MetalSCAN™
ONLY BY GASTOPS

gastops
LONG LIVE EQUIPMENT

CASE STUDY

GE LM6000 - 1B Bearing Failure

Background

The operator has a baseload LM6000 with MetalSCAN sensors monitoring 6 individual sumps (A, B, C, D, E and AGB). The engine had been operating continuously with normal/healthy indication of bearing condition using MetalSCAN.

Event Description

The unit had been operating continuously for 12,500 hours since overhaul when the A sump MetalSCAN sensor began to detect ferrous debris in late September and reached the warning limit a few days later.

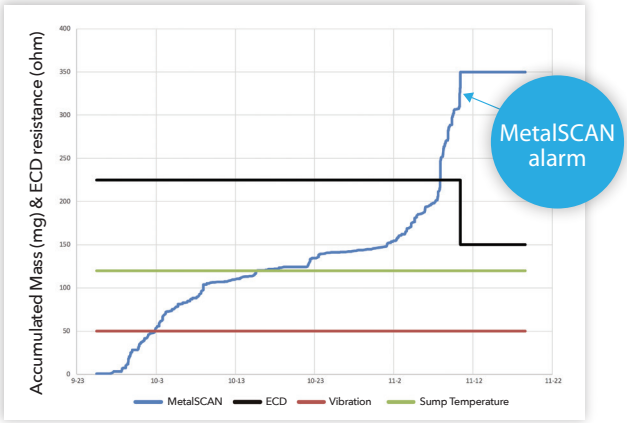
As the engine continued running, the counts increased slowly over the month of October. The Gastops Remote Monitoring Team was in contact with the operator throughout the event, reviewing MetalSCAN data and advising on estimated remaining life. Continued operation with close monitoring and small load reduction was advised.

In early November analysis of a filter (without shutdown) pointed to 1B bearing material. A lease engine was ordered while running continued. In early November the particle count rate began to increase and the alarm limit was reached by mid November, 44 days after the initial detection.

There was no other indication of a problem from vibration, temperature or the chip detector device in these 44 days of early warning from the MetalSCAN. The operator was able to begin planning for the eventual engine shutdown and replacement at this very early stage, with an estimated 96 hours of forced outage avoided. Engine teardown at the depot confirmed that the 1B bearing damage correlated very well with the MetalSCAN damage alarm indicator.

Time History of Events

ENGINE WAS RUNNING CONTINUOUSLY THROUGHOUT THIS PERIOD



Only last 6 weeks shown

BENEFITS

- Data-based damage trending allows continued operation and timely alarms
- Continuous online detection of individual debris for the individual sump (A sump)
- Constant contact with the Gastops Remote Monitoring to advise on actions and remaining useful life
- Critical LM6000 running continued and forced outage time was greatly reduced
- Damage was limited to the 1B bearing, secondary damage or catastrophic failure avoided
- Low cost of repair

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