Do We Really Need Preventive Maintenance?

“Sure, I know. Preventive maintenance helps avoid unplanned downtime and breakdowns. But PMs take a lot of time and cost a lot of money, and they don’t seem to make that much difference in the way our equipment runs. We’ve got excess capacity anyway, and we’re not running production on all shifts during the week. So, the downtime and repairs aren’t costing us that much in lost production. We’re able to keep up with customer orders. I really don’t see why we need to spend time and money on a PM program.”

That statement by the head of manufacturing has assured the senior management team that maintenance is under control despite the prior recommendations from the maintenance department for improving their preventive maintenance methods. Unfortunately, this way of thinking sets the stage for a “run-to-failure” and “emergency repair” work culture in the plant. But if plant capacity is not a problem and all customer orders are being filled, then why change? Good question.

That same head of manufacturing believes in safety:

“Workplace safety has to be more than the required employee training classes. We must make everyone aware of what causes accidents and injuries and develop ways to prevent the actual causes. The safety department can only do so much, and they have. Everyone must behave differently in the future if we are to improve our safety record.”

This passion for safety has led to significant improvements in the prevention of accidents and injuries of all types in the plant.

Do you suppose there is a common thread connecting workplace safety and preventive maintenance? What would happen if we could improve workplace safety and equipment reliability through preventive strategies? What if we couldn’t?

Preventive Maintenance Makes Good Business Sense

Why do PMs if the business does not seem to justify the time and the expense? PM for the sake of PM is not a good justification. There has to be more to it. The plant mentioned above has been plagued with financial problems and market share losses. In the past year, they have made significant strides in regaining lost business and reducing costs. They have a good sized maintenance group—mechanics, electricians, fabricators and a manager—with years of experience. They have spent time recently reorganizing their shops and storeroom as part of a 5S effort (workplace organization and orderliness). They also spent time improving setup/changeover of a few small pieces of bottleneck equipment. So, they are improving maintenance. Or are they?

The term “maintenance” typically means sustaining or preserving a desired condition or level of performance. However, in their plant, maintenance means fixing things that break—doing the needed repairs. And maintenance also means building things and fabricating modifications to the equipment and the facility. It can be extremely difficult to comprehend the need for a preventive maintenance program with this maintenance paradigm. So, they’re stuck with what they’ve got.
Maybe not. Let’s take a clean slate look at maintenance. What should maintenance be and do? Here are a few key points:

1. **The top priority of maintenance** should be to preserve the equipment and facility conditions. Some would call it “mission ready” condition. Regardless of who performs the work, keeping equipment and facilities in good shape is a foundation for market competitiveness. And good maintenance protects the investment of the owners and shareholders. Over the years, first-hand experience and studies have shown that reactive/repair-based maintenance costs the business 10 to 100 times more than preventive maintenance.

2. **The priority order for maintenance activities** should be as follows: 1) preventive, 2) planned repairs, 3) problem solving, 4) improving, 5) unplanned/emergency repairs, 6) setup/changeovers, 7) fabrication and then 8) installation projects. If the maintenance group does not have time to do preventive maintenance, planned repairs and problem solving, then they have no business doing fabrication and installation projects. They just keep digging the emergency-repair hole deeper.

Unfortunately, unplanned/emergency repairs have a way of moving from #5 priority to #1—all the more reason for focusing on the top four priorities—to eliminate unplanned/emergency work.

3. **Maintenance as a noun** usually refers to an organization or a group of people who maintain something—the maintainers. **“Maintain” is a verb**, an action that sustains or preserves desired conditions, assuring equipment reliability. Many people often assume that the action of maintaining is performed solely by the maintenance group. This is a dangerous assumption because many of the actual causes of poor equipment performance are outside of their direct control. And many routine PM-type inspections are best performed by the operators who are closest to the equipment most of the time.

4. **The top business policy priorities in a capital-intensive operation** include health, environmental, safety, quality and equipment and facility reliability. They are not five separate priorities but five equal priorities. Be careful with the politically correct statement: “Safety is our top priority here.” Stringing these priorities in linear fashion can be conveniently numbered: 1, 2, 3, 4, 5. In reality, business demands a systemic perspective: health and environmental and safety and quality and reliability.

**Workplace Safety is a Maintenance and Reliability Program**

While industrial maintenance typically applies to tools, equipment, processes and facilities, workplace safety typically applies to people interacting with tools, equipment, processes and facilities. Therefore, workplace safety is a maintenance program focused on preserving or sustaining the desired conditions of an accident- and injury-free workplace and healthy employees—a preventive maintenance program focused on the reliable safe job performance of people. There are rules, regulations, policies and procedures documenting what is expected and required for good workplace safety. There are employee training and refresher training classes, checklists and documentation of certain critical work activities (job safety analyses, confined space entry, welding and cutting permits, etc.).

**Everybody is involved.** We now know that workplace safety is no longer solely the responsibility of the safety department but rather the responsibility of everybody in the plant. And workplace safety must have clear expectations and accountabilities set by senior management. A safety policy communicates the importance of the company’s workplace safety processes.
Business leaders, union leaders and employees at all levels know the importance of workplace safety. Even so, there are varying degrees of workplace safety in today’s plants and facilities.

We measure workplace safety: lost workdays, accident/injury severity and so forth. These are lagging, after-the-fact indicators likely indicative of future performance improvement opportunities.

There are also proactive safety programs and leading indicators. These include hazard identification and elimination, “near-miss” reporting (which is a misnomer. It should be “near hit”), and DuPont’s famous “STOP” program (Safety Training Observation Program) designed to increase awareness and promote safety communications. Companies using these methods and measures of workplace safety are attempting to not only preserve (maintain) a desired safe work conditions but also to improve the conditions of workplace safety. Hazards and unsafe acts are identified, addressed and quantified before they turn into accidents and/or injuries.

The Business Costs of Inadequate Workplace Safety
Accidents happen, people get hurt. An unsafe workplace is not only harmful to people it is expensive. And these increased costs (losses) go well beyond federal and state fines for violating their regulations. Let’s briefly summarize the impacts of a reactive safety program:

- Accidents happen (costly equipment and facility damage).
- People get hurt (unplanned medical costs).
- Overhead costs increase (fines, medical, health insurance, workers’ comp insurance).
- Productivity is reduced (lost work days, light duty work, medical leave).
- Attitudes and morale suffer as injuries increase. (Productivity declines.)
- Employee turnover increases. (Hiring and training costs increase.)
- Costs of goods/services sold increase (price increase/lost profits).
- Workflow is interrupted. (Orders are not delivered on time.)
- Customers are disappointed (potential market loss).

The Business Costs of Inadequate Preventive Maintenance
Lack of adequate preventive maintenance can be a huge unpredictable cost to the business the same as when workplace safety suffers. The lack of adequate PM costs more than merely making the repairs. Poorly maintained equipment is often an accident waiting to happen. People often get injured while making emergency repairs and during the aftermath of cleanup. So add the list above to the following costs of inadequate preventive maintenance or a reactive maintenance program:

- Maintenance (repair) labor costs increase (unpredictable and uncontrollable).
- OEM technician costs increase (unpredictable and uncontrollable).
- Maintenance overtime labor cost increases (unpredictable and uncontrollable).
- Spare parts costs and inventory increase (unpredictable and uncontrollable).
- Expedited repair parts (Shipping costs increase.)
- Planned work gets deferred or cancelled. (Productivity is reduced.)
- Attitudes suffer as emergencies increase. (Productivity declines.)
- Damaged, defective and/or lost product (increased costs, lost efficiency)
- Workflow is interrupted. (Orders are not delivered on time.)
- Costs of goods/services sold increase. (Price increase?)
- Late shipments (Customer penalty/fines)
- Customers are disappointed (potential market loss).
The investment in preventive maintenance pays big dividends. A recent example shows that unplanned downtime was reduced by 18 hours per month by spending $508.00 on preventive maintenance labor and materials with 6.16 planned downtime hours per month. This resulted in a cost savings of $115,536.50 per month and an additional $53,280 in production output per month. Astounding!

Summary
Preventive maintenance makes sound business sense. But some of our decision makers do not understand the benefits of PM or the losses associated with reactive repairs. In tough economic times and in an era of maintenance skills shortages, it makes sound business sense to improve preventive maintenance effectiveness. Businesses that ignore the advantages and profitability of preventive maintenance will continue to struggle and/or miss their true potential in the marketplace.

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