

FAILURE ON LFG BLOWER AT LANDFILL SITE

At a large municipal landfill in the southeastern United States, a waste management operator runs multiple mechanical blowers to extract and process landfill gas (LFG). These blowers are essential for maintaining negative pressure across the gas collection system and for meeting strict environmental compliance standards.

Because of the critical role these systems play in daily operations and emissions control, unexpected blower failures can quickly lead to costly downtime and potential regulatory issues.

OBJECTIVE

Following a series of unforeseen blower failures, the operator sought to implement a more reliable condition monitoring solution.

The decision was made to install Machine Sentry® MSF2 sensors along with a Bluetooth (BT) gateway to remotely monitor blower performance. The goal was to collect daily operating data from the blowers and identify potential issues before they led to equipment failure or environmental non-compliance.

SURVEY

The monitoring system was deployed across three 200 HP electric motors and three Lonestar MC12 blowers, each capable of handling 5,500 CFM of gas. Triaxial MSF2 sensors were permanently installed, and all data was captured through the Machine Sentry software platform.

Key parameters monitored included overall vibration velocity (mm/s), overall acceleration (g's), peak acceleration, bearing condition, and temperature. The data was collected daily during operation to ensure consistent visibility into equipment health.

MACHINE SENTRY FIXED (MSF2)

The MSF2 can be used on a wide range of equipment, including compressors, pumps and motors as part of a condition monitoring programme.

- Frequency range of 1Hz to 8.5kHz
- Internal memory large enough to store more than 5000 readings
- High-speed data transfer via Bluetooth®
- Programmable data acquisition
- Replaceable battery
- Up to 5 years battery life
- Gas zone 0 and dust zone 20 certified
- Sealed to IP 67



MACHINE SENTRY®

FINDINGS

During a survey in July, one of the blowers showed early warning signs of a developing issue. Vibration levels were elevated at both the non-drive end (NDE) and drive end (DE) blower bearings. The frequency spectrum displayed high-frequency peaks unrelated to normal running speed, with an increased vibration floor separated by cage frequency. These indicators strongly suggested a bearing-related defect.

Temperature readings also raised concern. A 20 percent increase in temperature was recorded at the NDE bearing over just two days, further signaling that the component was deteriorating.

To validate the concern, the team compared the data from this unit (Blower 3, in service for two months) to a similar unit (Blower 2) that had been running for 12 months. Blower 2 showed stable performance, while Blower 3 exhibited the abnormal patterns.

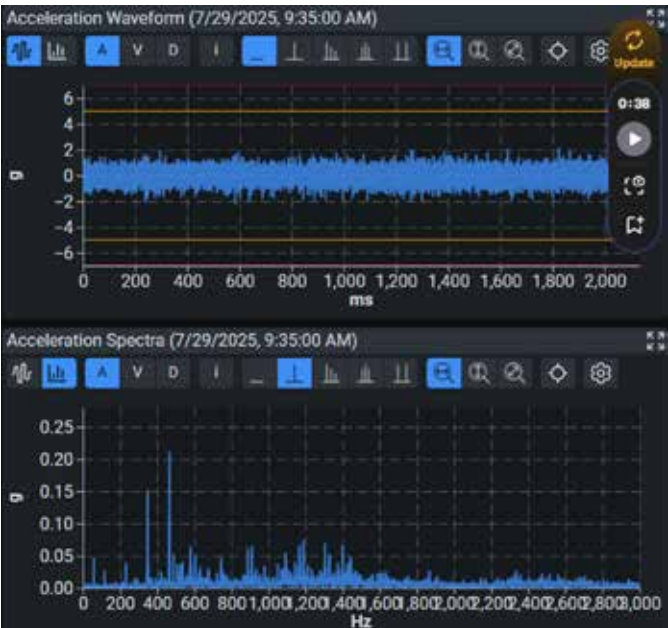
ROOT CAUSE ANALYSIS

An inspection of Blower 3 confirmed premature wear on the NDE bearing. Given the short time the unit had been in service, the most likely cause was a problem during installation. Shaft alignment was checked and found to be within acceptable tolerances for a 3,575 RPM blower, which ruled out misalignment as the root cause.

CORRECTIVE ACTION

The equipment manufacturer agreed to replace both bearings under warranty. As part of the corrective measures, the oil reservoir was cleaned and refilled, and the lubrication schedule was updated to better support blower performance. Thermal insulation was also added around the bearing housing to reduce the effects of ambient temperature fluctuations.

Blower 2 NDE Bearing



Blower 3 NDE Bearing



OUTCOME

By identifying the fault early, the operator was able to prevent a major failure. The use of Machine Sentry enabled the team to intervene before the problem escalated, avoiding unplanned downtime and a potential \$35,000 replacement cost.

The intervention extended the service life of the blower and improved the overall reliability of the system. Most importantly, the successful outcome reinforced the value of predictive maintenance for landfill gas operations. Based on the results, the operator has since expanded the use of Machine Sentry to additional sites.