How Manufacturers Can Unlock Uptime & Reliability:

A cross-functional approach to preventive maintenance

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For every manufacturing plant, success depends on equipment uptime and reliability. Yet, an often-overlooked factor in ensuring production line uptime and reliability is maintenance — and not just responding after something goes wrong. Preventive maintenance (PM) — also referred to as preventative maintenance — ensures that your teams stay one step ahead of potential problems, minimizing downtime and reducing costs.

Advanced preventive maintenance programs go further by building comprehensive and structured solutions that emphasize collaboration and coordination. Organizations that embrace collaborative preventive maintenance programs across manufacturing plants can optimize equipment maintenance and avoid costly down time by bringing operators, production managers, maintenance technicians and procurement specialists together.

Implementing a collaborative PM program requires dedication but delivers significant rewards, including reduced downtime, lower costs, improved quality, extended equipment usefulness and safer operations. And when you have smooth production, you have healthy bottom lines and happy customers.

No single team can implement comprehensive PM alone. Cross-functional cooperation is crucial. In this playbook, we'll explore the fundamentals of maintenance, how to build a culture of preventive maintenance, and why a collaborative PM program allows manufacturers to make dependable delivery commitments to customers and optimize how orders are sequenced through the plant.

Fundamentals of maintenance approaches

Preventive maintenance is crucial to avoid the pitfalls of reactive and run-to-failure models, where equipment is only repaired when broken. Those approaches can easily lead to unexpected downtime and higher costs.

The late Hank Bardel of the Marshall Institute called the result of missing preventive maintenance tasks a "downward or 'death' spiral" that allows preventable failures to occur. When he wrote this in 2010, Bardel estimated fixing failures was three to four times more expensive than planned maintenance. In today's supply chain climate, equipment downtime costs can be even higher when delays in receiving parts shipments prolong production halts.

However, preventive maintenance goes beyond simply scheduling basic maintenance activities.

David McClure, director of manufacturing innovation at StarPlus Energy, suggests reviewing and updating your plans regularly with a focus on maintenance costs. When you do experience an unplanned breakdown, determine the root cause and the potential impact on your PM plan.

"Proper root cause analysis is a **complex issue in maintenance.** Components that fail prematurely due to lack or absence of a preventative maintenance plan need one created and a schedule established. In many cases, PM plans are developed and implemented as a result of unplanned downtime."

David McClure
Director of Manufacturing Innovation, StarPlus Energy

Preventive vs. predictive maintenance

Preventive and predictive maintenance approaches work together to optimize equipment uptime and minimize failures. Adopting a proactive mindset across operations, maintenance and procurement is crucial.

McClure suggests that time-based preventive maintenance should evolve to predictive only after building a foundation of learning and experience. Adopting predictive maintenance can be challenging for some manufacturers, either because the required tools are expensive or because they have difficulty determining the ROI. However, all is not lost if your organization faces this dilemma.

"Many companies can operate cost-effectively utilizing a breakdown maintenance approach. There is no extra credit for implementing tools that provide no financial incentive to an organization," said McClure.

The importance of a collaborative approach

Preventive maintenance is far more effective when done in collaboration with functions such as operations, maintenance and procurement. Here are some of the roles each function plays in a collaborative PM program.

Operations:

- Perform basic cleaning and inspection with the right tools at the start of each shift and report any abnormalities.
- Monitor machine performance during production and report any abnormalities.
- Contribute real-time insights based on front-line equipment knowledge.
- Suggest process/product changes to reduce machine wear and tear.
- Provide input on preventive tasks, including effectiveness of maintenance solutions, based on equipment issues seen.
- Follow maintenance protocols, such as lockout/tagout.

Maintenance:

- Develop and implement PM schedules, checklists and procedures.
- Conduct in-depth equipment inspections and diagnostic tests.
- Perform scheduled maintenance tasks, such as cleaning or part replacement.
- Document all maintenance work, track performance trends, and offer feedback on effectiveness of maintenance tools and consumables.
- Continuously improve the PM program based on breakdown analyses.
- Provide training for operators on primary preventive care.
- Manage maintenance parts inventory and consumables.

Procurement:

- Source and purchase maintenance parts and consumables, such as cleaning solvents and heavy-duty wipes.
- Maintain optimal inventory levels of PM components.
- Develop contracts with vendors to ensure part availability.
- Provide usage data to inform maintenance planning and budgets.
- Collaborate with suppliers to obtain equipment reliability info.
- Offer procurement expertise to reduce PM program costs.

When you develop PM schedules with input from maintenance, procurement, operators and order scheduling, everyone becomes invested in success. Weekly walkthroughs, meanwhile, enable firsthand observation and information sharing between roles. Together, workers across teams can identify potential weak points before they cause disruptions.

As a result, maintenance transitions from reactive firefighting to smooth preventive care, with everyone looking ahead. Technicians respond to true emergencies rather than daily repairs. Vigilant operators help production hum along by keeping equipment in peak condition. Procurement ensures the right product for the right purpose is always at hand.

Cross-functional cooperation allows each team to contribute its specialized knowledge. Aligned around common reliability goals, every team contributes to optimized preventive maintenance and maximum uptime.

Benefits of collaborative preventive maintenance

Implementing a collaborative preventive maintenance program requires dedication, but the rewards are significant. Let's explore what those rewards are and how each role contributes.

Reduced downtime

Equipment failure is the cause of 42% of unplanned downtime, costing industrial manufacturers in the United States an estimated $50 billion annually.

Maintenance: Regular PM prevents unexpected breakdowns that cause costly outages.

Operations: Promptly reporting abnormalities prevents minor issues from becoming major failures.

Procurement: Ensuring stock of needed parts/materials enables quick repairs and scheduled downtime.

Increased safety

Improperly maintained equipment poses considerable threats to human and environmental well-being. Regular preventive maintenance helps machinery operate safely as intended, reducing risks of malfunctions that can injure workers or cause hazards.

Maintenance: Regular PM ensures reliable operation and reduces accident risks.

Operations: Proper equipment use and reporting of concerns prevent injuries.

Procurement: Personal protective equipment and other safety gear mitigate hazards.

Extended equipment lifespan

Consistent maintenance extends equipment lifespan by preventing costly replacements. Proactively replacing something like a cracked gear preserves an older machine's usefulness. Collaborative PM programs provide time to stock optimal parts rather than settling on quick fixes. Another benefit of this approach is that well-maintained equipment holds higher resale value.

Maintenance: Proactive repairs and scheduled component replacement extend usefulness.

Operations: Daily equipment monitoring detects wear and tear before it becomes severe.

Procurement: Vetting suppliers helps obtain quality replacement parts when needed.

Decreased repair costs

Early detection through PM allows problems to be fixed before catastrophic failure occurs. Replacing a leaking hose, for example, costs far less than overcoming a rupture requiring extensive repairs.

Maintenance: Early detection of problems through PM means lower cost fixes.

Operations: Routine cleaning and care with the right tools reduce wear-related repairs.

Procurement: Optimal stock levels for spare parts prevent relying on expedited shipping.

Improved quality

Manufacturers relying on reactive maintenance see 16 times more defects than companies using advanced maintenance approaches. Proper maintenance produces reliable, quality output. For example, consistent cleaning procedures allow food manufacturers to avoid contamination that leads to recalls or waste.

Maintenance: Well-maintained equipment produces consistent quality output.

Operations: Adhering to OEM specifications during runs maintains precision.

Procurement: Sourcing high-quality materials prevents contaminants.

Collaborative maintenance in action

Beyond adhering to PM schedules, manufacturers realize additional benefits when operators, maintenance technicians and procurement actively collaborate to address problems and ensure equipment is working optimally.

Deion Mercer, quality manager at one of Kimberly-Clark's plants, shared an impactful example of how collaboration between operations, maintenance and procurement optimized a PM program:

At the Kimberly-Clark wipers plant, the maintenance team flagged an unacceptable machine failure rate on high-speed machinery despite weekly PM. Together with operations and procurement, the maintenance team determined that the wrong grease was causing the issues. By tapping into each team's expertise, they resolved the problem with a better, more sustainable grease and optimized the PM program.

This case illustrates the power of cross-functional cooperation. The operators and maintenance team provided equipment expertise and production insight. Meanwhile, procurement delivered sourcing acumen. By combining their strengths, these teams resolved the issue, optimized PM frequency and prevented further disruption.

When equipment knowledge, maintenance skills and purchasing alignment converge, organizations can solve problems faster and continuously improve. Collaboration multiplies each department's capabilities.

How to cultivate a proactive maintenance culture

The success of a collaborative preventive maintenance program heavily depends on fostering a proactive mindset across teams.

It should start with leadership — reliability leaders, line leaders and plant managers. They need to convey the message that PM might take a little extra time, but we're not going to run our equipment to failure.

"Our experience drives our beliefs, and our beliefs drive our actions," says Joe Welsh, plant manager for Kimberly-Clark. "You have to provide that experience to say, 'We're going to do this in a planned way.'"

PM must be a priority, notes Mercer. "Everyone must understand that preventive maintenance is not an interruption. It is a strategic necessity."

"Value needs to be placed on the PM team and the time required to properly maintain assets," adds StarPlus Energy's McClure. "In addition to maintenance team buy-in, you need the right amount of labor and the right parts in the right quantity available at the right time. The production schedule should never be an excuse for neglecting the PM schedule."

Training for success

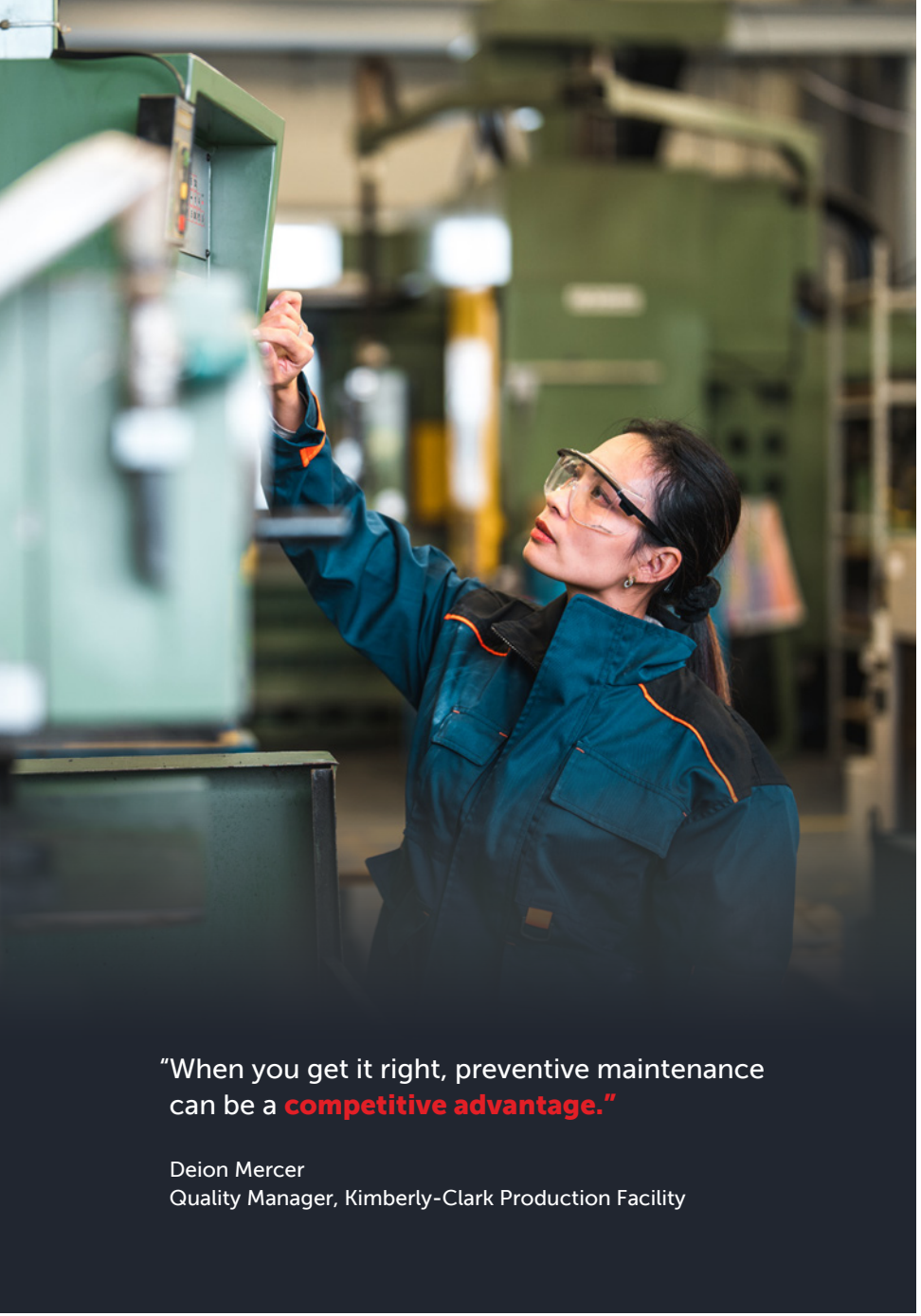
Collaborative PM programs rely on operators who feel invested in equipment care, treating machines like their own. With the right training and open communication, operators can provide real-time insights to complement scheduled inspections.

McClure has found that visual training tools, such as graphics and video, are the most effective for this type of training. He also recommends virtual and augmented reality tools.

At Kimberly-Clark, Welsh says training is a combination of classroom learning for foundational knowledge and hands-on instruction. In addition to basic PM training, technicians will undergo specialized training to obtain a higher level of skills required for energy control, lifting and rigging.

However, like PM programs, training isn't static. As new technology is introduced, training programs must be updated.

By promoting collective ownership, cross-functional insight sharing and up-to-date training, plants nurture the proactive thinking that enables maintenance success.



Cross-functional cooperation: a parting thought

Preventive maintenance powered by cross-functional collaboration delivers results no single team could achieve alone. By combining the hands-on insights of operators, the technical expertise of maintenance crews, and the sourcing acumen of procurement, organizations gain a comprehensive equipment view that unlocks efficiency. In other words, the benefits of PM are greater than the sum of its parts.

Maintaining smooth operations requires looking ahead to avoid issues rather than react to them. When teams share data, analysis and strategies with a focus on uptime goals, they build PM programs greater than any one department's capacity.

"When you get it right, preventive maintenance can be a competitive advantage," Mercer indicates.

Collaboration is key to getting PM right, breaking down knowledge barriers between running, maintaining and supplying equipment. Communication and coordination unlock synergies across functions, transforming disjointed efforts into integrated success.

Keep your machinery running with Kimberly-Clark Professional

The path toward preventive maintenance excellence starts with using the right tool for the task. Discover how our WypAll® Right Purpose Wipes webpage can help you select a wipe to optimize cleaning efficiency and help your machines meet their full potential.

"Consistent, effective cleaning of equipment surfaces and components is the foundation of every successful preventive maintenance program," says Kimberly-Clark plant manager Joe Welsh. "We clean to inspect, and we inspect to detect."

Kimberly-Clark's WypAll® product line is intentionally designed for specific applications rather than a one-size-fits-all approach, and you can experience the power of using the right wipe for the right purpose too.

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