HI-SPEED INDUSTRIAL SERVICE QualiTest® Diagnostics

7030 Ryburn Dr. Millington, TN Phone: (901) 873-5300 Fax: (901) 873-5301 www.gohispeed.com

June 2, 2021

Will Ledbetter
USG-Greenville
Greenville, MS

The following is a summary of findings from the May 2021 monthly vibration survey at the USG Greenville, MS Plant. Please let us know if there are any questions or comments.

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

Perlite

#7 Expander Dust Collector
Motor data is indicating that bearing may need to be greased. Data also shows some signs of minor defects in the bearings. Rated as a **CLASS II** defect.

#8 Expander Dust Collector
Motor still has high amplitude/high frequency/non-synchronous vibration. **Drive end bearing is showing signs of significant defects/wear. Motor needs attention very soon**. Rated as a **CLASS III** defect.

#5 Combustion Blower
This fan was not accessible this month, however, the following likely still applies: Blower bearing spectral data is showing excessive looseness in the outboard bearing while both bearings are showing strong sign of wear. **Unit needs attention soon**. Rated as a **CLASS III** defect.

#7 Combustion Blower
This fan was not accessible this month, however, the following likely still applies: The fan bearings were recently changed on this unit; however, vibration remains high. There appears to be ½ rpm harmonics in the fan spectra. This typically indicates fit looseness. Shaft may be worn. Ensure sheave hub is tight and perform lift check of fan shaft with dial indicator to confirm shaft defection. Also ensure fan is tight on shaft. **Unit needs attention as scheduling allows**. Rated as a **CLASS II** defect.

#5 Expander Dust Collector
High 1 x rpm vibration is still present and indicates imbalance of the fan wheel. Fan wheel needs to be inspected as scheduling allows**. A field balance is likely necessary.** Rated as a **CLASS III** defect.

#6 Expander Dust Collector
Fan was not in service this month. If no actions have been taken, then the following still applies :1 x fan rpm vibration is over 1 ips-pk at the fan inboard vertical. This is most likely due to a combination of imbalance and deteriorated grout around the fan base. Inspect and clean fan wheel. Base needs to be re-grouted in the near future. Rated as a **CLASS III** defect.

Hydrapulper
Gearbox continues to show some signs of gear issue and possible bearing issue. Drive motor is also showing some signs of bearing defect(s) in the motor and rotor bar issue. This motor will likely need attention soon. Rated as a **CLASS II** defect for now.

Mix-up/Reclaim

White Water Mix-up Pump
Pump was not in service this month. If no actions have been taken, then the following still applies: Pump is very noisy and pump amplitude has increased substantially this month. Drive end of pump shaft is physically moving around which indicates that the bearing is wiped. **Replace pump ASAP**. Rated as a **CLASS IV DEFECT**.

Dump Chest Agitator

Gearbox frame and gearbox were physically rocking back and forth. Frame is likely cracked. Motor still has a significant 1 x rpm motor horizontal vibration. This is an indication of structural or misalignment issue. Coupling may also, have issue. **Inspect/repair frame/base, inspect coupling and re-align motor to less than .003" offset and angularity**. Rated as a **CLASS III** defect.

Starch Blower

The high pressure blower has had an increase in acceleration throughout the blower. There are several high amplitude harmonics of blower rpm present as well. This is a good indication of internal wear of the blower. Blower will need attention SOON. Rated as a **CLASS III** defect.

Ultra-Sorter Screen

Motor base was found to be cracked last month, and it is unclear if this issue has been repaired. Motor vibration has decreased some; however, screen bearings are showing signs of wear. Screen bearings may need to be replaced in the near future. We will continue to monitor this issue closely. Rated as a **CLASS II** defect.

#2 White Water Loop Pump

Pump was not in service this month. If no actions have been taken, then the following still applies: Vibration data of the motor indicates defects are present in the motor bearing. Motor needs to be replaced as soon as practical. Rated as a **CLASS III** defect.

#2 East Well Water Pump

Pump was not in service this month. If no actions have been taken, then the following still applies: Pump data shows defects are present in the pump bearings. Pump needs attention as scheduling allows. Rated as a **CLASS II** defect for now.

Fiberglass

#2 Oven Circulation Fan

Motor has high 1 x rpm vibration in the vertical direction. Ensure all fasteners are tight and check sheaves for issues such as wear and misalignment. Rated as a **CLASS II** defect.

Board Line 3

Machine Chest Pump 3B

Motor is starting to show signs of bearing defects in the motor bearings. We will monitor this closely. Rated as a **CLASS II** defect.

Board Line Main Drive

Overall amplitude remains lower than previous. We have suspected this issue to be possible resonance; however, electrical vibrations are indicating that this issue may in fact be related to rotor bar issues. **An online and offline PdMA test could also clarify this issue.** We could perform the online test while we are onsite next month. For now this is rated as a **CLASS II** defect.

#1 Former White-Water Pit Pump
Vibration spectra of the motor signs of bearing defects of the drive end bearing. Inspect motor as scheduling allows. Rated as a **CLASS II** defect.

#2 Former White-Water Pit Pump
Pump was not in service this month. If no actions have been taken, then the following still applies: Motor high frequency acceleration has increased quite a bit this survey. Motor is showing strong signs of bearing defects in the spectral data. **MOTOR NEEDS ATTENTION SOON**. Rated as a **CLASS III** defect.

Seal Water Return Pump
Motor base is loose and is causing some unnecessary motor vibration. Ensure all fasteners are tight and ensure sheave alignment is good. Rated as a **CLASS II** defect.

Vacuum Pumps (1,2, and 3)
We are seeing some mid to high frequency noise floor in the motor spectra on all three motors. We suspect the bearings are starting to develop electrical fluting of the races. This is a common issue with AC motors being operated by VFD's that do not having grounding protection. We highly recommend letting us install an Aegis Grounding ring inside the motor at the drive end and installing an insulated bearing on the outboard end of the motor. This will help tremendously with fluting issues. This should be done as soon as scheduling allows. Rated as **CLASS II** defects.

Vacuum Pump #2
Motor has a higher than normal 1 x motor rpm vibration. This is likely due to the motor base not being secured properly to the concrete base. Motor base needs to be anchored properly. Rated as a **CLASS II** defect.

Vacuum Pump #3
Motor vibration data has been showing some possible lubrication issues; however, data is showing signs of bearing defects likely present in the outboard motor bearing. Motor may need attention in the near future. Rated as a **CLASS II** defect.

Wet End Combustion Blower
Blower bearings are continuing to trend upward on defect frequency vibration. Acceleration has also increased again this survey. These are signs of bearing defects/wear. **Bearings should be scheduled for replacement as soon as scheduling allows.** Rated as a **CLASS II** defect for now.

Finishing

#3 Finishing Baghouse Dust Collector
This fan had a failure earlier a couple of months back and damaged the inner cone and fan wheel. New bearings are showing some noise floor in the mid frequency range. This type of vibration should not be present with new bearings unless they are dry or defective. We will monitor this issue closely. For now, ensure bearings have adequate grease. Rated as a **CLASS II** defect.

Kiln Lube Oil Pump
The pump is showing signs of wear. Impacting can be seen in the vibration data along with pump vane harmonics. We will monitor this closely. Rated as a **CLASS II** defect.

Blue Oven 1 Zone 1 Circulation Fan 1
Vibration data indicates that the fan is out of balance. It is recommended to inspect the fan wheel for build-up and damage. Ensure sheaves are aligned properly and belts are in good shape and properly tightened. Rated as a **CLASS II** defect.

Blue Oven 1 Zone 1 Circulation Fan 2
Vibration data of the fan bearing indicates bearing faults more so in the bottom fan bearing. It is recommended to replace fan bearings as scheduling allows. Rated as a **CLASS II** defect.

Blue Oven 1 Exhaust Fan
Data shows imbalance of the fan. Fan shaft may also be bent. Sheave misalignment may also influence this vibration. Sheaves should be checked for misalignment and wear and perform a field balance of the fan. Rated as a **CLASS II** defect.

Blue Oven 1 Zone 2 Circulation Fan 1 and 2
Motor and fan vibrations remain higher than normal. Vibration is at fan speed in the motor and fan. This may be due to build-up on the fan. Inspect fan wheel for build- up and damage ASAP. Inspect sheaves and belts as well. Rated as a **CLASS II** defect.

As always, it has been a pleasure to serve USG Greenville, MS. 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
Cell: 901-486-4565
Email: kwilliam@gohispeed.com