

CASE STUDY GELM2500 C-SUMPBEARING FAILURE

Apart from slightly higher readings on the C-Sump scavenge temperature, no other engine parameters (including chip detector or vibration readings) indicated abnormalities.



User Application

GE LM2500 PE Aeroderivative Gas Turbine with MetalSCAN real-time condition indication sensors monitoring A, B, C and AGB-Sumps providing heat and power.



Timeline

Day 1: Initial Debris Detected

The engine had been operating continuously for three months since MetalSCAN was installed on this unit. An increase in debris accumulation was first detected by the C-Sump MetalSCAN sensor.

Day 3: Warning Triggered

As the engine continued running, within one day there was a steep rise in counts which triggered the alarm. The engine power was subsequently reduced to 80% of the normal base load to slow damage progression and allow operation until a scheduled maintenance period.

Day 9: Alarm Triggered

The alarm limit was reached nine days later, at which time the engine was shut down the day before the scheduled maintenance period.

Day 10: Scheduled Maintenance

The teardown inspection revealed damage limited to #5 and #6-Bearings, and no secondary damage. The bearing repairs were completed within the scheduled maintenance period.

Benefits

- MetalSCAN helps gas turbine operators maximize equipment availability by providing the industry's earliest advance warning of potential damage events.
- Withover 700 million operational hours over 40 years, MetalSCAN has been approved and validated by engine manufacturers, advanced research organizations, bearing companies and internationally recognized certification authorities.
- Chip detectors, vibration and temperature sensors have proven to be ineffective health indicators of equipment often leading to false, late, or missed bearing damage detection and unplanned shutdowns.
- MetalSCAN provides data once debris counts start trending upwards allowing for planned maintenance predictively and proactively.
- MetalSCAN and Gastops' ECA (Equipment Condition Analytics) Team advise operators on the real-time condition of their equipment, provide proactive actions for the condition, and predict Remaining Useful Life.

Conclusion

The engine was running continuously up to the day prior to the maintenance period. The bearing repairs were completed within the scheduled maintenance avoiding additional lost production.





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