

Phosphate Plant – Pump

Problem

- The pump was experiencing vibration drift:
- There was an observable change in the behavior of pump #3's vibration tag.
- The rise in vibration magnitude and range started ~06/07/19.

How SAM GUARD Helped

- SAM GUARD alerted about changes in vibration behavior while the pump's power remained in baseline.
- This indicated that the issue was not related to higher performance by the pump, because performance remained the same (flow/RPM wise) while the vibration was increasing and becoming unstable.
- SAMGUARD detected a deviation from standard tag behavior in reference to other parameters related to equipment.
- Alerts led the engineer to suspect a problem with the pump's impeller or in the pump's fixation to the concrete structure below. The issue was verified via an external vibration measurement device, and a problem was isolated in pump #3.
- The maintenance engineer found that the pump was showing signs of imbalance and suspected that it had material crystallization on the pump impeller. The decision was made to stop the pump for cleaning.

Value

- SAMGUARD predicted the pump failure, allowing an engineer to respond in advance before critical damage was done to the equipment.
- The pump station's concrete structure integrity was preserved (high vibration may cause cracks in structure damaging its structural integrity).
- No other system in the plant alerted about the high vibration since vibrations were still at acceptable values.

Pump Vibration drift over time

