

Impact Detection



The PeakVue trend provides operators with a simple yet conclusive way to verify when a machine is in good condition and provides early warning of developing problems with an indication of severity.

Cutting Through the Complexity of Machinery Analysis

New Technology

Traditionally, vibration data has not been routed to the control room because it required specialized training—and frequently specialized tools—to extract any information from the data.

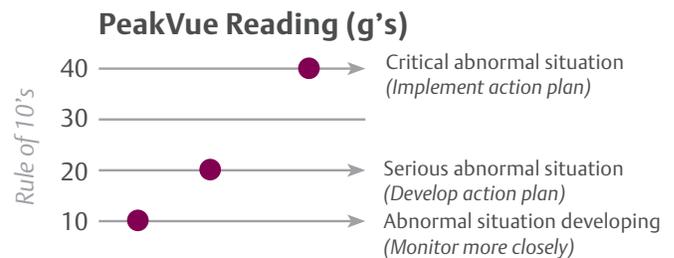
Emerson's PeakVue technology cuts through the complexity of machinery analysis to provide a simple, reliable indication of equipment health via a single trend. PeakVue filters out traditional vibration signals to focus exclusively on impacting, a much better indicator of overall asset health on pumps, fans, motors or any other type of rolling element bearing machine.

Simple Interpretation

As a measure of impacting, PeakVue readings are much easier to interpret. A good machine, properly installed and well lubricated, should normally not have any impacting on it. This establishes the zero principle:

The PeakVue measurement on a good machine should be at or close to zero.

As common machinery faults begin to appear on rotating equipment (e.g. rolling element bearing defects, gear defects, insufficient lubrication, or pump cavitation), the PeakVue reading typically can be evaluated using the Rule of 10's:



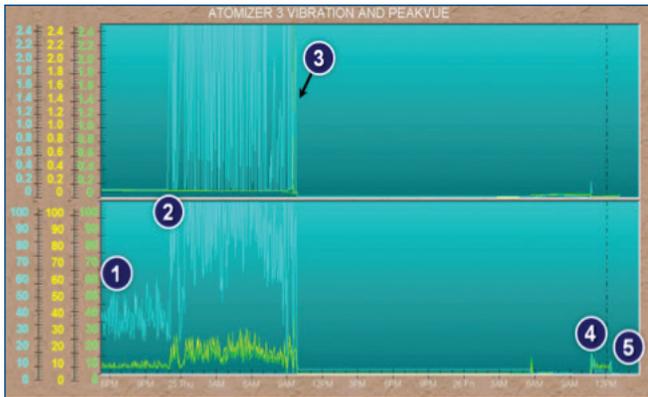
Bringing Reliability to the Control Room

With these simple principles, PeakVue is a powerful tool to bring reliability to the control room. Operators with no special training in machinery diagnostics can use PeakVue measurements quickly and easily to determine both when a piece of rotating equipment is healthy and when an abnormal situation is present.

Conclusive Analysis

Once an abnormal situation has been identified using the PeakVue overall, detailed diagnostic information can be extracted from the PeakVue waveform or spectrum to determine the exact nature of the defect. PeakVue can visualize distress signals on a machine that are simply not visible with other vibration measurements. Earlier indication of developing defects facilitates optimum maintenance planning and minimizes the impact on production.

Impact Detection



The PeakVue trend makes it possible for operators to discern machine health without any specialized training.

Improving the Dialogue between Operations and Maintenance

A power plant had been experiencing continued problems on an atomizer, with frequent bearing failures about every three months. Finding a solution called for a collaboration between operations and maintenance.

Operations Makes the Call Based on PeakVue

The power plant installed an Emerson transmitter on the atomizer and included PeakVue technology. At the point of start-up indicated in the graph (area 1), the overall vibration readings (indicated by green line) were all below acceptable levels. In contrast, the PeakVue readings on one bearing (blue line) were already ranging from 30 to 40 g's—indicating that a critical bearing fault was likely already in play.

Six hours later, around midnight, the vibration at this bearing location (area 2 of graph) shifted dramatically. The PeakVue levels rose sharply to above 100 g's, while the overall vibration level jumped suddenly from baseline to nearly ten times the fail-alert level. Both of these changes indicated that the bearing was in the process of failing. The control room communicated with maintenance planning to schedule maintenance for the following morning and continued to monitor the machine closely.

By about 9 am, the overall vibration level (area 3 of graph) on an adjacent bearing suddenly increased sharply from baseline level to about ten times the fail-alert level. At this point, operations made an immediate call to shut down the process.

Operations Makes Another Call Based on PeakVue

The defective bearing was replaced, and the machine was scheduled for start-up the following morning (area 4). The operator, familiar with PeakVue's Zero Principle, noted that the machine was running at nearly 10 g's at start-up. He contacted maintenance and asked them to check out the machine. As a result of the PeakVue warning and the operator's prompting, the maintenance team discovered the root cause of the repeated failures on this machine: the grease fitting was clogged. As a result, when they lubricated the bearing, only a fraction of the grease actually made it to the bearing.

The maintenance team cleaned the grease fitting, reapplied lubrication, and as expected, the PeakVue readings dropped below 1 g (area 5). The same asset that had previously failed every three months for more than a year has now been running for more than two years without incident.

This step change in reliability was made possible by the ability of the control room to view and interpret the machine condition and then function as an extra set of "eyes" for the maintenance group.

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