



**QualiTest® Diagnostics**

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The following is a summary of findings from the 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

### #6 Combustion Blower

Motor has high vertical vibration at fan speed. Blower data shows some high amplitudes with 1, 2, and 3 x rpm being dominant in spectra. This is likely due some type of structural looseness and or bearing fit/shaft looseness. Inspect unit as scheduling allows. Ensure sheaves are aligned properly. Rated as a **CLASS III** defect.

### #7 Combustion Blower

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 deflection. 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

1 x and 2 x fan rpm vibration is dominant in the fan inboard vertical spectral data. 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 II** defect.

### #7 Expander Dust Collector

Motor has increased vibration that appears to be near motor rpm. This may be sheave/belt related. Check sheaves and belts for wear and misalignment and check all base fasteners. Check angularity and offset alignment. 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.

### Hydrapulper

Drive motor is showing some signs of bearing defect(s) in the motor and possible rotor bar issue. Gearbox also shows some signs of internal wear. This is being monitored closely. Rated as a **CLASS II** defect for now.

## Mix-up/Reclaim

### Ultra-Sorter Screen

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.

### **Dump Chest Agitator**

Motor still has 1 x rpm motor horizontal vibration with some 2 x rpm vibration in motor verticals. 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 II** defect.

### **#2 White Water Loop Pump**

**Unit was not in operation, the following likely still applies:** Vibration data of the motor indicates defects are present in the motor bearings. Rated as a **CLASS III** defect.

## ***Fiberglass***

### **#2 Oven Circ Fan**

Data shows some 1 2 and 3 x rpm vibrations present in fan. Also, motor has high vibration at 1 x fan rpm. Fan shaft may be bent and or worn. Rated as a **CLASS II** defect.

## ***Board Line 3***

### **Machine Chest Pump 3B**

Motor is showing signs of bearing defects in the motor bearings. Rated as a **CLASS II** defect.

### **#3 Top Press Roll Drive**

Motor may be operating near a resonant frequency. Motor speed was around 1518 rpm and 1 x rpm amplitude was 1 .1 ips-pk. It is recommended to stay away from this range to help minimize vibration and other issues. Rated as a **CLASS II** defect.

### **Board Line Main Drive**

Overall amplitude in motor is lower this survey. Still likely has possible resonance but may also be issue such as sheave misalignment and or loose fasteners. Inspect for these issues soon. Rated as a **CLASS II** defect.

### **#1 Former White-Water Pit Pump**

**Unit was not in operation, the following likely still applies:** 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**

Motor data shows non-synchronous peaks in spectra with elevated 1k-20khz amplitude. This is indication of motor bearing defects. 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 with Vac Pump Motor #1 being the highest amplitude of vibration. 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.

### 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**

### Grinder 1 and 2

These motors have higher 1 x rpm vibration. May be related to grinding assembly issues such as imbalance. Inspect grinders as time allows. Rated as **CLASS II** defects.

### 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

Fan end fan bearing (outboard) data is showing signs of defects/wear. Motor and fan also have some 1 x rpm vibrations. Fan bearings will need attention soon. Also, ensure sheaves are aligned properly and belts are in good shape and properly tightened. 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 III** defect.

### #3 Finishing Baghouse Dust Collector

Motor data is beginning to show some peaks in spectra that are non-synchronous and appear to be bearing defect frequencies. Data of the motor and fan also indicate some possible drivetrain issues such as sheave misalignment and or belt issues. Inspect motor bearings, sheaves and belts soon. Ensure sheaves do not have face run-out and are aligned properly. 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



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