Modes and mitigation strategies
- Developing and Managing an Effective PM Program
- PM Workflow Process
- Steps required to develop and manage an effective PM Program
- Best Practice PM Procedures Example
- PM Roles and Responsibilities (RACI)
- Managing a PM Program
- "Walk by" PMs
- PM Leading and Lagging KPIs and KPI Dashboards
- Group and Individual Exercises:
  - Create a PM Dashboard
  - One thing each person learned today

# 05

## DAY 2 TRAINING SCHEDULE

### Maintenance Planning

- Review of Day 1
- PM and the PF Curve
- Maintenance Planning definition, requirements, and expectations
- Proactive Maintenance Planning and Scheduling Process and why it is important for a successful PM Program
- PM Vision Statement, Mission Statement, and Guiding Principles
- Operator Care and PM
- Repeatable Procedure definition and how to create
- Why Repeatable Procedures are critical
- Examples of Repeatable procedures for PM
- Parts requirements
- Definition of Kitting and how to establish a kitting process
- Parts Ordered from Vendor vs Storeroom Stock
- Security of Scheduled Work Parts/Material
- Group and Individual Exercises:
  - Create PM Vision Statement, Mission Statement, and Guiding Principles
  - Create a PM Repeatable Procedure for a given example asset
  - Create a Process Map for PM
  - Create a RACI Chart (Roles and Responsibilities for PM)
  - Create a PM Procedure for a specific asset at your site



**Example of Proactive PM Procedure**

Step	Description	Start	End	Days	Frequency
1	Check units to be repaired and prepared for repair	April 1	April 1	8:00	8:30
2	Check for loose bolts and nuts on drive assembly	April 1	April 1	8:30	8:45
3	Check for worn rollers and idlers	April 1	April 1	8:45	9:00
4	Check for cracked or weakened brackets	April 1	April 1	9:00	9:15
5	Check for weak mounting brackets	April 1	April 1	9:15	9:30
6	Check for worn belts	April 1	April 1	9:30	9:45
7	Check for manufacturing flaws	April 1	April 1	9:45	10:00
8	Check for damaged guards	April 1	April 1	10:00	10:15



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## DAY 3 TRAINING SCHEDULE

### Maintenance Planning and Scheduling Alignment

- What's one thing you learned so far?
- Benefits of a PM Optimization
- PM Optimization example
- PM Optimization Process
- Benefits of a PM Optimization Process
- Expectations of a PM Optimization Process
- Which asset or assets to perform a a PM Optimization (PMO)
- Principles for performing a PMO on a specific asset
- Example of a PMO and the results
- Steps to success in the PMO Process
- Best practices / lessons learned in PM Optimization
- Group and Individual Exercises:
  - PM Best Practices Exam
  - PM Optimization Process
  - Project Plan for when you return
- Final Exam
- Course Close Out / Evaluation

**PM Optimization Process**

1. Identify which asset or functional area the PM Optimization will be executed
2. Identify a cross functional team (Operator, Maintenance Tech, Reliability Engineer, Maintenance Planner)
3. Establish expectations from everyone engaged in this process
4. Define end goal of this process
5. Define how you will measure if the PM Optimization Process is effective or not
6. Present copies of PPMs to all parties
7. Review equipment history for the past 30, 60, and 180 days
  - # of breakdowns
  - Causes of critical breakdowns based on a formal RCA
  - PM Labor Hours vs EPM/urgent Labor Hours
8. Go step by step for PM Procedure and identify the following of each task



PM Evaluation / Optimization Results			
PM Procedure	# of Critical Breakdowns	% of Critical Breakdowns	PM Labor Hours
Pre-Start - Startup Test	1,100	15.0%	1,800
Startup to Under Run	1,100	15.0%	1,800
Startup to Operator Close	1,800	18.1%	3,200
Shutdown to PM	1,800	17.2%	4,200
PM Work Task	2,200	20.0%	11,000
Task to Stand as Planned	2,200	20%	5,000
<b>Total PM Hours</b>	<b>11,000</b>	<b>100%</b>	<b>32,000</b>

**Crawl – Walk – Run Methodology**



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*“Such a fun, engaging, and informative course! I learned so much in only a few days.”*

- Caitlyn Young, CMRP

## HOW TO ENROLL:

Complete the "Attendee Registration Form" on the next page and email your completed registration page to [rsmith@worldclassmaintenance.org](mailto:rsmith@worldclassmaintenance.org).

**October 19-21, 2020**

**Southern Wesleyan University**

**Clemson, South Carolina**

**Virtual or Live**

**Cost: \$750 per person. If you are signing up for two or more people, the cost is \$650 per person.**

Go to [worldclassmaintenance.org](http://worldclassmaintenance.org) for more information. You'll also find free, downloadable resources at [worldclassmaintenance.org](http://worldclassmaintenance.org) with no email required.

Connect with us on social media:

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**Attendee Registration**

**Cost: \$750.00 USD**

**Workshop:** PM Best Practices plus PM Optimization

**Workshop Date:** October 19-21, 2020

**Attendee Information**

**Attendee Name:** \_\_\_\_\_

**Position:** \_\_\_\_\_

**Email:** \_\_\_\_\_

**Company Name:** \_\_\_\_\_

**Address:** \_\_\_\_\_

\_\_\_\_\_

**Purchase Order:** \_\_\_ **Check:** \_\_\_ **Credit Card** \_\_\_

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Email this document to [rsmith@worldclassmaintenance.org](mailto:rsmith@worldclassmaintenance.org)