



QualiTest® Diagnostics

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May 9, 2024

Tracy Irving
Bio-Energy Development
Memphis, TN

Tracy,

The following is a summary of findings from the Chiller vibration survey that was performed on May 9, 2024.

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.

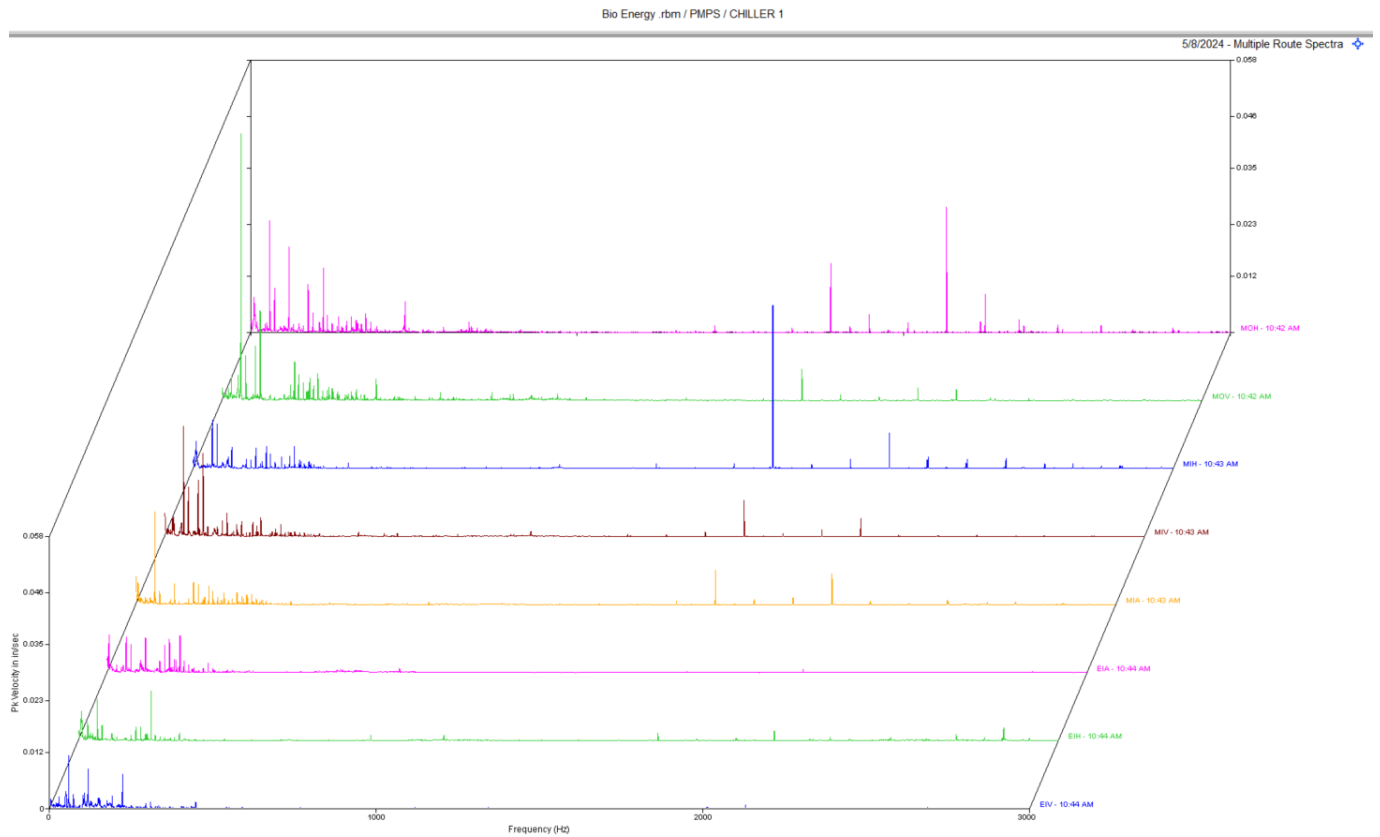
CLASS III: Defect (s) present that may cause failure in short term (less than 2 months). This should be addressed as soon as practical, with a high maintenance priority. Increase monitoring frequency.

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

Hi-Speed Industrial Service tests and inspects industrial machinery and equipment and makes recommendations concerning maintenance and repairs based on its experience in the field of industrial repair and maintenance. The information contained herein is provided as an opinion only, not as a guaranty or warranty of the matters discussed herein.

Data Summary

Chiller 1 CLASS I



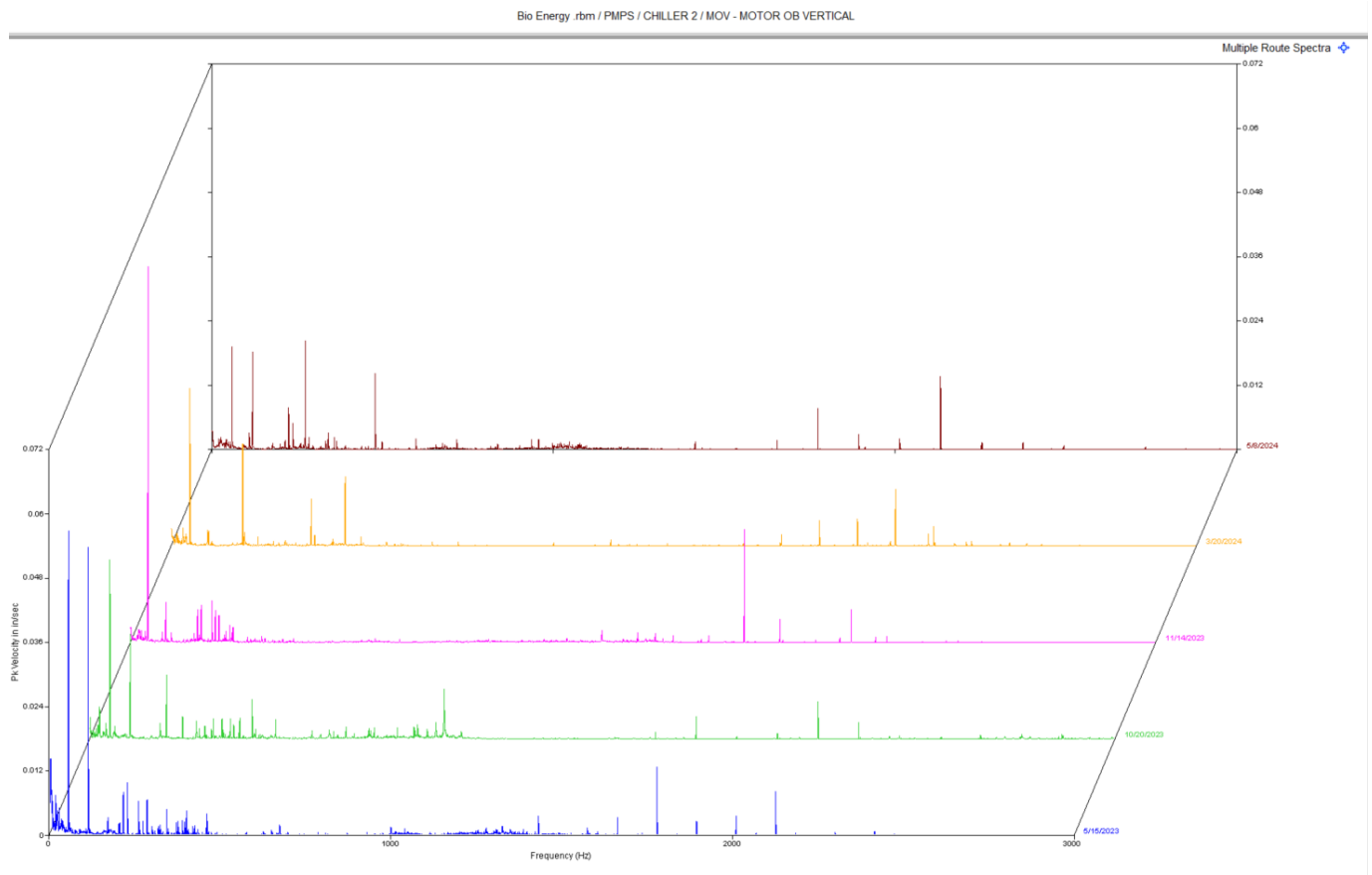
Observation:

There is a vibration peak at 30 x rpm which may be rotor bar pass frequency if rotor has 30 bars. Some sidebands of 2 x line frequency can also be seen.

Recommendation:

This motor was recently reconditioned. Overall vibration is low, but there is some evidence of slight rotor eccentricity or air gap variation between the rotor and the stator. The motor was also under minimal load compared to Chiller 2. We recommend collecting more vibration data with motor under at least 70 % load to see if this vibration changes any based on load.

Chiller 2



Observation:

Vibration data shows low amplitude vibration at 30 x rpm (similar to Chiller 1 but lower amplitude and very small sideband activity). Overall amplitude of motor and chiller points are all under .1 ips-pk.

Recommendation:

No recommendations are necessary at this time. Continue to monitor as normal.

Abbreviated Last Measurement Summary

Database: Bio Energy .rbm


MEASUREMENT POINT -----	OVERALL LEVEL -----	HFD / VHFD -----
CHILLER1 - CHILLER 1		(08-May-24)
	OVERALL LEVEL	1 - 20 KHz
MOH	.057 In/Sec	.873 G-s
MOV	.077 In/Sec	.195 G-s
MIH	.044 In/Sec	.860 G-s
MIV	.043 In/Sec	.227 G-s
MIA	.029 In/Sec	.258 G-s
EIA	.026 In/Sec	.280 G-s
EIH	.023 In/Sec	1.207 G-s
EIV	.025 In/Sec	.115 G-s
CHILLER2 - CHILLER 2		(08-May-24)
	OVERALL LEVEL	1 - 20 KHz
MOH	.040 In/Sec	.557 G-s
MOV	.047 In/Sec	.435 G-s
MIH	.034 In/Sec	.597 G-s
MIV	.051 In/Sec	.171 G-s
MIA	.021 In/Sec	.179 G-s
EIA	.026 In/Sec	.070 G-s
EIH	.054 In/Sec	.456 G-s
EIV	.026 In/Sec	.110 G-s

Clarification Of Vibration Units:

Acc	-->	G-s	RMS
Vel	-->	In/Sec	PK

As always, it has been a pleasure to serve Bio-Energy Memphis, TN. If there are any comments or questions, do not hesitate to contact us.

Sincerely,



ISO Certified Vibration Analyst, Category III



QualiTest® Diagnostics

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