

Maintenance—now more than ever!

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Preventative maintenance versus maintenance versus repair

First let's get some definitions straight. You perform "preventative maintenance" on equipment to extend its service life and "prevent" equipment breakdowns. This effort requires performing recommended maintenance on a scheduled basis to preclude more timely and costly equipment interruptions. It may mean replacement of components that still are functioning well at the time of replacement because you would rather do this in a planned fashion than wait for the component to actually fail, causing an emergency situation. In personal automotive terms, preventative maintenance is performing timely oil changes in accordance with timed (or mileage) intervals to prevent excessive engine wear before the oil has broken down and the oil filter becomes ineffective. Both the oil and the filter were still functioning properly before they were changed and discarded.

You perform "maintenance" on equipment to replace worn items that have reached their service life, but did not actually fail. This effort is often preceded by inspection efforts necessary to determine the condition of the components to be replaced. Although it is proactive to perform this maintenance before the equipment component actually fails and can prevent catastrophic failure of related equipment components, it is not the same as providing preventative maintenance that would have extended the service life of the equipment component. In personal automotive terms, maintenance is replacing tires that are worn but have not yet failed (blown-out or gone flat). Your mechanic inspected the tires and determined that they have reached the end of their service life and should be replaced now before they actually fail and cause other related components (rims, spindles, brakes, etc.) to fail with them.

You "repair" equipment that has already failed. This situation can be totally unexpected, even if a comprehensive preventative maintenance

As I write this, I am reflecting that a year has gone by since the biggest economic recession since 1929 started. The pundits have not dubbed this downturn a "Depression" as they did in 1929, but it sure seems pretty "Great" to many people. It certainly is the scariest thing my generation has ever seen.

I remember my parents and grandparents talking about the Great Depression with stories of how they pulled through as a family and became "stronger" for the effort. They certainly did not take money for granted after that and learned that saving for a rainy day and re-using clothing, appliances, car tires...whatever, was prudent. This "Greatest Generation" tried to impress upon us "Baby Boomers" that things were different for them and that we needed to heed Benjamin Franklin's advice that a "penny saved is a penny earned."

Frankly, I admit that these stories seemed unbelievable at the time and felt that walking to school in snow in bare feet could not possibly lead to better grades, just cold feet. However, these stories were intended to

motivate us to do better than they did, appreciate what we had, and feel more comfortable with the hand-me-down clothes or toys from our older siblings or cousins.

Many manufacturers in North America have weathered this economic/financial "perfect storm" and will emerge stronger than before. I am sure business owners have a renewed sense of economic discipline they may not have had since they first started their companies. For instance, they are putting off buying new equipment because their existing equipment can continue to do the job, even though it may not have that "just bought" look.

Extending the useful life of your finishing system until a new one can be affordably purchased has become very popular in these uncertain economic times. In fact, we are often asked: "How long can a finishing system last?" Our answer has always been "Well-maintained finishing equipment can last 30 years, or more." Last year we were at a client's facility, whose equipment supplier ceased to exist in the early 1960s, meaning the equipment was almost 50 years old!

schedule has been faithfully executed. However, repairs can be minimized if preventative maintenance and regular maintenance are performed in a prudent fashion. For instance, using the personal automotive analogy, having a flat tire is bad enough, but if this unexpected situation could have been predicted or prevented, then you have no one to blame except yourself. For instance, if the flat was caused by ignoring the worn condition of the tires, and the engine seized simultaneously because you had not changed your oil since you bought your car, then you have only to look inward to see who is to blame for the long wait in the rain on the side of a deserted road for AAA to show up.

Understanding the differences between these three distinct situations illustrates how sometimes “an ounce of prevention” is better than a “trip to the ER.” I am always amazed that some companies eliminate preventative maintenance activities in tough times hoping to “beat the odds” to save some short-term expenses only to pay much higher expenses and lost production time when their equipment fails to function when they need it most. What is undeniable is that this methodology is a gamble that may or may not pay off. Certainly newer, previously well-maintained equipment, will most likely not fail immediately if some preventative maintenance is postponed to a time when it is more convenient or affordable. But this attitude can set dangerous precedents that may be very difficult to overcome in the future, as bad habits are always hard to break. Finally, successful delay of maintenance activities provides a false sense of invulnerability (“it never caused a problem before”) where the gamble really is closer to Russian Roulette than a well-played hand of poker. It may work out, but it is just not a risk worth taking.

Develop a preventative maintenance plan

The role of preventative maintenance is to prevent the failure of the equipment and reduce the replace-

ment of wear components. Normal wear and tear cannot be totally eliminated, but it can be mitigated and handled in a time of one’s own choosing. Preventative maintenance is the cornerstone of equipment reliability. Each time you turn your equipment on you must have a reasonable expectation that it will perform as it should, without surprises. Using the personal automotive analogy again, preventative maintenance for a car’s engine is required to ensure that each time you turn the key the car actually will start. When it doesn’t the initial cost may be minor (a dead battery for instance), but the long-term costs can be much higher, for example, you missed an important appointment that cost you your job.

Successful preventative maintenance programs start with a plan.

Successful preventative maintenance programs start with a plan. This means that someone has identified what equipment components need to be checked or replaced at what intervals to eliminate equipment failures. This plan starts with the equipment supplier’s recommendations and is expanded to encompass actual experience with your system, as this experience may necessitate accelerated maintenance schedules. A great example of this philosophy in the automotive world is race cars, which are often maintained at a much higher level than personal cars. Drag racing car engines are often completely broken down between races/runs and rebuilt to ensure their reliability in the next race. Many perfectly good components are replaced on the premise that they do not want to lose the race because a \$2 part failed. That being said, you would not change your engine oil every time you drove to the grocery store in your personal car.

Now I realize that powder coating systems are not race cars. However, the same philosophy has its application in the finishing world as well.

For instance, shutting an entire assembly line down due to lack of painted parts is very costly, especially if it could have been prevented by employing a well-designed preventative maintenance plan. If you own a job shop, would you risk losing your best customer since you were not able to make their delivery date because you delayed replacing the filters in your powder coating booth before they caused your fan blower motor to overheat and fail? Probably not.

Preventative maintenance plans should be all-inclusive, covering all equipment components in a powder coating system. They should be organized by equipment component, such as air compressor, air dryer, conveyor, pretreatment system, dry-off oven, powder application/recovery equipment, environmental room, cure oven, etc. The plans should detail what is to be done and when to do it. This detail should include specific parts that must be replaced/checked. For instance, you want to list all your lubrication points individually in your plan and not just state “lube the equipment.” This level of detail provides a simple check sheet for the person performing the preventative maintenance to ensure that they did the job completely and correctly.

Make someone responsible. Now that you have a plan, the next issue you must have in place is making someone responsible for executing this plan. In smaller systems this responsible party may be the actual person performing the maintenance activities. However, in large systems the responsible person may be the maintenance manager who directs a crew of workers to perform the maintenance activities. In either case, this person not only has to be provided with the plan to perform the maintenance but also has to have the resources available to execute the plan. This may mean a significant maintenance budget, sufficient to support in-house labor, outside contractors, and parts/consumables to perform the activities outlined in the preventative maintenance plan.

Enforcement/accountability.

Finally, this person has to know, in no uncertain terms, that their job depends upon executing this preventative maintenance plan in the time period specified. Accountability is key to ensuring that a plan actually is executed. But accountability includes company management to ensure that the responsible party has the resources to actually perform what is required of them. The old saying: “The road to hell is paved with good intentions” has never been more appropriate than when discussing support for preventative maintenance activities.

Closing note

The title of this article is “Maintenance—now more than ever!” for a reason. These economic times require everyone to make do with what they have. However, this does not mean that you should not replace a piece of equipment or system that is putting you at a competitive disadvantage. If your very survival is at stake, then buying something new is the way to go, especially now when suppliers are offering discounts never seen before.

Going back to the “hand me down” analogy I started with: Our parents would not hesitate to darn old hand-me-down socks before they gave them to us, but they would not expect us to walk to school in shoes that were too small for our feet. Therefore, you should look at your process with the same mentality; repair it and maintain it to extend its useful service life if it fits your needs. However, don’t hurt your feet (or company) if your shoes (or process) are too small (inadequate). That is just plain stupid! **PC**

Editor’s note

For further reading, see the “Index to Articles and Authors 1990-2008,” Reference and Buyer’s Resource Issue, *Powder Coating*, vol. 19, no. 9 (December 2008), or click on the Article Index at [www.pcoating.com]. Article can be bought online. Have a question? Click on Problem Solving to submit one.

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