



QualiTest® Diagnostics

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January 4, 2023

North Shelby Plant
Millington, TN

The following is a summary of findings from the December 2023 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

Rinse Compressor

Drive motor data is showing some elevated 1-20 Khz. amplitude. Last reading showed amplitude to be 5 g's. Baseline amplitude was 1.3 g's. Spectral data shows a noise floor starting around the 1500 hz range. This may be a lube issue. Ensure motor bearings have clean adequate amounts of grease. We are monitoring this closely. Rated as a **CLASS I** defect for now.

101-B Feed Compressor

Equipment was not in service during this survey; however, the following still applies: Compressor data shows some high frequency acceleration amplitude with noise floor. Peaks in spectral data suggest possible wear of internal compressor components. We are watching this closely. Rated as a **CLASS I** defect.

506 B Product Compressor

Equipment was not in service during this survey; however, the following still applies: Motor data continues to show defects are present in motor bearings. Motor will need to be swapped out as soon as practical. Rated as a **CLASS III** defect.

Abbreviated Last Measurement Summary *****

Database: Clean Energy.rbm
Area: millington plant

MEASUREMENT POINT -----	OVERALL LEVEL -----	HFD / VHFD -----
301 FLARE - 301 FLARE BLOWER (21-Dec-23)		
	OVERALL LEVEL	1K-20KHz
MOH	.092 In/Sec	.837 G-s
MOV	.170 In/Sec	.187 G-s
MIH	.126 In/Sec	.696 G-s
MIV	.105 In/Sec	.132 G-s
MIA	.102 In/Sec	.267 G-s
EIH	.248 In/Sec	.247 G-s
EIV	.096 In/Sec	.320 G-s
EIA	.067 In/Sec	.076 G-s
EOH	.145 In/Sec	.371 G-s
EOV	.145 In/Sec	.275 G-s
RINSE COMP - RINSE COMPRESSOR (21-Dec-23)		
	OVERALL LEVEL	1K-20KHz
MOH	.143 In/Sec	3.783 G-s
MIH	.181 In/Sec	5.030 G-s
MIA	.129 In/Sec	.599 G-s
IIH	.087 In/Sec	1.196 G-s
IIA	.143 In/Sec	.361 G-s
IOH	.148 In/Sec	.659 G-s
OIH	.087 In/Sec	1.440 G-s
OIA	.121 In/Sec	.225 G-s

OOH	.129 In/Sec	.742 G-s
VAC COMP - VACUUM COMPRESSOR (21-Dec-23)		
	OVERALL LEVEL	1K-20KHz
MOH	.158 In/Sec	1.557 G-s
MIH	.097 In/Sec	1.962 G-s
MIA	.089 In/Sec	.170 G-s
IIH	.064 In/Sec	.580 G-s
IIA	.099 In/Sec	.120 G-s
IOH	.099 In/Sec	.666 G-s
OIH	.091 In/Sec	.476 G-s
OIA	.063 In/Sec	.102 G-s
OOH	.109 In/Sec	.955 G-s
COOLFAN1 - COOLING FAN 1 (21-Dec-23)		
	OVERALL LEVEL	1K-20KHz
MOH	.019 In/Sec	.134 G-s
MOV	.020 In/Sec	.103 G-s
MIH	.019 In/Sec	.237 G-s
MIV	.022 In/Sec	.068 G-s
MIA	.025 In/Sec	.053 G-s
101A COMP - 101A FEED COMPRESSOR (21-Dec-23)		
	OVERALL LEVEL	1K-20KHz
MOH	.130 In/Sec	.398 G-s
MIH	.120 In/Sec	.312 G-s
MIA	.075 In/Sec	.306 G-s
IIH	.261 In/Sec	1.719 G-s
IIA	.393 In/Sec	1.592 G-s
IOH	.350 In/Sec	1.443 G-s
OIH	.220 In/Sec	1.363 G-s
OIA	.339 In/Sec	1.553 G-s
OOH	.099 In/Sec	2.808 G-s
HX132A FAN - HX132A GAS OIL COOLER FAN (21-Dec-23)		
	OVERALL LEVEL	1K-20KHz
EIH	.070 In/Sec	.093 G-s
EOH	.078 In/Sec	.059 G-s
451A PUMP - 451A VACCUM PUMP (21-Dec-23)		
	OVERALL LEVEL	1K-20KHz
MOH	.085 In/Sec	.625 G-s
MOV	.119 In/Sec	.379 G-s
MIH	.139 In/Sec	.389 G-s
MIV	.184 In/Sec	.539 G-s
MIA	.095 In/Sec	.193 G-s
EIH	.245 In/Sec	.156 G-s
EIV	.133 In/Sec	.168 G-s
EIA	.116 In/Sec	.207 G-s
EOH	.170 In/Sec	.616 G-s
EOV	.132 In/Sec	.082 G-s
HX453A FAN - HX453A VAC PUMP OIL COOL FAN (21-Dec-23)		
	OVERALL LEVEL	1K-20KHz
MOH	.215 In/Sec	.153 G-s
MIH	.157 In/Sec	.090 G-s
451B PUMP - 451B VACCUM PUMP (21-Dec-23)		
	OVERALL LEVEL	1K-20KHz
MOH	.066 In/Sec	.423 G-s
MOV	.084 In/Sec	.226 G-s
MIH	.088 In/Sec	.610 G-s
MIV	.092 In/Sec	.222 G-s
MIA	.059 In/Sec	.134 G-s
EIH	.185 In/Sec	.194 G-s
EIV	.126 In/Sec	.193 G-s
EIA	.131 In/Sec	.320 G-s
EOH	.163 In/Sec	.430 G-s
EOV	.182 In/Sec	.223 G-s

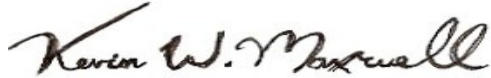
HX453B FAN - HX453B VAC PUMP OIL COOL FAN (21-Dec-23)		
	OVERALL LEVEL	1K-20KHz
MOH	.145 In/Sec	.209 G-s
MIH	.127 In/Sec	.180 G-s
451C PUMP - 451C VACCUM PUMP (21-Dec-23)		
	OVERALL LEVEL	1K-20KHz
MOH	.097 In/Sec	.427 G-s
MOV	.108 In/Sec	.088 G-s
MIH	.111 In/Sec	.396 G-s
MIV	.184 In/Sec	.104 G-s
MIA	.076 In/Sec	.077 G-s
EIH	.150 In/Sec	.762 G-s
EIV	.100 In/Sec	.316 G-s
EIA	.091 In/Sec	.139 G-s
EOH	.120 In/Sec	.509 G-s
EOV	.121 In/Sec	.221 G-s
HX453C FAN - HX453C VAC PUMP OIL COOL FAN (21-Dec-23)		
	OVERALL LEVEL	1K-20KHz
MOH	.139 In/Sec	.385 G-s
MIH	.136 In/Sec	.187 G-s
451D PUMP - 451D VACCUM PUMP (21-Dec-23)		
	OVERALL LEVEL	1K-20KHz
MOH	.095 In/Sec	1.026 G-s
MOV	.108 In/Sec	.457 G-s
MIH	.118 In/Sec	1.802 G-s
MIV	.119 In/Sec	.197 G-s
MIA	.048 In/Sec	.322 G-s
EIH	.179 In/Sec	.434 G-s
EIV	.098 In/Sec	.193 G-s
EIA	.079 In/Sec	.187 G-s
EOH	.142 In/Sec	.531 G-s
EOV	.153 In/Sec	.225 G-s
HX453D FAN - HX453D VAC PUMP OIL COOL FAN (21-Dec-23)		
	OVERALL LEVEL	1K-20KHz
MOH	.192 In/Sec	.127 G-s
MIH	.228 In/Sec	.100 G-s
506C COMP - 506C PRODUCT COMPRESSOR (21-Dec-23)		
	OVERALL LEVEL	1K-20KHz
MOH	.062 In/Sec	.523 G-s
MIH	.053 In/Sec	2.094 G-s
MIA	.046 In/Sec	.536 G-s
IIH	.171 In/Sec	.565 G-s
IIA	.177 In/Sec	.857 G-s
IOH	.192 In/Sec	1.802 G-s
OIH	.207 In/Sec	.664 G-s
OOH	.235 In/Sec	.464 G-s
HX507C FAN - HX507C GAS COOL FAN (21-Dec-23)		
	OVERALL LEVEL	1K-20KHz
MOH	.241 In/Sec	.076 G-s
MIH	.365 In/Sec	.089 G-s

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,

A handwritten signature in black ink that reads "Kevin W. Marshall". The signature is fluid and cursive, with the first name "Kevin" and last name "Marshall" clearly legible.

ISO Certified Vibration Analyst, Category III



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