August 27, 2019

ARKEMA

Subject: August week 4 vibration service report

**Weekly Equipment**

**Agitator, Hydrogenator C 7001-01**

No legitimate vibrations were found to be above 0.15”/sec velocity peak. Spectrum appears normal for unit. No action required.

**A/B Concentrator Vacuum Pump 57**

Vibrations increased again for the outboard pump bearing at what looks to be vane pass. Vibration is just above 0.3”/sec velocity peak. No immediate action is required at this time. **Rated a Class I Defect.**

**Flash Vacuum Pump 2130-1**

Vibrations in this unit appear normal. No actions required.

**Air Compressor C-201**

Vibrations appear normal this week. The trend clearly shows that the vibrations vary considerably over time. We still believe these motors have possible weak rotor bar end connections that cause the vibrations to fluctuate higher due to loading. We will continue to monitor this unit for changes. No actions required.

**Air Compressor C-202**

Vibrations in this unit appear normal. No actions required.

**Air Compressor C-203**

Vibrations appear normal this week. The trend clearly shows that the vibrations vary considerably over time. We still believe these motors have possible weak rotor bar end connections that cause the vibrations to fluctuate higher due to loading. We will continue to monitor this unit for changes No actions required.

**Air Compressor NASH 201-08**

Vibrations in this unit appear normal. No actions required.

**D Hydrogenator Agitator 9002-10**

Data sets for the gearbox bearings show overall vibrations are still near 0.35”/sec velocity peak. Vibrations of interest are around 11 and 278 HZ. Modulation around the 11 HZ peak is causing a beat vibration. Gearbox and structure could be resonant. An internal inspection and oil analysis should be considered. Also, check the unit fasteners for tightness. **Rated a Class II Defect.** Please provide detailed information on the gearbox for further analysis.

**Instrument Air Compressor new**

Vibrations in this unit has increased in the outboard end of the male rotor. The vibration is at almost 0.35”/sec velocity peak at what looks to be 28 orders of input speed. We assume the dominant vibration is the fundamental gear mesh. We will watch the unit closely for changes that might affect the unit reliability. **Rated a Class I Defect.**

**C Concentrator Vacuum Pump 2130-1 old**

Vibrations in this unit appear normal. No actions required.

**Monthly Equipment this Survey on report**

None.

An Abbreviated Last Measurement Summary follows below:

***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.

This completes our assessment of your equipment for this survey. Thank you for your business and don’t hesitate to call if you have any comments or questions.

Sincerely,

David W. Shook

Senior Reliability Specialist

dshook@gohispeed.com

***Hi-Speed* Industrial Service**

**Abbreviated Last Measurement Summary**

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**Database: Arkema.rbm**

**Station: PEROXIDE**

**Route No. 6: ARKEMA WK4**

**Report Date: 27-Aug-19 09:51**

**MEASUREMENT POINT OVERALL LEVEL HFD / VHFD**

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**7000-01 - AGITATOR,HYDROGENATOR C (23-Aug-19)**

**OVERALL LEVEL**

**01 - DRIVESHAFT BRG-NORTH-SOUTH .070 In/Sec**

**02 - DRIVESHAFT BRG-EAST-WEST .052 In/Sec**

**03 - DRIVESHAFT BRG-VERTICAL .057 In/Sec**

**11 - C Hydro Agitator MOTOR OB HORIZ .056 In/Sec**

**11H - MOTOR OB HORIZ - HI FREQ .044 In/Sec**

**12 - C Hydro Agitator MOTOR OB VERT .045 In/Sec**

**12H - MOTOR OB VERT - HI FREQ .050 In/Sec**

**13 - C Hydro Agitator Motor OB Axial .051 In/Sec**

**13H - MOTOR OB AXIAL - HI FREQ .054 In/Sec**

**21 - C Hydro Agitator MOTOR IB HORIZ .101 In/Sec**

**21H - MOTOR IB HORIZ - HI FREQ .051 In/Sec**

**22 - C Hydro Agitator MOTOR IB VERT .059 In/Sec**

**22H - MOTOR IB VERT - HI FREQ .059 In/Sec**

**23 - C Hydro Agitator Motor IB Axial .068 In/Sec**

**23H - MOTOR IB AXIAL - HI FREQ .068 In/Sec**

**31 - C Hydro Agitator GrBx In Horizon .098 In/Sec**

**32 - C Hydro Agitator GrBx In VERT .074 In/Sec**

**33 - C Hydro Agitator GrBx In Axial .057 In/Sec**

**41 - C Hydro Agitator GrBx Top Horizo .048 In/Sec**

**42 - C Hydro Agitator GrBx Top VERT .042 In/Sec**

**53 - C Hydro Agitator GrBx Top Axial .151 In/Sec**

**53L - C Hydro Agitator GrBx Top Axial .151 In/Sec**

**57 - A/B Concentr Vac Pmp-var RPM (23-Aug-19)**

**OVERALL LEVEL**

**11 - Motor OB HOR .045 In/Sec**

**OVERALL LEVEL 1-20 KHz**

**11H - Motor OB HOR .045 In/Sec .114 G-s**

**12 - Motor OB VERT .060 In/Sec**

**12H - Motor OB VERT .068 In/Sec .180 G-s**

**13 - Motor OB AXIAL .073 In/Sec**

**21 - Motor IB HOR .059 In/Sec**

**23 - Motor IB AXIAL .077 In/Sec**

**71 - Compressor IB HOR .127 In/Sec**

**81 - Compressor OB Horiz .308 In/Sec**

**83 - Compressor OB Axial .059 In/Sec**

**236-26 - HYDRO FD PUMP S 236-26-2FLR (23-Aug-19)**

**OVERALL LEVEL**

**11 - Hydro Fd Pmp C So Motor OB Horiz .103 In/Sec**

**21 - Hydro Fd Pmp C So Motor IB Horiz .073 In/Sec**

**23 - Hydro Fd Pmp C So Motor IB Axial .103 In/Sec**

**\* 71 - PUMP HORIZONTAL .031 In/Sec**

**\* 72 - Hydro Fd Pump C So Pump IB Verti .031 In/Sec**

**2130-1 - FLASH VAP VAC PUMP-var speed (23-Aug-19)**

**OVERALL LEVEL**

**11 - Motor OB HOR .050 In/Sec**

**12 - Motor OB VERT .041 In/Sec**

**21 - Motor IB HOR .035 In/Sec**

**22 - Motor IB VERT .053 In/Sec**

**23 - Motor IB AXIAL .083 In/Sec**

**71 - Compressor IB HOR .099 In/Sec**

**72 - Compressor IB VERT .068 In/Sec**

**81 - Compressor OB Horiz .079 In/Sec**

**82 - Compressor OB VERT .080 In/Sec**

**83 - Compressor OB Axial .042 In/Sec**

**C-203 - C-203 Comp (Old Joy) (23-Aug-19)**

**OVERALL LEVEL 1-20 KHz**

**11 - MOTOR OB HOR .035 In/Sec 1.155 G-s**

**12 - MOTOR OB VERT .025 In/Sec .286 G-s**

**13 - MOTOR OB AXIAL .023 In/Sec .299 G-s**

**21 - MOTOR IB HOR .019 In/Sec .210 G-s**

**22 - MOTOR IB VERT .035 In/Sec .031 G-s**

**23 - MOTOR IB AXIAL .024 In/Sec .755 G-s**

**71M - COMP MALE SHAFT IB HOR .044 In/Sec**

**72M - COMP MALE SHAFT IB VERT .050 In/Sec**

**73M - COMP MALE SHAFT IB AXIAL .053 In/Sec**

**81M - COMP MALE SHAFT OB HOR .048 In/Sec**

**82M - COMP MALE SHAFT OB VERT .053 In/Sec**

**83M - COMP MALE SHAFT OB AXIAL .045 In/Sec**

**71F - COMP FEMALE SHAFT IB HOR .031 In/Sec**

**72F - COMP FEMALE SHAFT IB VERT .059 In/Sec**

**73F - COMP FEMALE SHAFT IB AXIAL .066 In/Sec**

**81F - COMP FEMALE SHAFT OB HOR .049 In/Sec**

**82F - COMP FEMALE SHAFT OB VERT .048 In/Sec**

**83F - COMP FEMALE SHAFT OB AXIAL .055 In/Sec**

**\* 901 - 1ST STG Prox Probe .283 Mils**

**\* 902 - 2ND STG Prox Probe .327 Mils**

**C-201 - C-201 Comp (Old Centac) (23-Aug-19)**

**OVERALL LEVEL 1-20 KHz**

**11 - MOTOR OB HOR .084 In/Sec .256 G-s**

**12 - MOTOR OB VERT .111 In/Sec 2.575 G-s**

**13 - MOTOR OB AXIAL .049 In/Sec .471 G-s**

**21 - MOTOR IB HOR .090 In/Sec .530 G-s**

**22 - MOTOR IB VERT .032 In/Sec .179 G-s**

**23 - MOTOR IB AXIAL .075 In/Sec 1.955 G-s**

**71M - COMP MALE SHAFT IB HOR .045 In/Sec**

**72M - COMP MALE SHAFT IB VERT .056 In/Sec**

**73M - COMP MALE SHAFT IB AXIAL .080 In/Sec**

**81M - COMP MALE SHAFT OB HOR .046 In/Sec**

**82M - COMP MALE SHAFT OB VERT .048 In/Sec**

**83M - COMP MALE SHAFT OB AXIAL .067 In/Sec**

**71F - COMP FEMALE SHAFT IB HOR .043 In/Sec**

**72F - COMP FEMALE SHAFT IB VERT .034 In/Sec**

**73F - COMP FEMALE SHAFT IB AXIAL .041 In/Sec**

**81F - COMP FEMALE SHAFT OB HOR .044 In/Sec**

**82F - COMP FEMALE SHAFT OB VERT .050 In/Sec**

**83F - COMP FEMALE SHAFT OB AXIAL .081 In/Sec**

**\* 901 - 1ST STG Prox Probe .216 Mils**

**\* 902 - 2ND STG Prox Probe .105 Mils**

**C-202 - C-202 Comp (New Location) (23-Aug-19)**

**OVERALL LEVEL 1-20 KHz**

**11 - MOTOR OB HOR .035 In/Sec .795 G-s**

**12 - MOTOR OB VERT .129 In/Sec .158 G-s**

**13 - MOTOR OB AXIAL .053 In/Sec 1.218 G-s**

**21 - MOTOR IB HOR .048 In/Sec .431 G-s**

**22 - MOTOR IB VERT .053 In/Sec .096 G-s**

**23 - MOTOR IB AXIAL .056 In/Sec .195 G-s**

**71M - COMP MALE SHAFT IB HOR .044 In/Sec**

**72M - COMP MALE SHAFT IB VERT .044 In/Sec**

**73M - COMP MALE SHAFT IB AXIAL .079 In/Sec**

**81M - COMP MALE SHAFT OB HOR .027 In/Sec**

**82M - COMP MALE SHAFT OB VERT .051 In/Sec**

**83M - COMP MALE SHAFT OB AXIAL .070 In/Sec**

**71F - COMP FEMALE SHAFT IB HOR .034 In/Sec**

**72F - COMP FEMALE SHAFT IB VERT .063 In/Sec**

**73F - COMP FEMALE SHAFT IB AXIAL .056 In/Sec**

**81F - COMP FEMALE SHAFT OB HOR .043 In/Sec**

**82F - COMP FEMALE SHAFT OB VERT .049 In/Sec**

**83F - COMP FEMALE SHAFT OB AXIAL .052 In/Sec**

**\* 901 - 1ST STG Prox Probe .286 Mils**

**\* 902 - 2ND STG Prox Probe .136 Mils**

**201-08A - COMPRESSOR,NASH A 201-08A (23-Aug-19)**

**OVERALL LEVEL**

**11 - Nash Compr A Motor OB Horiz .106 In/Sec**

**12 - Nash Compr A Motor OB Vertical .062 In/Sec**

**12H - Nash Compr A Motor OB Vertical .059 In/Sec**

**13 - Nash Compr A Motor OB Axial .106 In/Sec**

**21 - Nash Compr A Motor IB Horiz .058 In/Sec**

**22 - Nash Compr A Motor IB VERT .086 In/Sec**

**23 - Nash Compr A Motor IB AXIAL .134 In/Sec**

**71 - Nash Compr A COMP IB HORIZ .126 In/Sec**

**72 - Nash Compr A Compressor IB Verti .183 In/Sec**

**72H - Nash Compr A COMP IB Vertical .181 In/Sec**

**73 - Nash Compr A COMP IB AXIAL .123 In/Sec**

**81 - Nash Compr A COMP OB HORIZ .126 In/Sec**

**82 - Nash Compr A Compressor OB Verti .208 In/Sec**

**82H - Nash Compr A COMP OB Vertical .218 In/Sec**

**83 - Nash Compr A Compressor OB Axial .138 In/Sec**

**83H - Nash Compr A COMP OB AXIAL .146 In/Sec**

**9002-10 - D-HYDROGENATOR AGITATOR (23-Aug-19)**

**OVERALL LEVEL**

**11 - MOTOR OUTBOARD HORIZONTAL .089 In/Sec**

**21 - MOTOR INBOARD HORIZONTAL .076 In/Sec**

**23 - motor inboard axial .058 In/Sec**

**31 - GEARBOX INPUT SHAFT -HORIZONTAL .251 In/Sec**

**31H - GEARBOX INPUT SHAFT -HORIZONTAL .270 In/Sec**

**31L - GEARBOX INPUT SHAFT-N-S-LOW FRQ .241 In/Sec**

**51 - GEARBOX TOP PLATE- E-W .328 In/Sec**

**51L - GEARBOX OUTPUT SHAFT-E-W-LOW FRQ .373 In/Sec**

**52 - GEARBOX TOP PLATE- N-S .304 In/Sec**

**52L - GEARBOX OUTPUT SHAFT-E-W-LOW FRQ .346 In/Sec**

**53 - GEARBOX OUTPUT SHAFT -VERTICAL .082 In/Sec**

**61 - GEARBOX OUTPUT SHAFT-HORIZONTAL .204 In/Sec**

**61L - GEARBOX OUTPUT SHAFT-E-W-LOW FRQ .273 In/Sec**

**81 - AGIT INTERMED BRG @ SEAL- N-S .037 In/Sec**

**82 - AGIT INTERMED BRG @ SEAL- E-W .035 In/Sec**

**83 - AGIT INTERMED BRG @ SEAL- VERT .037 In/Sec**

**2130-1old - C Concentrator Vacuum Pump (23-Aug-19)**

**OVERALL LEVEL**

**11 - Motor OB HOR .069 In/Sec**

**21 - Motor IB HOR .052 In/Sec**

**23 - Motor IB AXIAL .142 In/Sec**

**71 - Compressor IB HOR .128 In/Sec**

**81 - Compressor OB Horiz .136 In/Sec**

**83 - Compressor OB Axial .067 In/Sec**

**MEASUREMENT POINT OVERALL LEVEL HFD / VHFD**

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**new AC - INSTRUMENT AIR COMPRESSOR (23-Aug-19)**

**OVERALL LEVEL 1-20 KHz**

**11 - MOTOR OB HOR .128 In/Sec 1.045 G-s**

**12 - MOTOR OB VERT .093 In/Sec .711 G-s**

**13 - MOTOR OB AXIAL .070 In/Sec .308 G-s**

**21 - MOTOR IB HOR .182 In/Sec .816 G-s**

**22 - MOTOR IB VERT .087 In/Sec .635 G-s**

**23 - MOTOR IB AXIAL .083 In/Sec .414 G-s**

**71M - COMP MALE SHAFT IB HOR .087 In/Sec**

**72M - COMP MALE SHAFT IB VERT .123 In/Sec**

**73M - COMP MALE SHAFT IB AXIAL .121 In/Sec**

**81M - COMP MALE SHAFT OB HOR .185 In/Sec**

**82M - COMP MALE SHAFT OB VERT .348 In/Sec**

**83M - COMP MALE SHAFT OB AXIAL .299 In/Sec**

**71F - COMP FEMALE SHAFT IB HOR .149 In/Sec**

**72F - COMP FEMALE SHAFT IB VERT .141 In/Sec**

**73F - COMP FEMALE SHAFT IB AXIAL .126 In/Sec**

**81F - COMP FEMALE SHAFT OB HOR .146 In/Sec**

**82F - COMP FEMALE SHAFT OB VERT .257 In/Sec**

**83F - COMP FEMALE SHAFT OB AXIAL .127 In/Sec**

**-------------------------------------------------------------------------------**

**Clarification Of Vibration Units:**

**Acc --> G-s PK**

**Vel --> In/Sec PK**

**-------------------------------------------------------------------------------**

**Clarification Of Vibration Units:**

**Acc --> G-s PK**

**Vel --> In/Sec PK**

**Dsp --> Mils P-P**

**\* - Indicates Data Has Date/Time Different From Machine Date/Time**