

Real-time Vibration Balancing Provides Another Piece to the Plant Asset Management Puzzle

By David Clayton



Keywords

Plant Asset Management, Condition Monitoring, Vibration Balancing

Summary

Real-time vibration balancing is a technology that allows manufacturers to correct imbalances in rotating machines automatically during operation. Integration of real-time vibration balancing with Plant Asset Management (PAM) and Condition Monitoring (CM) solutions extends the breadth of these solutions beyond real-time monitoring and analysis to incorporate automated real-time corrective action, thereby increasing production up-

Integration of real-time vibration balancing with Plant Asset Management (PAM) and Condition Monitoring (CM) solutions extends the breadth of these solutions beyond real-time monitoring and analysis to incorporate automated real-time corrective action, thereby increasing production uptime, optimizing equipment life, and maximizing asset availability.

time, optimizing equipment life, and maximizing asset availability. Real-time vibration balancing solutions have potential applications across a broad range of equipment and industries ranging from traditional process plants, to machine tool shops, to aerospace production floors. Through real-time vibration balancing, Boise Paper Solutions reduced production interruptions and extend equipment life, saving the company an estimated \$87,000 annually.

Analysis

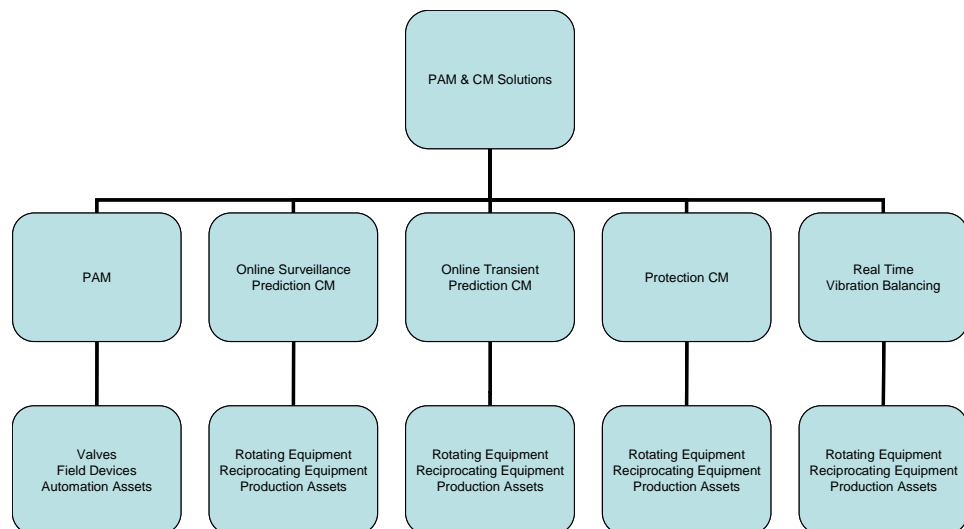
Real-time vibration balancing solutions incorporate a group of balancers that are permanently fixed on a rotating shaft and surrounded by a stationary coil. By continuously monitoring critical rotational machinery, real-time vibration balancing solutions identify and report pending balance problems and automatically reposition counterweighted rotors located inside rotating balancers to bring the equipment back in balance. Real-time vibration monitoring solutions also store imbalance history and past bal-



ance correction data to provide detailed vibration analysis including spectrum and signature studies.

Real-time Vibration Balancing Solutions Augment Existing PAM and CM Solutions

Integration of real-time vibration balancing with Plant Asset Management (PAM) and Condition Monitoring (CM) solutions extends the breadth of these solutions beyond real-time monitoring and analysis to incorporate automated real-time corrective action. Where traditional PAM and CM solutions stop at diagnosing pending equipment failures, real-time vibration balancing solutions take the next step and automatically take corrective action, thereby increasing production uptime, optimizing equipment life, and maximizing asset availability.



Real-time Vibration Balancing Augments Traditional PAM and CM Solutions

Traditional PAM and CM systems supply raw data to in-house experts who analyze the data and make recommendations regarding each asset's health. With the reduction of manpower and loss of technical knowledge, however, manufacturers' needs have grown. Manufacturers increasingly need PAM and CM solutions that go beyond providing reams of raw data, which are capable of pinpointing problem areas and offering appropriate solutions. More intelligent PAM and CM solutions are critical for manufacturers to have the necessary level of maintenance and operating decision support with fewer in-house experts. Real-time vibration balancing solutions not only provide customers appropriate solutions to avoid impending equipment failures, they go as far as to undertake corrective action automatically to avoid equipment failure proactively.

Applications for Real-time Balancing Solutions Exist Across a Broad Range of Industries

Real-time vibration balancing solutions have potential applications across a broad range of equipment and industries. Scheduled and unscheduled production downtime due to equipment vibration is a common problem facing manufacturers from the traditional process industries to machine tool builders, and aerospace companies. In each of these industries, equipment is used that periodically must be shut down and rebalanced to avoid unnecessary vibration and prevent equipment damage. Within the traditional process industries, real-time vibration balancing solutions are applicable for use on compressors, fans, and generators. Within the machine tool industries, real-time vibration balancing solutions are applicable for use on high-speed grinders, lathes, milling machines, and drilling machines. Real-time vibration balancing solutions are also applicable for use on variable pitch propellers, which are often used in aerospace applications.

Even in the best case scenario, when a pending equipment failure is averted through proactive condition monitoring, scheduled downtime to rebalance rotating machines can cost manufacturers days of production uptime each year. In some industries, production downtime due to unbalanced rotating equipment alone can make the difference between a profitable and unprofitable year. By incorporating real-time vibration balancing solutions, manufacturers across all these industries can significantly improve their bottom line by reducing unnecessary downtime and easing equipment through critical intervals during start-up after necessary shutdowns.

Boise Paper Solutions Reduces Production Interruptions and Increases Equipment Life through Real-time Balancing

Boise Paper Solutions is a major manufacturer and distributor of uncoated free sheet papers, containerboard and corrugated containers, newsprint, and market pulp. Due to high levels of vibration caused by continual build-up of calcium carbonate on a large induction fan, the company's Wallula, WA plant was averaging 2.5 unscheduled shutdowns per year at a cost of \$33,000 to \$35,000 each in lost production, makeup lime, and maintenance costs.

Lord's RealTime Balancing System paid for itself in six months.

Downtime associated with having to go off-line for unscheduled shutdowns was significantly affecting Boise Paper Solution's profitability, prompting the company to seek out a solution to minimize production down time as well as wear and tear on fan bearings. In 2003, the company

installed Lord's RealTime Balancing solution on a large induction fan for a Lime Kiln. Boise Paper Solutions chose to install Lord's RealTime Balancing solution due to its unique ability to automatically make rapid balance corrections online and withstand the harsh environment surrounding the lime kiln fan. Through its use of Lord's RealTime Balancing solution, Boise Paper Solutions has significantly reduced production interruptions, while extending the life of its equipment. According to Boise Paper Solutions, Lord's RealTime Balancing system paid for itself in six months, even before taking into account the savings due to less equipment wear and tear. In addition, production supervisors now have little worries about the fan and can perform daily functions without the hassle of unscheduled shutdowns.

Recommendations

- Manufacturers involved in applications utilizing rotating equipment should take a close look at the effect production downtime due to equipment vibration has on their bottom line. Many manufacturers consider production downtime to balance rotating equipment as a necessary part of the production process. The evolution of real-time vibration balancing solutions, however, give manufacturers a means of significantly reducing production down time associated with vibration by automatically monitoring and correcting equipment imbalances in real-time during operation.
- Real-time vibration solutions should be viewed as an extension to existing PAM and CM solutions that allow manufacturers to take the next step beyond automatically monitoring rotating equipment health to automatically performing corrective action during operation, significantly reducing production downtime.
- Suppliers of PAM and CM solutions should pursue product and alliance strategies that deliver an integrated solution capable of going beyond providing raw data and incorporating intelligent recommendations or automatic corrective action.

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