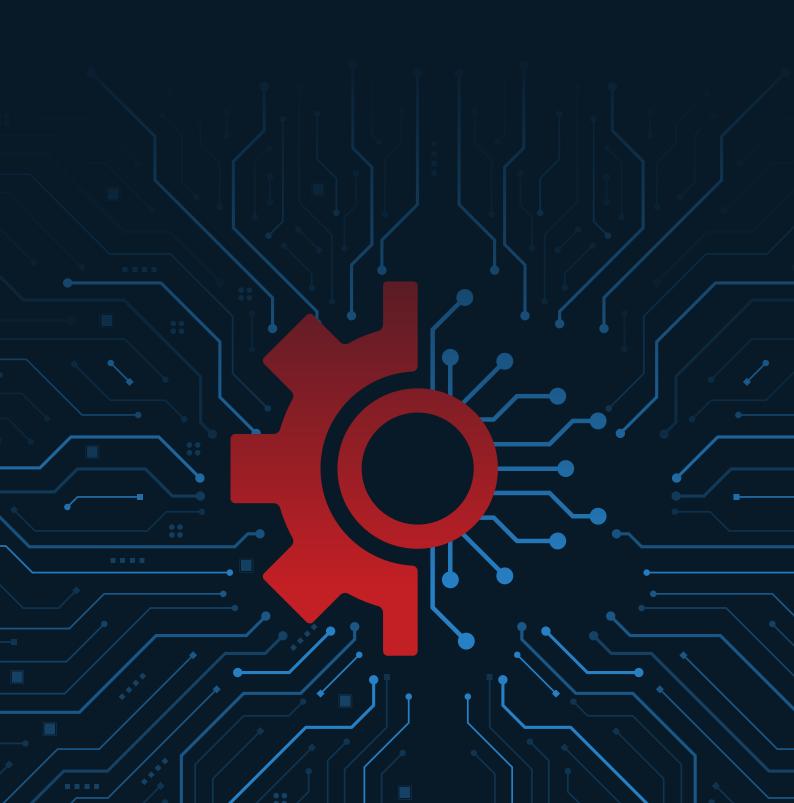
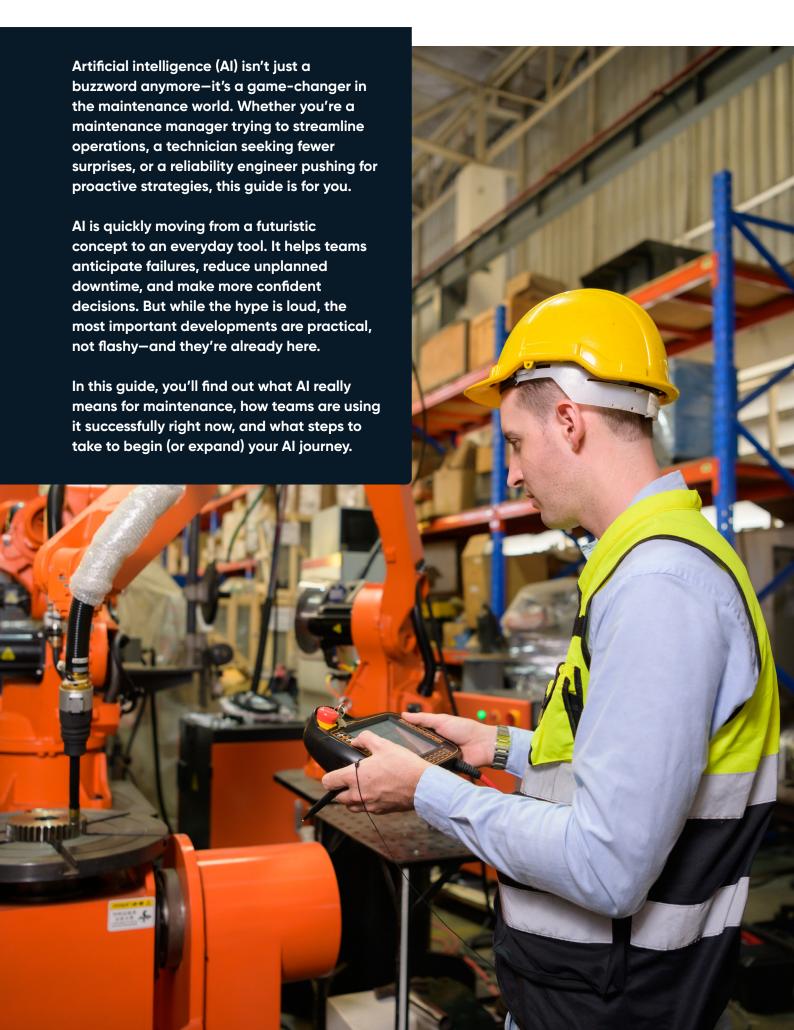


Al in Maintenance:

How to Use It Today—and What's Coming Next









The State of Al in Maintenance in 2025

In today's maintenance environments, AI is already making a meaningful impact by enhancing visibility, automating repetitive tasks, and delivering insights that were once out of reach.

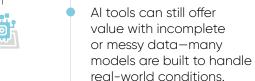
Teams are using AI to detect early warning signs of failure through real-time sensor data, recommend optimized maintenance schedules, and even streamline how work orders are categorized and assigned. AI tools can spot usage trends to help avoid stockouts, surface anomalies in asset performance before they lead to downtime, and enable more natural interactions with maintenance systems through voice or chat interfaces.

These capabilities are no longer experimental—they're built into many modern maintenance platforms and are helping teams work smarter with the data they already have.

Common myths vs. realities

Realities

Al augments technicians, helping them make faster, better decisions.



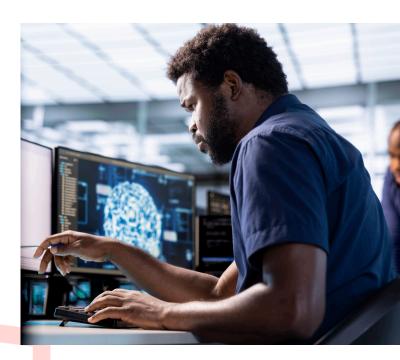
 Affordable, plug-and-play Alfeatures are now available in many modern CMMS and EAM platforms. Al replaces technicians.

You need perfect data to get started.

Al is only for big companies.



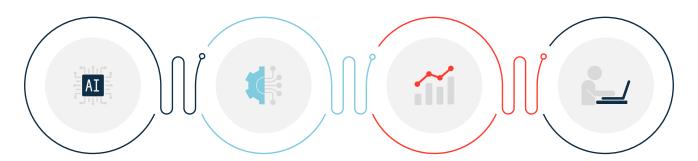
Myths







Key Terms



Artificial Intelligence (AI):

Algorithms that mimic human intelligence to make decisions, learn patterns, or optimize outcomes.

Machine Learning (ML):

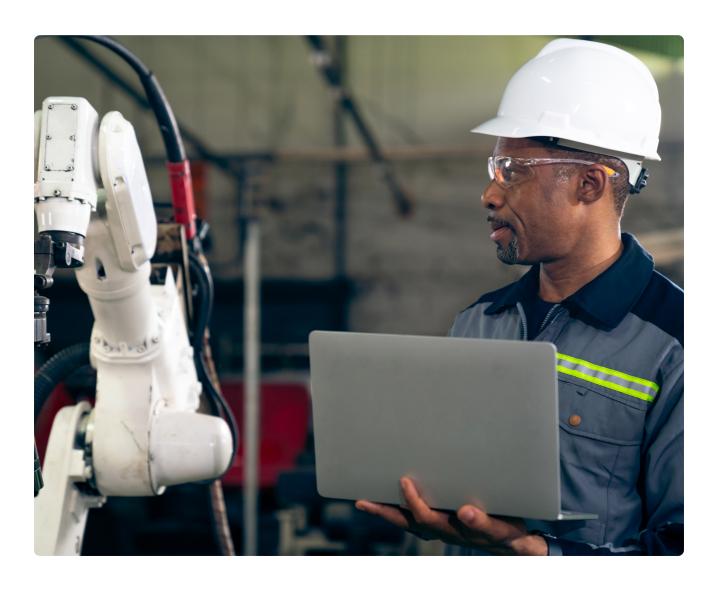
A type of AI that improves performance by learning from data, without explicit programming.

Predictive Analytics:

Using historical and real-time data to forecast future events, such as equipment failure.

Computer Vision:

The use of cameras and AI to "see" and interpret visual information (e.g., corrosion, leaks, or safety hazards).





Practical Ways Maintenance Teams Can Use Al Today

Al is already helping maintenance teams across industries solve day-to-day problems in smarter, faster ways. Here's how it's showing up on the ground—in manufacturing plants, food distribution centers, school facilities, and more.



Predictive Maintenance in Automotive Manufacturing

At a busy auto manufacturing plant, unplanned downtime on the assembly line means big losses—every minute counts.

The maintenance team used to rely on scheduled checks and a lot of gut instinct to catch issues before they escalated. But now, with sensors installed on key equipment like stamping presses and conveyor motors, they've layered in AI to make sense of the flood of vibration and temperature data.

The system continuously monitors each machine, learns what "normal" looks like, and flags when something changes—often well before a human would notice. One afternoon, a press began to show subtle signs of wear. The AI flagged the anomaly, triggering a quick inspection and bearing replacement—preventing a breakdown that could've halted the line for hours.



Work Order Automation in K-12 School Facilities

A school district's maintenance team handles everything from broken heating, ventilating and air conditioning (HVAC) units to playground repairs—and hundreds of requests come in each week.

Before AI, it was tough to prioritize what needed attention first, especially with limited staff. Now, their computerized maintenance management system (CMMS) uses AI to classify incoming requests automatically, tagging them by type, urgency, and even which technician is best suited for the job.

When a teacher submits, "It's freezing in Room 203," the system not only categorizes it as a heating issue but also marks it as high priority and routes it to the technician with the right HVAC certification who's already working nearby.

The result? Faster responses, fewer dropped tickets, and a lot less manual triaging.





Inventory Optimization in Food Distribution

A large food distribution center depends on a well-stocked but lean inventory to keep refrigerated delivery trucks on the road. In the past, parts like refrigeration fan motors or conveyor belts were often either overstocked (taking up costly storage space) or out of stock when they were needed most.

Now, Al reviews historical usage patterns, seasonality (like holiday demand spikes), and real-time equipment health data to forecast which parts are likely to fail and when. When the system notices a pattern of increased wear on freezer units as summer approaches, it proactively recommends ordering replacement compressors before they're needed. This helps the team avoid emergency repairs and overnight shipping costs, keeping everything cold—and on schedule



Asset Performance Monitoring in Commercial Real Estate

A property management firm overseeing dozens of commercial office buildings wanted a better way to track asset performance across locations. With so many HVAC units, elevators, and lighting systems in play, small inefficiencies added up fast.

By integrating Al-powered dashboards, the team now gets real-time insights into equipment behavior across their portfolio. In one case, the system detected a chiller at a midtown building using more energy than normal for similar buildings in the same region. A quick look revealed the chiller was short-cycling due to a sensor issue. Fixing it took less than an hour-but without the Al alert, it might have gone unnoticed for months, racking up energy waste and wear.



Natural Language Interfaces in Utilities

In a regional utility company, field technicians cover large service areas and often work with gloves on, making data entry a hassle.

To reduce time spent fiddling with tablets, the company introduced a voice-activated CMMS assistant powered by Al. Now, when a technician finishes a job at a substation, they simply say, "Mark transformer 3B inspection as complete and note corrosion on the lower casing." The Al logs the update, attaches the technician's note, and schedules a follow-up inspection if needed. This hands-free approach keeps work flowing while making documentation easier and more consistent.



Safety & Compliance in Oil & Gas

During routine inspections at a refinery, safety technicians used to manually review reports and photos to spot issues—a time-consuming and error-prone task.

Today, the inspection photos are uploaded to a cloud-based platform where computer vision and AI analyze each image. In one instance, the system flagged a missing lockout-tagout device on a control panel and a technician not wearing required gloves. These alerts surfaced within minutes, allowing supervisors to intervene before any incident occurred. It's become an extra layer of safety oversight that never blinks—and never gets tired.



The Future of Al in Maintenance

The next generation of Al in maintenance is moving beyond detection to decision-making. Tools powered by generative AI are starting to develop customized maintenance plans, drawing from historical data to recommend schedules, tasks, and parts. Meanwhile, some organizations are beginning to experiment with fully autonomous maintenance, where Al systems trigger work orders, order parts, and even dispatch robots to handle inspections or simple tasksespecially in hazardous or remote environments.

Mobile AI tools will also evolve, offering technicians instant diagnostics, predictive insights, and AR-guided repairs through their phones or wearables. As these capabilities grow, maintenance workflows will become more proactive, more precise, and increasingly data-driven.

Still, the road to adoption comes with challenges. Data quality remains a major barrier—Al can't work with missing or messy inputs. There's also a growing skills gap, as teams need to learn how to use these tools effectively. But instead of replacing technicians, Al is shifting their role. Future techs will focus more on strategic decisions and less on routine checks, using Al as a smart assistant that enhances—not replaces—their expertise.





Getting Started: An Al Adoption Roadmap

Al adoption doesn't have to be overwhelming—and you don't need to be a tech company to benefit from it. What you do need is a thoughtful, step-by-step approach that aligns with your goals, your team's capabilities, and your current systems. Here's how to get started.



Assess Your Readiness

Before jumping into tools and technologies, take stock of where you are today. Ask yourself:

- How digitally mature is your operation? Are you using a CMMS consistently? Are your asset records and work orders complete?
- What kind of data are you already collecting? Do you have sensor data, equipment history, or inspection photos?
- What are your pain points? Is it unplanned downtime, inventory chaos, reactive work, or overloaded technicians?

This self-assessment will help you identify gaps—and more importantly, where Al can deliver real value.



Start with a Clear Use Case

Al works best when it's tied to a focused problem. Instead of trying to overhaul your whole operation, pick one area to improve. Maybe it's reducing downtime on a critical asset through predictive maintenance. Or maybe it's auto-sorting incoming work orders to save time. Pick a use case where you have good data and a clear win.



Choose Tools That Fit Your Workflow

Not every AI tool is plug-and-play, so look for technology partners that understand maintenance. Many modern CMMS platforms now include built-in AI features like anomaly detection, natural language processing, or parts forecasting. If you're already using a CMMS, explore what's available within your current ecosystem—you may already have access to AI features you're not using yet.



Step 04

Build Trust and Train Your Team

Al adoption isn't just technical—it's cultural. Technicians and managers need to understand how the Al works, why it's making certain recommendations, and how it supports (not replaces) their expertise. Provide training not just on how to use the tool, but how to interpret its output. Let the Al prove itself on non-critical assets or low-risk tasks so confidence can grow.

Step 05

Monitor, Measure, and Adjust

Once you've implemented a use case, track the right metrics to evaluate its impact. These might include reduced downtime, faster work order processing, fewer stockouts, or better schedule compliance. Set baseline metrics before starting, then monitor progress over time. Use these results to refine your approach and decide where to expand next.

Step 06

Grow as Your Data Matures

Al gets smarter with better data, so as your team becomes more disciplined with logging work orders, tracking assets, and capturing sensor input, new opportunities will open up. Think of it as a journey—each improvement in your process or data quality unlocks new Al capabilities down the road.



Conclusion

Artificial intelligence isn't just a futuristic concept—it's a practical tool that's already reshaping how maintenance teams work today. From predicting failures before they happen to streamlining work orders and improving safety, Al is helping organizations reduce downtime, optimize resources, and make smarter decisions faster. And while the technology will continue to evolve, the time to start is now. With the right mindset, a clear use case, and a willingness to learn, any maintenance team—no matter the size or industry—can take the first steps toward a smarter, more proactive future.

