HI-SPEED INDUSTRIAL SERVICE QualiTest® Diagnostics

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January 31, 2024

North Shelby Plant
Millington, TN

The following is a summary of findings from the January 2024 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

Defects

Rinse Compressor

Drive motor data is showing some elevated 1-20 Khz. amplitude. The 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 or early stage bearing wear. For now, 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
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Database: Clean Energy.rbm
Area: millington plant

MEASUREMENT POINT	OVERALL LEVEL	HFD / VHFD
302 FLARE - 302 FLARE BLOWER	(24-Jan-24)	
	OVERALL LEVEL	1K-20KHz
MOH	.042 In/Sec	.946 G-s
MOV	.032 In/Sec	.157 G-s
MIH	.051 In/Sec	1.020 G-s
MIV	.112 In/Sec	.152 G-s
MIA	.044 In/Sec	.212 G-s
EIH	.057 In/Sec	.353 G-s
EIV	.147 In/Sec	.089 G-s
EIA	.054 In/Sec	.130 G-s
EOH	.065 In/Sec	.133 G-s
EOV	.190 In/Sec	.066 G-s
RINSE COMP - RINSE COMPRESSOR	(24-Jan-24)	
	OVERALL LEVEL	1K-20KHz
MOH	.165 In/Sec	2.598 G-s
MIH	.165 In/Sec	2.520 G-s
MIA	.142 In/Sec	.266 G-s
IIH	.075 In/Sec	.766 G-s
IIA	.134 In/Sec	.153 G-s
IOH	.149 In/Sec	.552 G-s
OIH	.103 In/Sec	.614 G-s
OIA	.138 In/Sec	.164 G-s
OOH	.144 In/Sec	.759 G-s
VAC COMP - VACUUM COMPRESSOR	(24-Jan-24)	
	OVERALL LEVEL	1K-20KHz
MOH	.158 In/Sec	1.441 G-s
MIH	.170 In/Sec	2.348 G-s
MIA	.108 In/Sec	.142 G-s
IIH	.064 In/Sec	.567 G-s
IIA	.104 In/Sec	.112 G-s

	IOH	.109 In/Sec	.776 G-s
	OIH	.113 In/Sec	.601 G-s
	OIA	.183 In/Sec	.152 G-s
	OOH	.121 In/Sec	.970 G-s

COOLFAN1 - COOLING FAN 1 (24-Jan-24)

	OVERALL LEVEL	1K-20KHz
MOH	.033 In/Sec	.328 G-s
MOV	.072 In/Sec	.131 G-s
MIH	.014 In/Sec	.439 G-s
MIV	.059 In/Sec	.097 G-s
MIA	.025 In/Sec	.089 G-s

101A COMP - 101A FEED COMPRESSOR (24-Jan-24)

	OVERALL LEVEL	1K-20KHz
MOH	.197 In/Sec	.301 G-s
MIH	.157 In/Sec	.282 G-s
MIA	.129 In/Sec	.350 G-s
IIH	.378 In/Sec	1.399 G-s
IIA	.511 In/Sec	1.422 G-s
IOH	.463 In/Sec	1.233 G-s
OIH	.302 In/Sec	1.213 G-s
OIA	.140 In/Sec	1.169 G-s
OOH	.103 In/Sec	3.166 G-s

HX132A FAN - HX132A GAS OIL COOLER FAN (24-Jan-24)

	OVERALL LEVEL	1K-20KHz
EIH	.040 In/Sec	.041 G-s
EOH	.053 In/Sec	.048 G-s

451A PUMP - 451A VACCUM PUMP (24-Jan-24)

	OVERALL LEVEL	1K-20KHz
MOH	.098 In/Sec	.483 G-s
MOV	.101 In/Sec	.311 G-s
MIH	.126 In/Sec	.368 G-s
MIV	.172 In/Sec	.553 G-s
MIA	.068 In/Sec	.272 G-s
EIH	.168 In/Sec	.173 G-s
EIV	.127 In/Sec	.227 G-s
EIA	.108 In/Sec	.242 G-s
EOH	.168 In/Sec	.564 G-s
EOV	.114 In/Sec	.142 G-s

HX453A FAN - HX453A VAC PUMP OIL COOL FAN (24-Jan-24)

	OVERALL LEVEL	1K-20KHz
MOH	.134 In/Sec	.120 G-s
MIH	.111 In/Sec	.088 G-s

451B PUMP - 451B VACCUM PUMP (24-Jan-24)

	OVERALL LEVEL	1K-20KHz
MOH	.050 In/Sec	.426 G-s
MOV	.069 In/Sec	.096 G-s
MIH	.063 In/Sec	.404 G-s
MIV	.075 In/Sec	.129 G-s
MIA	.057 In/Sec	.074 G-s
EIH	.174 In/Sec	.200 G-s
EIV	.126 In/Sec	.157 G-s
EIA	.114 In/Sec	.216 G-s
EOH	.221 In/Sec	.556 G-s
EOV	.216 In/Sec	.146 G-s

HX453B FAN - HX453B VAC PUMP OIL COOL FAN (24-Jan-24)

	OVERALL LEVEL	1K-20KHz
MOH	.117 In/Sec	.152 G-s
MIH	.096 In/Sec	.143 G-s

451C PUMP - 451C VACCUM PUMP (24-Jan-24)

	OVERALL LEVEL	1K-20KHz
MOH	.073 In/Sec	.528 G-s
MOV	.073 In/Sec	.107 G-s

MIH	.084 In/Sec	.644 G-s
MIV	.127 In/Sec	.209 G-s
MIA	.059 In/Sec	.154 G-s
EIH	.126 In/Sec	.580 G-s
EIV	.095 In/Sec	.166 G-s
EIA	.081 In/Sec	.222 G-s
EOH	.112 In/Sec	.608 G-s
EOV	.126 In/Sec	.137 G-s

HX453C FAN - HX453C VAC PUMP OIL COOL FAN (24-Jan-24)

	OVERALL LEVEL	1K-20KHz
MOH	.114 In/Sec	.226 G-s
MIH	.090 In/Sec	.143 G-s

451D PUMP - 451D VACCUM PUMP (24-Jan-24)

	OVERALL LEVEL	1K-20KHz
MOH	.110 In/Sec	1.107 G-s
MOV	.102 In/Sec	.417 G-s
MIH	.124 In/Sec	1.267 G-s
MIV	.136 In/Sec	.297 G-s
MIA	.057 In/Sec	.496 G-s
EIH	.180 In/Sec	.371 G-s
EIV	.101 In/Sec	.176 G-s
EIA	.119 In/Sec	.126 G-s
EOH	.125 In/Sec	.392 G-s
EOV	.145 In/Sec	.123 G-s

HX453D FAN - HX453D VAC PUMP OIL COOL FAN (24-Jan-24)

	OVERALL LEVEL	1K-20KHz
MOH	.192 In/Sec	.145 G-s
MIH	.183 In/Sec	.129 G-s

506C COMP - 506C PRODUCT COMPRESSOR (24-Jan-24)

	OVERALL LEVEL	1K-20KHz
MOH	.080 In/Sec	.490 G-s
MIH	.059 In/Sec	1.651 G-s
MIA	.054 In/Sec	.747 G-s
IIH	.202 In/Sec	.700 G-s
IIA	.152 In/Sec	1.627 G-s
IOH	.206 In/Sec	1.894 G-s
OIH	.219 In/Sec	.612 G-s
OOH	.211 In/Sec	.769 G-s

HX507C FAN - HX507C GAS COOL FAN (24-Jan-24)

	OVERALL LEVEL	1K-20KHz
MOH	.242 In/Sec	.078 G-s
MIH	.362 In/Sec	.064 G-s

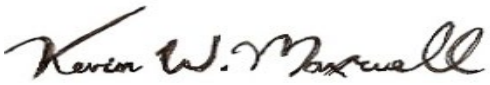
Clarification Of Vibration Units:

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,



ISO Certified Vibration Analyst, Category III

HI-SPEED INDUSTRIAL SERVICE

QualiTest® Diagnostics

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