Preventive maintenance for profit

Audit your practices, and make time for uptime.

By John Kravontka, CMRP, Fuss & O'Neill Manufacturing Solutions

Apr 09, 2014

Most things in our lives require maintenance. Automobiles, trains, aircraft, trucks, houses, bridges, roads, industrial machinery — none of these can continue to operate correctly if they aren't properly maintained. Even our own bodies require maintenance in the form of nutrition and exercise.

But what is maintenance? Some people think it's fixing, like repairing a flat tire. But in reality, when a piece of equipment needs to be repaired, that's an indication that maintenance didn't occur. Webster's definition of maintenance may surprise some people: maintenance is "those actions required for the care of machinery, a building, etc., to keep it clean and in proper functioning condition, to prevent or forestall damage due to normal use." Maintenance is really all about keeping something from breaking or failing. It is all about prevention.

Worldwide, even in the United States, maintenance tends to be handled very poorly. Most municipalities, companies, and institutions either fail to maintain their capital assets or defer maintenance to some time in the future. Typically, that time never comes. And poor or deferred maintenance costs the United States hundreds of billions of dollars every year.

On the road to ruin

Take, for example, America's roadways. Deferred maintenance causes millions of dollars in damage to American automobiles every year. Lack of maintenance leads to the development of potholes at best, and roadway failures at worst. Currently, 32% of America's major roads are in poor or mediocre condition, costing U.S. motorists $67 billion a year or $324 per motorist, in vehicle repairs and operating costs, according to the 2013 Report Card for America's Infrastructure by the

American Society of Civil Engineers, which also cites roadway conditions as a factor in one out of every three traffic fatalities.

How can improperly maintained roadways cost drivers so much? The obvious example occurs when a driver hits a pothole that causes a blown tire. In the best-case scenario, that blown tire merely has to replaced, which can cost the driver a couple hundred dollars. But in the worst-case scenario that blown tire may lead to an accident that could cause significant injury or even death.

There are also less apparent repercussions to insufficient roadway maintenance. For instance, hitting potholes or other roadway impediments can throw off a vehicle's alignment, which can cause increased tire wear, cause poor gas mileage, and necessitate costly tire realignment. Similarly, that same pothole can wreak havoc with shocks and struts, which can also lead to potential safety issues and the need for shock and strut replacement.

And all of these hazards occur when potholes are struck by people in the relative safety of their vehicles. What happens when a motorcyclist or bicyclist hits those potholes? For riders, the implications can be much more severe, bringing the risk of serious injury or even death. Even runners and pedestrians are at risk for hurting themselves, sometimes seriously, if they step in a pothole.

And as dramatic as these examples are, they only measure the cost to drivers. When roadways fail and have to be repaired, those repairs are often very costly — certainly much more costly than maintenance that could have been done in the first place.

Roadways are far from the only example of infrastructure where improper maintenance imperils drivers. Many cities, towns, states, and counties, faced with long-term budget shortfalls, are pulling dollars from their bridge maintenance budgets. There have been cases of deadly bridge failures and structural collapses, many of which could have been avoided by planning ahead and not doing the easy thing — deferring maintenance. It can be tempting to defer maintenance since you aren't likely to see any impact for a few years. But the ultimate cost can be disastrous. Sudden bridge and road failure costs our country billions every year in unnecessary liability and rush service and repair work, not to mention loss of life and limb. And, even if there is not a catastrophic breakdown, maintaining or repairing a resource after deferring maintenance can increase the ultimate cost tenfold or more.

Finally, look at yourself. Do you take care of your own body by maintaining the proper weight, engaging in exercise, and being careful about nutrition? Our hospitals are full of people who have broken down because they are not living a healthy lifestyle (preventive maintenance), and their bodies have broken down prematurely. This cost makes all of our other examples look small in comparison.

The wheels of industry

Of course, it's not only in our personal lives where maintenance matters. Our economy depends on the efficiency and effectiveness of American industry. Unfortunately, when it comes to maintenance, American companies are not measuring up. As a result, their equipment runs poorly at a lower output, and they cannot deliver to the customer at a high rate. Major or catastrophic breakdowns can happen at any time. Poor equipment performance costs U.S. manufacturers enormous amounts in profitability each year because the equipment doesn't produce at the level for which it was designed. Production worker overtime (to catch up), extra raw material costs (scrap), accelerated run-time to make up for poor quality, additional equipment, and additional energy costs all make up pieces of the additional costs that companies unnecessarily accrue each year because of shabby maintenance practices.

The difference between a manufacturing company generating a profit and having to close its doors is often in the hands of the maintenance organization and its ability to be proactive rather than reactive. Reactive maintenance is very costly, and it leads to the poorly performing equipment.

Over time, manufacturers begin to accept poorly running equipment as normal, a process which often goes unnoticed because it happens very slowly. They work around the failed equipment and quality problems, believing this is the only way they can maintain production levels. Although they may start to fall behind in meeting their output goals, some companies

rationalize that shutting down for maintenance will make it worse, so they often defer it. However, if failed equipment, minor stoppages, and quality issues are the cause of reduced output, then maintenance, even with some downtime, is required.

A solution for today

The challenge facing manufacturers is how to implement a maintenance program that will provide immediate return. It can take as many as five or 10 years to train maintenance staff and introduce programs for them to carry out.

Obviously companies can't wait up to a decade for their new training programs to get up and running. Companies need answers to their manufacturing challenges today, not some undeterminable date in the future. But what can they do today?

The first step is to estimate what the poor equipment performance is costing in a given facility. Begin to understand what improved equipment output, quality and reliability would mean to the manufacturing processes. Manufacturers will then see the huge opportunity in front of them.

The second step is to conduct a maintenance audit. The audit permits companies to evaluate the effectiveness of their current efforts against a world-class maintenance standard. The audit starts with a visual evaluation of how the equipment is running, monitoring that equipment constantly throughout a work day, and recording how efficiently it is operating (Figure 1). It's often only necessary to monitor the equipment for a few hours to get a good sense of how well it is working and where potential issues can be found, both in terms of short- and long-term operations. The evaluation should also assess the maintenance organization against a world-class standard, to allow the organization to see where it is functioning well and where it needs to improve. The audit can be conducted either by in-house maintenance managers or experienced consultants who are experts on the maintenance process.

Figure 1. A maintenance audit starts with a visual evaluation of how the equipment is running, monitoring that equipment constantly throughout a work day, and recording how efficiently it is operating.

Once the evaluation is completed, a short-term plan needs to be developed for fixing problems identified during the audit phase. The plan should be created with the goal of getting equipment fully operational as quickly as possible. Temporary bandage approaches are not solutions at all because they typically lead to new problems down the road while hindering productivity in the short-term.

However, while these initial steps represent progress, they are still reactive. The goal of every manufacturer should be to have a proactive maintenance program in place. This doesn't happen overnight; many companies find that they need to implement 3- to 5-year plans to move from reactive to proactive maintenance. Plans are created by establishing production goals for equipment and then determining maintenance best practices that will lead to that equipment being able to achieve those goals. Every company, every facility, and every piece of equipment is different, and the plans for meeting those goals must be built around the unique characteristics and challenges presented by the company and its equipment.

Individual companies that treat maintenance as a priority can save millions of dollars by avoiding expensive equipment repair, productivity stumbles, and safety-related losses. It's not difficult to make maintenance an important part of day-to-day operations, but it does often require company leaders to

John Kravontka, CMRP, is president of Fuss & O'Neill Manufacturing Solutions. He will be presenting "Preventive Maintenance & Profits!" on May 15 as a featured speaker at Reliable Asset World in Clearwater Beach, Florida. Kravontka is a continuous-improvement consultant with more than 40 years of training, troubleshooting, and rebuild/retrofit experience with all types of machine tools and equipment. He uses many lean-manufacturing methodologies to increase

change the way they think. Those companies that do make a commitment to maintenance excellence don't just save money, they also create a better work environment, produce a better product, and gain a competitive edge over their competitors who don't understand the importance of maintenance.

equipment productivity and reliability and also is the author of "Seeing the Invisible — Single Point Lessons," which is available at www.gbmp.org. He can be reached at jkravontka@fando.com.

What are your comments?

You cannot post comments until you have logged in. Login Here.

Comments

No one has commented on this page yet.

RSS feed for comments on this page | RSS feed for all comments

Follow us on:

Related Content You May Like If you enjoy this article, our editors think you may enjoy this related reading.

- Nine maintenance practices to prevent downtime
- Is preventive maintenance a second class effort?
- Is a PM program sustainable?

Most Popular Check out the most popular content on , as determined by our visitors.

1. #1 5S floor marking tape color standards
2. #2 How VFDs save energy
3. #3 Ten tips for improving chiller efficiency
4. #4 DC motors: Why are they still used?
5. #5 Can energy managers ignore water?

Maintenance Crisis Resource Center

Tools you can use to overcome the shortage of qualified personnel.

Survivor USA Plant of the Year

How maintenance and asset management helped it beat the odds.

- Subscribe to E-Newsletters »
- Subscribe to Plant Services »
- Get the Article RSS Feed »