



8 STEPS

8-Steps to Successfully Implement
a Preventive Maintenance Program



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Welcome!

It can be hard to develop a comprehensive approach to improve your PMs.

There may have been different documentation methods over the years. The management and execution may vary between areas. Different groups and software sometimes manage a portion of your existing PM system.

Over the last 50 years, IDCON has helped thousands of plants implement effective preventive maintenance. This 8-Step Guide will walk you through the primary steps you need in order to do PM the right way.

There is also incredible value in building something as a team. Use this guide as a starting point for your team to build your own implementation plan.

We know that every plant has cultural, technical and scalable differences. There are also a variety of methods for documentation (RCM, PMO, TPM, etc.)

No matter the differences, these 8 Steps can be easily adapted to fit your team's needs.

Work hard and enjoy the increased reliability!



This is an overview of the implementation steps in a typical Preventive Maintenance (PM) improvement project. Most of the processes can be applied to a greenfield process. In fact, that may be easier to improve than an existing PM process.

We describe the process as a “Preventive Maintenance improvement process for simplicity.”

The official name is:

Preventive Maintenance/Essential Care and Condition Monitoring (PM/ECCM)

We don't need to dig into definitions too much, but it is important for you to understand that this process applies to all repetitive actions that may **prevent a problem or detect a problem early**.

This means that preventive methods such as greasing bearings, cleaning and adjustments are included as well as inspections.

Both subjective inspections (look, listen, feel, smell) and objective methods such as vibration analysis, flow, current and temperature are considered.

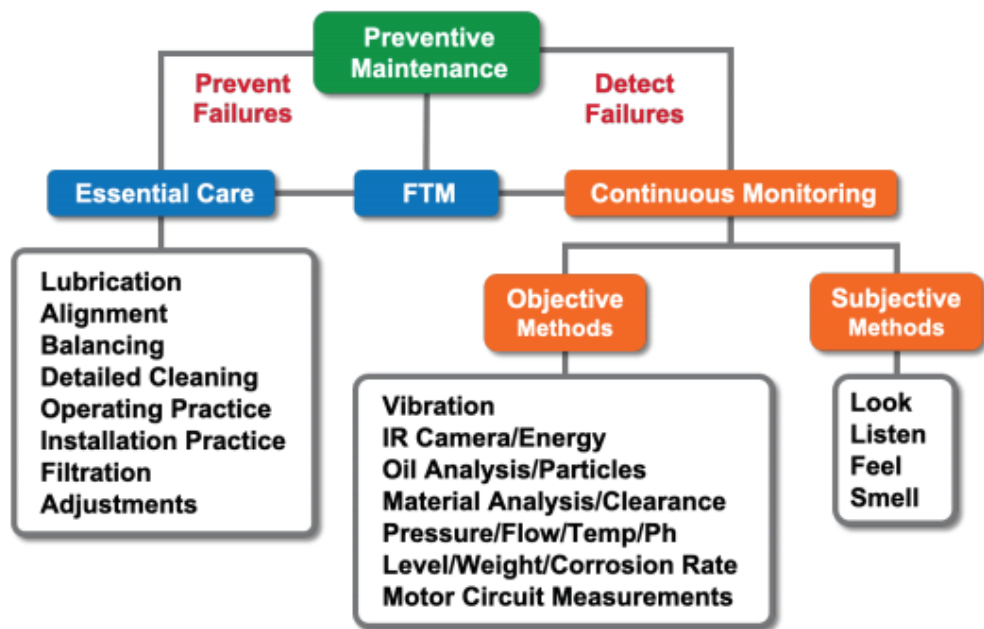


Figure 1: IDCON's definition of PM/ECCM

Phase 1

Set Up



The first two steps are:

- Commitment
- Defining the Roadmap

You first need to know where you are, where you need to improve, and to make sure that your entire team is committed to moving forward together.

Below are the key components to the getting commitment from your team and plant management, and establishing your roadmap to make improvements.

Step 1

Commitment

Phase I: Set Up



Commitment

I. Understand:

Assess quality, execution and management of current PMs. A formal assessment of all aspects of PM is preferred, but key items are quality, execution and how management follows up on execution.

II. Scope:

What physical area will be improved? The whole plant –each area? What types of equipment and PMs will be improved? Which skills/roles are involved?

Typical PM systems include on-the- run and shutdown PMs for Electrical, Mechanical, Instrumentation and Lubrication. Some PMs may be done by Operations (depending on plant culture).

There may be different tools used for the inspections. It may be a look, listen, feel, smell inspection, or it may require inspection tools such as vibration, ultrasonic, borescope, motor testing, flow readings, current readings, etc.

Set a scope for type(s) of equipment and area(s). The tools and methods will be consequential to the PM analysis for each system, equipment and/or component.

III. Rough Plan:

Scope, resources, cost, goals, expected results. Make a business case, select pilot area(s) and select team(s). If any top manager is asked, Do you support PM?" and they will obviously answer "Yes." But the end goal and expected cost of improved PM must be decided. For example, "we think we can improve OEE 2% with an investment of \$300,000". If a manager is told they can get 1% for \$1,000,000, the support may change. Make a business case!

Step 1

Commitment

Phase I: Set Up



Commitment

IV. Site Commitment

Present the business case and get commitment for resources. Management needs to understand the cost to support the project, the expected results and the actual outcome. Present the expected mountain of work. When inspections improve, the plant will see an increase in work requests and work orders. Agree on a plan for how the plant will deal with the additional (temporary) workload. Each repair will be prioritized, and if done correctly, each repair will improve reliability.

V. Communication

Basic Change Management: Make a communication plan. Communicate goals, approach, resources and costs. It is critical to get momentum in PM improvements. It is very easy for these efforts to fizzle out because it takes time to improve the PM system, and it requires some patience and determination.

Step 2

Road Map



I. Training

In order to put together a comprehensive action plan your team needs awareness training in what good PM looks like for your organization, how it will be implemented and what methodologies will be used. This training is often provided to a smaller team that typically works on the pilot area and then later functions as implementation leaders/support.

II. Detailed Implementation Plan and Design Workflows for How to Document Preventive Maintenance.

The implementation plan, for example, can follow the flow of this document. It is important that the implementation plan has clear tasks with assigned resources and a time limit for each task.

It is common to see implementation plans with too much or too little detail. There is a balancing act between the detail a team can deal with and being detailed enough so that tasks are meaningful.

There has to be a clear PM documentation method.

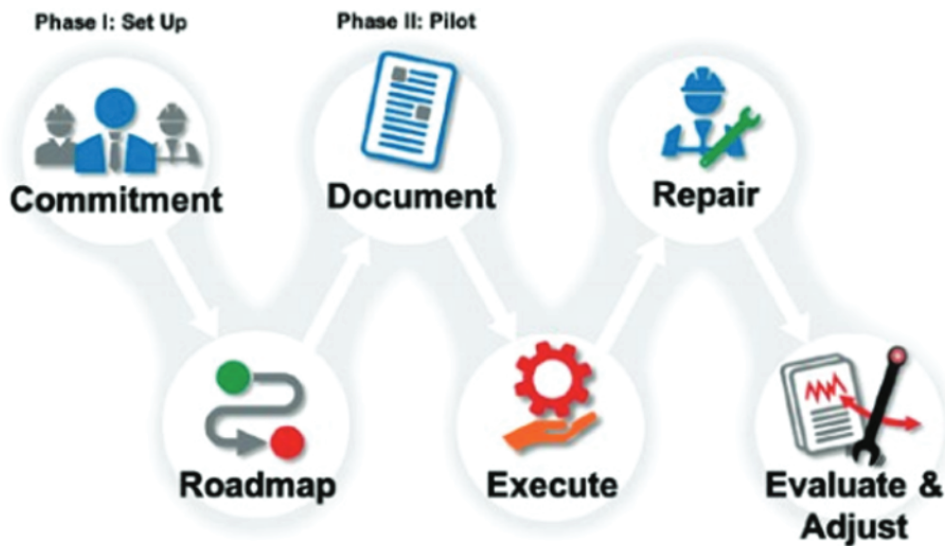
- Which thought process is used to identify tasks, PM interval and when to operate to breakdown instead of PM?
- What tools are needed?
- Who should do the PM?

This is a complex topic in itself that should be covered in a training class

It will not be detailed in this document, but that leads us to the basic steps which are outlined in the next Phase: The Pilot Phase.



Phase 2 Pilot



Once you have your Roadmap, it's tempting to try to implement across your entire plant. But to avoid mistakes, it's best to first Pilot your new PM Program in one small area.

Maybe it's one piece of equipment, or at most, up to 20. Either way, the next 4 steps make up "Phase 2" of the Implementation Process.

- Document
- Execute
- Repair
- Evaluate & Adjust

Step 3

Document

Phase II: Pilot



Document

Select a pilot area to document then execute and repair the first batch of improved PMs. The purpose is to practice the PM documentation methodology and also to give the first PMs a trial run and repair what you find.

This is a way to train and to work out any issues with the process.

Common issues that may arise: known problems aren't fixed, people don't have or know how to use inspections tools, supervisors and planners are unaware of the process and resist it (Why create more work orders when we we have enough to do?), and that the area doesn't know how to deal with an increased corrective workload from PMs.

The main steps for documenting PMs are typically:

- I. Criticality analysis on the equipment level, not the component level (yet)
- II. Review existing PMs
- III. Decide on a maintenance method (Operate-to-Breakdown, Fixed Time Maintenance, Condition Based Maintenance)
- IV. Understand how each component works (requires equipment to be divided into components first)
- V. Identify how each component fails
- VI. Describe what can be done (in a cost-effective way) to prevent failures
- VII. Describe what can be done (in a cost-effective way) to find failures early
- VIII. Determine the failure developing period (or Pf curve) and inspection frequency
- IX. Decide on who should do the inspection and what tools are needed
- X. Document the PMs in the Excel sheet

Repeat Steps I through X using standards (similar components) to speed the process up; IDCON's Condition Monitoring Standards (CMS) are a great tool easily purchased in PDF

Step 4

Execute



Execute

- I. Clean the equipment and note problematic operating procedures; it is possible to use 5S
- II. Execute the documented PMs and write work requests where needed
- III. Perform a Root Cause Analysis for problematic and/or repetitive problems

Step 5

Repair



Repair

- I. Repair problems found from PMs in the pilot area

Step 6

Evaluate and



PMs are often skipped due to poor work management systems. Root causes aren't solved. Spare parts can't be found.

Help the area work through these issues:

- I. Evaluate interfacing processes to support PM improvement (Work Management, Root Cause, Materials Management)
- II. Evaluate any problems from Pilot PMs (e.g. missing tools, too few cleaning stations and issues with resources, skills or support from management); start talking about how PMs will be executed (designated person or not, etc.)
- III. Update the detailed plan and reassure the commitment of leadership

**Phase II will loop until the whole plant is covered.
Then you'll select the next area.**

Phase 3 & 4

Deployment & Continuous Improvement



Once the pilot is complete (at least more or less some problems may take a while to repair because engineering, a shutdown, or rare spare part may be needed), select the next area.

Step 7

Implementation



Implementation

Phase 3: Deployment

Don't pick too big of an area. If you do, the documentation batch will be enormous, and there will be too many repair work orders. It is better to cover smaller areas:

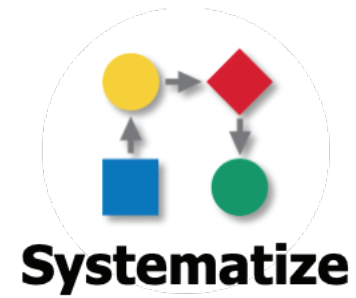
DOCUMENT → EXECUTE → REPAIR

While you are working in the next few areas make sure that the PMs are functioning within the system:

- I. Tools/Software: Determine necessary inspection tools, match tasks to the appropriate software, learn about new software, coordinate with IT
- II. Scheduling of PMs: Scheduling and balancing of workload for future PMs
- III. Set up KPIs for Preventive Maintenance
- IV. Set up training for PM execution (remember, only a small group has worked with PMs so far)
- V. Execute the communication plan (reminder); operations and maintenance supervisors need to be involved at this time; PMs need to be added to the workload for weekly scheduling and workload balancing

Step 8

Systematize



Phase 4: Continuous Improvement

- I. Design workflows for execution of Preventive Maintenance Management (different than the documentation method, this is the interface with Work Management and day-to-day work with the documented PMs)
- II. Establish an auditing process of the Preventive Maintenance process (Independence Model); PMs are documented and tested, but it will take a while to get the PMs into the culture; each manager will need to own the PMs and hold people accountable for the PM system
- III. Coach respective managers in their role to follow up on the PM process, KPIs and individual performance; coach planners, hourly crew members and IT in supporting PMs

Are you ready

to make your team more efficient?

Talk with one of our experts today.

See how your team can go from frustrated and overworked to energized and proactive.

Email us at **info@idcon.com**

or call **1-800-849-2041**