



AI + Human Expertise in Predictive Maintenance: How to Get the Balance Right and Empower Your Team to Win





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Introduction People and PdM Tech: Two Parts of a Greater Whole

Today's AI-powered predictive maintenance (PdM) tools are nothing short of revolutionary. They leverage machine learning, smart algorithms, and real-time sensor data to spot equipment issues long before they become emergencies—bringing unprecedented capabilities to the factory floor.

But here's the truth: simply installing smart sensors and dashboards doesn't translate into uptime gains. In fact, 70% of digital transformation initiatives fall short, with many manufacturers struggling to turn predictions into preventive action. You can use AI to identify a trending vibration spike, but it can't interpret context or recommend the right next step.

When vendors leave facility teams on their own, adoption is bound to suffer. A recent survey found that 98% of manufacturers are struggling with data use and related challenges due to poor integration, lack of training, and minimal ongoing support. Solutions sold as “set it and forget it” can become a burden to the team and, ultimately, a missed opportunity.

In this guide, we'll explore how **the best of AI and human expertise combine to make PdM work**—for your team, your assets, and your plant's performance.

If you've ever invested in sensors that didn't deliver, wondered why actionable insights didn't translate into maintenance wins, or struggled with dashboards that didn't serve your team—this guide is for you.

AI-Powered Precision: Enabling Timely, Effective Action

At the earliest stages of failure prevention, AI plays an indispensable role.

Industry-leading AI models are built to detect over 100 distinct failure modes.

These are actionable insights informed by decades of reliability expertise baked into the algorithms. By analyzing billions of metrics across dozens of industries on thousands of assets, AI and machine learning become increasingly accurate and precise over time.

How **expert-trained AI** detects and flags anomalies

For best-in-class predictive maintenance solutions, experts train the AI —so you don't have to.



DATA COLLECTION

High-resolution vibration and temperature data are captured continuously from critical assets.



REAL-TIME DATA TRANSMISSION

Sensor data is securely transmitted to the cloud for immediate analysis, enabling 24/7 monitoring.



AI ANALYSIS

Advanced AI models analyze billions of data points, identifying patterns and comparing them to healthy baselines.



ANOMALY DETECTION

AI pinpoints deviations that suggest early failure indicators such as misalignment, imbalance, or bearing wear.



SMART PRIORITIZATION

AI ranks issues by severity, ensuring maintenance teams focus on the most urgent issues first.

After flagging anomalies, the AI-powered platform ranks risks across assets. Each anomaly is accompanied by visual trend data and is instantly validated by a condition monitoring engineer (CME) so only valid alerts get through to the facility team. The CME then makes prescriptive recommendations to help resolve issues.

Predictive maintenance solutions that pair high-fidelity data capture with intelligent, prioritized recommendations take the guesswork out of maintenance—as long as a *human expert* steers the process.

Why AI Alone Isn't Enough

AI can tell you that something's off. But it can't tell you whether the alert matters in your unique operating environment. It also can't tell you how to address the issue in the most practical, effective way possible.

Without the benefit of timely validation from a human expert, teams are often swamped by condition monitoring data. They develop “alert fatigue,” leading not only to frustration, but also to ignored alerts, missed issues, and time wasted chasing noise. If the PdM tech is more hassle than it's worth, teams may even revert back to firefighting on the production line.

This is why a dedicated CME, working closely with the facility team day to day, is *make or break* for predictive maintenance success.

Dialing into a call center or submitting a support ticket, and having to wait days for a response, won't cut it.

» Fact: AI-powered predictive maintenance systems are only as powerful as the humans and processes that surround and train them.

Pairing every alert with analysis from a dedicated CME means only valid alerts get through. The maintenance team always knows what issues to address, when, and how. The CME becomes an extension of the team—not just interpreting the data, but also supporting root cause analysis and recommending corrective actions based on your specific operations, equipment history, and production priorities.

This is “prescriptive maintenance” in action. And it's how manufacturers across industries are working smarter, not harder, to achieve operational excellence.

How does a prescriptive maintenance process work, exactly?

Keep reading to learn how it can transform daily life at your plant—and equip your team to rack up the wins.

Making AI Work for Your Team, Not the Other Way Around

The best technology doesn't replace your crew—it works for them. Here's how.

Wireless triaxial vibration sensors continuously monitor vibration and temperature, detecting everything from gradual wear to sudden faults. This always-on surveillance is like having extra eyes on every critical asset, even when your team is off-shift.

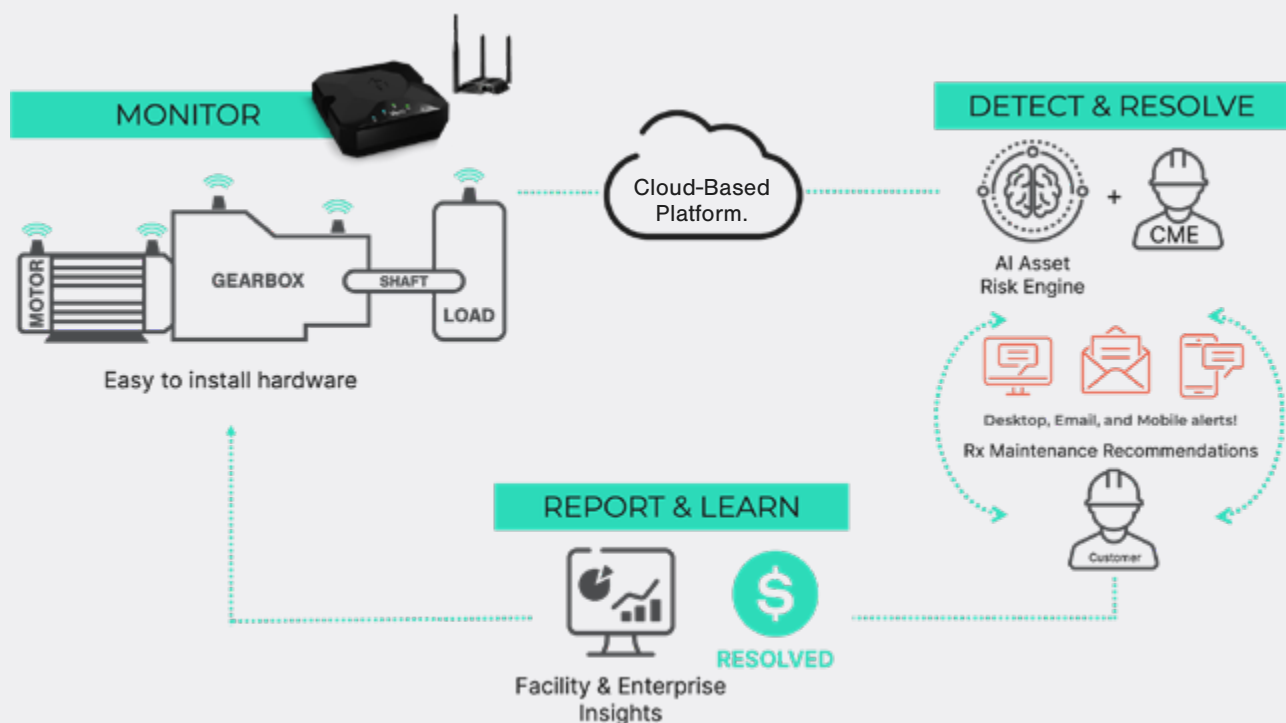
Real-time data is sent directly to a cloud-based AI-powered platform that's trained on more than 200 million machine hours, learning and adapting in real time.

With a seamless CMMS integration and easy-to-use app:

- Your team can view live asset trends and CME-validated alerts at a glance.
- They can communicate with their dedicated CME through preferred channels: CMMS, app, email, or live chat.
- Critical assets are prioritized based on real risk.
- Work orders are automatically logged and tracked to closure in the CMMS.

A FULL-SERVICE CONDITION MONITORING SOLUTION

that combines the power of predictive analytics with human expertise helps maintenance teams get ahead of failures and do more with less.



Dedicated Expert Support: The Real Difference Maker

With a CME in their time zone and guiding them steadily from day one, your team can easily adapt to predictive maintenance technologies. They'll see the value of PdM in asset saves, improved efficiency, and data-driven decision making. This is how you build your team's confidence and secure early buy-in.

With advanced AI and ongoing CME guidance:

- Maintenance managers can confidently schedule downtime based on true asset condition
- Technicians spend less time firefighting and more time executing high-value work
- Leadership sees improved reliability metrics and fewer budget surprises

Over time, maintenance becomes a proactive process. Teams are trained by example, supported by their CME, and encouraged by visible saves.

These asset saves illustrate how the right balance of AI and human support helps facility teams prevent catastrophic losses.





CME outreach and maintenance teams’ timely action prevent costly failures

Mining & Aggregates

High vibration at crusher speed was detected on a cone crusher motor, indicating possible sheave misalignment and/or incorrect belt tension. The facility’s dedicated CME recommended inspecting the sheaves for proper alignment and ensuring proper belt tension. After the customer replaced the motor, belts, and sheaves, vibration returned to normal levels.

RESULTS	Amount Saved	Downtime Prevented
	\$240,000	24hrs

Energy

A sensor on a crusher roll bearing picked up a sharp increase in velocity and acceleration. Vibration patterns suggested a bearing fault. The facility’s dedicated CME recommended inspecting the bearing ASAP by looking, listening, and feeling for abnormalities, as well as checking the auto-lube system for proper function. The bearing was replaced during an outage, resulting in a significant reduction in vibration levels.

RESULTS	Amount Saved	Downtime Prevented
	\$250,000	12hrs



Buyer Checklist: Choosing the Right Predictive Maintenance Solution

From tech capabilities to ease of use to quality of support, the predictive maintenance partner you choose can make or break your program’s success. Your team will either successfully leverage condition monitoring data for maximum uptime and easier workdays, or feel drained and frustrated trying to keep up.

Here’s a checklist to help you evaluate your options, along with questions you can ask to help guide your buying process.



Technology capabilities that fit your team’s real-world needs

Look for a solution that’s easy to implement—no IT headaches, no weeks-long learning curve.

Checklist item	Questions to ask
Triaxial wireless sensors for continuous monitoring of vibration and temperature	• How frequently do the sensors collect data? • Do the sensors offer high resolution at slower speeds, and can the monitoring parameters be tailored to each machine? • Are magnetic-mount sensors available? • Are the sensors built for high performance in harsh operating environments? • Will sensor installation disrupt our operations?
Wireless and self-contained system (no Wi-Fi or IT support required)	• Will we need to involve our IT department for deployment? • Can the system work in remote or hard-to-network areas?
AI that detects 100+ machine failure modes with adaptive learning	• What kinds of faults can your AI detect? • How do you reduce false positives?
Real-time asset risk ranking and anomaly alerts	• How does the system prioritize issues? • How fast will we be notified when a critical asset is trending toward failure?



Human experts supporting your team every step of the way

Choose a partner who delivers ongoing guidance, not just dashboards and a support hotline.

Checklist item	Questions to ask
Dedicated condition monitoring engineer (CME) assigned to your facility from day one	• Will we have one expert assigned to our facility who we can build a relationship with? • Will our CME be based in our area? • How will they stay familiar with our assets and priorities?
Certified experts (CAT III or IV) reviewing alerts and advising on action	• What level of experience do your CMEs have? • Can they support our team in root cause analysis and decision making?
Proactive insight-sharing and maintenance planning	• How often will your team check in or provide guidance without us reaching out first? • How will you help us move from reactive to proactive planning?



Integrations and functionality that make the system easy to use

The best systems fold seamlessly into existing workflows—no extra hoops, no tech headaches.

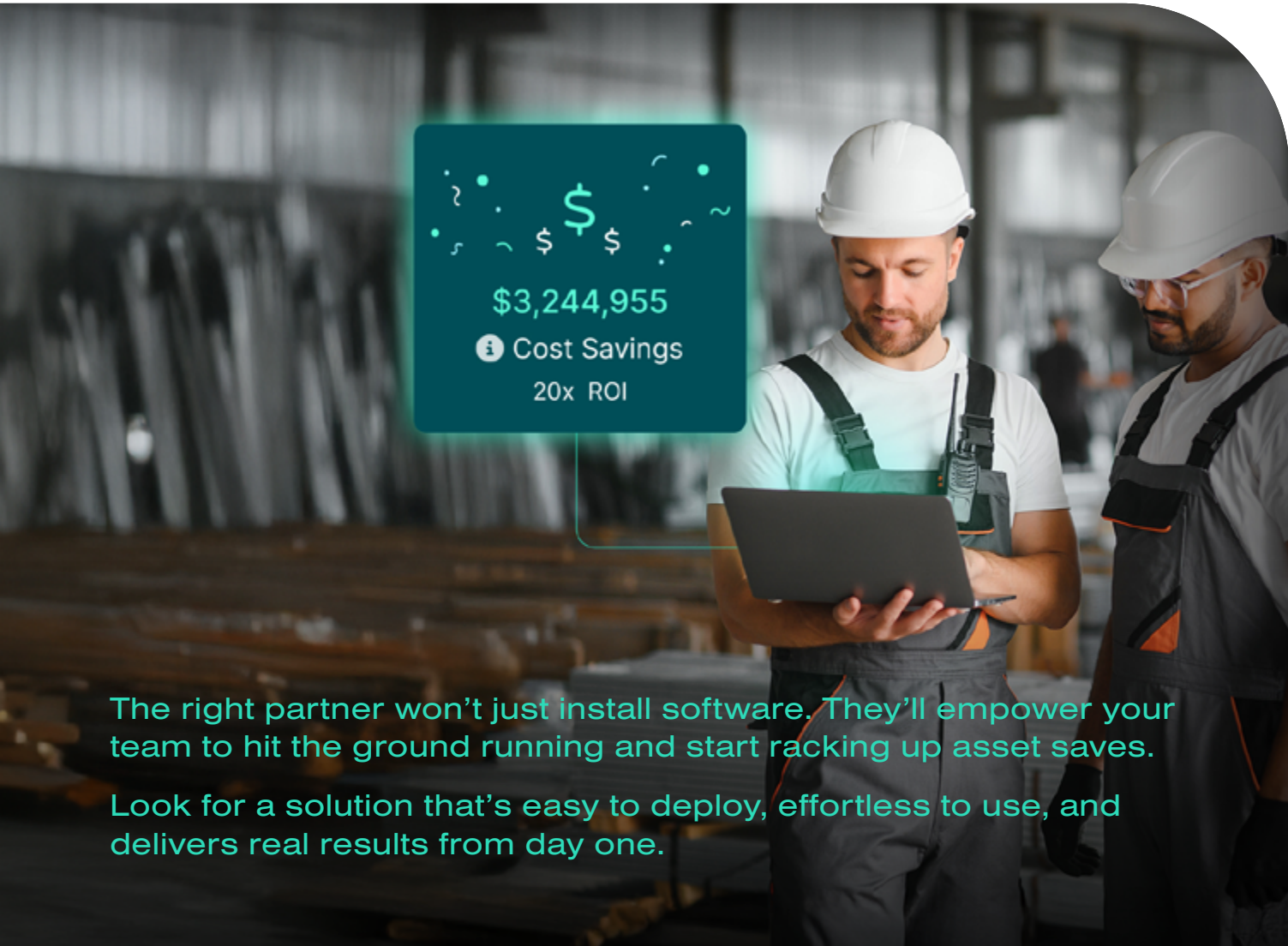
Checklist item	Questions to ask
Full integration with existing CMMS and work order systems	• How does your system integrate with our CMMS? • Can alerts create automatic work orders?
Easy-to-use mobile app with asset history and alert tracking	• Can techs in the field access recommendations and view sensor trends? • Is the app simple enough for all experience levels?
Multi-channel alerts: CMMS, mobile, email, and desktop	• Can we choose how and where alerts are delivered? • Can we control alert frequency?



Business value delivered starting on day one

Don't settle for vague promises. Choose a provider that makes value obvious, fast.

Checklist item	Questions to ask
Clear ROI tracking and documented downtime savings	- Do you help us quantify savings and prove ROI to leadership? - Can you share examples of typical results in our industry?
Subscription-based pricing (no CapEx)	- What's included in the monthly subscription? - Are hardware, installation, site visits, and ongoing support all covered?
Deployment in days—not months	- How long does it take to be up and running? - What's the average time to value for new customers?



The right partner won't just install software. They'll empower your team to hit the ground running and start racking up asset saves. Look for a solution that's easy to deploy, effortless to use, and delivers real results from day one.

Conclusion The Most Effective Predictive Maintenance Program Puts People First

AI is a powerful tool. But predictive maintenance is a people-first discipline.

That's why **PdM should be a partnership**—offering both advanced AI and continuous expert guidance.

Rather than a flurry of alerts, you need timely answers from a human expert. A dedicated CME can help interpret data in your context, guide your team through root-cause analysis, and ensure the system adapts to your unique operations.

When you choose a PdM provider, ask the hard questions:

- Will we have a dedicated expert, or just a support inbox?
- Is the system designed to simplify our work, or complicate it?
- Will our team feel supported, or stuck sorting through raw data?

AssetWatch pairs cutting-edge technology with service that's unrivaled in the industry. You'll have advanced AI combined with a CME who knows your plant. And most importantly, your team will have the confidence and clarity they need to win.



Schedule a free expert consultation and see how easy it is to get started. Let's talk about your operational goals and how we can help you fast-track adoption and ROI.