



**QualiTest® Diagnostics**

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January 21, 2025

North Shelby Plant  
Millington, TN

The following is a summary of findings from the January 2025 monthly vibration survey at the North Shelby site.

**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.

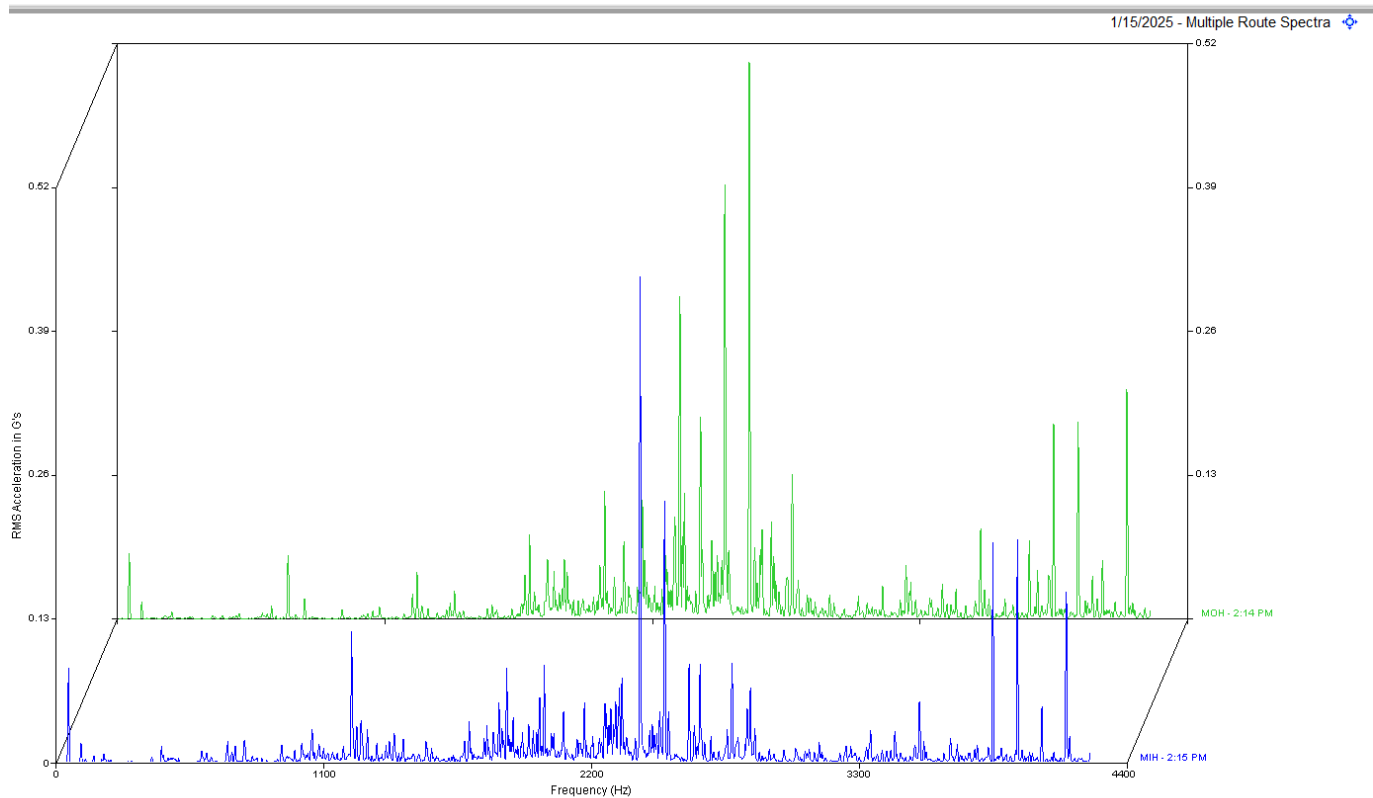
**Class IV:** Defect (s) present that makes continued reliability unpredictable, and possibility of secondary damage is high. Repairs should be made ASAP. An unscheduled shutdown should be considered for repairs

**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.

# Defects

## 301 Flare Blower **CLASS II**

Clean Energy.rbm / ce / 301 FLARE BLOWER



### Observations:

Data above is the motor outboard horizontal. There appear to be several harmonics of a non-synchronous frequency present in the spectra that line up with outer race defect fundamental and its harmonics. This is indication of bearing defects in the motor.

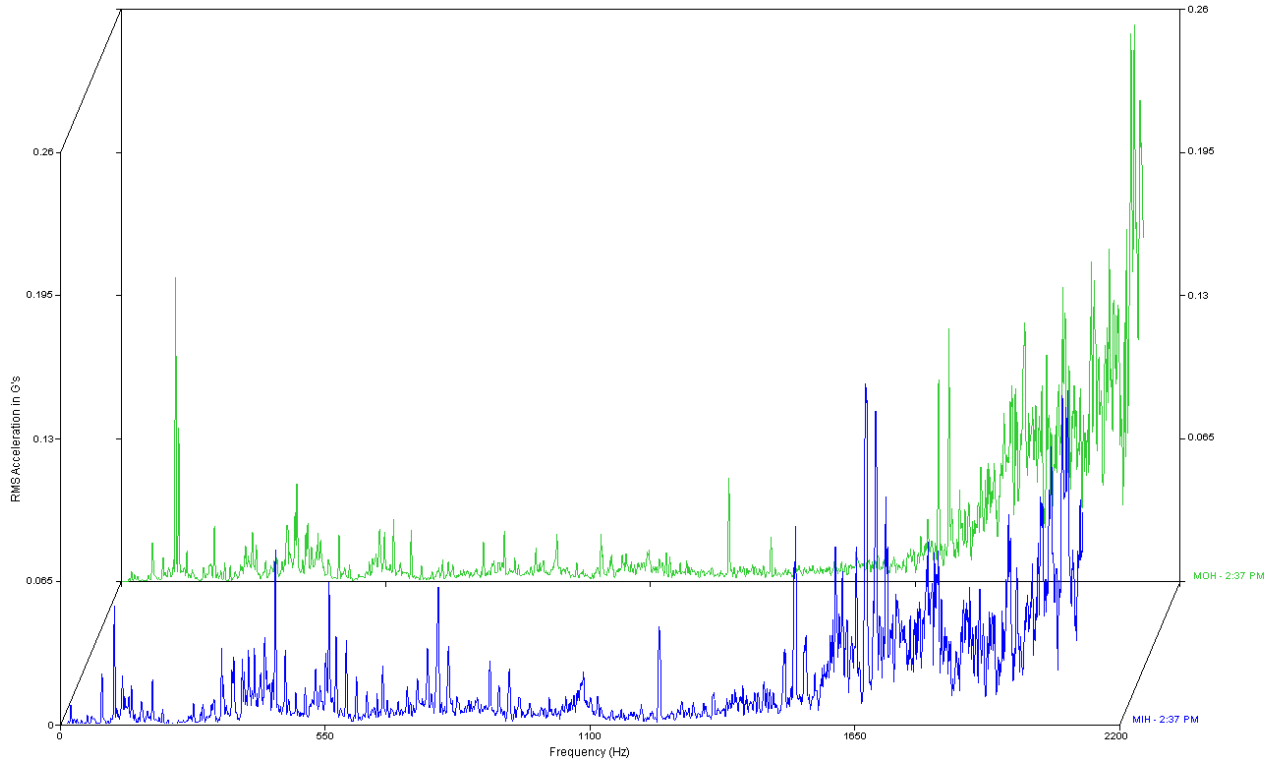
### Recommendations:

Motor should be replaced in the next few months. Still low level at this time. We are monitoring this closely.

## Rinse Compressor **CLASS II**

Clean Energy.rbm / ce / RINSE COMPRESSOR

1/15/2025 - Multiple Route Spectra



### Observations:

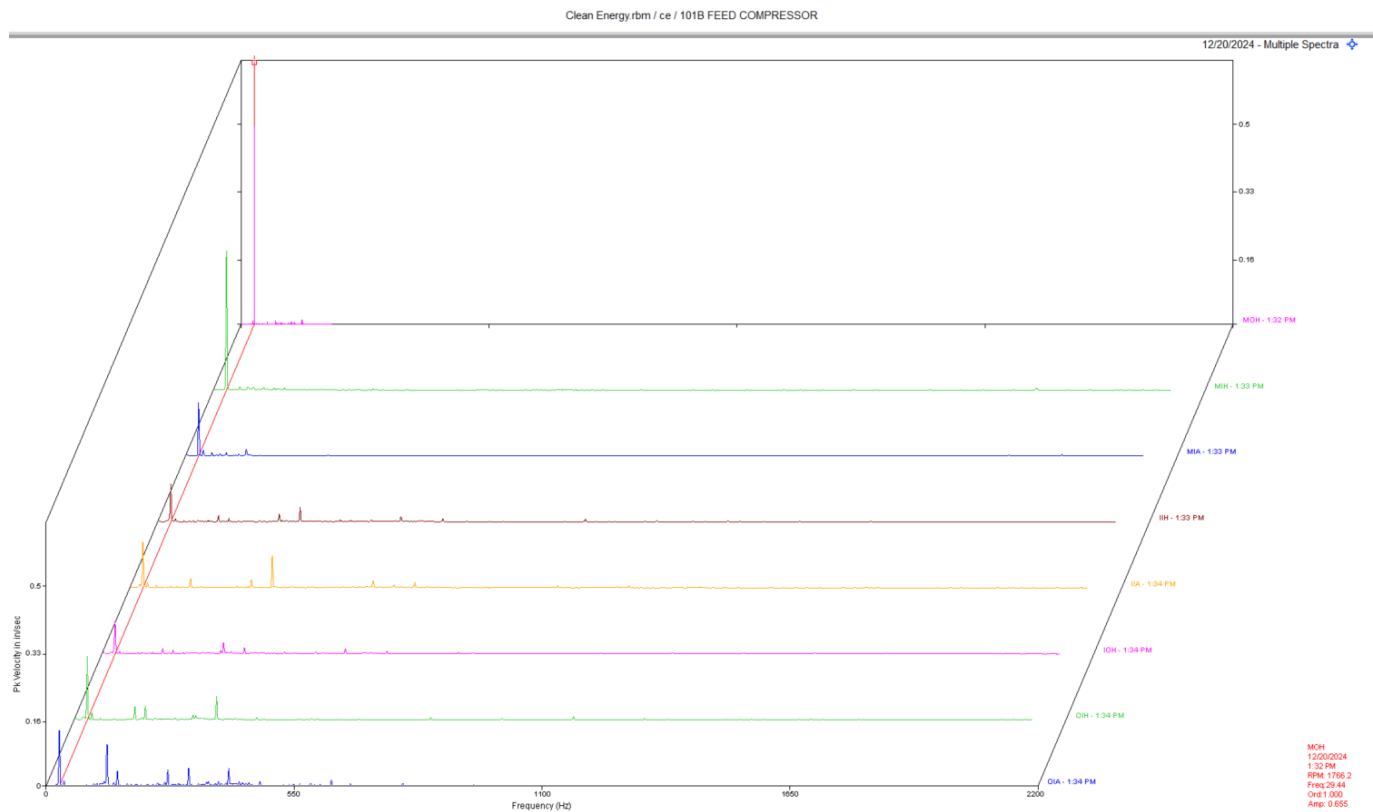
Drive motor data shows some high frequency vibration. Motor is also making a squealing type noise. The last reading showed amplitude to be 2.1 g's on average. Spectral data shows a noise floor 1500-5000 hz range. Peak to peak waveform amplitude is 16 to 18 g's.

### Recommendations:

Vibration characteristics indicate a lube issue or bearing wear. Motor likely needs attention during next extended shutdown. We are monitoring this closely. Rated as a **CLASS II** defect for now.

**Unit was down this survey; however, the following still applies:**

## **Feed Compressor B CLASS I**



### **Observations:**

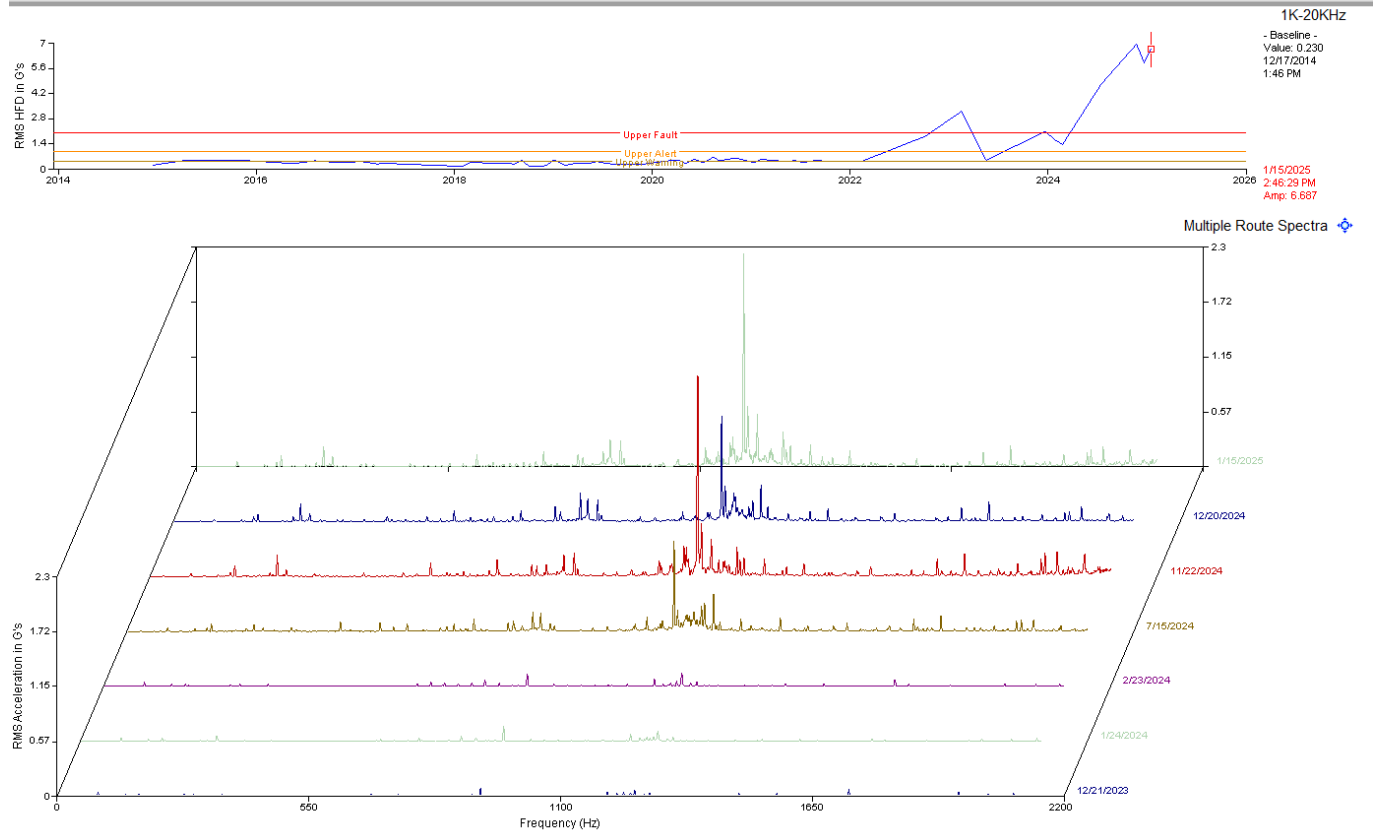
New motor data still shows motor to have elevated 1 x rpm vibration.

### **Recommendations:**

The 1 x rpm vibration may be due to process load and or imbalance. There could also be an issue with the motor side of the coupling. It is recommended to run the motor solo, if possible, to help diagnose issue. It may also be necessary to recheck alignment, fasteners, and check couplings at next opportunity.

## Product Compressor C **CLASS III**

Clean Energy.rbm / ce / 506C PRODUCT COMPRESSOR / MIH - MOTOR INBOARD HORIZ



### Observations:

Trend data shows increase in G's in motor DE data. Spectral waterfall of motor DE shows an increase in non-synchronous peaks over the past few surveys.

### Recommendations:

Data indicates defects in motor bearings. Motor will need attention in the next couple of months.

Abbreviated Last Measurement Summary  
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Database: Clean Energy.rbm  
Area: millington plant

MEASUREMENT POINT -----	OVERALL LEVEL -----	HFD / VHFD -----
301 FLARE - 301 FLARE BLOWER (15-Jan-25)		
	OVERALL LEVEL	1K-20KHz
MOH	.113 In/Sec	1.047 G-s
MOV	.269 In/Sec	.307 G-s
MIH	.156 In/Sec	.726 G-s
MIV	.161 In/Sec	.143 G-s
MIA	.134 In/Sec	.293 G-s
EIH	.289 In/Sec	.252 G-s
EIV	.088 In/Sec	.437 G-s
EIA	.057 In/Sec	.136 G-s
EOH	.208 In/Sec	.282 G-s
EOV	.088 In/Sec	.077 G-s
RINSE COMP - RINSE COMPRESSOR (15-Jan-25)		
	OVERALL LEVEL	1K-20KHz
MOH	.146 In/Sec	4.291 G-s
M1P	.035 In/Sec	
MIH	.097 In/Sec	3.101 G-s
M2P	.040 In/Sec	
MIA	.111 In/Sec	.370 G-s
IIH	.079 In/Sec	.840 G-s
IIA	.150 In/Sec	.170 G-s
IOH	.111 In/Sec	.602 G-s
OIH	.091 In/Sec	.858 G-s
OIA	.115 In/Sec	.200 G-s
OOH	.102 In/Sec	.862 G-s
VAC COMP - VACUUM COMPRESSOR (15-Jan-25)		
	OVERALL LEVEL	1K-20KHz
MOH	.188 In/Sec	1.838 G-s
MIH	.143 In/Sec	1.122 G-s
MIA	.068 In/Sec	.215 G-s
IIH	.121 In/Sec	.556 G-s
IIA	.051 In/Sec	.109 G-s
IOH	.100 In/Sec	.974 G-s
OIH	.075 In/Sec	.854 G-s
OIA	.055 In/Sec	.183 G-s
OOH	.101 In/Sec	.630 G-s
101A COMP - 101A FEED COMPRESSOR (15-Jan-25)		
	OVERALL LEVEL	1K-20KHz
MOH	.185 In/Sec	.221 G-s
MIH	.167 In/Sec	.278 G-s
MIA	.086 In/Sec	.343 G-s
IIH	.267 In/Sec	1.341 G-s
IIA	.432 In/Sec	1.394 G-s
IOH	.309 In/Sec	1.135 G-s
OIH	.110 In/Sec	2.375 G-s
OIA	.286 In/Sec	5.320 G-s
OOH	.144 In/Sec	1.100 G-s
HX132A FAN - HX132A GAS OIL COOLER FAN (15-Jan-25)		
	OVERALL LEVEL	1K-20KHz
EIH	.027 In/Sec	.029 G-s
EOH	.036 In/Sec	.037 G-s
451A PUMP - 451A VACCUM PUMP (15-Jan-25)		
	OVERALL LEVEL	1K-20KHz
MOH	.080 In/Sec	.427 G-s

MOV	.087 In/Sec	.338 G-s
MIH	.117 In/Sec	.823 G-s
MIV	.151 In/Sec	.563 G-s
MIA	.077 In/Sec	.171 G-s
EIH	.210 In/Sec	2.491 G-s
EIV	.139 In/Sec	.271 G-s
EIA	.077 In/Sec	.494 G-s
EOH	.153 In/Sec	.513 G-s
EOV	.147 In/Sec	.149 G-s

HX453A FAN - HX453A VAC PUMP OIL COOL FAN (15-Jan-25)

OVERALL LEVEL		1K-20KHz
MOH	.184 In/Sec	.237 G-s
MIH	.105 In/Sec	.072 G-s

451B PUMP - 451B VACCUM PUMP (15-Jan-25)

OVERALL LEVEL		1K-20KHz
MOH	.065 In/Sec	.390 G-s
MOV	.107 In/Sec	.150 G-s
MIH	.085 In/Sec	.363 G-s
MIV	.091 In/Sec	.185 G-s
MIA	.065 In/Sec	.083 G-s
EIH	.255 In/Sec	.471 G-s
EIV	.174 In/Sec	.215 G-s
EIA	.147 In/Sec	.250 G-s
EOH	.256 In/Sec	.598 G-s
EOV	.229 In/Sec	.196 G-s

HX453B FAN - HX453B VAC PUMP OIL COOL FAN (15-Jan-25)

OVERALL LEVEL		1K-20KHz
MOH	.176 In/Sec	.195 G-s
MIH	.127 In/Sec	.159 G-s

451C PUMP - 451C VACCUM PUMP (15-Jan-25)

OVERALL LEVEL		1K-20KHz
MOH	.213 In/Sec	.529 G-s
MOV	.159 In/Sec	.088 G-s
MIH	.252 In/Sec	.698 G-s
MIV	.193 In/Sec	.200 G-s
MIA	.071 In/Sec	.165 G-s
EIH	.162 In/Sec	.611 G-s
EIV	.140 In/Sec	.161 G-s
EIA	.101 In/Sec	.153 G-s
EOH	.134 In/Sec	.825 G-s
EOV	.148 In/Sec	.166 G-s

HX453C FAN - HX453C VAC PUMP OIL COOL FAN (15-Jan-25)

OVERALL LEVEL		1K-20KHz
MOH	.178 In/Sec	.400 G-s
MIH	.130 In/Sec	.257 G-s

451D PUMP - 451D VACCUM PUMP (15-Jan-25)

OVERALL LEVEL		1K-20KHz
MOH	.059 In/Sec	.897 G-s
MOV	.072 In/Sec	.495 G-s
MIH	.077 In/Sec	1.092 G-s
MIV	.076 In/Sec	.167 G-s
MIA	.035 In/Sec	.346 G-s
EIH	.159 In/Sec	.490 G-s
EIV	.136 In/Sec	.100 G-s
EIA	.098 In/Sec	.108 G-s
EOH	.179 In/Sec	.902 G-s
EOV	.176 In/Sec	.240 G-s

HX453D FAN - HX453D VAC PUMP OIL COOL FAN (15-Jan-25)

OVERALL LEVEL		1K-20KHz
MOH	.224 In/Sec	.113 G-s
MIH	.231 In/Sec	.143 G-s

506C COMP - 506C PRODUCT COMPRESSOR (15-Jan-25)

	OVERALL LEVEL	1K-20KHz
MOH	.173 In/Sec	1.775 G-s
MIH	.237 In/Sec	6.687 G-s
MIA	.130 In/Sec	1.688 G-s
IIH	.192 In/Sec	1.134 G-s
IIA	.180 In/Sec	1.268 G-s
IOH	.229 In/Sec	2.178 G-s
OIH	.218 In/Sec	1.924 G-s
OIA	.231 In/Sec	1.367 G-s
OOH	.227 In/Sec	1.226 G-s

HX507C FAN - HX507C GAS COOL FAN (15-Jan-25)

	OVERALL LEVEL	1K-20KHz
MOH	.177 In/Sec	.094 G-s
MIH	.273 In/Sec	.096 G-s


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Clarification Of Vibration Units:

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

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

Sincerely,



ISO Certified Vibration Analyst, Category III



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