HI-SPEED INDUSTRIAL SERVICE QualiTest® Diagnostics

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November 7, 2023

Jay Giannini
Blake & Pendleton
Bartlett, TN

Jay,

The following is a summary of findings from the Air Compressor vibration survey that was performed at MS Silicone on November 3, 2023.

QualiTest® uses a four step rating system for defects.

CLASS I: Defect is present, but effect on reliability is not clear; no immediate action is required. Continue to normally monitor.

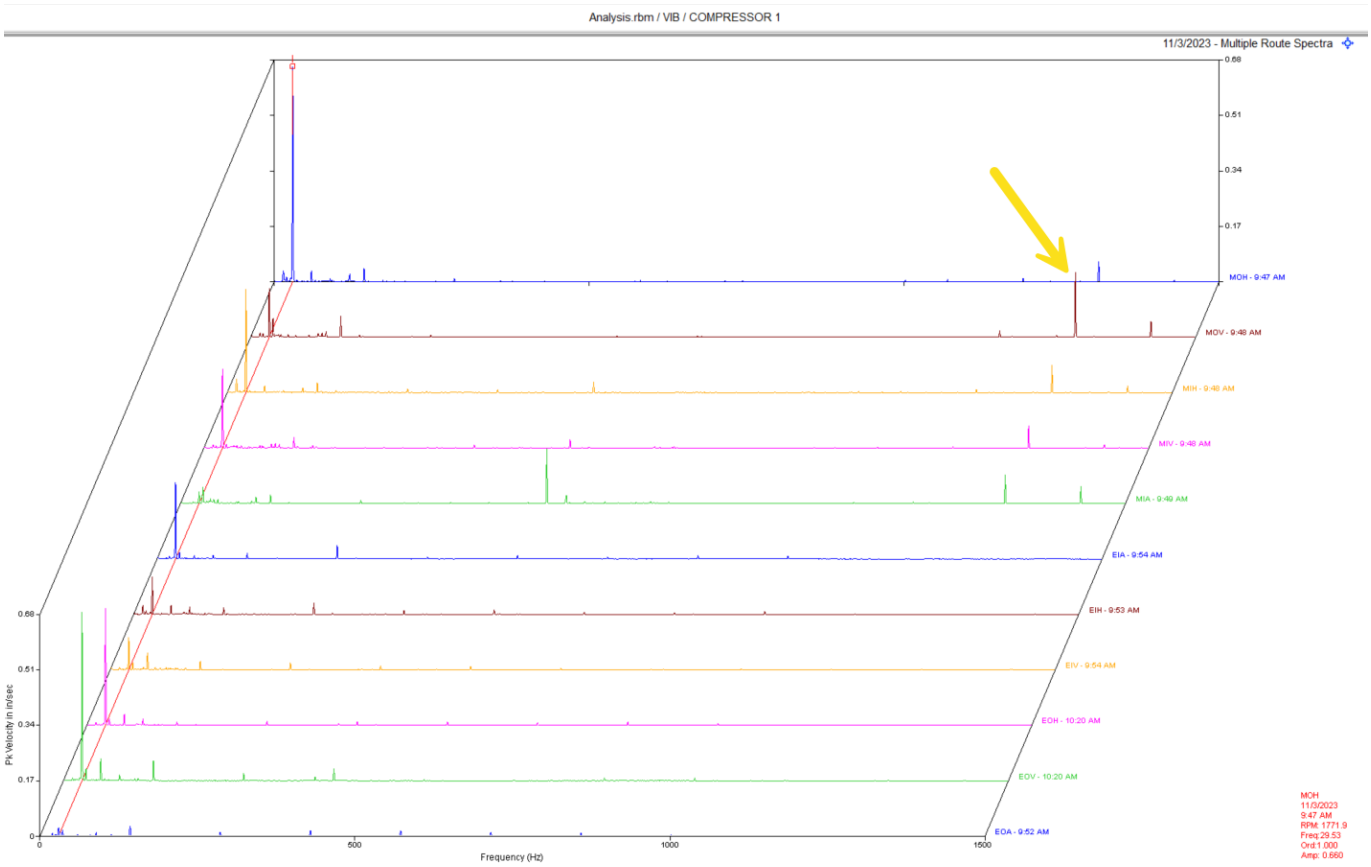
CLASS II: Defect (s) present that may cause problem in long term (2-6 months). Repair during normal maintenance scheduling. Continue to monitor.

CLASS III; Defect (s) present that may cause failure in short term (less than 2 months). This should be addressed as soon as practical, with a high maintenance priority. Increase monitoring frequency.

CLASS IV; Defect (s) present that makes continued reliability unpredictable, and possibility of secondary damage is high. Repairs should be made ASAP. An unscheduled shutdown should be considered for repairs

Defect Summary

South Air Compressor **CLASS II**



Observation:

Multipoint spectra above is the motor and the compressor. Notice the large peak in the lower end of the motor spectra. This is 1 x motor rpm. The other large peak in the MOV spectrum is marked with the arrow. This peak is likely rotor bar pass frequency. Compressor spectra also shows a high 1 x input shaft rpm vibration.

Recommendation:

A few issues were found during our assessment of this unit. The first issue found was a soft base condition that may be contributing to the high 1 x rpm vibration. The skid is not mounted very well to the concrete. While taking data in monitor mode, we stood on the skid and the vibration dropped from .5 to .4 ips-pk. This may be the effect and not the cause. We locked the unit out and performed a shaft run out check of the compressor section. Shaft was found to be within tolerance at .002" run-out. We then performed a lift check of the compressor shaft and found around .008" lift. This seems excessive as typical clearance should be around .0025-.0035". This could cause some high 1 x rpm vibration. We also checked the alignment with the unit hot and found .010" offset and angularity misalignment. Our spec is .002-.003" for 1800 rpm machines. We also found some wear of the coupling element that is causing some slack in the coupling hubs.

The rotor bar pass frequency peak in the motor data along with a high 1 x rpm vibration can sometimes be caused by rotor bar issues in the rotor. This is not as common as the other issues we found, but still could be suspect. For now, we recommend determining what the max shaft clearance is on the input compressor shaft. Air end may need to be

replaced due to excessive shaft movement. We also recommend to anchor the base down better, replacing the coupling element, and performing a hot alignment of the unit. If vibration persists, then the rotor could be the issue. Further vibration/electrical testing can be performed to help determine the rotor condition.

Abbreviated Last Measurement Summary

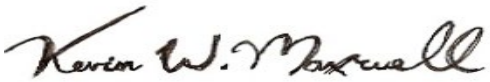
Database: Analysis.rbm
Area: ANALYSIS

MEASUREMENT POINT	OVERALL LEVEL	HFD / VHFD
COMP-1 - COMPRESSOR 1		(03-Nov-23)
	OVERALL LEVEL	1K-20KHz
MOH	.707 In/Sec	1.571 G-s
MOV	.288 In/Sec	3.296 G-s
MIH	.357 In/Sec	1.568 G-s
MIV	.274 In/Sec	1.141 G-s
MIA	.225 In/Sec	1.691 G-s
EIA	.257 In/Sec	.911 G-s
EIH	.143 In/Sec	.651 G-s
EIV	.134 In/Sec	.799 G-s
EOH	.387 In/Sec	.874 G-s
EOV	.562 In/Sec	1.024 G-s
EOA	.069 In/Sec	1.010 G-s

Clarification Of Vibration Units:
Acc --> G-s RMS
Vel --> In/Sec PK

As always, it has been a pleasure to serve Blake & Pendelton. If there are any comments or questions, do not hesitate to contact us.

Sincerely,



ISO Certified Vibration Analyst, Category III

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