

Creating a Business Case for Change

By Ricky Smith CMRP

One of the major areas of focus in industry today is improving equipment reliability. Why? To ensure that production is always available to meet the demand of the marketplace. One of the worst nightmares of any company and those who manage it is to have a demand for product but not be able to supply it because of equipment failure. Certainly, this scenario will reduce company profitability and could ultimately put a company out of business. There is large difference in cost between a reactive and proactive maintenance organization. See the chart below and think about whether change is necessary in your organization.

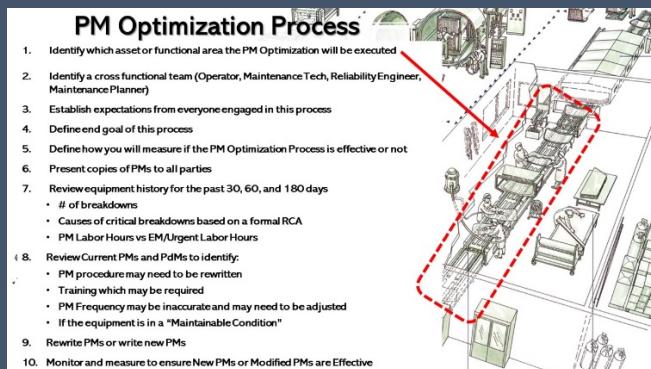
Metric	Typical	World Class
Maintenance cost/replacement asset value Maintenance cost must include labor (including overtime), materials, contract maintenance, and capital replacements, and maintenance (replacing worn-out assets because they were never properly maintained)	3.5–9%	2.0–3.0%
Maintenance materials cost/replacement asset value Maintenance materials cost must include material in storeroom stock plus material in other locations (maintenance shop, plant floor, etc.)	1.0–3.5%	0.25–0.75%

For some firms, poor reliability and its impact on production are far more serious than for others. For those that operate on a continuous basis—they run 24 hours per day seven days per week—there is no room for unplanned shutdowns of the production equipment; any loss of production is often difficult or even impossible to make up. For others that do not operate in a 24/7 mode, recovery can be easier, but nevertheless, time consuming and expensive, reducing profits.

Many programs available in the industry are designed to help businesses improve reliability. They are identified in trade literature, promoted at conferences and over the web, and quite often they are in place within the plants in your own company. Most of these programs are “hard skill” programs. They deal with the application of resources and resource skills in the performance of a specific task aimed at reliability improvement.

For Example, to improve “Preventive Maintenance”.

- Train your workforce in preventive maintenance best practices, perform a PM Optimization focused on a specific production line or area.



- Roll out your optimized PM program accompanied by corporate publicity, presentations of what you expect to accomplish, and other forms of hype to get buy in from those who need to execute it along with post a PM Scorecard along with defining Roles and Responsibilities.



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											
<table border="1" style="margin-left: auto; margin-right: auto; border-collapse: collapse;"> <tr> <td style="padding: 2px;">Responsibilit</td> <td style="padding: 2px; text-align: center;">"the Doer"</td> <td style="padding: 2px;">(could be more than one)</td> </tr> <tr> <td style="padding: 2px;">Accountable</td> <td style="padding: 2px; text-align: center;">"the Buck stops here"</td> <td style="padding: 2px;">(One person only)</td> </tr> <tr> <td style="padding: 2px;">Consulted</td> <td style="padding: 2px; text-align: center;">"two-way communication"</td> <td style="padding: 2px;">(In the Loop)</td> </tr> <tr> <td style="padding: 2px;">Informed</td> <td style="padding: 2px; text-align: center;">"one-way communication"</td> <td style="padding: 2px;">(kept in the picture)</td> </tr> </table>									Responsibilit	"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)
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PM RACI

- Then you congratulate your team for a job well done and move on to the next project. Often at this juncture, something very significant happens.
- The program you delivered starts strongly, but immediately things begin to go wrong. The work crews assigned to preventive maintenance get diverted to other plant priorities; although promises are made to return them to their original PM assignments, this never seems to happen.
- Equipment scheduled to be out of service for preventive maintenance can't be shut down due to the requirements of the production department; although promises are made to take the equipment off-line later, this never seems to happen.
- Finally, the various key members of management who were active advocates and supporters at the outset are the very ones who permit the program interruptions, diminish its intent, and reduce the potential value. Often, these people do make attempts to get the program back on track, but these attempts are half-hearted.
- Although nothing is openly said, the organization recognizes what is important, and often this is not the preventive maintenance program. (Steve Thomas simplifies the demise of the preventive maintenance program in an example.) Yet this is exactly as it happens, although much more subtle.
- In the end, the result is the same. Six months after the triumphant rollout of the program, it is gone. The operational status quo has returned and, if you look at the business process, you may not even be able to ascertain that a preventive maintenance program ever existed at all.

For those of us trying to improve reliability or implement any type of change in our business, the question we need to ask ourselves is “Why does this happen?” The intent of the program was sound. It was developed with a great deal of detail, time, and often money: the work plan was well executed. Yet in the end there is nothing to show for all of the work and effort.

Part of the answer is that change is a difficult process. [Note that we did not say program, because a program is something with a beginning and an end.] **A process has a starting point—when you initially conceived the idea—but it has no specific ending and can go on forever.**

Yet the difficulty of **implementing change isn't the root cause of the problem**. You can force change. If you monitor and take proper corrective action, you may even be able over the short term to force the process to appear successful. Here, the operative word is you.

What if you implement the previously mentioned preventive maintenance program and then, to assure compliance, continually monitor the progress. Further suppose that you are a senior manager and could rapidly remove from the process change any roadblocks it encounters as it progresses.

What then? Most likely the change will stick if you are providing care and feeding. But what do you think will happen if after one month into the program you are removed from the equation? If there are no other supporters to continue the oversight and corrective action efforts, the program will most likely lose.

Step 1. Educate the plant management on the basics of reliability, which involves how equipment fails, how to monitor equipment health, and how to make the right decision at the right time so as not to see equipment failure.

Step 2. Assess current state of your Maintenance Process

MAINTENANCE / RELIABILITY ASSESSMENT
Excerpts from "Rules of Thumb for Maintenance and Reliability Engineers"
by Ricky Smith CMRP and Keith Mobley

The biggest challenge organizations face is to know the status of their current maintenance and reliability process and developing a plan to close the gap between current and desired performance.

In the next few pages, you will be given specific questions to answer in order to define the gap between your maintenance and reliability process current performance and what is defined as "Best Practices".

All answers should be a "yes" if not then this area may need to be explored in more depth. If you are unsure about the question or answer, then the question answer is a "no".

Remember this assessment is only used to help an organization determine its gaps between current and desired performance.

It is recommended this assessment is performed with representatives from all stakeholders. This includes plant manager, maintenance and engineering manager, production management, operators, maintenance personnel, maintenance planners, storeroom management, etc.

Step 3. Assemble all the information for the business case.

This information could be sketchy dependent on how reactive an organization truly is. The information must include:

- Asset reliability data (plant, production line, critical assets' mean time between failure). This information should be available from CMMS/EAM if work orders have been written for most failures.

- Maintenance labor costs: overtime percentage-plus cost (do not include “full burden” cost), yearly labor cost for current-year budget, yearly labor cost for past three to five years, contractor cost used to assist in maintenance projects or maintenance work, and any other labor cost that may be important.
- Maintenance material costs (specify a dollar amount):
 - Maintenance storeroom inventory level
 - Maintenance material expenditures for the past three to five years
 - Overnight delivery costs for the past three to five years
 - Additional costs associated with maintenance parts storage and procurement.
- Current plant capacity and capacity targets and goals for the current year and past three to five years.
- Marketing forecast for next one to three years (if available) in total sales.
- Quality losses for the current year and past three to five years.

Note: Other costs could be useful in the development of the business case, just be sure any cost the business case claims will be financially affected by the reliability initiative can be validated by the financial person.

Step 4. Develop the business plan with plant management. Expect this exercise to take one to two days, depending on the availability of the information. If any of the required members cannot participate fully, then do not move forward with this process. Required team members are the plant manager (do not move ahead without him or her); production manager; chief financial officer, comptroller, or plant accountant; maintenance and engineering manager; safety director (or person responsible); and environmental director (or person responsible).

Step 5. Calculating savings. Once all the data are compiled, begin identifying past losses and potential savings for each of the following areas, based on current reliability of the assets against future state. For example:

- **Current capacity:** 88% (over the past three years, the number generally has been the same).
- **Sales projections:** Could sell all products produced—1% increase in capacity increases the bottom line by \$150,000 a day; plant operates 365 days a year = $\$150,000 \times 365 \text{ days} = \54.75 million .
- **Potential savings:** What is the impact of reliability on production? In most plants, reliability increases capacity by as much as 98%; say 50% to be conservative. New calculations for savings = $50\% \times \$54.75 \text{ million} = \27.375 million .
- **Time until this savings affects the bottom line (educated guess):** Aggressive reliability initiative = (“under commit, overdeliver”)
 - Year 1 = 10% improvement = \$2,737,500.
 - Year 2 = 20% (plus last year’s 10%) = \$8,212,500.
 - Year 3 = 30% (plus last two year’s 30%) = \$16,425,000.
- **The savings or just the increase in capacity equals \$16,425,000 in a three-year period.** After adding savings from a reduction in maintenance costs, including maintenance labor and materials, recalculate the savings. In a short time, it should equal or exceed the plan’s cost. I
- **In addition to the profit from increased capacity,** also identify the following:
 - Decrease in maintenance labor cost over three years = 30% = \$4 million.
 - Decrease in maintenance material cost over three years = 20% = \$1.2 million
 - The business plan would show the savings listed as shown below

	Year 1	Year 2	Year 3	Accumulated Savings
Maintenance labor savings	\$800,000	\$1,200,000	\$2,000,000	\$4,000,000
Maintenance materials savings	-\$200,000	\$300,000	\$1,100,000	\$1,200,000
Capacity net profit	\$2,737,500	\$5,475,000	\$8,212,500	\$16,425,000
Total savings	\$3,337,500	\$6,975,000	\$11,312,500	\$21,625,000
Reliability initiative cost	-\$3,200,000	-\$600,000	-\$120,000	-\$3,920,000
Net savings	\$137,500	\$6,375,000	\$11,192,500	\$17,705,000

Step 6. Develop an action plan with a timeline that identifies the major task defined; defined roles and responsibilities by position, from the floor level to boardroom for each task; defined key performance indicators to measure success of the project (establish targets and goals); established measures of success for specific positions, which align responsibilities; and defined milestones with cost and savings identified. and defined milestones with cost and savings identified.

Step 7. Present the business plan to senior management. Spend time to do it right, make it professional and appealing. Rehearse the presentation. Remember you only have one chance at this sales presentation.

- Use a PowerPoint presentation (no more than 10 slides) to show the benefits (it is all about the money), costs (play up the return on investment), and project plan abbreviated (give an overview); then present a large chart with the project plan attached make it shine, make a statement with it.

Once this project has been approved, have consultants ready to assist in training and coaching the staff to make this reliability project effective. A consultant will have experienced many failures and many successes. Do not try to reinvent the wheel.

Checkout my upcoming workshops at www.worldclassmaintenance.org

Looking for more information? Email me at rsmith@worldclassmaintenance.org

Upcoming Workshops

ALL Workshops are Available onsite in US

- **MasterClass – Maintenance and Reliability Best Practices / SMRP BoK (5 days - Virtual)**
- **Maintenance Planning and Scheduling (3 Days – Virtual/Live at SWU, Central, SC)**
- **Maintenance and Reliability Best Practices (3 Days – Virtual/Live at SWU, Central, SC)**
- **Maintenance Technician Best Practices (3 Days – Virtual/Live at SWU, Central, SC)**
- **Managing the Maintenance Storeroom to World Class Maintenance Standard (in development stage now)**
- **Failure Reporting, Analysis, and Corrective Action System for Maintenance Leaders (development stage now)**