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Case Study :: Fertilizer Plant and an SSA

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CUSTOMER SUCCESS STORY :: Fertilizer Plant and an SSA



GE's System 1* Condition Monitoring and Diagnostic Applications Reduces Unplanned Downtime by Detecting Unbalance in a Critical Machine.

A large fertilizer plant was experiencing a sudden vibration increase in one of its critical machines. The customer was aware of this change but the machine was running without trip. The decision was made to use System 1* to perform a root cause analysis of the situation.

PROBLEM

GE India's (GEIPL) Bently Nevada Division has a Supporting Services Agreement (SSA) with one of the country's largest fertilizer plants. The agreement includes periodic site and remote audits of vibration data from System 1* deployed on the plant's most critical rotating machinery. During one of the routine site audits, a GE engineer identified sudden vibration increase in one of the second body compressors. The machine was running with high vibrations above alarm limits but just under trip limits. As the machine was due for a full overhauling in three months from the date of the detection, the customer needed to ensure its availability until the planned shutdown.

SOLUTION

GE's System 1* Event Manager data showed symptoms of sudden increase in the forward 1X component that stabilized within three seconds of increasing. There was no major change in rotor position within the casing. Additionally, the normal bearing temperature trends ruled out the

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possibility of bearing failure. All data was pointing towards the possibility of a sudden increase in unbalance force due to a possible mass addition or removal on the rotor. As the vibrations were within above alarm limits but within trip limits and stable, close monitoring was done for radial vibration and position through System 1* data analysis for three months to correspond with the planned shutdown while ensuring machine availability.

During the planned shutdown, the machine was inspected and found that, some part of the rotor's mass had broken off near the outer edge of the impeller. This may have caused the unbalance in the rotor.

PAYBACK

As a result of the System 1* data, the problem was detected early, before it became more severe. The customer was able to prepare well in advance by acquiring a spare rotor in time for the planned shutdown. This helped avoid unplanned downtime as well as optimized the cost of the planned downtime. Furthermore, the close monitoring done between the detection of the problem and the planned shutdown helped ensure the machine was available and operating safely.

BENEFITS

- Accurate and timely diagnosis: The System 1* Event Manager data allowed for a prompt assessment and understanding of the problem.
- Avoided costly downtime: An estimated minimum of five days of downtime valued at \$208,000 was saved, as the customer was well prepared with a spare rotor.
- Safe and reliable operations: The monitoring of the machinery until the planned shutdown ensured safe and reliable operations of the machine without failure.

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