

Condition-Based Maintenance

CBM is based on the monitoring of equipment performance and control of corrective work orders taken as result. Data parameters are continuously collected, trended and analyzed for early failure symptoms. Thresholds are set to trigger corrective actions in the CMMS system. Eliminate unscheduled downtime through routine care of critical equipment to improve efficiency and productivity for a positive bottom line and healthy intercompany workflow.

“The basis of predictive maintenance is condition monitoring. Without constantly checking a machine’s operating status and tracking its tendency for degradation, it is impossible to make a precise predictive maintenance plan.”

—Hai Qiu and Jay Lee, ReliablePlant

Condition Monitoring covers

Vibration Analysis

Predictive maintenance of gearboxes with multiple rotating components such as gears, shafts and bearings reduces the amount of reactive maintenance. Periodic readings are recorded and evaluated by maintenance personnel and compared with a baseline vibration spectrum. When recorded wear reaches a pre-defined level, the bearing component is scheduled for replacement before equipment failure can occur.

Suitable for all production environments and equipment, MAINTelligence™ interfaces with a wide variety of portable and online vibration data collection devices.

Features include: analysis tools such as harmonic and sideband cursors, signal post-processing tools, and customizable alarms (overall, spectral and narrow band, envelope) and fault frequency overlays (bearings, gears, blades, belts, electrical) for each vibration point.

Lubricant Analysis

Routine predictive maintenance for analyzing oil health, oil contamination, and machine wear. Lubricant analysis indicates if maintenance action is required in order to extend the oil life for optimal machine efficiency.

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MAINTelligence™, the world's leading system for lubricant analysis, offers complete control over the sampling cycle. From generating sample bottle labels (complete with bar codes and NFC tags) to electronic import of your sample results, the system interfaces with all major lubricant testing laboratories and many popular on-site sampling instruments.

Ultrasonic Analysis

Overall plant maintenance is achieved through ultrasonic analysis. Avoid downtime by discovering machine malfunctions before they become an issue by detecting microscopic changes in friction forces. This larger window of opportunity for scheduled maintenance reduces costs and downtime.

Thermography

Detect heat patterns and track temperatures of electrical and mechanical components to efficiently identify differences or "hot spots" due to wear or looseness. Thermography allows technicians to perform maintenance on only the electrical components that need attention, eliminating manual inspection.

With the help of MAINTelligence™, you can import infrared and visible light images from infrared cameras directly into the system and manage thermographic data along with other PDM data.

Motor Monitoring

Evaluate motor conditions, prioritize corrective measures, and schedule maintenance downtime prior to equipment failures.

Motor monitoring allows for data-driven decisions about when to replace an asset after evaluation of its performance, operating and remediation costs. Motor Monitoring is performed while the machine is operating, minimizing system disruptions.

Deferring Condition Monitoring risks higher repair costs and new equipment expenditures.

CBM is crucial for a productive, cost-effective and competitive plant.

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“Ultrasonic leak detection is recommended by entities such as the U.S. Department of Energy as the best method for detecting the location of leaks in order to minimize energy waste and improve plant efficiency.”

—R.P. Naik, ReliablePlant

“...the ability to distinguish high temperatures in rotating equipment, especially motors, allows maintenance organizations to apply highly effective predictive and preventive strategies. This is because a thermal image makes immediately clear what part of the motor is overheating, and to what extent.”

—R. James Seffrin, EfficientPlantMag

“A well-orchestrated predictive maintenance program will all but eliminate catastrophic equipment failures. We will be able to schedule maintenance activities to minimize or delete overtime cost.

We will be able to minimize inventory and order parts, as required, well ahead of time to support the downstream maintenance needs. We can optimize the operation of the equipment, saving energy cost and increasing plant reliability.”

—US Department of Energy Report

Condition Based Maintenance BENEFITS

- Increased productivity uptime
- Increased production throughput
- Increased asset life expectancy
- Reduced cost of asset repairs and failures
- Minimized occurrences of unexpected equipment failure
- Improved equipment reliability and performance
- Improved maintenance management
- Improved worker and employee safety
- Improved environmental impact

Condition Based Monitoring CHALLENGES

- Implementation challenges can occur due to initial organizational resistance
- Initial time investment for employee training

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- Initial monetary investment and CMS maintenance fee
- Determining the best APM system for your plant

How CBM Benefits Outweigh the Challenges

Condition Based Maintenance is simply the most efficient form of plant maintenance available. Initial implementation costs and time investments are outweighed by long-term benefits: Decreased overhead costs, safety risks, and downtime due to unexpected system malfunctions and equipment failure

CBM is highly effective in industries where safety and reliability play a crucial role in plant operations such as the paper industry, manufacturing, oil and gas, etc.

Regular equipment health checks ensure repair and replacement occurs with minimum impact on production and the facility schedule. This results in improved equipment performance and lower operating and outage costs, leading to more efficient and cost-effective plant operations in the long run that far outweigh the roll-out costs.

Potential operator resistance to the new system will give way to a healthier company culture once the significant reduction in work orders prove a benefit. Regular machine maintenance and advanced warnings with planned repairs will replace unforeseen breakdowns, improving workplace safety. This will allow more time for identifying areas that require improvement in equipment performance, plant efficiency, and maximum productivity.

CBM is based on collecting and analyzing data to better identify trends in asset performance.

This allows for informed decisions on scheduling, repairs and budgeting. While condition based maintenance relies on technology and automated systems, the success of its implementation in the organization depends on employees and their ability and willingness to use the system.

In order to eliminate user errors and increase reliability throughout the process, it's vital for your maintenance team to be trained on CBM and to learn the benefits of an optimal CBM program. This training process will have a positive ripple effect through the organization as a whole through an empowering effect on employees, providing them with an opportunity to take ownership of their plant's equipment and maintenance.

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Some CBM software solutions are better for certain organizations than others.

In order to choose the best solution for you, consider:

- Does the technology interface with existing ERP/CMMS systems?
- How easy is it to implement?
- How easy is it to train employees to use the software?
- Is there a support team readily available to help you through the implementation process, as well as through the ongoing problems that might rise?

Asking the right questions is crucial in finding a system that will accommodate your specific needs. Every company is unique and your goal is to make sure the software you pick suits your plant operations.

The MAINTelligence™ platform can be installed on a rugged handheld device, a mobile phone or a tablet, and can be integrated with most data-management systems. Its intuitive nature and easy-to-use operating system is well-respected in the industry.

Our support team is there to help you all the way from implementation to day-to-day operations. Contact us if you have any further questions, or book your demo today.