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Your company probably has an extensive preventive maintenance (PM) program in place. In spite of all the PMs, you are still finding that well over 50 percent of your maintenance work is reactive maintenance. Sound familiar?

This is a very common problem. There are many companies that have extensive PM programs but are finding that they are not making significant headway in reducing the number of breakdowns. I have personally worked in a company that did a lot of PMs, but 75 percent of its work was reactive. In my latest role Ý in consulting I have seen that most companies today are experiencing this same problem. On average between 50-60 percent of total maintenance work is reactive.

Before proceeding let me first define what I mean by PM programs. PMs are time-based overhauls on assets. They are jobs that are scheduled at regular intervals either based on calendars--replace filters every 6 months, or based on readings--change filters every 5,000 operating hours.

Companies have invested millions of dollars over the years to develop, implement, and sustain their PM programs. Why then, do so many companies that have comprehensive PM programs still find that 50 to 60 percent of their maintenance work is corrective or reactive maintenance? Isn't the purpose of the PM program to keep the equipment in proper working order to ensure that failures don't happen?

Before answering these questions, I would like to review the history of maintenance to see what led companies to utilize PMs in the first place.

The first generation of maintenance viewed equipment failures as fitting one pattern. As equipment got older it deteriorated and eventually failed. At this time most companies just ran equipment to failure. However, some companies started to recognize that ancillary damage caused by running equipment to failure was expensive. Since it was thought that all equipment deteriorated at a fixed rate over time, they tried to determine when it was likely to fail and schedule an overhaul to restore the equipment andÝ avoid the failure and ancillary damage. This was the birth of PM.

During the second generation of maintenance, most companies started embracing PM

We are now in the third generation of maintenance. We know that there are actually six different equipment failure patterns. Three are age related, but the other three follow random failure patterns, with no relationship to age. Research has shown that less than 20 percent of equipment follows age-related failure patterns; the other 80 percent are random.

Now let's get back to the original question. Why don't PMs significantly reduce the amount of reactive maintenance being performed in your plant? The answer is simple. PMs were designed around the theory that equipment failures are directly related to the age of the equipment. Since only 20 percent of equipment failures fit this pattern that means that 80 percent of equipment failures are not being effectively managed by doing time-based PMs.

What's the answer? The key to significantly reducing equipment failures is to monitor the condition of your equipment. Random failures do not adhere to any specific pattern and therefore the only way to effectively manage these types of failures is to closely monitor the key indicators-vibration, hot spots, leaks, cracks, etc. New technologies such as predictive maintenance devices combined with advanced methodologies such as reliability-centered maintenance (RCM) are now making it possible to easily determine what indicators need to be monitored and how to monitor them.

Remember the company I said I worked for that was doing 75 percent reactive maintenance work? Well we implemented a comprehensive condition based maintenance program combined with RCM and that company is now experiencing only 20 percent reactive maintenance with a goal to get to 10 percent. So now that you know why your PM program isn't working the way you hoped it would, it is time to do something about it. The tools and technologies are there. I strongly urge you to take the plunge. The payoff will be tremendous. **MT**

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