

December 2, 2020

Integrity Mechanical

Subject: Hot Water Pump 7 at Germantown Performing Arts Building 1801 Exeter**Introduction**

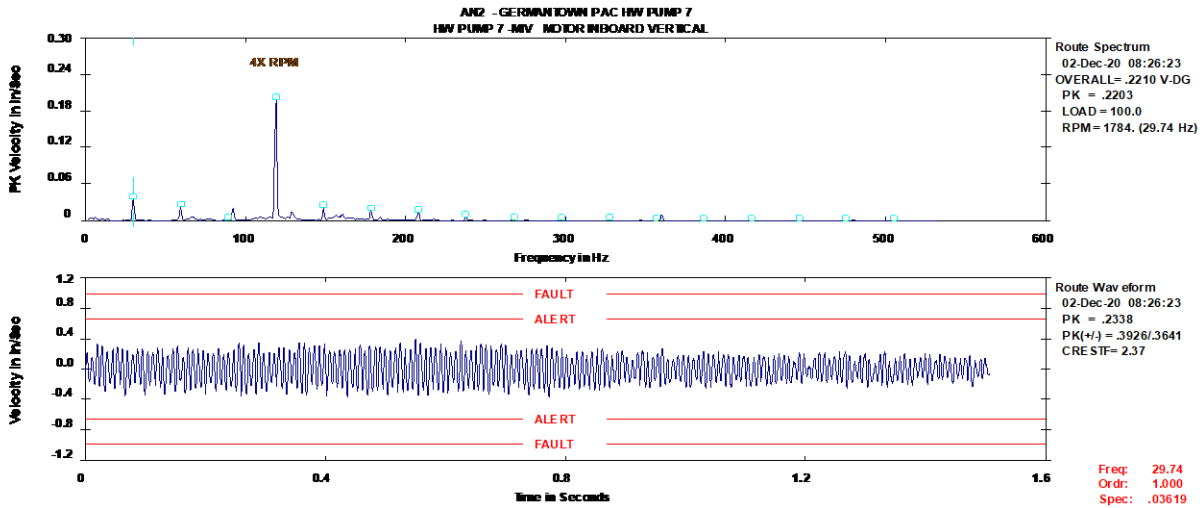
This pump was making noise after repairs. A full set of vibration data was acquired on the motor and pump unit the morning of December 2, 2020. Analysis, suggestions and supporting graphs and plots are included below.

Analysis

Vibration data shows a dominant vibration at 4 times the unit shaft speed. That seems to indicate the issue is associated with the pump impeller. We are assuming the impeller has 4 blades. We suspect the vibration is possibly flow related or is of a resonant nature. There also seems to be a BEAT vibration in the unit with a period of a few seconds. Some smaller vibrations seen are normal such as the shaft fundamental and small harmonics; however, 1 or 2 seemed very close to 2 times line and 6 times line frequency which could be electrical related.

Recommendations

Check the motor for soft foot and check all electrical connections. You could also check the shaft alignment and be sure there is no axial pre-load. Consider pipe strain as a possible root cause. The flanges could be loosened and then retightened. Flexible connectors could be added to help further isolate this unit from vibrations of adjacent machines. Check to make sure the pump is running at an optimal point in the design curve. Last would be to check to make sure the pump impeller is set up correctly.



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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,

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