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July 5<sup>th</sup>, 2023

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The following is a summary of findings from the June 2023 WEEK 4 vibration survey at the H2O2 Plant that was performed on June 30<sup>th</sup>, 2023.

QualiTest® uses a four step rating system for defects.

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

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

**<u>CLASS III</u>**; 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.

# WEEK 4 H2O2 Plant

## P102 Pump CLASS I



## **Observation:**

Data above is trend, spectral, and time waveform data for the Pump inboard horizontal. Trend data shows a decrease in overall amplitude since last week's data collection. The only concern here is the amount of pump rpm harmonics and the presence of an impact at what appears to be 6 x pump rpm. This may indicate some pump wear.

#### **Recommendation:**

Overall velocity amplitude is lower, but the presence of impacting is somewhat concerning. We are currently establishing a weekly trend of this machine so severity is still somewhat unclear. For now, we are monitoring this closely and will report any changes.

# Agitator, Hydrogenator C CLASS I



#### **Observation:**

Data above is a multipoint spectral waterfall. Data does show an increase in noise floor in the motor data. Data points labeled 11-23.

### **Recommendation:**

Motor data still suggests a possible issue in the motor. May be rolling element defects in bearings. Still looks minor at this point and we are monitoring this closely.

# D Hydrogenator Agitator CLASS II



#### **Observation:**

Data above is output top radial direction (East-West). Peaks in the spectrum appear to be related to a gear mesh frequency fundamental with harmonics thereof. This may be due to heavy tooth load or internal gear issue such as wear and/or internal misalignment. Waveform data shows a dominant low frequency vibration that is likely a harmonic of output speed of the agitator. Gearbox does have a torsional vibration that may be due to issues with output shaft of the gear drive.

#### **Recommendation:**

Ensure gear drive is not heavily loaded due to process issues. Ensure output shaft does not excessive shaft defection. Will continue to monitor closely.

Database:	Arkema.rbm			
Station:	PEROXIDE			
Route No.	4: ARK WK4			

MEASUREMEN	T POINT	OVERALL LEVEL	HFD / VHFD
XSTORPMP	- X STORAGE PUMP	(3	30-Jun-23)
		OVERALL LEVEL	1-20 KHz
11		.041 In/Sec	.550 G-s
21		.049 In/Sec	.486 G-s
23		.067 In/Sec	.644 G-s
71		.190 In/Sec	.193 G-s
72		.049 In/Sec	.297 G-s
2130-1old	- C Concentrator	Vacuum Pump (3	30-Jun-23)
		OVERALL LEVEL	1-20 KHz
11		.095 In/Sec	.481 G-s
21		.096 In/Sec	.712 G-s
23		.147 In/Sec	.488 G-s
71		.164 In/Sec	2.101 G-s
81		.201 In/Sec	.498 G-s
83		.176 In/Sec	1.274 G-s
7000-01	- AGITATOR, HYDRO	GENATOR C (3	30-Jun-23)
		OVERALL LEVEL	1-20 KHZ
02		.043 In/Sec	.019 G-s
03		.055 In/Sec	.0068 G-s
11		.072 In/Sec	1.781 G-s
12		.069 In/Sec	.353 G-s
13		.046 In/Sec	.474 G-s
21		.076 In/Sec	2.196 G-s
22		.098 In/Sec	.339 G-s
23		.053 In/Sec	.292 G-s
31		.061 In/Sec	.427 G-s
32		.073 In/Sec	.419 G-s
33		.061 In/Sec	.246 G-s
41		.056 In/Sec	.228 G-s
42		.081 In/Sec	.351 G-s
51		.056 In/Sec	.185 G-s
53		.034 In/Sec	.043 G-s
61		.027 In/Sec	.259 G-s
71		.044 In/Sec	.282 G-s
81		.019 In/Sec	.260 G-s
83		.039 In/Sec	.212 G-s
57	- A/B Concentr Va	ac Pmp-var RPM (3	30-Jun-23)
		OVERALL LEVEL	1-20 KHz
11		.029 In/Sec	.376 G-s
12		.040 In/Sec	.222 G-s
21		.034 In/Sec	.359 G-s
23		.028 In/Sec	.103 G-s
71		.048 In/Sec	.445 G-s
81		.052 In/Sec	.381 G-s
83		.036 In/Sec	.184 G-s
2130-1	- FLASH VAP VAC	PUMP-var speed (3	30-Jun-23)
		OVERALL LEVEL	1-20 KHz
11		.050 In/Sec	.273 G-s
12		.054 In/Sec	.086 G-s
21		.050 In/Sec	.325 G-s
22		.055 In/Sec	.182 G-s
23		.073 In/Sec	.191 G-s
71		.074 In/Sec	.869 G-s
72		.141 In/Sec	.717 G-s
81		.067 In/Sec	.909 G-s
82		.076 In/Sec	.710 G-s

	83		.055	In/Sec	.900 G-s
C-202	-	C-202 Comp		(3	0-Jun-23)
			OVERA	LL LEVEL	1-20 KHz
	11		.039	In/Sec	.911 G-s
	12		.147	In/Sec	.358 G-s
	21		.061	In/Sec	.245 G-s
	22		.071	In/Sec	.096 G-s
	23		.041	In/Sec	.049 G-s
			OVERA	LL LEVEL	1-20 KHZ
	71M		.055	In/Sec	4.156 G-s
	72M		.051	In/Sec	1.032 G-s
	73M		.078	In/Sec	.930 G-s
	81M		.053	In/Sec	4.267 G-s
	82M 71 E		.04/	In/Sec	1.889 G-S
	71F 72F		.030	In/Sec	2.330 G-S
	725		031	In/Sec	.909 G-S
	81F		094	In/Sec	20 50 G-s
	82F		.054	In/Sec	1.730 G-s
	•			,	
C-201	-	C-201 Comp	OVEDA	(3 	0-Jun-23)
	11		OVERA.	тр/сес Тр/сес	1 070 C -
	12		.087	In/Sec	1.0/2 G-s
	21		.039	In/Sec	.989 G-S
	22		028	In/Sec	.790 G-s 234 G-s
	23		.063	In/Sec	.144 G-s
			OVERA	LL LEVEL	1-20 KHZ
	71M		.090	In/Sec	4.637 G-s
	72M		.056	In/Sec	1.470 G-s
	73M		.059	In/Sec	1.149 G-s
	81M		.061	In/Sec	8.752 G-s
	82M		.033	In/Sec	1.855 G-s
	71F		.041	In/Sec	4.962 G-s
	72F		.065	In/Sec	1.276 G-s
	73F		.036	In/Sec	.729 G-s
	81F		.081	In/Sec	21.51 G-s
	82F		.077	In/Sec	2.160 G-s
new AC	-	INSTRUMENT AIR	COMPRES	SOR (3	0-Jun-23)
			OVERA	LL LEVEL	1-20 KHz
	11		.081	In/Sec	.772 G-s
	12		.093	In/Sec	1.054 G-s
	13		.054	In/Sec	.653 G-S
	22		.0/1	In/Sec	1.326 G-S
	22		.003	In/Sec	1.735 G-S
	23		OVERA	III/ Sec	1-20 KHZ
	71M		.124	In/Sec	7.289 G-s
	72M		.137	In/Sec	8.999 G-s
	73M		.103	In/Sec	8.164 G-s
	81M		.140	In/Sec	6.972 G-s
	82M		.139	In/Sec	8.149 G-s
	83M		.192	In/Sec	7.886 G-s
	71F		.112	In/Sec	5.678 G-s
	72F		.083	In/Sec	3.810 G-s
	73F		.129	In/Sec	4.001 G-s
	81F		.112	In/Sec	3.393 G-s
	82F		.279	In/Sec	7.024 G-s
	83F.		.119	In/Sec	5.194 G-s
201-08A - COM		COMPRESSOR, NASH	H A 201-	08A (3	0-Jun-23)
			OVERA	LL LEVEL	1-20 KHz
	11		.052	In/Sec	.095 G-s
	12		.050	IN/Sec	.139 G-s
	13 21		. 110	IN/Sec	.005 G-S
	2⊥ 22		.04/	IN/Sec	.144 G-S 130 C-s
	23		.038	In/Sec	.139 G-8
				, 500	

71		.149	In/Sec	.965 G-	s
72		.172	In/Sec	.272 G-	·s
73		.112	In/Sec	.264 G-	- ·s
81		.148	In/Sec	.187 G-	- ·s
82		.181	In/Sec	.105 G-	·s
83		.123	In/Sec	.103 G-	·s
202-05 - 1	NASH SEAL LIQ	UID PUMP-A	A	(30-Jun-23)	
		OVERAI	LL LEVEL	1-20 KHz	1
11		.018	In/Sec	.076 G-	s
21		.020	In/Sec	.177 G-	s
23		.049	In/Sec	.081 G-	s
71		.033	In/Sec	.073 G-	s
72		.025	In/Sec	.051 G-	s
0002 10				(20 Tree 22)	
9002-10 - 1	D-HIDROGENATO	K AGITATOR	х т тех <i>и</i> ет	(30-Juli-23)	
11		OVERAL	ть телет ть /сее	1 027 C	
11		.064	In/Sec	1.037 G-	- 5
21		.074	In/Sec	./51 G-	-5
23		.073	In/Sec	.128 G-	· S
21		OVERAL 1 E A	ла Гелет Та /Сее	1 1-20 KH2	-
31		.154	In/Sec	.635 G-	-5
311		. 192	In/Sec	.660 G-	S
F1		OVERAL	лг гелет Табрат	1-20 KH2	
51		.187	In/Sec	.3/9 G-	S
511		.187	In/Sec	.3/9 G-	S
52		.062	In/Sec	.255 G-	S
521		.199	In/Sec	.446 G-	S
53		.238	In/Sec	.149 G-	S
53L		.179	In/Sec	.261 G-	s
61		.152	In/Sec	.178 G-	s
61L		.181	In/Sec	.178 G-	s
81		.035	In/Sec	.026 G-	s
82		.028	In/Sec	.069 G-	s
83		.034	In/Sec	.015 G-	S
Clarification Of	Vibration Un	its:			
Acc>	G-s PK				
Vel>	In/Sec PK				

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

Sincerely,

Kevin W. Maxuell

ISO Certified Vibration Analyst, Category III



# QualiTest Diagnostics

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