HI-SPEED INDUSTRIAL SERVICE QualiTest® Diagnostics

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The following is a summary of findings from the December 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

Defects

Perlite

#7 Expander Dust Collector
Motor data is indicating that bearing may need to be greased. Data is also showing increase in amplitude indicating bearing is near the end of its life. Rated as a **CLASS III** 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 replaced very soon**. The fan bearings is showing signs of wear also
Rated as a **CLASS IV DEFECT**.

#5 Combustion Blower
Motor shive and belts are showing signs of wear and or misalignment Need to check the runout on the fan shaft also. Rated as a **CLASS II** defect.

#6 Combustion Blower
Motor shive and belts are showing signs of wear and or misalignment Need to check the runout on the fan shaft also. Rated as a **CLASS II** defect.t
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#8 Combustion Blower
Blower data is indicating that the belts need to be replaced and alignment checked. Rated as a **CLASS II** defect.

#5 Expander Dust Collector
The high 1x fan vibration is causing the bearings to have a defect the bearings will need to be replaced before a balance can be performed.
Rated as a **CLASS III** defect.

#6 Expander Dust Collector
1 x fan rpm vibration has dropped from 1 ips-pk to 0.6 ips 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
Hydrapulper could no be accessed due to pulp build up
The Hydrapulper Gearbox continues to show some signs of gear issue and possible bearing fit issue. The motor has possible rotor bar problems. **PdMA test should be performed during the next shutdown also to 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.

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
Blower was not in service this month. If no actions have been taken, then the following still applies: 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 III** defect.

#1 White Water Loop Pump
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 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

#1 Recycle Pump
Vibration data indicates that the belts need to be checked.
CLASS II
#2 East Well Water Pump
Pump data shows defects are present in the pump bearings. Pump needs attention as scheduling allows. Rated as a **CLASS III** defect for now.

Fiberglass
Fiberglass was down this month.

#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. Check for cracks in structure
Rated as a **CLASS II** defect.

Board Line 3

Machine Chest Pump 3B
Motor is showing 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 has doubled since last month. 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 should be performed during the next shutdown also to clarify this issue Should be scheduled .** 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. Acceleration has increased from .54 G To 9.54 G's motor needs replaced as scheduling allows. Rated as a **CLASS III** defect.

#2 Former White-Water Pit Pump
Motor high frequency acceleration has increased quite a bit this survey. Motor is showing strong signs of bearing defects in the spectral data. Rated as a **CLASS II** 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. sub-synchronous vibration has suddenly appeared this could be caused by belts. Check belts and sheaves.
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 #1
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 and inboard motor bearing. Motor may need attention soon. Rated as a **CLASS II** defect.

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. The pump has a high 1 x vain pass this is typically due to vain restriction pump needs to be cleaned 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. **BLOWER NEEDS ATTENTION SOON** These are signs of bearing defects/wear. **Bearings should be scheduled for replacement as soon as scheduling allows.** Rated as a **CLASS III** defect for now.

Finishing

#3 Finishing Baghouse Dust Collector
Vibration data is showing a high 1x on fan axial and horizontal, fan needs to be cleaned. 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 III** 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 III** 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,

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