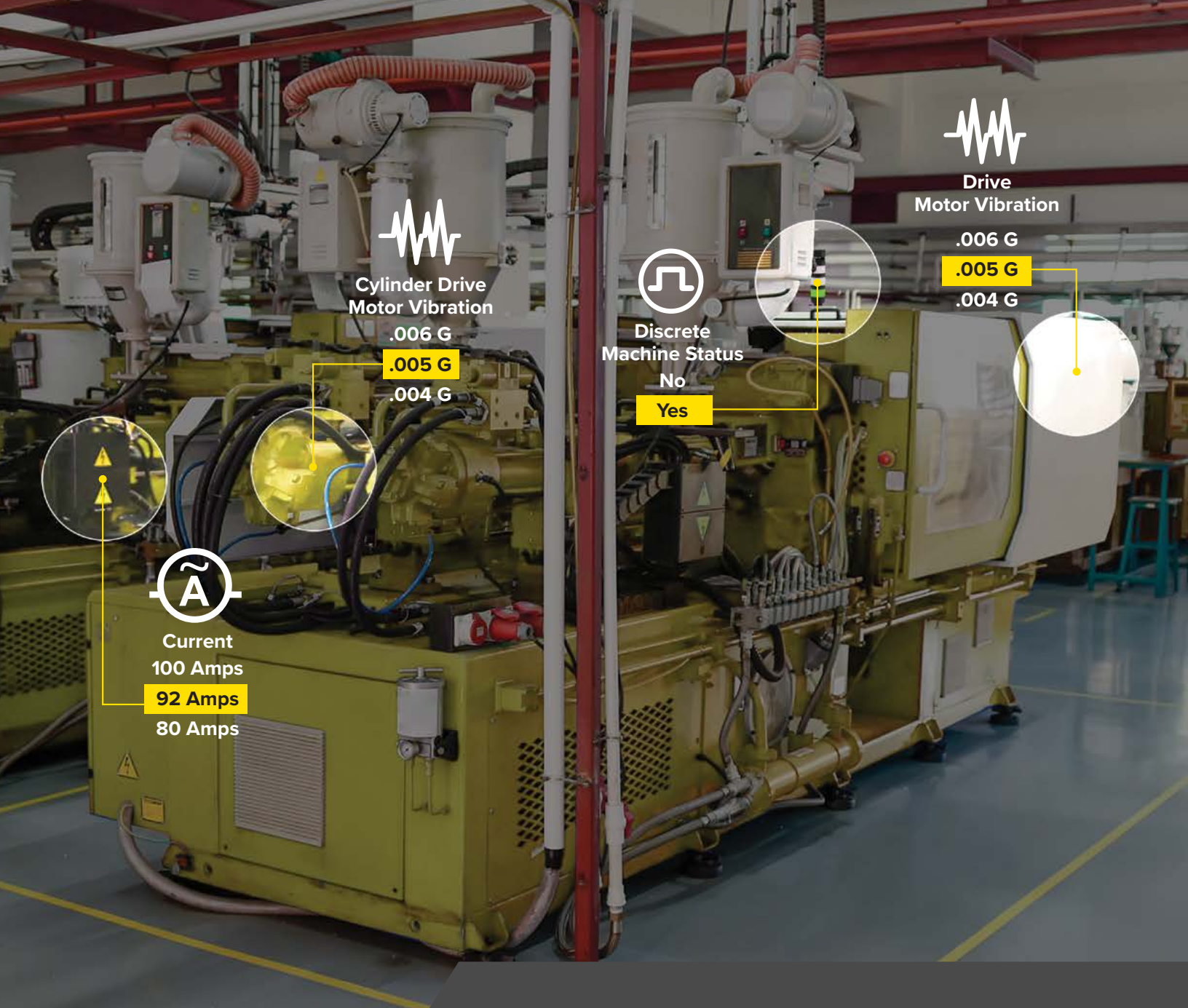




5-Step Guide to Implementing a Predictive Maintenance Program



So you've heard good things about data-driven organizations, and you believe data can help your maintenance operations. Maybe you've heard that these organizations realize more cost reductions than non-data-driven ones, are more likely to retain customers, or are significantly more likely to be profitable.

You know that capturing data from your assets can help you reduce unplanned downtime, and you're thinking about moving to a predictive maintenance program. But maybe you're not quite sure how to evaluate your operation or where to begin.

This simple guide will help make it easier to implement a predictive maintenance program by breaking down the process into five key steps.

5-Steps to Implementing a Predictive Maintenance Program

- 1** Identify process equipment that could contribute to downtime
- 2** Prioritize your equipment's need for predictive maintenance
- 3** Determine what metrics need to be gathered to get the insights you need
- 4** Choose a vendor
- 5** Get started



1 Identify process equipment that could contribute to downtime

Think through your process to identify production equipment and also include any ancillary equipment to your process.

As an example, a plant might have:

- a conveyor that moves raw materials into a production area
- several presses or molding machines that process raw materials
- compressors that provide air to various pneumatic actuators or tools
- fans used for ventilation

Any piece of equipment that could contribute to downtime should be added to the list. All of these machines may be critical to production and must be considered for condition monitoring as part of a predictive maintenance (PdM) program.

Knowledge of downtime comes from your maintenance team, operations personnel, shift leads, and beyond. Tap key personnel from these groups to weigh in on this process.

Once you've created your list, the next step is the most critical: prioritizing each machine's need for monitoring.



2 Prioritize your equipment's need for predictive maintenance based on:

Criticality: Prioritize equipment that is critical to the production process or has a significant impact on product quality, safety, or environmental compliance. The failure of such equipment can lead to costly downtime, lost production, or potential hazards.

Failure history: Analyze the historical failure data and maintenance records of the equipment to identify machines that frequently experience breakdowns or require extensive repairs. These assets are good candidates for PdM as there may be an opportunity to reduce maintenance costs and improve reliability.

Maintenance costs: Consider the maintenance costs associated with each piece of equipment, including labor, spare parts, and downtime. Equipment with high maintenance costs may benefit from PdM, as it can help optimize maintenance activities and reduce expenses.

Age and condition: Older equipment or machines in poor condition are more likely to experience failures and may benefit from a PdM program. However, if the equipment is nearing the end of its useful life or is due for replacement, investing in PdM for the aging machines may not be cost-effective.

Equipment complexity: Is the equipment difficult to access? Is it difficult to maintain? Complex equipment with multiple components and subsystems can benefit from PdM, as it can help detect issues in specific parts before they lead to system-wide failures.

Replacement Parts: Some machines have an exceptionally long lead time to get replacement parts. Are your machine's spare parts readily available? How much lead time is required to procure them? If you carry these parts in inventory, how much space do they occupy? Rank the machine's need for PdM considering if spare parts are inexpensive and easy to source; if they're either expensive or have a longer lead time; or if they're both expensive and have a long lead time.

[Click here to try our free Predictive Maintenance Asset Scoring Template](#)



3 Determine what metrics need to be gathered to get the insights you need

Condition monitoring equipment can be used to gather a range of metric data, such as vibration, temperature, current, pressure, humidity, tank level, and more. There are many other types of metrics you can capture, and a wide range of sensors to do so.

Monitoring vibration tells you when a motor or other rotating asset is healthy and running as expected or when its health is declining, revealing need for intervention. Temperature increases outside acceptable parameters is a good indicator the asset is in the later stages of degeneration and needs prompt attention to avert a problem. And monitoring an asset that is drawing more current than it's supposed to tells you either the asset itself needs maintenance, or an upstream or downstream component is malfunctioning, putting added stress on the asset.

Using vibration, temperature, and current sensors, Banner's VIBE-IQ data monitoring program develops baselines during normal running conditions and tracks performance trends over time. This process can detect gradually degenerating bearings and other rotating components early by tracking, analyzing, and reporting changing vibration, temperature, and current levels: all key indicators of asset health.

Data from these sensors allow advanced notice for corrective maintenance scheduling, reducing the possibility of asset damage and unplanned downtime.



4 Choose a vendor

Banner Engineering offers the most comprehensive line of products available for predictive maintenance. This portfolio of products include a range of sensors, controllers, software, and associated equipment to monitor rotating assets. And it has the expertise, flexibility, and capability to customize solutions to each customer.

The fastest way to get started with PdM is to employ a Banner [Asset Monitoring Gateway with SNAP ID](#) (which accepts wired sensors) or a Banner [Asset Monitoring Gateway with CLOUD ID](#) (which accepts wireless sensor node(s)) and which delivers information directly to the cloud using Banner's [Cloud Data Services](#). The monitoring solutions automatically recognize an array of compatible sensors to measure vibration, temperature, humidity, differential pressure, tank level, and almost any other asset parameter, from new or old machines.

These are scalable condition monitoring solutions that offer real-time insights about the operation and performance of facility assets. The gateways help companies make informed maintenance decisions to increase productivity, save energy, and improve uptime.

A single Asset Monitoring Gateway with SNAP ID can connect up to 20 devices, and a single Asset Monitoring Gateway with CLOUD ID can connect up to 40 devices. The gateways eliminate the need for programming by automatically recognizing each sensor, knowing what data it's able to share, and scaling the data into easily understood units (like PSI and amps, instead of milliamps or volts).



5 Get started

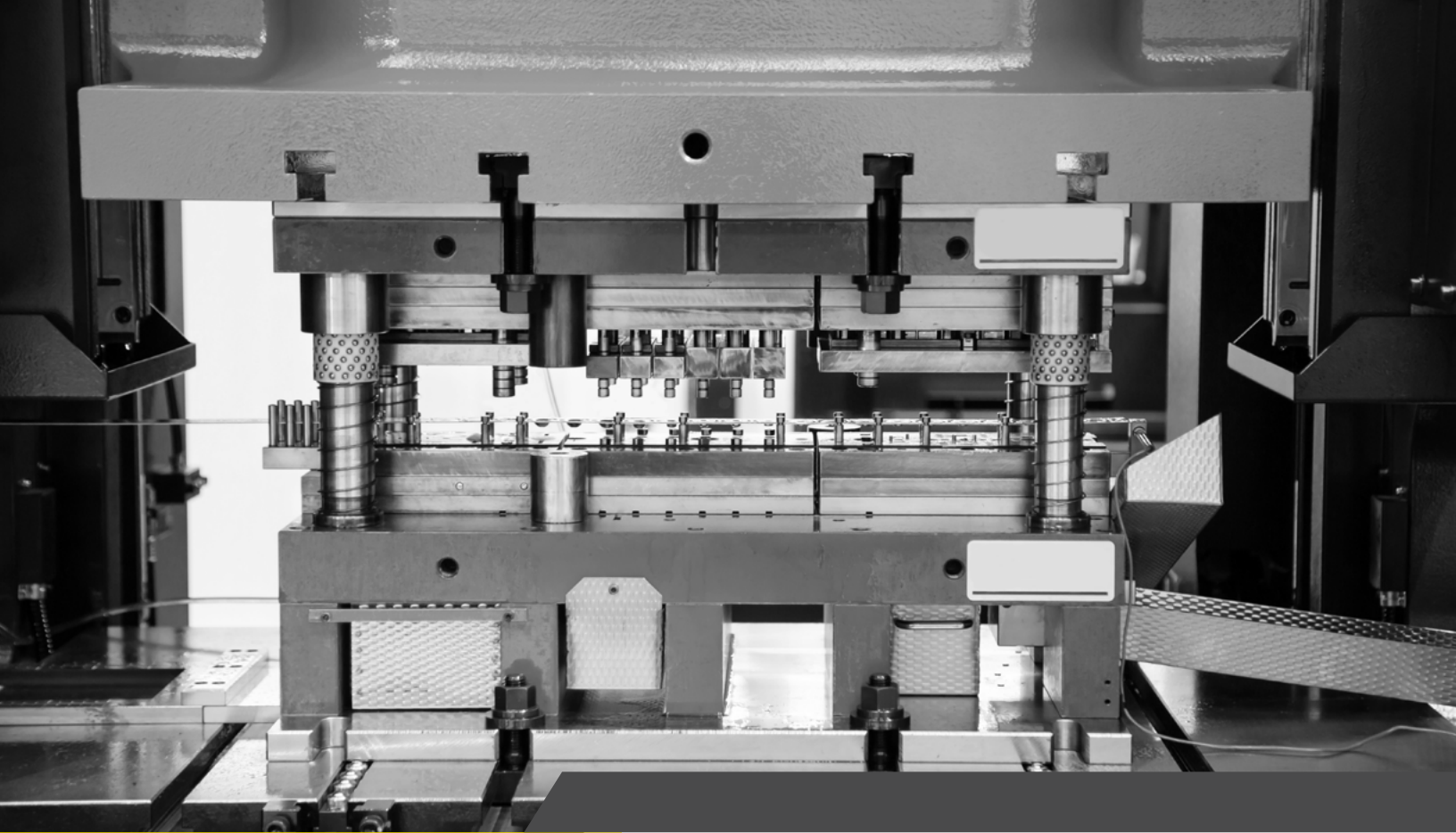
You should consider a long-term vision of predictive maintenance for your operation but start with a small pilot to prove the monitoring system's function and value. Try monitoring a single asset critical to your operation—preferably one with a history of maintenance problems. This allows you to test and validate the effectiveness of your program on a manageable scale.

Banner monitoring gateways were created to simplify and streamline the deployment of IIoT solutions into your plant. Cost-effective and simple to install, these gateways are designed to begin collecting data and providing value on the first day of installation.

You can set up your entire end-to-end condition monitoring solution in a few simple steps: install sensors on your equipment, add power, pair sensors to gateway, and activate the data services. Once you create an account to connect your cellular radio, data immediately starts being pushed to the cloud. A simple setup on Banner's [Cloud Data Services](#) (CDS) gives you access to dashboard tools, so you can see for yourself as the sensors immediately begin to collect data. Banner's CDS makes it easy to create alert levels and automate email warnings for problems with your assets and production lines. Watch a brief how-to video and get other installation-and-setup resources [here](#).

After the gateway is installed and collecting data, the process of expanding the solution is as simple as adding more sensors. This allows facilities to scale quickly and grow their predictive maintenance program.

By starting small, users can mitigate risks, learn valuable lessons, and scale quickly to achieve the benefits of predictive maintenance across their organization.



Helping maintenance and reliability professionals deliver peak productivity, Banner Engineering designs and manufactures condition monitoring products ranging from turnkey solutions to a full suite of products that can be tailored to specific needs. Backed by more than 55 years of experience, Minneapolis-based Banner is an industrial automation industry leader with more than 10,000 products, operations on five continents, and a worldwide team of more than 5,500 employees and partners. Our dedication to innovation and personable service makes Banner a trusted source of smart automation technologies to customers around the globe.

For more information about a Predictive Maintenance Program, please visit [bannerengineering.com](https://www.bannerengineering.com).



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