



UTTER PRECISION, INC.

The Next Generation in Reliability

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Vibration Case Study on a

Precision CNC Machine

Situation Specifics

- Small manufacturing company that builds fans
- Bought the VSA-1215 for vibration issues due to engineering changes on equipment in the field
- Started hearing sounds in one of their CNC machines used to make fan hubs
- They took vibration readings and emailed them to me while I was at another facility. I analyzed the data on my Treo and emailed back the condition and recommendations

Machine Operator Taking Data



The Machine operator with minimal training was able to take readings.

The owner of the company then emailed the data to me from his computer while I was another facility taking vibration readings.

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Me Analyzing the Data Elsewhere

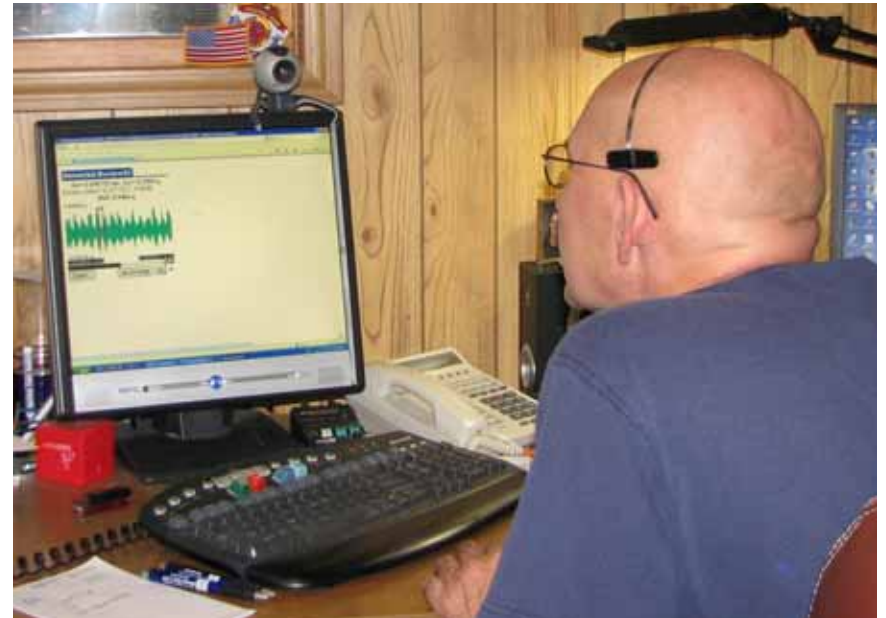


Using the SiteConnex™ software on my Palm Treo, I received the Data and was able to analyze the condition of the bearing on both the spindle and the motor driving the CNC machine.

I then took a screen shot showing the issue and attached that to a return email stating the condition and giving repair recommendations so that a timely repair could be performed before the equipment failed.

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Owner Reviewing Emailed Analysis

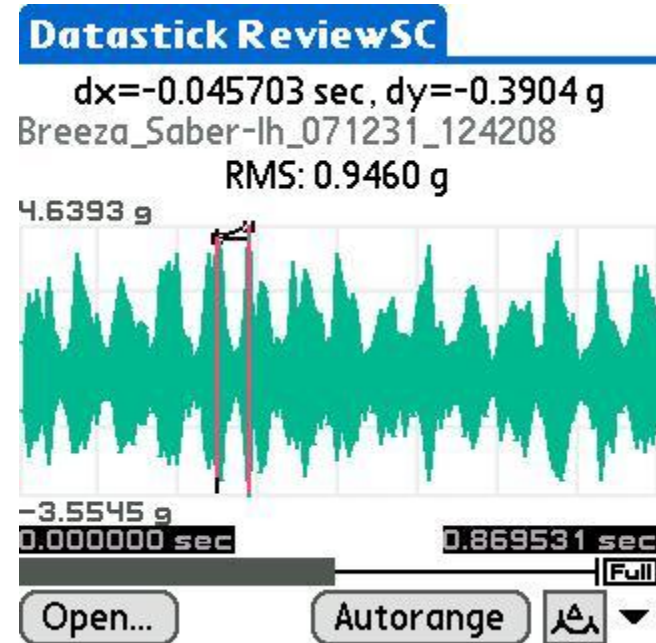
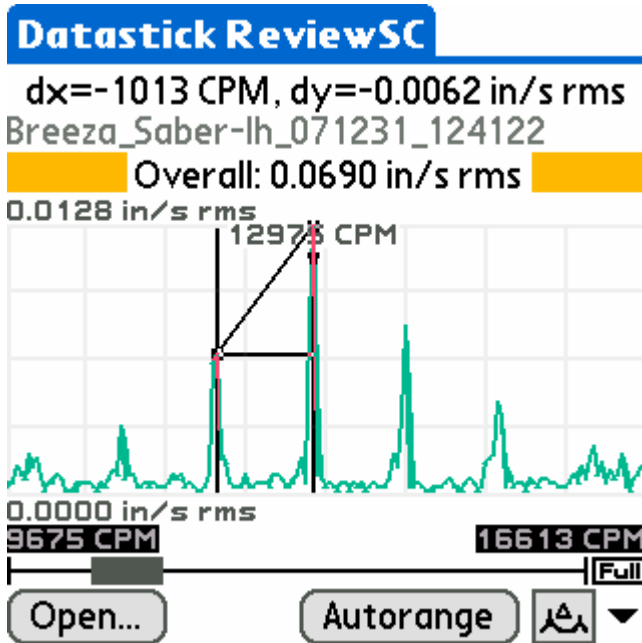


The owner of the company received my email back in less than 15 minutes from sending it to me and was able to not only read my recommendations but also see the facts by viewing the screen shots.

Now with the DRS Viewer I could have just sent back the suspect readings and he could open it within Excel.

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Actual Analysis From Treo



Vibration Data at 12975CPM is the Inner Race Bearing Fault of the Lower Bearing. The Cursor in the spectrum shows the turning speed side banding present. Impacting of greater than 7Gs at this slow of a speed shows the issue is severe.

Replace the spindle bearings ASAP.

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Bearings When Pulled



This is the condition of the spindle bearings after removing them. The coolant line had ruptured and purged all of the bearing grease out of the bearings. The coolant also continued running and caused the contamination and rust to develop.

Vibration Data After Repair

INSPECTION POINT TREND REPORT

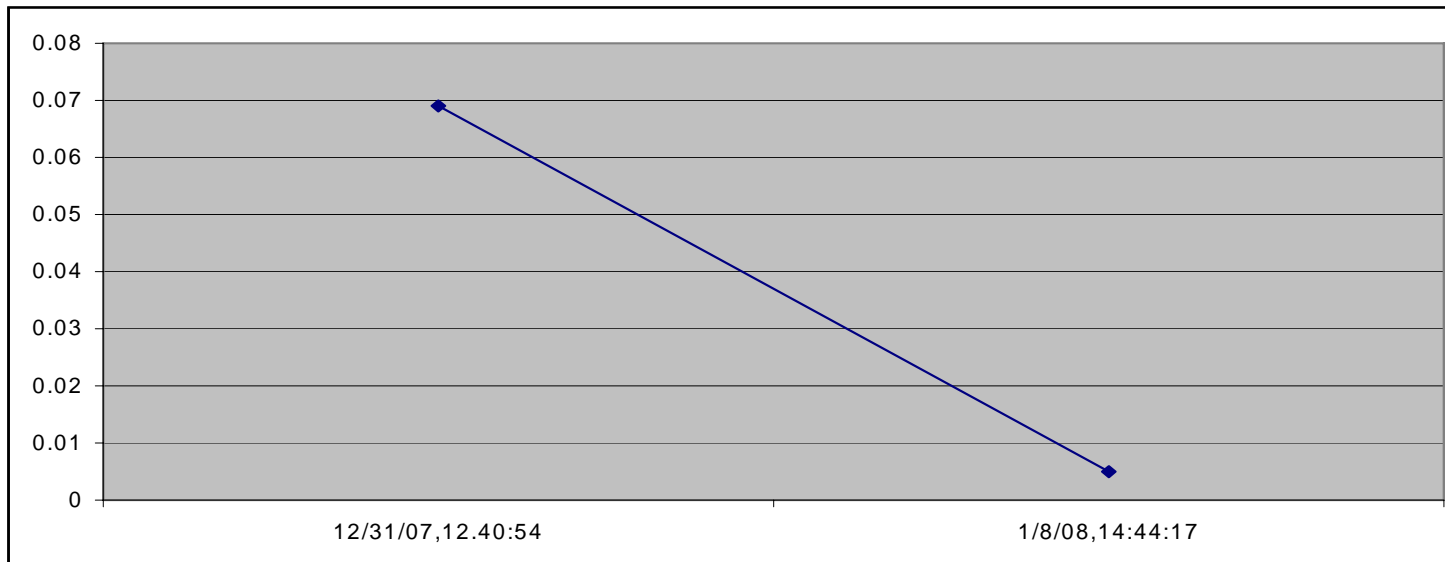
of Breeza Saber-lh

(starting with measurement dated: [12/31/07,12.40:54](#))

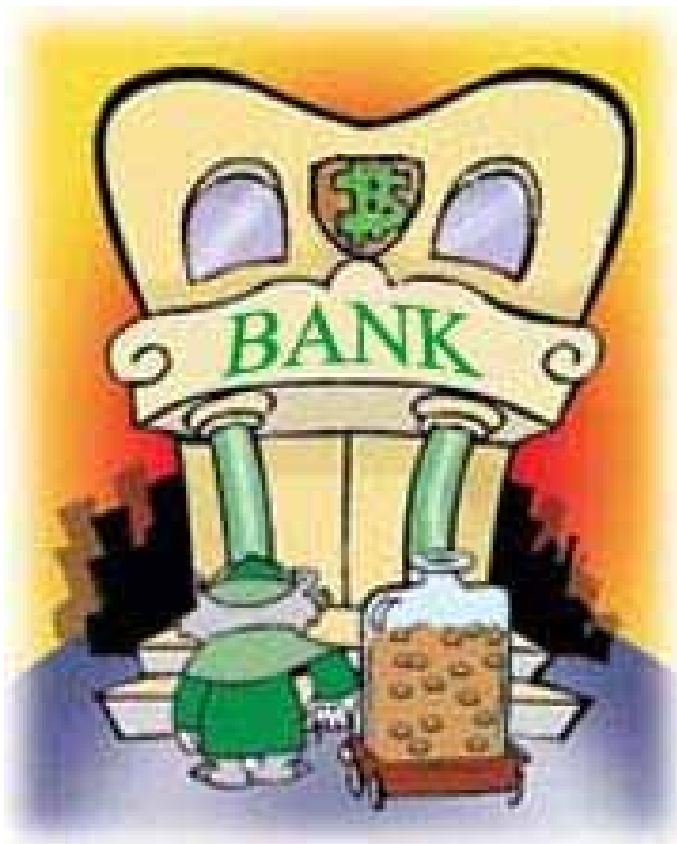
user: UPI001 device: VSA-1215 channel: Saber-lh
mode: Frequency to 60000CPM, Hanning, Velocity

<u>Date/Time</u>	<u>Value</u>	<u>Units</u>	<u>Severity</u>
12/31/07,12.40:54	0.06903	in/s rms	OK
1/8/08,14:44:17	0.004968	in/s rms	Normal

After the repairs there was a 92% decrease in the Overall Vibration Levels on the lower spindle bearing.



These are the Calculated Savings for being able to tell the repair company exactly what the problem was instead of them having to figure it out by tearing the machine apart and possibly changing out the wrong part.



- 1 Extra Day to Troubleshoot where the problem was = \$1,600
- 1 Extra Day of Travel to Retrieve Parts after Troubleshooting = \$1,600
- 2 Extra Days of Downtime for that Machine = \$9,040
- 2 Extra Days Downtime for the Facility Due to Parts Back Up = \$12,000

Total Savings = \$24,240