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Five strategies to achieve world-class preventive maintenance

A step-by-step process ensures better results, reliability.

By Lora Mays

Accruent

More than ever, manufacturers must focus on establishing preventive maintenance programs as a base to build upon their competitive strategy within the market. After all, premium performance of production equipment drives profitability and can transform an organization's operational success.

To ensure high performance, manufacturers should focus on implementing a world-class preventive maintenance program, which occurs when organizations spend 90% or more of their time on preventive maintenance without requiring the machinery to be taken offline.

A focus on preventive maintenance benefits the organization in a number of ways. First, it significantly reduces the costs associated with maintenance. Breakdown maintenance costs can be as much as five times higher than the same activity done in a planned fashion, and that doesn't even take into account the revenue loss from decreased product inventories.

Second, preventive maintenance allows the maintenance organization to focus on high-level priorities. Elevating your planning from a tactical approach to strategic can help extend the life of essential assets. Additionally, the

maintenance team can become a key proponent for larger strategic decisions within the organization, such as capital planning.

Consider these five strategies to help your team establish a world-class preventive maintenance program and experience the resulting operational gains.

1. Conduct a review

Prior to beginning any preventive maintenance procedures, especially if there aren't any already in place, conduct a review and understand what assets and programs currently exist. Without insight into current activities, it can be impossible to understand key gaps and areas for improvement.

The review should capture:

- **Assets.** Without a strong understanding of owned assets and their associated conditions, you can't put a solid preventive maintenance program in place.
- **Procedures.** Understanding the organization's current library of procedures can help you quickly identify any gaps that may exist in the processes. It can also provide context to where your team's priorities already lie.
- **People.** Knowing how the maintenance

team spends their days can help organizations realize better ways to leverage their talent. While the activity can be time-intensive, it also can be the most fruitful as employees will often share where they see key gaps in current processes and procedures that may not be otherwise obvious.

2. Establish standardized operating procedures for reactive and preventive maintenance

As organizations grow larger, either by adding more shifts or locations, doing things the way they've always been done won't necessarily work anymore. A U.S.-based metal manufacturing organization



A combination of technology and strategy can help create a more consistent preventive maintenance program. Image courtesy: CFE Media

KEY WORDS:

Here are some of the articles at www.plantengineering.com, **KEYWORD: PREVENTIVE MAINTENANCE** that further discuss this topic:

FINE-TUNING YOUR PREVENTIVE MAINTENANCE SCHEDULE

- A good CMMS system can deliver the information users need to better fine-tune their PM schedules. If a less-rigorous PM schedule gets the maintenance team slapped with a corrective work order, it's time to adjust. Sometimes it is the other way around. If the CMMS system tells the maintenance manager 'all is well' with an asset, that may be a signal to shift resources to other equipment in greater need.

FIND THE RIGHT TIMING TO PERFORM PREVENTIVE MAINTENANCE WORK

- Selection of the correct interval to perform a preventive maintenance task is, by far, the most difficult job confronting the maintenance technician and analyst. We need to understand how physical processes and materials change over time, and how those changes ultimately lead to what we call failure modes. Understanding how failure rates can vary as a function of time is essential and in order to tackle a solution, we enter the world of statistical analysis.

PREVENTIVE MAINTENANCE THE KEY TO MOTOR CONTROL CENTER RELIABILITY

- The low-voltage motor control center is a key element in electrical control systems because of the vital operating role they play in controlling motors and production processes. Over the years, MCCs have evolved from cabinets that housed basic electro-mechanical devices such as circuit breakers, contactors and overload relays to centers of automation that may include variable frequency drives, soft starters and programmable controllers. Because failure or malfunction of electrical systems—specifically MCC-housed equipment—can present a serious hazard to personnel and property, it is imperative to comprehend how MCCs are maintained. By shifting from reacting when equipment fails to proactively maintaining machinery through preventive and predictive practices, manufacturers can help mitigate such risks and prevent failures from occurring.

that was quickly growing learned this the hard way. After adding two additional facilities with the same equipment, they noticed one plant had significantly more downtime than the other.

The engineers and technicians were conducting preventive maintenance on a regular basis, and were also diligent in responding to reactive maintenance requests quickly and efficiently. Even so, the unprecedented downtime for the new location was so high it was impacting its profitability.

The organization compared preventive maintenance procedures that had been conducted on the equipment in the past month and found they were incomparable to each other. Because they didn't have standardized operating procedures in place, the staff at each facility had to navigate the waters on their own—determining the best way to approach different scenarios based only on the information they had been given.

By establishing standardized operating procedures across the board, organizations

can greatly improve the outcomes from both reactive and preventive maintenance. These procedures can be as simple as outlining the types of tools that should be used on particular maintenance requests, or as complex as outlining the exact procedure to take apart a piece of equipment for repair or maintenance upkeep. In the case of this manufacturer, they were able to institute established procedures to bring downtime to normal levels.

3. Create a reliability and maintenance policy with an improvement plan

Planning sits at the center of becoming more cost-effective with your maintenance activities. To prevent failure, establish a sound reliability and maintenance policy that incorporates an improvement plan. Industry experts recommend that the improvement plan outlines documentation for a 3-year and 5-year timeline.

The policy itself should establish objectives, goals, and key responsibilities for the team. Other essential elements in the document include:

- Current state versus future goals
- Key performance indicators (KPIs)
- Importance of KPIs and organizational value
- Internal recognition for reaching goals
- Importance of reliability to the entire organization
- How maintenance feeds into plant competitiveness
- Timeline and key internal stakeholders
- How employees can submit comments and feedback.

Once you've determined your policy and improvement plans, think about how you will store it and how employees will access it. By leveraging a technology solution, like a computerized maintenance management system (CMMS), ensure that it's readily at the hands of everyone to review and access at any time.

4. Leverage technology to advance your preventive maintenance program

For decades, plant automation has helped optimize plant equipment. To this day, it has helped manufacturing organizations significantly reduce costs, both from a production and people standpoint.

So, where does preventive maintenance technology fit in? In leveraging CMMS solutions, there's the opportunity to use the data

you gain in plant automation to take your preventive maintenance up a notch.

Using manual processes, such as spreadsheets or even paper documents, to manage your preventive maintenance schedules consumes time, promotes redundancies, and drains resources. A CMMS solution allows all data to be automatically updated on a regular schedule and include the exact information that is necessary to complete the PM request.

For an engineer or technician working out in the field, they can use their mobile device to pull up all the information they need—the specific request, procedure information, and inspection details—and record their work and findings as they go.

In addition, a CMMS solution can track how teams are spending time on a daily basis to help departments plan more effectively in the future. Leveraging business intelligence and reporting capabilities offer maintenance departments the opportunity to showcase activities and how they are obtaining key performance indicators.

5. Secure 100% execution of preventive maintenance in line with the 10% rule

Oftentimes, organizations will assign a 10-day or even a 30-day deadline for monthly preventive maintenance procedures to give technicians the time they need to execute tasks. When this occurs, it's likely your preventive maintenance procedures are being completed sporadically, which can limit their effectiveness.

For instance, a monthly preventive maintenance task comes up at the beginning of July, but due to vacations and other issues within the plant, it's delayed until the end of the month. It's still considered as completed on time and, thus, in compliance.

In August, the technician has enough time to complete preventive maintenance on the second day of the month. September comes along and has many of the same problems as July, so it's not completed until the end of the month.

Lack of consistency within these months makes it difficult for preventive maintenance, which needs to be done on a regular and consistent schedule, to work for your organization. Because of this, it's important to focus on the 10% rule of preventive maintenance: the task must be executed within a 10% variation of the time frequency of the request. In the case of a 30-day preventive

maintenance activity, it must be completed within 1.5 days on either side of the due date to be compliant.

Aiming for 100% compliance in line with the 10% rule can significantly improve your preventive maintenance outcomes, as it will optimize reliability of equipment and reduce equipment failures, propelling you into a world-class preventive maintenance organization.

Whether an organization manages preventive maintenance activities manually or via an extensive asset lifecycle management program, there is always room for improvement—even when there's zero-reactive maintenance.

Once a reliability and maintenance policy and associated improvement plans are in place, it requires constant refining to ensure it meets the dynamic demands of the industry and organization.

In fact, organizations with world-class preventive maintenance programs spend time each quarter to assess the current state of the program and how it can be improved. Once established, however, it opens doors to extend your maintenance program beyond that by integrating predictive maintenance techniques and technologies. **E**

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THE BOTTOM LINE:

- **A focus on preventive maintenance significantly reduces the costs associated with maintenance. Breakdown maintenance costs can be as much as five times higher than the same activity done in a planned fashion.**
- **Preventive maintenance allows the maintenance organization to focus on high-level priorities. Elevating your planning from a tactical approach to strategic can help extend the life of essential assets.**
- **Once a reliability and maintenance policy and associated improvement plans are in place, it requires constant refining to ensure it meets the dynamic demands of the industry and organization.**