

Orbit Magazine

Case Study: Machinery Diagnostic Services

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Machinery Diagnostic Services

AN EXAMPLE OF HOW GE HELPS CUSTOMERS IN THE OIL & GAS INDUSTRY

Good Recommendation from GE Engineer Saves Saudi Customer Costly Downtime. GE's machinery diagnostic experts recently responded to an emergency customer request to troubleshoot problems resulting in start-up failure of critical machinery.

PROBLEM

A customer in Saudi Arabia has a Supporting Service Agreement (SSA) covering the commissioning, optimization, and availability of GE's extensive Bently Nevada product install base at their facility. The customer contacted GE with an emergency request to identify the root cause behind the failed start-up of a critical air blower, driven through a speed-increasing gearbox by an induction motor. A machinery diagnostic services (MDS) engineer was immediately mobilized to the site and quickly began diagnosing the machinery problem by pulling historical data from GE's System 1* condition monitoring software.

SOLUTION

Upon review of the available vibration data, the field engineer found the unit was tripping due to high vibration levels on the high speed gearbox when reaching full speed. In addition, a review of the transient data plots from GE's System 1 indicated the vibration levels increased while the machine was coasting down.

Prior to the evaluation by GE's MDS engineer, the customer had planned to disassemble the gearbox to inspect the internals (bearings) and rotor for any bow or bend. However, the MDS engineer recommended the flexible coupling between the gearbox and air blower be inspected before any such invasive and costly actions were undertaken. After detailed analysis, the engineer suspected the coupling itself was not operating properly because of limitations in its flexibility. Upon further inspection of the coupling, the customer confirmed that coupling flexibility was indeed being restricted, because the locknuts were being engaged. The locknuts were removed and the machine was started up. Subsequent evaluation of System 1 plots showed normal machine behavior during steady and transient states.

PAYBACK

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Without the GE engineer's assessment, the customer would have disassembled the gearbox and accrued significant costs due to delays in commissioning the asset. Additionally, because System 1 software was already deployed and optimized, quality data was available so that the problem was identified before a machine trip occurred. Because of the SSA agreement, GE engineers promptly helped resolve the issue, improving the reliability and availability of critical equipment at the plant. The Customer Support Manager later reported that had a machine trip occurred, it could have resulted in an estimated \$1 million in losses.

BENEFITS

- Prevented costly downtime. System 1's early detection of the issue helped prevent the machine from tripping, saving the customer an estimated \$1 million.
- Improved availability. The MDS engineer's correct diagnosis prevented the customer from exploring alternate solutions that would have taken the asset out of commission.
- Immediate/onsite response. Because of the SSA, an MDS engineer was immediately deployed to the customer's site to resolve the problem.
- Historical data. Since high-quality historical data was available through the SSA, it helped correctly diagnose the problem and enabled the customer to make a decision in a timely manner.

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