Written by Enrique Mora, LeanExpertise.com
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With today's proven maintenance strategies, there's no reason for your operations to be in chasing mode, but there's hope if you are.

The time was many years ago. The site was a metal-mechanics plant in Barranquilla, Colombia, where it had been concluded that most of the operation's poor OEE (Overall Equipment Effectiveness) was due to low compliance with the plant's preventive maintenance (PM) program. According to the maintenance manager, the average PM completion rate was no greater than 30%. When asked why, he put it in simple, but graphic, terms: "We all are too busy chasing the chickens, so no one has the time to find the hole in the fence and fix it." Many plants today face the same challenge. The good news is that this situation can be rectified with a little "imagination."

Imagine that you are suddenly told that two of your maintenance team members will stop working for you. *Imagine* that because of budget constraints you can't replace them. Also *imagine* that although these workers are among your most valuable technicians, they spend most of their time chasing chickens. What will you do without them?

Now, *imagine* that you will be spared from losing two valuable employees, but the thought of losing them has made you see the importance of giving them a new task: to complete all PM work orders and, while doing so, bring to you any possible improvement ideas. These workers will no longer be allowed to chase chickens. Instead, they will be assigned to "find the holes and fix the fence." A process of PM optimization to remove unnecessary PM work orders and streamline the PM process will follow. At this point, you'll be in a good position to embark upon the optimal situation— *that of autonomous maintenance*. It's not fantasy. It's very achievable. You must, however, expect the best. If you do, the best will happen. You can stop

chasing chickens by putting your maintenance activity into high gear.

Leadership and maintenance

Much has changed in maintenance over the last 50 years. In the old days, maintainers were not the important professional force that they are today. Maintenance, as some often said, was a necessary evil. Nowadays, many operations—*but not all*—have realized that better maintenance means better performance and profits. The belief that maintenance is simply "those who repair machines when they fail, burn or break" still exists. Those who subscribe to this flawed notion get just that.

In today's competitive world, forward-thinking companies see maintenance activity as an integral part in the production process. Coincidentally, that is exactly what it should be, according to the principles of Total Productive Maintenance (TPM)—*a concept that is understood by only a very few.*

To clarify: The T in TPM refers to the *Total* responsibility of everyone. It is the *Total* human resource of the organization to keep and
Maintain
the
Productive
edge of the enterprise. A good way to achieve this totally shared responsibility is through compliance with preventive maintenance.

A reasonable PM program can do what is needed to prevent failure and bring the reliability of the plant to the highest level possible. That said, it is also wise to implement autonomous maintenance (AM).

AM (considered to be the core discipline of TPM) combines two important workforces that have traditionally been antagonistic: production and maintenance. TPM achieves this harmony by getting both forces to understand how important the (good) functioning of the equipment is for the enterprise. *Everyone* in a plant is responsible for bringing the equipment to maximum performance. When this is done correctly, *everyone* will find a benefit from the improvement in productivity.

The evolution of preventive maintenance

While there's no question that PM is valuable, historically its schedules were created to establish only the basic maintenance steps required to validate equipment guarantees. Some of these original measures were (and still are) exaggerated and costly. Here is where we need to make some improvements to the PM process:

Fine-tune PM scheduling...

Countless manufacturer-created PMs are scheduled on a calendar basis. This is effective only for equipment that runs a fixed number of hours per day. (When machines or systems run in irregular periods, it is good to install hour meters to measure their usage.) Consider the following example:

Pump maintenance was an issue at a North Carolina biotech facility. PM instructions ordered parts changes at calendar intervals—*something that led to totally new parts being removed, regardless of their condition*. In short, perfectly good diaphragms and seals were being replaced time after time by robot-like technicians who didn't have the authority to think on their own or use their own criteria. The diaphragms and seals at this plant, though, may have been just part of the costly picture. Other types of losses frequently caused by what can best be described as "irrational" PMs not only involve the labor, but the wear and tear on bolts, nuts, fittings, etc., during unnecessary disassembly and reassembly of equipment.

Year	PM	Corrective	Emergency
2000	10%	25%	65%
2004	39%	50%	11%
2006	38%	45%	17%
2009	48%	46%	6%
2010	57%	40%	3%

Table I. One Company's Effort to Do Things Right in Its Maintenance Department

As in almost any activity related to lean manufacturing, maintenance must achieve a higher

level of training and leadership than that detailed in the foregoing example. This empowers people to use critical thinking and, therefore, act in a more informed, autonomous and professional way. Technicians must also share their thoughts and ideas so the program gets improved with their feedback.

Simplify inspection and repair procedures...

Making equipment more maintainable should also be an ongoing concern. Far too many hours can be wasted removing covers only to learn that everything underneath is performing properly. All technicians should be trained to develop procedures that are inspection- and replacement-friendly. These include the use of:

- Machinery guards that can be rapidly removed or contain see-through windows.
- Motor bases that allow rapid belt changes without affecting alignment.
- Visual temperature indicators.
- Filters that can be changed on the run.

Upgrade to predictive maintenance...

The last decade has seen the rapid evolution of predictive maintenance (PdM). This "new wave" helps move maintenance efforts in the right direction by tracking the health of equipment as it is used—*and allowing technicians to make smarter repair/upgrade decisions*. With PdM, maintenance has reached adult status, meaning it is time for all maintenance professionals to update their thinking and bring technicians and everyone else to a higher awareness and knowledge levels.

Metrics tell the story

The numbers shown in Table I reflect one company's 10-year effort to do things right. They are quite interesting.

This company is surviving—*even in these hard times*. It considers that its effective implementation of TPM and better understanding of PMs and PdM efforts have been of substantial importance to achieving its goals. Needless to say, this company is very proud that only 3% of its maintenance effort is spent "chasing the chickens."

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Enrique Mora is an expert in lean manufacturing and Six Sigma, with 56 years of experience as both a consultant and practitioner. California-based, he has worked with hundreds of organizations across a range of industries in the U.S., Mexico, Puerto Rico, Colombia and elsewhere. Telephone: (760) 450-6025; e-mail: Enrique@LeanExpertise.com .

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