

MaintainX

The State of Industrial Maintenance 2024

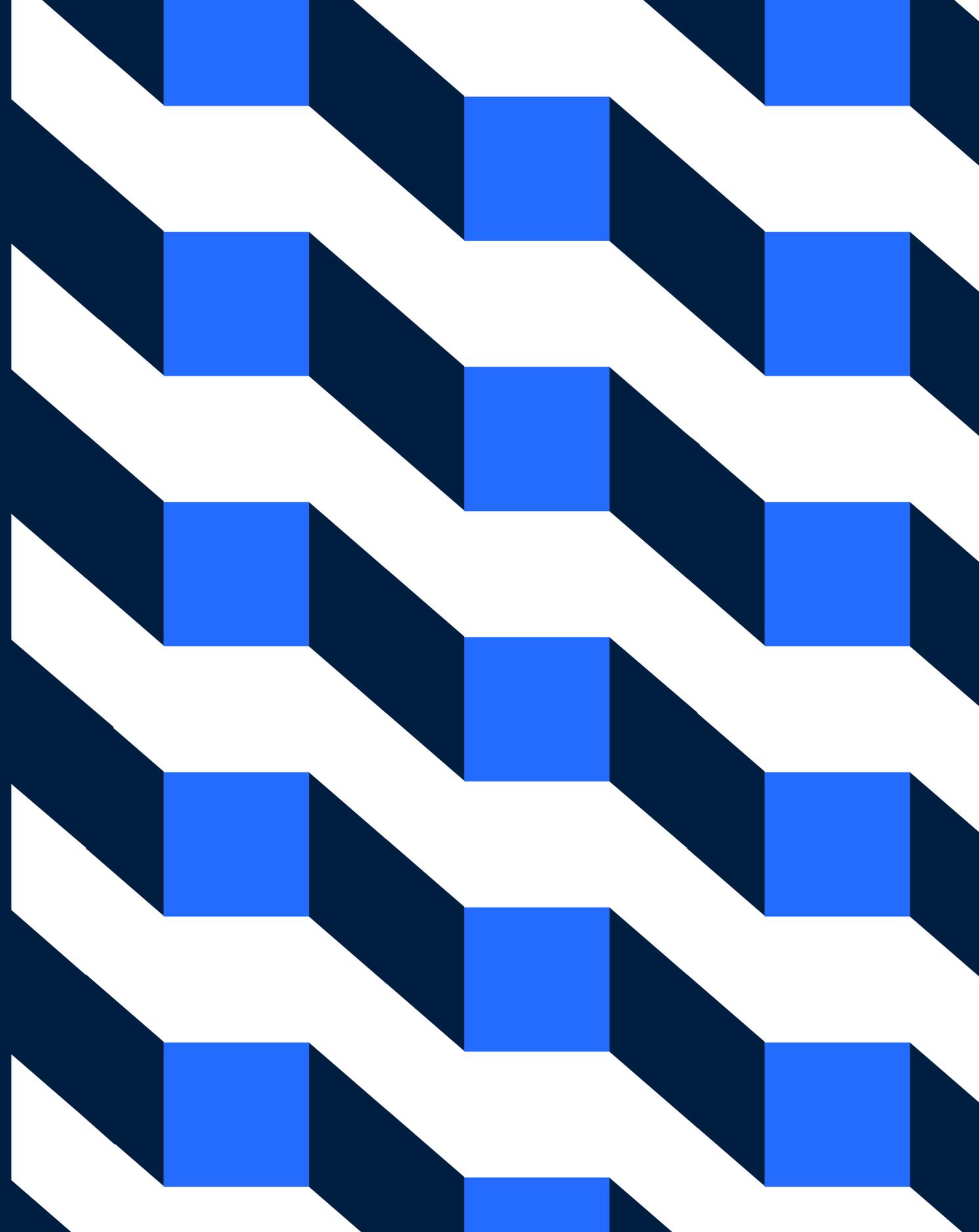


Table of Contents

Foreword by Nick Haase, Co-Founder of MaintainX	4
<hr/>	
Who Was Surveyed	6
<hr/>	
The Unplanned Downtime Paradox	7
Proactive Maintenance and Training Help Keep Incidents of Unplanned Downtime in Check	9
The Cost of Unplanned Downtime Is on the Rise	13
Navistar Avoids Delays and Reduces Parts Costs With a Digital Parts Inventory System	15
Aging Equipment Is the #1 Threat to Undisrupted Operations	17
Key Take-Aways	21

Table of Contents

Maintenance Programs in Review	22
Preventive Maintenance: The Cornerstone of Maintenance Programs	23
Preventive Maintenance: Action Lags Behind Intentions	25
Skills Gap and Resource Constraints Hinder Maintenance Progress	27
Maintenance Budgets & Teams	29
Maintenance KPIs	31
Key Take-Aways	33
<hr/>	
Thriving in Complexity	34
Optimize MRO Parts Inventory Management and Turn the Tide on Rising Costs	35
Increase Adoption of Preventive Maintenance to Protect Operations	36
Invest in Your Existing Workforce to Combat Skilled Labor Shortages	37
Build a Strong Foundation of Operational Data to Unlock Resources and Better Decision-Making	38

The Changing Face of Industrial Maintenance: Navigating Challenges, Embracing Opportunities

Foreword by Nick Haase, Co-Founder of MaintainX

Industrial maintenance in 2024 is **complex and multifaceted**. Maintenance, repair, and operations (MRO) professionals navigate an ever-changing playing field where technological advancements, rising costs, and labor shortages make improving operations challenging.

At first glance, there's cause for optimism. **85.2% of respondents reported a stabilization or decrease in unplanned downtime over the past year**. This improvement suggests that many organizations are making strides in implementing preventive maintenance and improving operational efficiency.

But if you dig a little deeper, a more complex picture emerges. Despite fewer outages, **29.4% of respondents reported an increase in the financial impact of these disruptions**. In 2024, the average cost of an hour of unplanned downtime hovers around \$25,000 and can skyrocket to over \$500,000 for larger organizations.

This paradox—fewer incidents but higher costs—is at the heart of the maintenance challenge in 2024. The paradox is driven by several factors: inflation, supply chain disruptions, and a tightening labor market.

There's also a concerning gap between intention and action in preventive maintenance programs. While 86.8% of facilities report using preventive maintenance strategies, **nearly 60% dedicate less than half of their total maintenance time to them**. This gap highlights a crucial area for improvement and directly ties into our core mission at MaintainX: **to drive unplanned operational downtime to zero**.

Perhaps the most pressing issue is the looming skilled labor shortage. **Half of maintenance and reliability professionals will retire** in the next decade. And as they exit the industry, they'll take critical knowledge accumulated over decades of work with them.

The inaugural MaintainX State of Industrial Maintenance Report identifies clear pathways forward through these challenges. The most successful organizations are taking a multi-faceted approach:

- 1. Prioritizing data collection and analysis**, recognizing that high-quality operational data is the foundation for immediate improvements and future technology adoption.
- 2. Investing in training and knowledge transfer**, working to upskill their existing workforce and capture the insights of experienced workers before they retire.
- 3. Evolving their maintenance strategies**, moving from reactive to predictive approaches.
- 4. Empowering frontline workers with user-friendly tools** that make their jobs easier while simultaneously capturing valuable data to inform better decisions.

These strategies are more than just theoretical. This report provides anecdotes and case studies from companies that have successfully navigated these challenges and have reduced downtime, cut costs, and improved overall operational efficiency.

As you read through this report, consider your organization's approach to maintenance. Are you capturing the full spectrum of operational data from the shop floor and your workforce? Are you prepared for the demographic shift in your maintenance team? How do your preventive maintenance practices stack up against industry benchmarks?

The insights in this report offer more than a snapshot of the industry; they provide a roadmap for turning maintenance from a cost center into a strategic advantage. In an era of razor-thin margins and intense competition, the companies that master these challenges will be the ones that thrive.

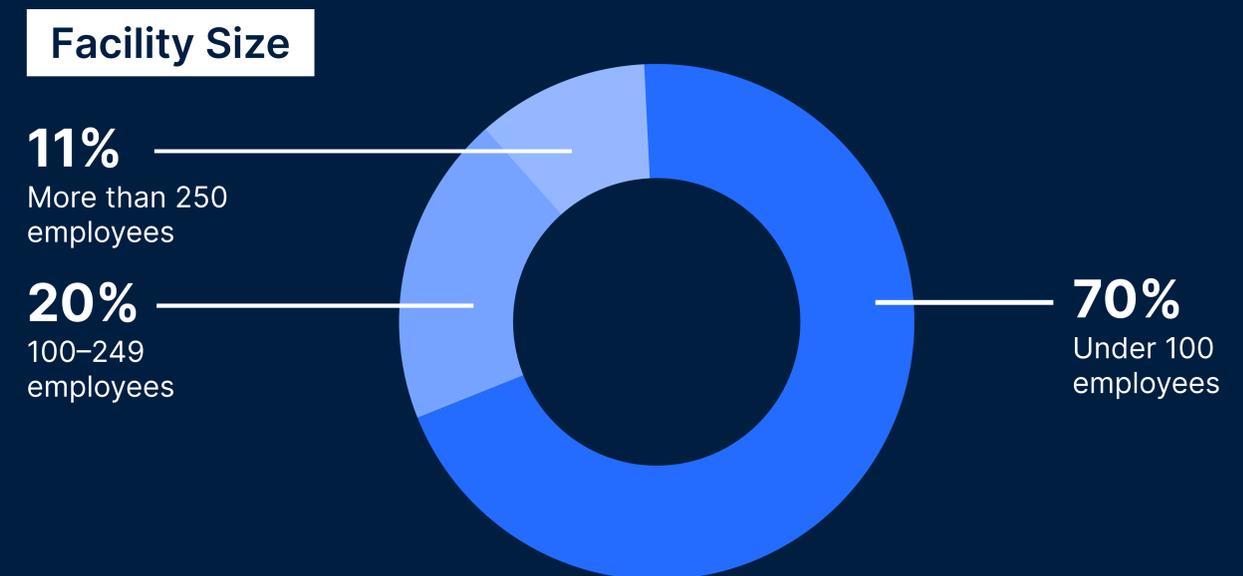
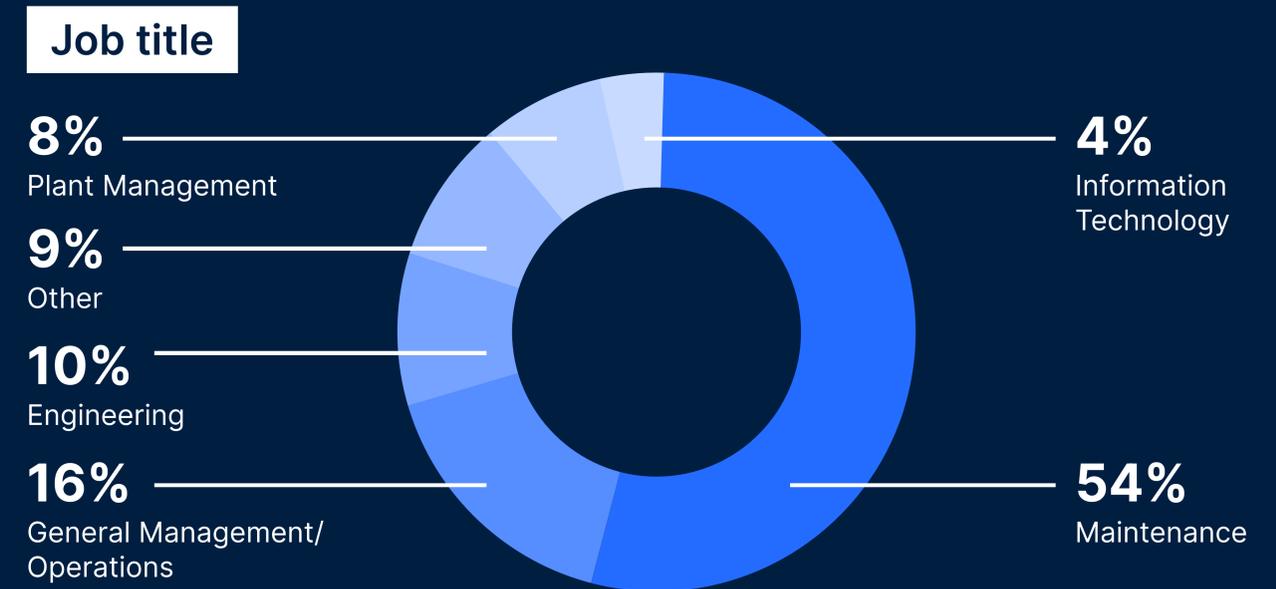
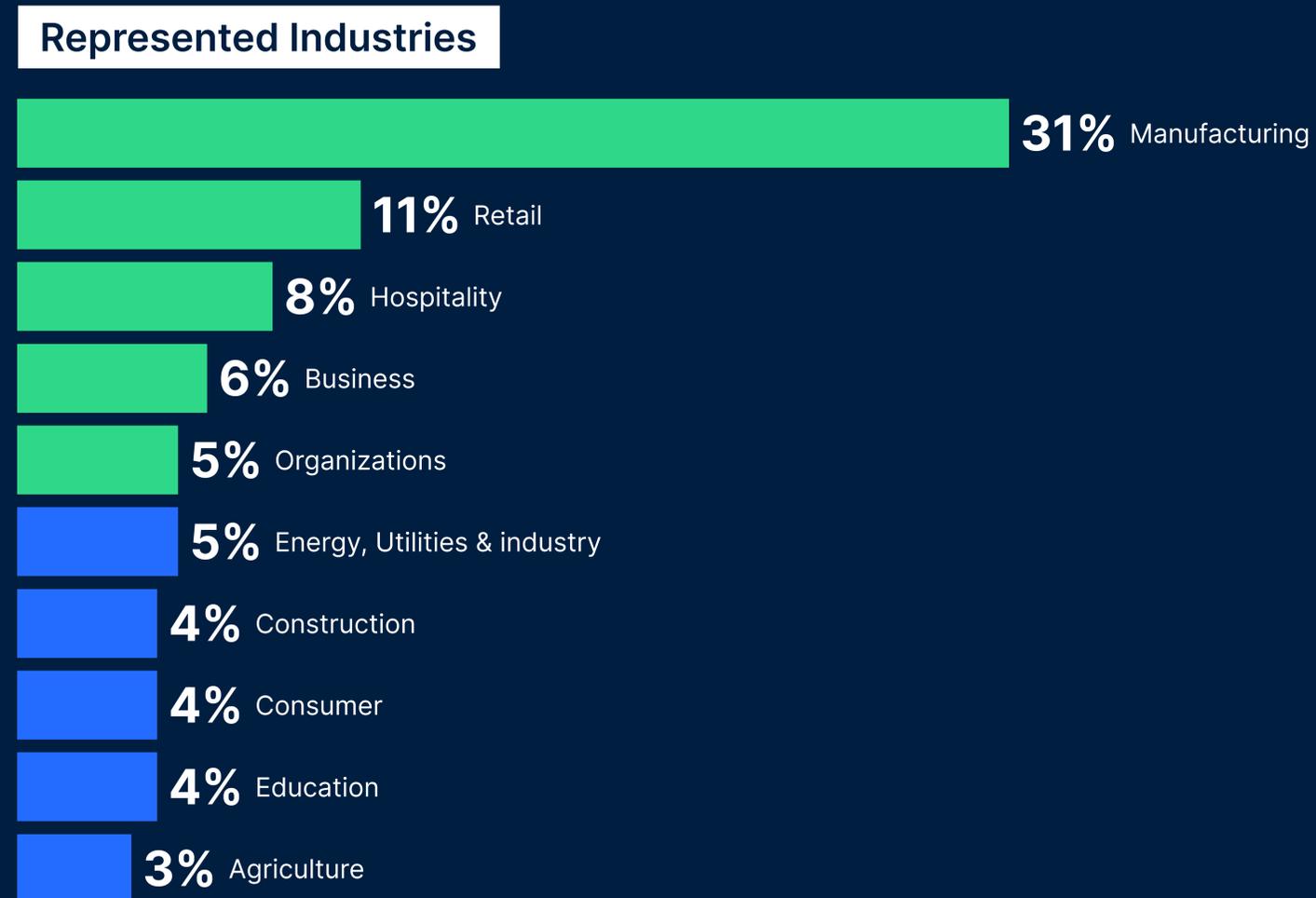


Nick Haase

Co-Founder @ MaintainX

Who Was Surveyed

MaintainX, the leading CMMS and asset management software provider, conducted this global survey with 1,165 MRO professionals across a wide range of sectors, facility sizes, and locations.



The Unplanned Downtime Paradox

Ask MRO professionals about their fight against unplanned downtime over the last 12 months, and they'll paint you a complex and ever-evolving picture.

While most respondents **(85.2%) reported a stabilization or even a decrease in unplanned downtime incidents** over the past year, a significant portion **(29.4%) grappled with an increase in the financial impact of these disruptions.**

The downward trend in incidents of unplanned downtime indicates that facilities across industries are making positive progress toward improving maintenance, asset reliability, and operational processes. However, the escalating costs of these incidents raise alarms about the financial impact of even brief disruptions to production, delivery, or operations.

These seemingly contradictory findings underscore the need for a more nuanced understanding of unplanned downtime and the factors that drive both frequency and cost. Let's start by examining the good news: **unplanned downtime incidents are on the decline.**



45%
reported a **decrease in unplanned downtime**



30%
reported an **increase in unplanned downtime costs**

Proactive Maintenance and Training Help Keep Incidents of Unplanned Downtime in Check

In the last 12 months, **45% of respondents** reported a decrease in unplanned downtime, successfully reducing disruptions to their operations. In fact, only one out of seven respondents reported increased incidents of unplanned downtime over the past year.

65% of respondents reported that proactive maintenance was the most effective way to reduce unplanned downtime incidents.

Evolving maintenance strategy has been by far the most common and effective way to reduce incidents of unplanned downtime. 64.6% of respondents pointed to improving their maintenance strategy as one of the core contributors to the decrease in unplanned downtime in the past year.

Evolving maintenance strategy

65%

Replacing aging equipment

43%

Improving quality and frequency of training

27%

% of respondents, 'What has led to the decrease in unplanned downtime at your facility? Select all that apply.'

“

Ready access to critical maintenance data has been a game-changer for us. It's been the catalyst for the evolution of our maintenance program at Univar.

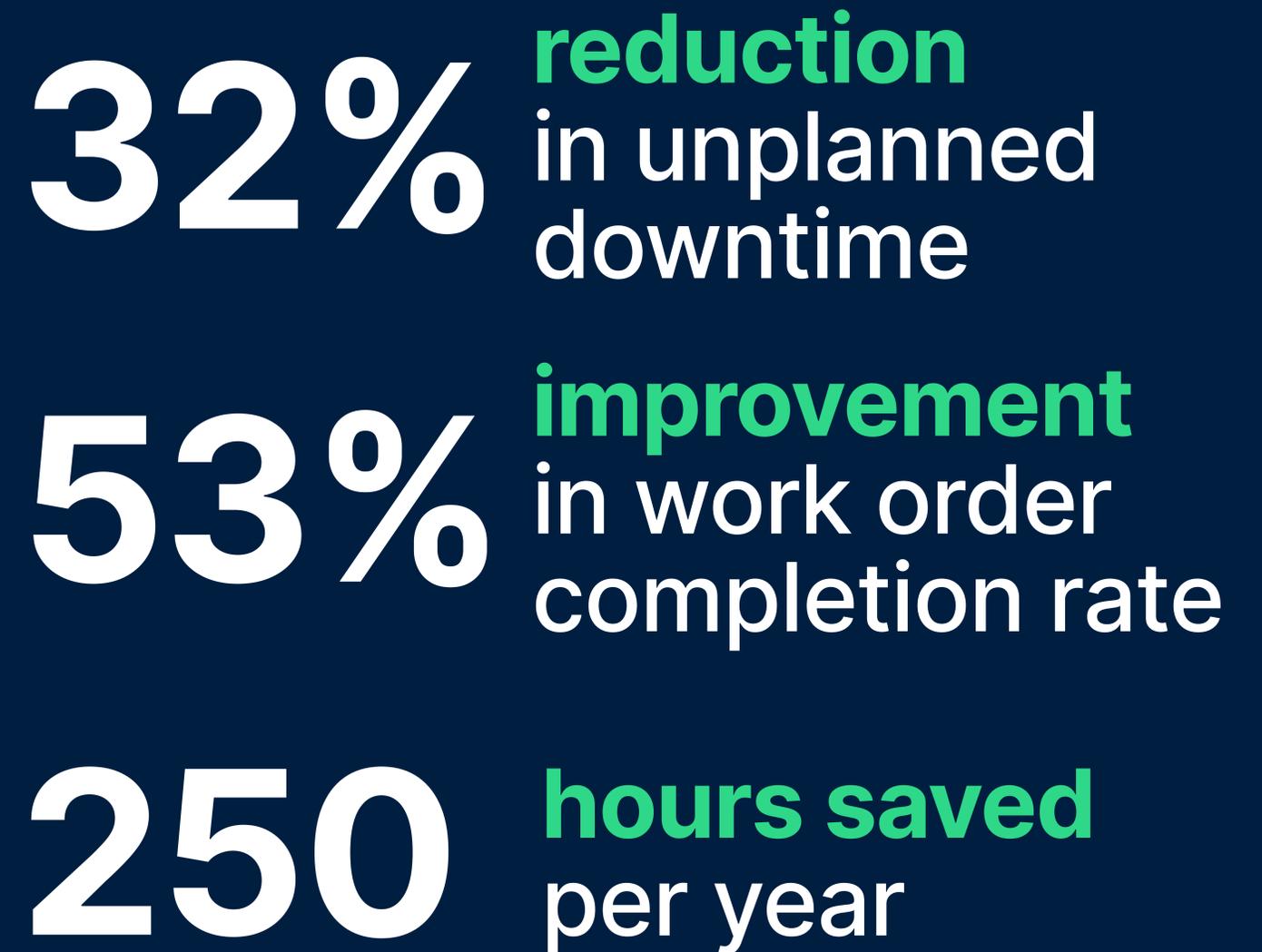
By combining the data with hands-on experience and knowledge, we've been able to make assessments of parts that we should carry in order to help with uptime (instead of waiting for parts to come in), optimize maintenance schedules, and make better, data-driven decisions around budget and labor allocation.”



Christopher Wilcox

Maintenance Manager at Univar Solutions

Even a simple transition from a fully reactive maintenance program to a partially preventive maintenance program can have a significant impact on unplanned downtime. In our past surveys, facilities that have made the transition reported:



Facilities also proactively invested in modernizing their assets in the past year. In 2023, companies increased investments in plants and other production facilities by 63%, the largest annual increase since 1951. The surge was driven by federal incentives and a need to catch up on deferred spending due to supply chain disruptions.

43% of respondents reported that replacing aging equipment decreased unplanned downtime

The survey results demonstrate the positive impact of these investments on improving operations: 43% of MRO professionals attributed the decrease in unplanned downtime to strategic investments made to replace aging equipment.

Investments in training and education pay off. Improving the quality and frequency of training was the third most frequently selected reason (27.3%) for the decrease in unplanned downtime in the last 12 months.

Facilities have faced significant disruptions to their workforce over the past few years:



The COVID-19 **pandemic erased 578,000 jobs**, wiping out nearly **six years of job gains**.



A persistent **lack of skilled labor** continues to plague the sector, with a projected **2.1 million jobs** expected to remain **unfilled due to skill gaps**.



Many **experienced workers are retiring**, taking valuable institutional knowledge with them. **78% of companies** surveyed by The Manufacturing Institute indicated concern about the impending aging workforce exodus.

In fact, for facilities that did see an increase in unplanned downtime over the past 12 months, **65.7% of them cited labor shortages and a lack of necessary skill sets** as the driver of the increase.

These findings underscore the importance of high-quality training and upskilling initiatives in combating skilled labor shortages and unplanned downtime. By empowering the workforce with the knowledge and skills needed to identify and address issues proactively, facilities can minimize unexpected disruptions to their operations and improve productivity.

More manufacturers reported increases in incidents of unplanned downtime than facility managers. 17.4% of manufacturers noted a rise in unexpected downtime, while only 13.6% of facility managers reported the same.

30% more manufacturers reported an increase in unplanned downtime than facility managers

When asked about the main factors behind this increase in unplanned downtime, both groups identified the same top three causes, albeit in slightly different orders. For manufacturers, the leading causes were equipment failure, followed by aging equipment, and then reduced or lack of maintenance. Facility managers, on the other hand, ranked aging equipment as their primary concern, followed by equipment failure, and then reduced or lack of maintenance.

	Manufacturers	Facility managers
1	Equipment failure	Aging equipment
2	Aging equipment	Equipment failure
3	Reduced or lack of maintenance	Reduced or lack of maintenance

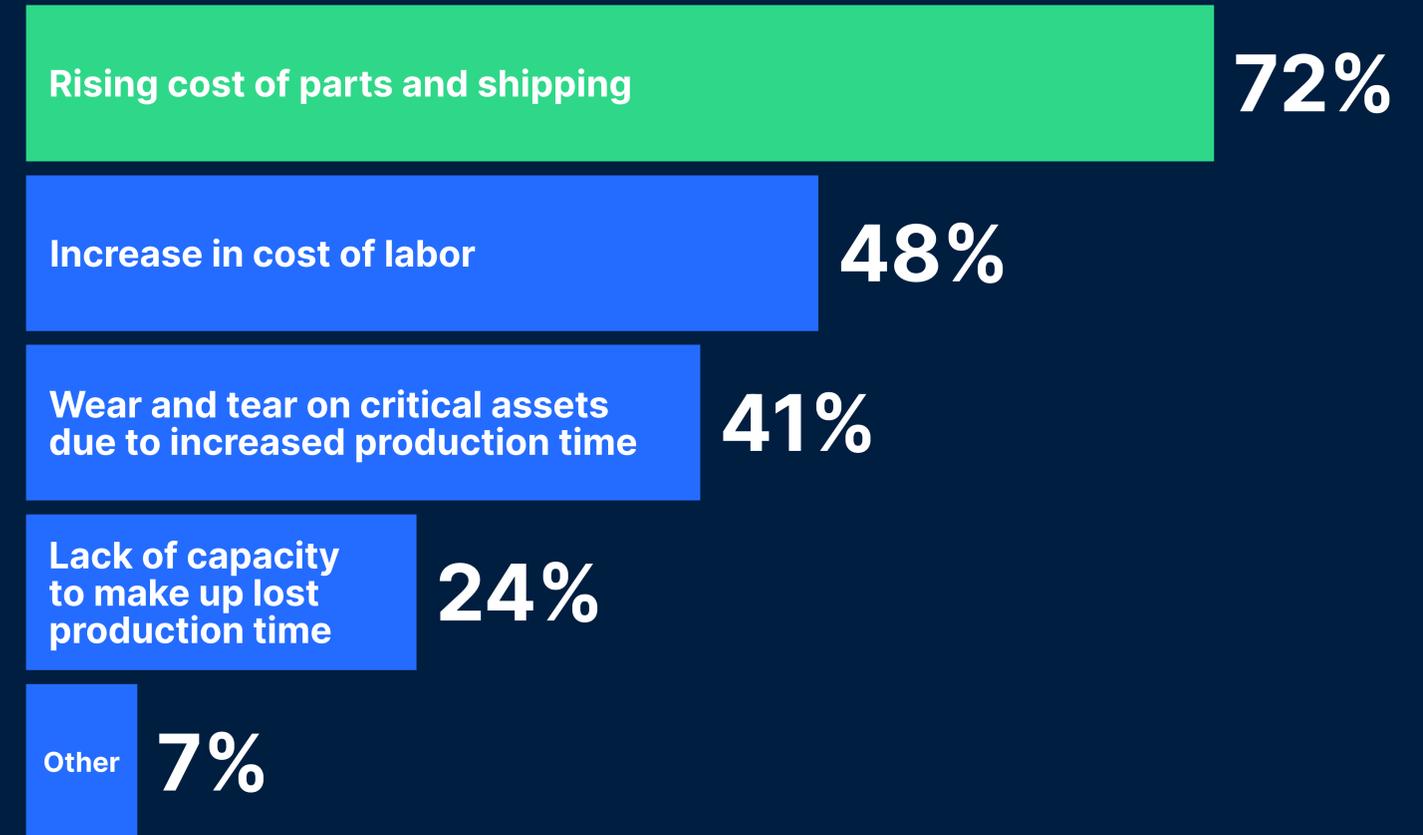
Ranked causes of increase in unplanned downtime, by sector (1 = highest, 3 = lowest)

The Cost of Unplanned Downtime Is on the Rise

Despite the progress made towards mitigating incidents of unplanned downtime, the financial impact of each incident is on the rise. **Nearly 30% of respondents** reported a troubling rise in the cost of unplanned downtime within the past year. In other words, while the frequency of unplanned disruptions may be declining, their financial toll is growing.

\$25K per hour
average cost of unplanned downtime

Survey data shows that the average cost of an hour of unplanned downtime per facility hovers around \$25,000, but can skyrocket to over \$500,000 for larger organizations. This stark reality underscores a critical point: a marginal decrease in incidents of unplanned downtime may not be enough to offset the growing cost per incident.



% of respondents, 'What has contributed to the increase in the cost of unplanned downtime? Select all that apply.'

Inflation and supply chain disruptions are driving up the cost of unplanned downtime. 72% of respondents attributed the increased cost of unplanned downtime to the rising cost of parts and shipping.

Justin Foat, the Fleet Maintenance Manager at Herlache Truck Lines, explains: “Everything’s gotten more expensive and longer to procure. Inflation has significantly increased the cost of parts and raw goods, from tires to doors, that we need to maintain our fleet. This makes it much more expensive to replace parts when they break down.”

“And to make things worse, lead times for parts, especially specialty items, haven’t recovered to pre-pandemic levels,” Foat adds. “One of the big parts vendors we work with couldn’t get ahold of the Duraplate side sheet that all our trailers are made of. It took us nearly three months to get our hands on the part.”

He concludes: “The volatility in cost of goods and supply chain has meant that we’ve had to be much more conservative when it comes to keeping critical parts in stock.”

Shipping costs are also back on the rise, seeing a resurgence in 2023 after steadily decreasing from an all-time high during the pandemic. The Red Sea shipping crisis has significantly disrupted commercial shipping operations, with attacks on commercial vessels driving a downturn in maritime activity and soaring freight rates and shipping insurance costs.

59% of facilities successfully reduced costs with improved parts inventory management.

These factors continue to highlight the importance of improving MRO inventory management to mitigate the rising cost of parts and shipping. In fact, 58.9% of facilities that successfully reduced the cost of unplanned downtime attributed the improvement to better parts inventory management.

CASE STUDY

Navistar Avoids Delays and Reduces Parts Costs With a Digital Parts Inventory System

Faced with soaring parts prices and lengthening lead times during the height of the pandemic in 2021, Ronald Gibson, Tool Crib Attendant at Navistar, knew he had to optimize MRO inventory management to minimize disruptions to production. Working with MaintainX, Gibson digitized and automated Navistar's parts inventory to reduce costs, save valuable time, and get ahead of delays.

Reduced Parts Costs

Imagine ordering, paying, and waiting for a new part to come in, only to discover that part was available on-site all along. For example, when Navistar's QA department needed 600 ft/lbs torque wrenches, its digital inventory saved them from over-ordering.

Gilbert explained: "Because we had taken a thorough inventory, we discovered two brand new, still-in-the-box wrenches from 2017. We utilized both immediately upon request. **The savings was about \$1,000.00 per wrench, plus saving on the cost of time, overnight shipping, and lost production time.**"

Time Savings

Time, Gibson said, is the most valuable non-renewable resource his team has. **"If a well-curated inventory can buy us back an hour or two, or a day or two, in manpower, then that's an opportunity to utilize that elsewhere and save a bit on that project to increase profit."**

"Management can also check remotely about inventory, knowing it's pretty much up to date within a reasonable margin or error. This helps because now no one has to call or make a trip down to see how many wrenches we have. MaintainX updates our parts inventory automatically as we use them."

Mitigating Supply Chain Delays

Gibson and his team are no strangers to parts that are hard to come by: "We got a lag time of about 7 to 10 business days, which is aggressive in this supply chain situation."

With a digital parts inventory system, Gibson explained that he could now share how many coil grinders he had ordered, on what day, and who had checked them out. **He can now track who he checked the parts out to and get his hands on them quickly without making an unnecessary order.**

Higher labor costs exacerbate the financial impact of unplanned downtime. Increased labor costs is the second most frequently cited reason for the increase in cost of unplanned downtime, with 47.7% of respondents attributing it to the higher costs.

As housing, food, transportation, and other consumer goods have bigger price tags, wages have also followed suit. And to make matters worse, the skilled labor shortage has made filling open positions difficult, leading to increased turn times across the board.



One of the biggest vendors that we work with recently had a bunch of employees quit and move onto another facility as they were offering higher wages. In response, the vendor had to raise their labor rates to retain their technicians, which meant that we had to pay more to get the team in to perform maintenance on our fleet.”

Justin Foat

Fleet Maintenance Manager at Herlache Truck Lines

Increased production time has taken a toll on critical assets. To meet the resurging demand following the COVID-19 pandemic, many facilities increased the run time of their critical assets. According to the 2021 State of Manufacturing report by Oden, while demand increased by 25–50% coming out of the pandemic, manufacturers struggled to match the increase, with the majority only being able to increase capacity from 6–10%.

41% of respondents reported wear and tear on critical assets as a top driver of increased unplanned downtime costs

Now, as the backlog gets cleared out, facilities are noticing the impact of the increased run time on their assets: parts and assets are breaking down faster, and needing repairs and replacements more often. 40.6% of respondents reported wear and tear on critical assets as one of the top drivers of the increase in the cost of unplanned downtime.

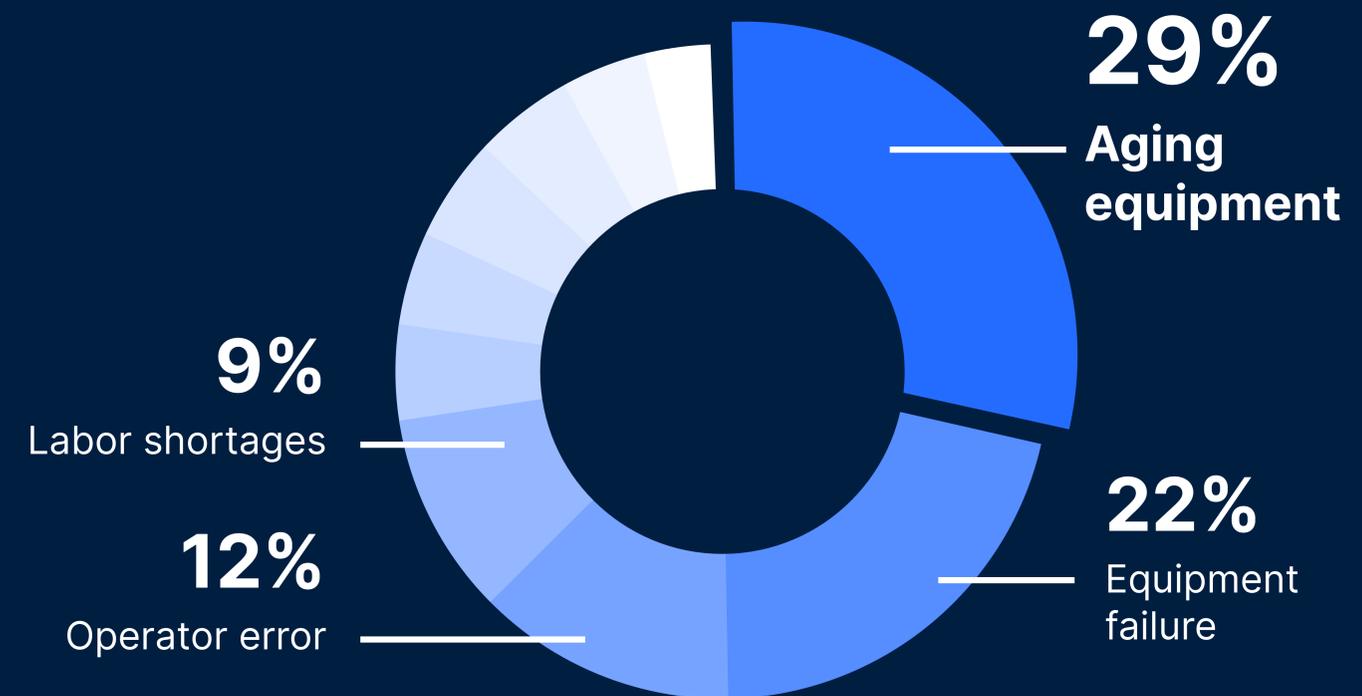
Increasing scheduled maintenance on these critical assets and ensuring a healthy stock of essential components will be paramount to limiting the financial impact of unplanned downtime on the bottom line.

Aging Equipment Is the #1 Threat to Undisrupted Operations

Nearly a third of respondents believe that aging equipment will be the leading cause of unplanned downtime at their facility in the next 12 months.

29% of respondents anticipate aging equipment to be the leading cause of unplanned downtime

In fact, manufacturers and facilities of all sizes unanimously chose aging equipment as the top anticipated cause of unplanned downtime. Fixed assets in the US are rapidly aging, with the average age of private nonresidential fixed assets and structures nearing 16 years and 25 years, respectively. This aging infrastructure presents a critical challenge for facilities, highlighting the urgent need for strategic equipment upgrades and modernization to mitigate the rising risks of unexpected breakdowns and inefficiencies.



% of respondents, 'In the next 12 months, what do you anticipate will be the leading cause of unplanned downtime at your facility?'



The problem with aging equipment is that, as the years pass by, the accumulated wear and tear make them much more susceptible to downtime, even with scheduled maintenance. And when they do go down, it's nearly impossible to find the necessary parts to fix the issue."



Jeremiah Dotson

Equipment Tech Manager at Amfab Steel

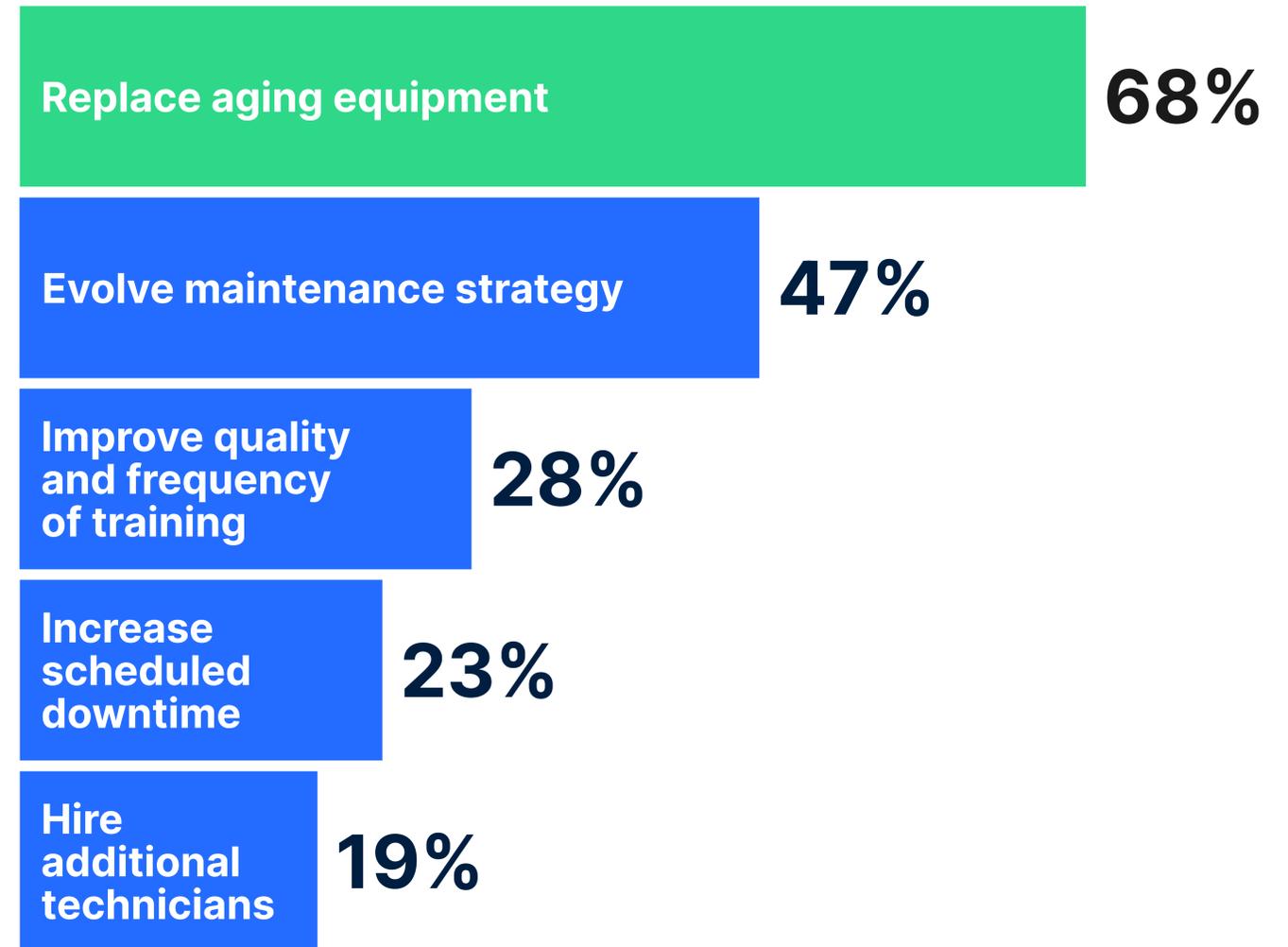
"As newer versions of the equipment get released, OEMs stop manufacturing the older version of the equipment and the associated parts. When we can't get a hold of the required parts, we have to retrofit other parts to fit and work with the asset."

Dotson continues: "For example, we have a plasma table that dates back to 2003, and because it's 21 years old, we can't find the parts for it. So when it breaks down, we have to retrofit other parts to work with the table, but it's not ideal nor sustainable."



While replacing aging equipment remains the predominant strategy (67.95%) for mitigating operational risks, current economic conditions present significant challenges to this approach. Inflation has substantially increased equipment costs, while supply chain disruptions have extended lead times materially. As a result, executing capital projects has become more complex, even for organizations with allocated budgets.

As equipment ages, maintenance takes center stage. 47.1% of respondents that anticipate aging equipment as the primary driver of unplanned downtime in the coming year indicated that they would be evolving their maintenance strategy to combat it. Improving maintenance on aging equipment can minimize the risk of unexpected failures and help keep them operational until you can replace the assets.



% of respondents, 'In the next 12 months, how are you planning on combating aging equipment at your facility? Select all that apply.'

Facilities are also looking to invest in higher-quality and more frequent training to reduce disruptions from aging equipment. More than a quarter (28.3%) of respondents facing aging equipment challenges plan on improving the quality and frequency of training to combat the problem. Jeremiah Dotson adds: “You won’t always have the luxury of being able to replace aging equipment, so you have to control what you can. By taking the time to teach technicians about the machines and walk them through the documentation on file, we can ensure that all team members have the necessary knowledge to deal with and fix failures.”

Manufacturers prioritize maximizing the lifespan of aging equipment over flat-out replacing them. Unlike facility managers, manufacturers' most commonly selected strategy in response to aging equipment is improving the quality and frequency of training, increasing scheduled downtime, and then replacing aging equipment. The responses emphasize the focus of manufacturers on upskilling operators and technicians and increasing the amount of maintenance on aging equipment to maintain asset reliability and minimize disruptions to production before replacing them.

	Manufacturers	Facility managers
1	Improve quality and frequency of training	Replace aging equipment
2	Increase scheduled downtime	Evolve maintenance strategy
3	Replace aging equipment	Improve quality and frequency of training

*Ranked priorities for addressing aging equipment, by sector
(1 = highest, 3 = lowest)*

Key Take-Aways

Incidents of **unplanned downtime** have **decreased** in the last 12 months:

- **45%** reported a decrease in unplanned downtime incidents over the past 12 months.
- **65%** reported that a shift towards proactive maintenance strategies has been the most effective way to reduce unplanned downtime incidents.
- **44%** attributed the decrease in unplanned downtime to strategic investments made to replace aging equipment; **27%** to improved quality and frequency of training.

Effective MRO inventory management is paramount to keep the cost of unplanned downtime in check:

- **59%** that successfully reduced their unplanned downtime costs identified improved inventory management as the primary factor. This highlights the critical role that effective parts and materials management plays in minimizing disruptions and controlling maintenance expenses.

Unplanned downtime has become more **expensive** over the last 12 months:

- **30%** reported an increase in unplanned downtime costs.
- The average cost of an hour of unplanned downtime is **~\$25,000** for facilities across all sectors, but can be greater than **\$500,000** for larger organizations.
- An overwhelming majority (**72%**) attributed the increase in cost to the rising price of parts and shipping.

Aging equipment remains a top threat to operations:

- **29%** expect aging equipment to be the leading cause of unplanned downtime in the next 12 months. Addressing this challenge will require a multifaceted approach, including replacing aging equipment, evolving maintenance strategies, and investing in better training.

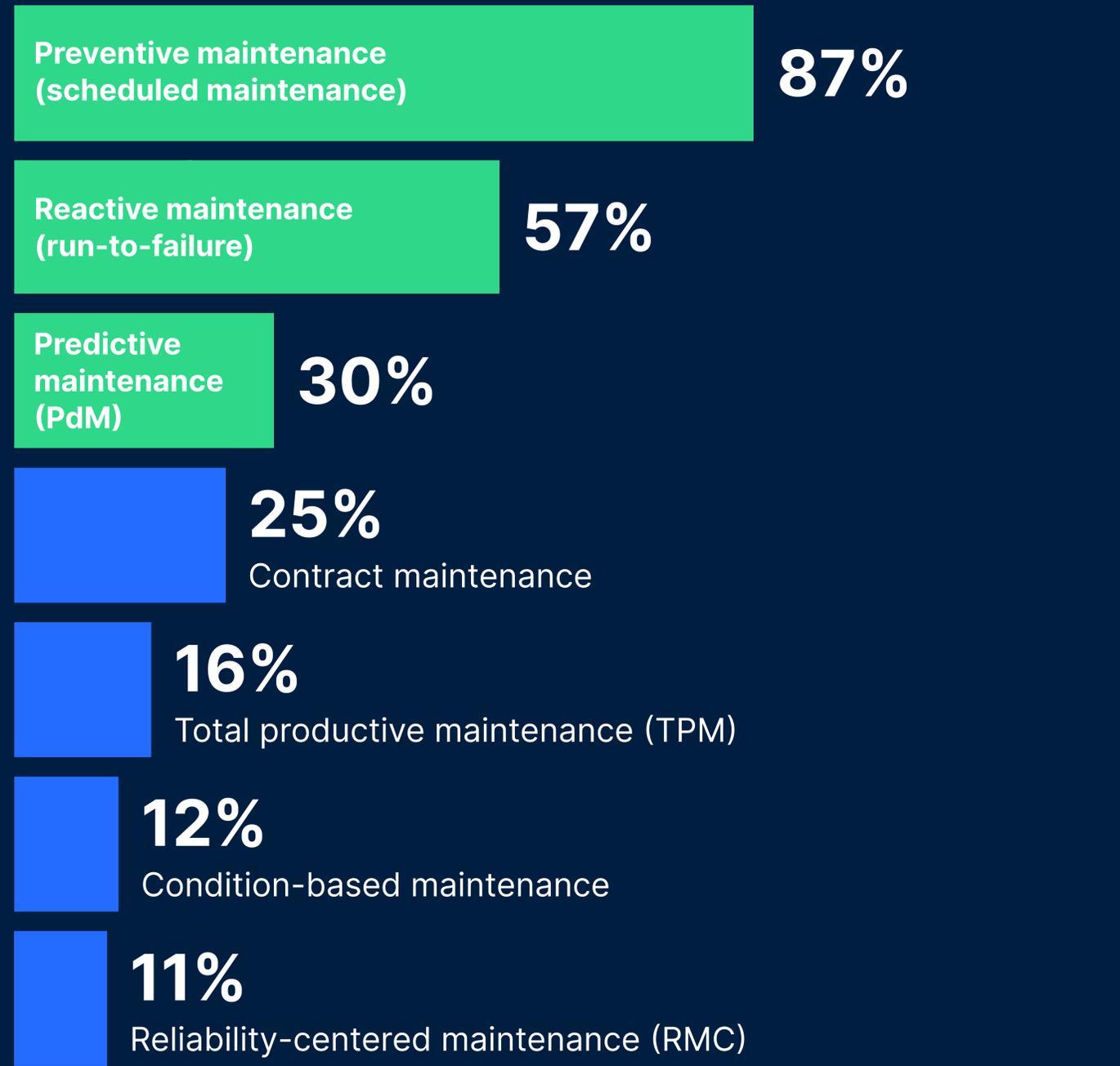
Maintenance Programs in Review

Preventive Maintenance: The Cornerstone of Maintenance Programs

86.8% of participating facilities reported active use of preventive maintenance (scheduled maintenance).

This widespread implementation highlights the recognition of the importance of scheduled maintenance in minimizing downtime and optimizing equipment lifespan.

Despite the widespread use of preventive maintenance, run-to-failure maintenance still plays a vital role for facilities. Over half of the facilities (57%) still rely on run-to-failure maintenance to maintain their assets, with 5% of facilities reporting that it is the **sole** program in place at their facility. “There are just some things that you can’t plan for,” says Justin Foat, the Fleet Maintenance Manager at Herlache Truck Lines. “For example, during the hotter months, you can send out a truck fitted with brand new tires, have them hit hot pavement, roll over a rock, and boom, it blows.”



% of facilities, 'Which of the following maintenance programs are actively in use at your plant or facility? Please select all that apply.'

Predictive maintenance (PdM) is gaining significant traction amongst facilities. PdM is the third most commonly utilized maintenance program, with nearly one-third of facilities (30.2%) leveraging it.

“Because we strive to operate higher than the standard, it’s critical for us to stay ahead of any issues that might impact asset performance or uptime,” says Woody Rogers, the Maintenance Supervisor at Cintas. “By monitoring and analyzing historical and real-time data that we collect on the conditions of our assets, we’ve been able to proactively identify, detect, and fix issues before they become bigger problems.”

EXPERT TIP

When to use preventive maintenance vs. reactive maintenance?

“The simplest way to determine whether to use preventive or reactive maintenance on an equipment or asset is by looking at the volume and frequency of work performed on it over a specific time interval. If you find that you are performing a lot of unplanned work on the asset, it might be time to consider a preventive maintenance schedule or to increase the frequency of scheduled maintenance on the asset.”



Christopher Wilcox

Maintenance Manager at Univar Solutions

On average, three maintenance programs are used by the average facility.

Over half of facilities (57%) still rely on some form of run-to-failure maintenance to maintain their assets.

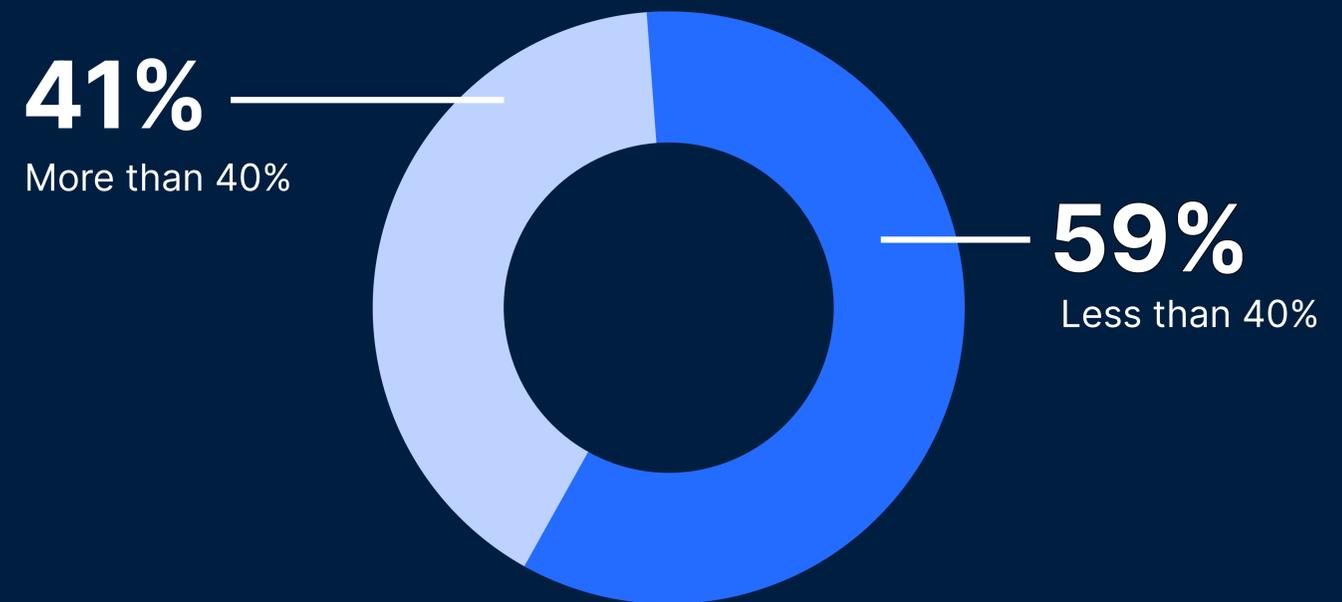
Facilities that only leverage run-to-failure maintenance are 2x more likely to report an increase in incidents and cost of unplanned downtime.

Preventive Maintenance: Action Lags Behind Intentions

Despite the widespread adoption of preventive maintenance, most facilities still find themselves trapped in a reactive maintenance cycle, dedicating the bulk of their maintenance time to unplanned activities.

59% of facilities dedicate **less than half** of their time to planned maintenance work.

This stark reality highlights a significant gap between **intention and action**: most facilities understand the value of proactive maintenance but need help to drive adoption.



% of respondents, 'What % of total maintenance time is dedicated to planned maintenance activities?'



Before you can start to ramp up your program, you need experience and data to understand the impactful things you need to perform on your equipment.

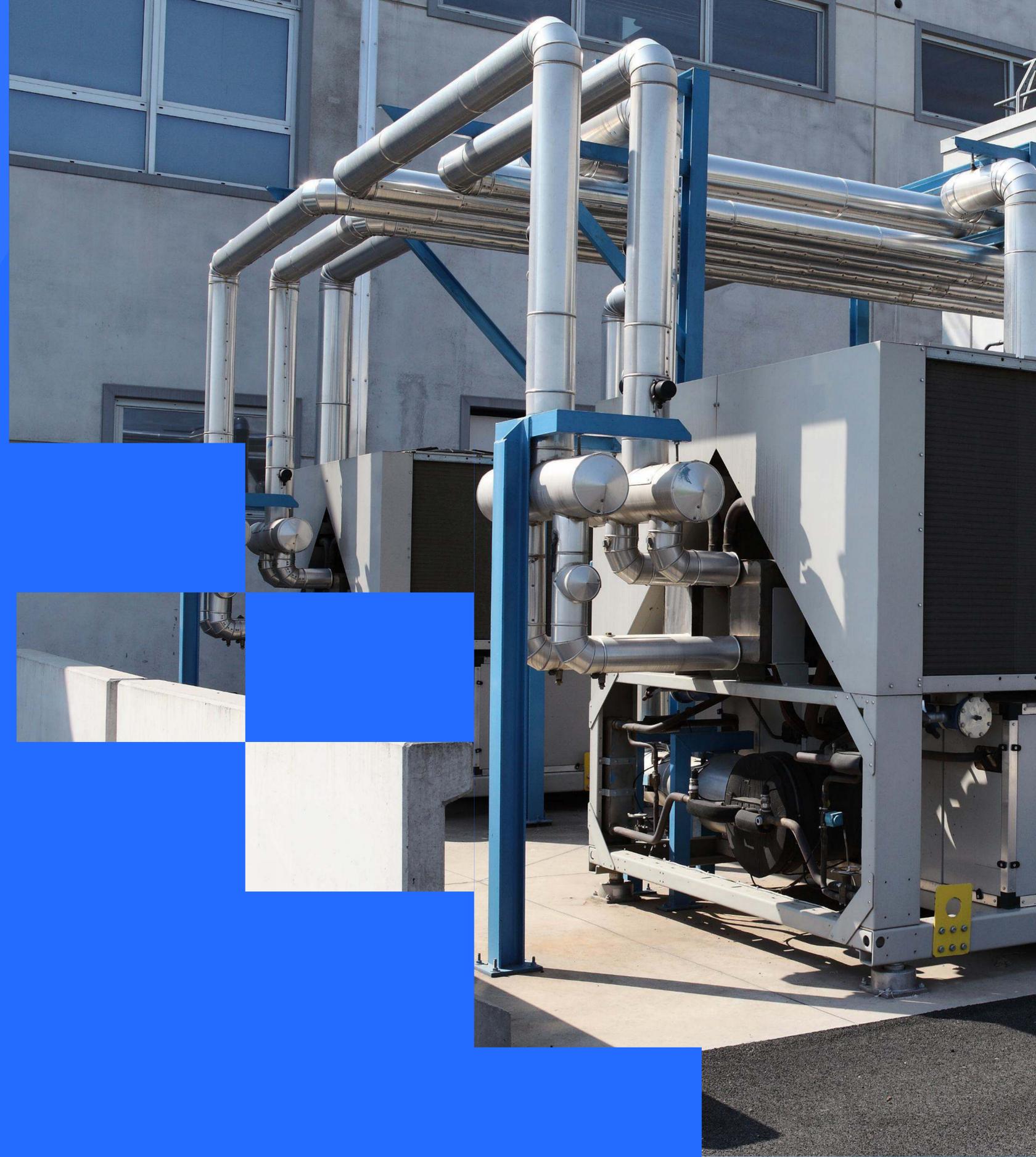
For example, you might initially build a preventive maintenance schedule based on the manufacturer's guidelines. However, as you perform the work and analyze the data, you may find that the manufacturer missed critical areas and that's leading to unplanned maintenance work.

By using that information, you can refine your schedule, prioritize critical tasks, and ultimately create a more effective preventive maintenance program that minimizes time spent on unplanned maintenance work."



Christopher Wilcox

Maintenance Manager at Univar Solutions

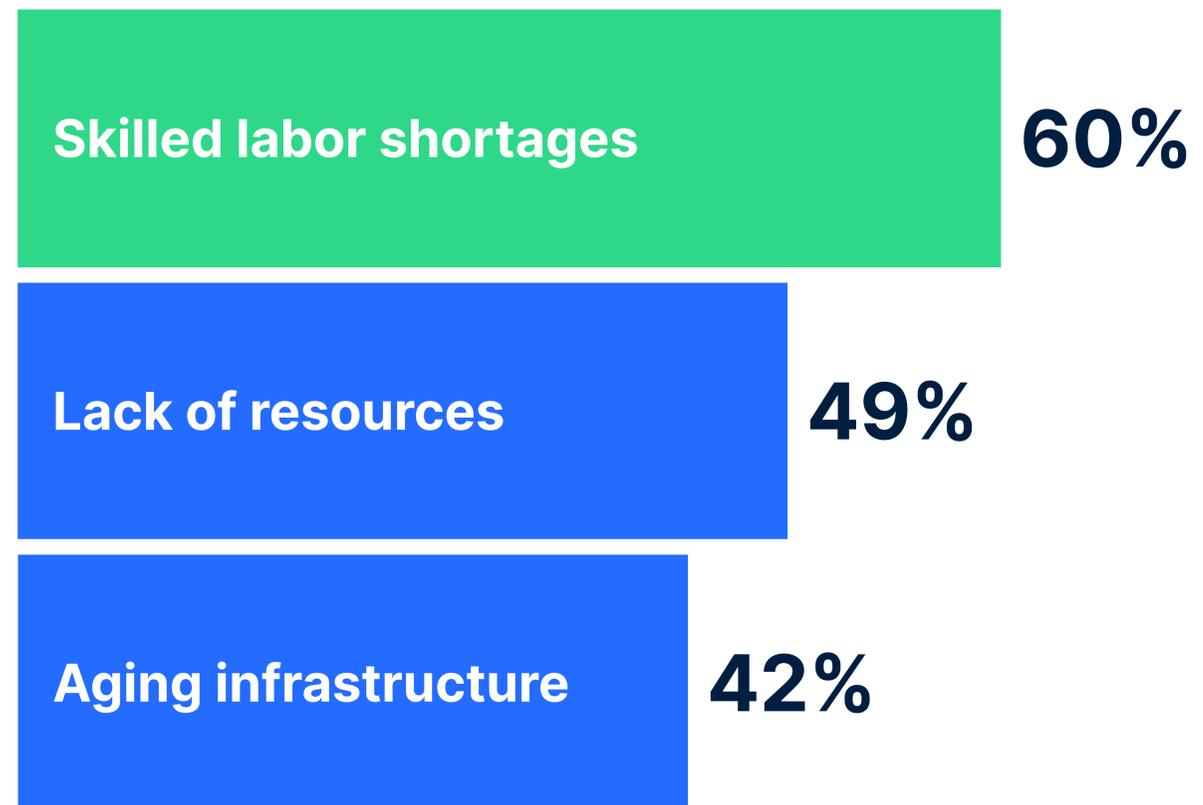


Skills Gap and Resource Constraints Hinder Maintenance Progress

Skilled labor shortage is the main barrier to improving maintenance programs for facilities across all sectors and sizes. A recent report by Deloitte and the Manufacturing Institute highlighted that 1.9 million jobs in manufacturing could remain unfilled by 2033 due to the skills gap. As experienced technicians retire and fewer young people enter the field, the shortage is only set to worsen.

“There’s not as many young people coming into maintenance as there used to be years ago,” explains Woody Rogers, the Maintenance Supervisor at Cintas. “In some cases, we don’t even get a single application when a maintenance role opens up. And when we do get applications, they don’t always have the required skills.”

Justin Foat, the Fleet Maintenance Manager at Herlache Truck Lines, adds: “The younger generations don’t grow up dreaming of becoming mechanics. And as the older generations retire, it’s becoming challenging to replace that human capital.”



% of respondents, 'What are the top three challenges that you are facing in improving your maintenance program?'



"At Cintas, we are tackling the skilled labor shortage head-on. We are working closely with MaintainX to improve the quality and frequency of our training. We are producing videos on how to perform each type of PM to ensure that anyone can easily pick up the work order and perform the work required in a standardized manner."



Woody Rogers

Maintenance Supervisor at Cintas

"We are also outsourcing certain specialized maintenance work to free up wrench time for our existing technicians," Rogers continues. "For specialty work like HVAC maintenance, outsourced workers can do the job more efficiently and free up time for us to focus on other work that we cannot outsource."

"Lastly, we are developing an apprenticeship program to cultivate talent internally," concludes Rogers. "We want to play an active role in developing the skilled workforce we need to meet the evolving needs of our organization."

Many MRO professionals have struggled to get access to the necessary resources to improve their maintenance programs. 48.8% of respondents cited a lack of resources as a major roadblock to evolving their maintenance programs.

"Maintenance data is the secret weapon," says Christopher Wilcox. "It's not just numbers on a spreadsheet; it's the objective evidence that you need to build a compelling case for resources and investments in your program. And when you present empirical, data-driven insights, you gain credibility and trust from decision-makers."

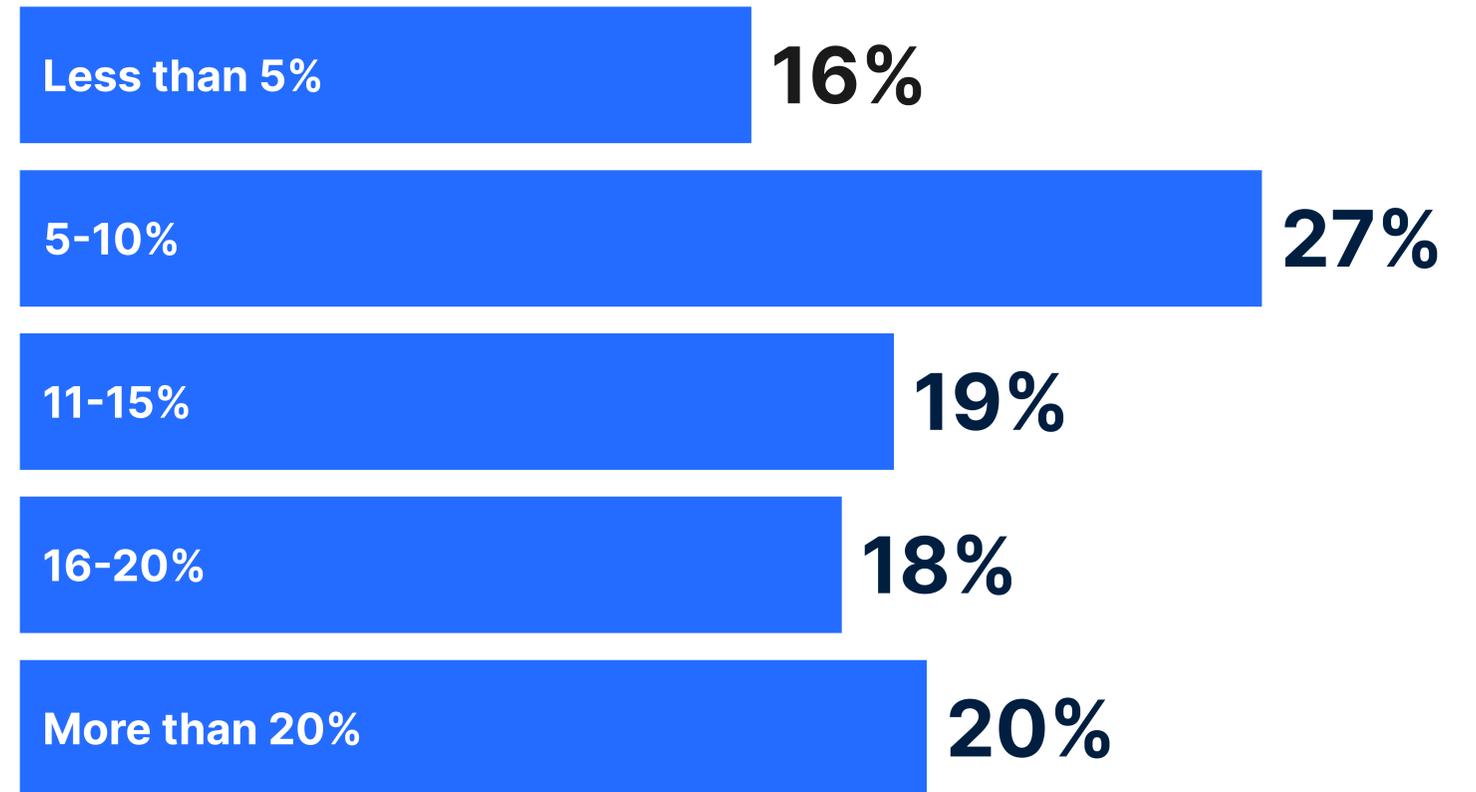
However, accessing and utilizing this data can be a challenge in itself. "A lot of maintenance teams struggle to access this data because they rely on a paper-based system," explains Wilcox. "I mean, who has the time to sort through file cabinets full of paper to filter and correlate them to a series of events or a timeline? That's why it's so important to embrace modern technologies like a Computerized Maintenance Management System (CMMS) that centralize and streamline maintenance. It unlocks the data you need to make better decisions, optimize maintenance operations, and get the support you need."

Maintenance Budgets & Teams

The majority of facilities (64.4%) allocate 5–20% of their annual operating budget to maintenance. Around one in five facilities allocate more than 20% of their annual operating budget towards maintenance.

Facility managers allocate a higher percentage of the annual operating budget to maintenance than manufacturers. 40.2% of facility managers indicated that maintenance represents 16% or more of the annual operating budget, while only 31.2% of manufacturers indicated the same.

In the next 12 months, facilities plan to focus their investments on process improvements. Confronted with operational challenges, such as aging equipment and labor shortages, facilities plan on prioritizing process enhancements to optimize their workflows, reduce waste, and maximize the productivity of their existing resources.



% of facilities, 'What percentage of your plant's annual operating budget is allocated for maintenance?'

“In the next 12 months, where will you be allocating your budget to?”

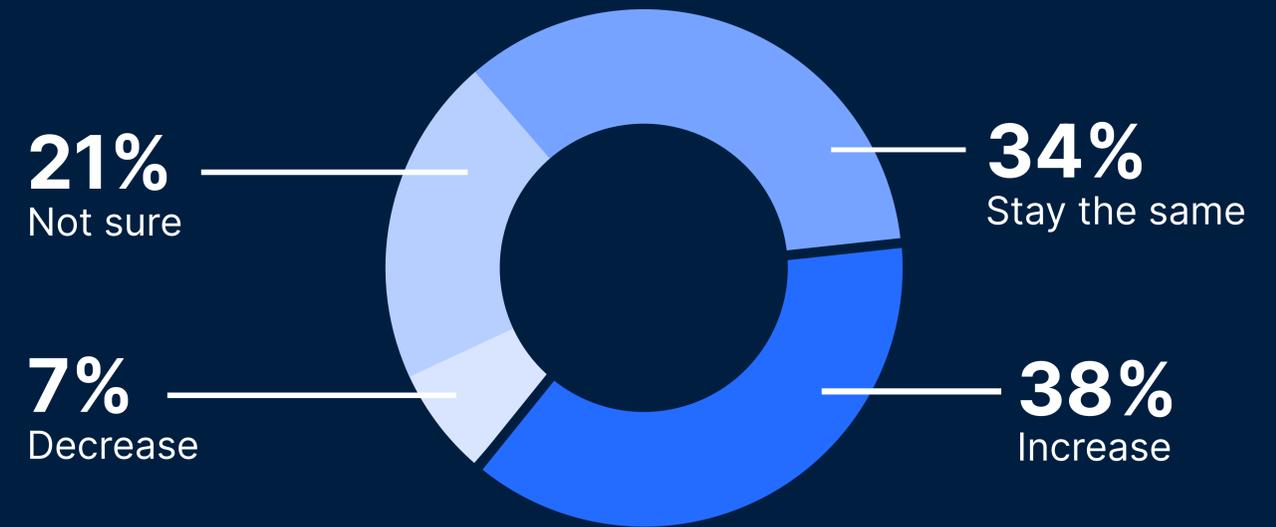
- 1** Process
- 2** People
- 3** Technology

With inflation driving up the cost of parts, equipment, and labor, facilities across different sectors are building additional buffers into their budgets. 37.7% of facilities indicated that they expect to see an increase in their maintenance budget for the next 12 months.

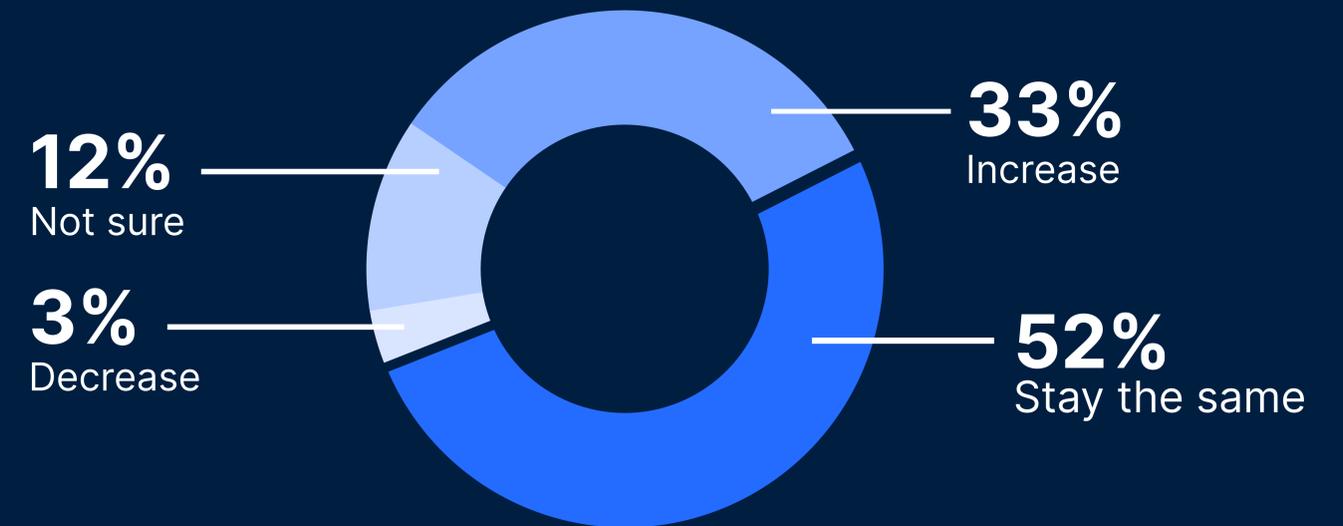
38% of facilities expect an increase in budget

52% of facilities expect teams to stay the same size

Despite the anticipated increase in maintenance budgets, the size of maintenance teams is expected to remain relatively stable, with 51.6% of facilities reporting no planned changes in the next 12 months. In the face of skilled labor shortages and rising wages, many facilities are shifting their focus toward maximizing the effectiveness of their existing resources. Instead of simply expanding their workforce, they are investing in optimizing assets, streamlining processes, and upskilling their current employees.



% of facilities, 'Will your maintenance budget increase or decrease in the next 12 months?'



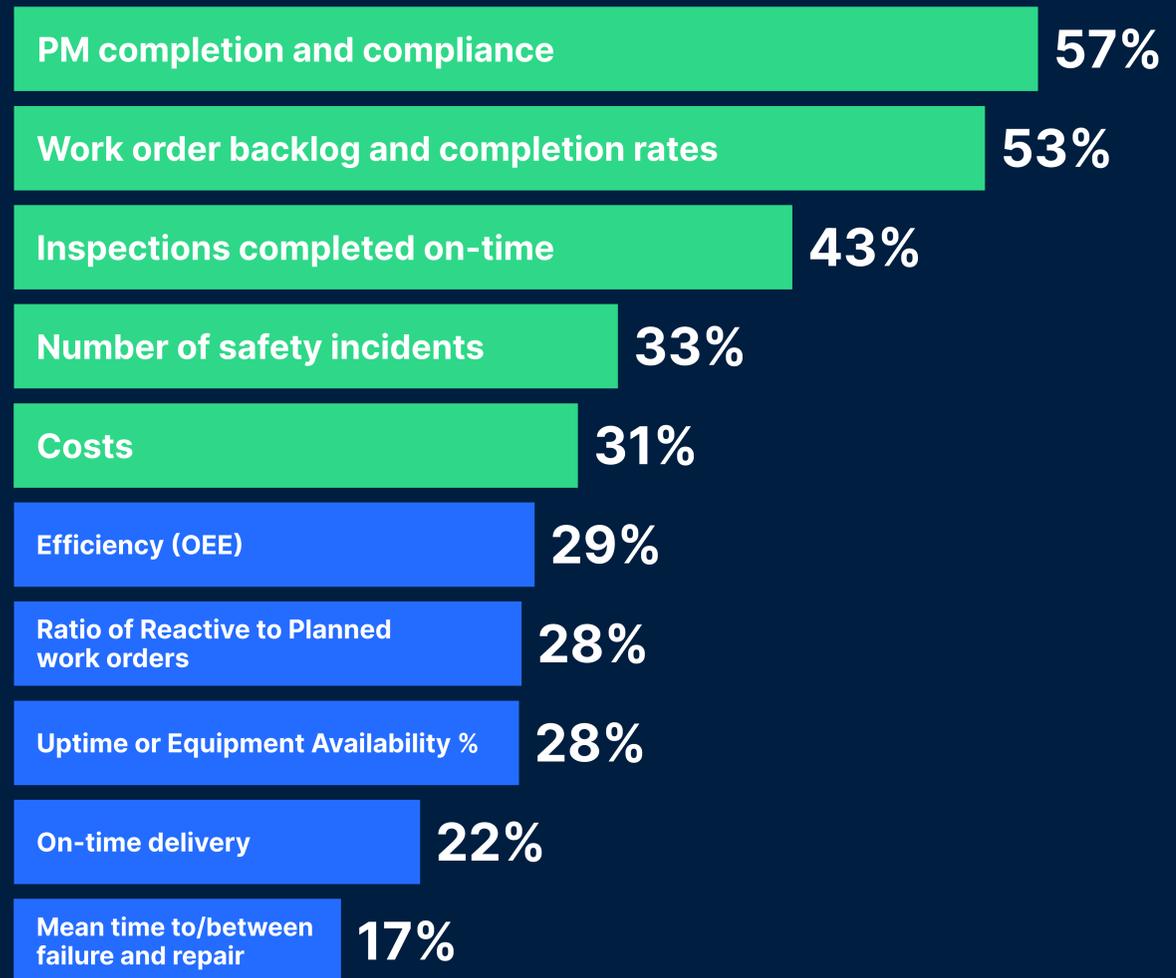
% of facilities, 'Will the size of your maintenance team increase or decrease in the next 12 months?'

Maintenance KPIs

PM completion and compliance and work order backlog and completion rates are the top KPIs for MRO professionals. The focus on PM and work order completion highlights the emphasis on tracking and measuring maintenance execution.

56% of respondents regularly track PM completion and compliance

“PM completion is at the heart of all maintenance programs,” says Woody Rogers. “It measures whether you are completing your PMs or not, and in essence, whether your maintenance program is being executed. If you aren’t performing PMs, you’re putting your equipment and, in turn, your operations at risk. The longer you go without completing the PMs on an asset, the more wear and tear you will see on it, and the more likely you are to run into unexpected equipment failures, downtime, or accidents.”



% of respondents, 'What KPIs do you track on a regular basis? Select all that apply.'

Safety metrics are top of mind for facilities. Inspections completed on time (42.9%) and number of safety incidents (33.3%) rank among the top five most tracked KPIs. Safety incidents can have devastating consequences: on average, a workplace injury can cost more than \$100,000, and the damage to trust and employee morale can be even more significant. Tracking safety metrics helps facilities ensure that they are creating a safe and secure environment for their workforce, remain compliant with OSHA regulations, and minimize the risk of costly accidents, injuries, and potential lawsuits.

Despite its importance, only about a quarter of facilities track the ratio of reactive to planned work orders. This metric compares the volume of reactive work orders to planned ones, revealing the delicate balance between proactive and reactive maintenance efforts.

"If you're going to judge whether a maintenance program is working or not, this is the most important metric to look at," says Christopher Wilcox. "If you constantly have reactive work orders on the same issue for the same equipment without a planned work order, you're missing opportunities to improve performance and save costs. On the other hand, if you're performing numerous PMs but not finding issues, it's time to adjust."

He continues: "For example, let's say you're greasing a chain every week, but each time, you don't find an issue. In this scenario, you should adjust the frequency because you're wasting resources on unnecessary PMs. Ideally, you should have far more planned than reactive work orders, but not so many that you're wasting time and money."

Key Take-Aways

Preventive maintenance is widely implemented but **not fully adopted**:

- **87%** report active use of preventive maintenance.
- However, **59%** dedicate less than half of their total maintenance time to planned maintenance work.
- This gap between intention and action highlights the need for a deeper commitment to proactive strategies that minimize disruptions and maximize asset lifespans.

Skilled labor shortage is the top challenge in improving maintenance programs:

- Due to the skills gap, the manufacturing sector could have **1.9 million** unfilled jobs by 2033.
- This shortage will likely worsen as experienced technicians retire and fewer young people enter the field.
- Facilities use multifaceted strategies to combat shortages, including improved training, strategic outsourcing, and internal talent development.

Maintenance budgets are **expected to increase**, but team sizes to remain stable:

- **38%** expect an increase in their maintenance budget for the next 12 months, indicating increased investment in maintenance.
- However, **52%** report no planned changes to their maintenance team size.
- This suggests a focus on maximizing the effectiveness of existing resources rather than expanding the workforce.

PM completion and work order backlog are the most tracked KPIs:

- **56%** and **53%** of respondents report that they track PM completion and compliance and work order backlog, respectively.
- Safety is also at the top of many MRO professionals' minds, with metrics like inspections completed on time and the number of safety incidents as part of the **top five** tracked metrics.
- Surprisingly, only about a quarter of facilities track the ratio of reactive to planned work orders, despite its importance.

Thriving in Complexity

ACTIONABLE RECOMMENDATIONS

Chapter 3

RECOMMENDATION #1:

Optimize MRO Parts Inventory Management and Turn the Tide on Rising Costs



Leverage data to make **better decisions**

Your gut feeling isn't good enough. Leverage historical usage data to understand part consumption patterns and their potential impact on operations to set optimal reorder points and stock levels.

Given the continued supply chain disruptions, add additional buffers to your inventory so you don't stock out of critical parts.



Forge stronger **supplier relationships**

Reliable suppliers can be the difference between having the parts that you need on hand when you need them or scrambling to find alternatives.

Communicate proactively with suppliers and find ones that deliver high-quality parts, offer competitive pricing, and provide flexible lead times.



Use technology to **supercharge inventory management**

Technology is your ally in times like today. Consider digitizing MRO inventory management with a modern CMMS.

A CMMS tracks parts usage, automates reordering processes, provides real-time inventory visibility, and centralizes the data needed to make better inventory decisions.

RECOMMENDATION #2:

Increase Adoption of Preventive Maintenance to Protect Operations



Analyze past work orders to **uncover new PM opportunities**

Examine historical work order data to identify recurring equipment failures, pinpoint problematic assets, and uncover trends that reveal opportunities to schedule new or improved preventive maintenance tasks.



Invest in **training and education**

Equip your team with the necessary skills and knowledge to perform and complete preventive maintenance tasks.

This may include training on equipment operations, maintenance SOPs, and the use of supporting technology like a CMMS.



Foster a culture of **proactive maintenance**

Lead by example and champion the shift from reactive firefighting to preventive maintenance.

Show how prioritizing planned maintenance can improve equipment uptime, enhance safety, and reduce painful fire drills.



Implement **preventive maintenance software**

Invest in a mobile-first preventive maintenance software solution to reduce cumbersome administrative overhead by automating PM work order generation, scheduling, and tracking

RECOMMENDATION #3:

Invest in Your Existing Workforce to Combat Skilled Labor Shortages



Improve **frequency and quality** of training

Invest in training your existing workforce and equip them with the skills and knowledge required to meet the organization's needs.

Provide on-the-job training, mentorship programs, continuing education opportunities, tuition reimbursement, and technical certifications to enhance their expertise and prepare them for specialized work.



Outsource non-critical, specialized work to **free up wrench time**

Work with reliable, third-party vendors to outsource non-critical, specialized maintenance work like HVAC, electrical, etc. to free up wrench time for critical work that you cannot outsource.



Develop talent internally

Develop programs like structured apprenticeships that combine classroom instruction with hands-on experience to develop the next generation of skilled workers.

Partner with local trade schools and technical colleges to create a pipeline of qualified candidates.



Invest in tools that improve productivity and efficiency

Boost productivity by automating and streamlining cumbersome maintenance processes with modern technology like a CMMS.

It can free up valuable wrench time, allowing your team to focus on what they do best: keeping your operations running smoothly and efficiently.

RECOMMENDATION #4:

Build a Strong Foundation of Operational Data to Unlock Resources and Better Decision-Making



Invest in advanced **data collection tools**

Capture real-time data on equipment performance, condition, and usage with modern technology like sensors and IoT devices. The data you collect through these tools will form the bedrock of your data ecosystem.



Standardize **data collection process**

Develop and implement clear guidelines and processes for data entry and collection. This includes standardizing nomenclature, units of measurement, and data formats to ensure data consistency



Implement a robust **CMMS**

A modern CMMS enhances accessibility, collaboration, and data analysis across your organization. These advanced platforms offer powerful integration capabilities, allowing you to seamlessly connect various data sources and create a single source of truth.



Regularly **audit and clean** your data

Perform regular data audits to identify and correct errors, inconsistencies, or outdated information. A modern CMMS can help you with the audit— anomaly detection automatically flags data anomalies so you can catch the mistake before it gets recorded.

MaintainX