



Success story

Nexus Controls solves customer gas fuel startup issue

Industry:

Power generation

Application:

Heavy duty gas turbine

Solution:

Nexus Controls Remote Diagnostic Services

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Introduction

The Nexus Controls Remote Diagnostic Services (RDS) team was able to diagnose a gas fuel startup issue for a 7FA heavy duty gas turbine in time to recommend a proactive, cost-effective solution—saving this customer an estimated \$50,000 to \$1,000,000 in potential unit trips, equipment repairs, and extended outage costs.

Customer's challenge

Customer heard a loud noise inside their gas turbine unit upon startup but the unit was still able to get to full speed no load (FSNL) and no other issues were observed during ramp up. Despite the lack of additional symptoms, hearing such a noise in the unit was quite concerning, especially as this was the second time it had occurred. The customer decided to reach out to the Nexus Controls RDS team.



Nexus Controls solution and added value

Nexus Controls RDS team utilized the remote services gateway (RSG) workstation at customer's site to analyze trend data for the concerning startups. The RDS team noticed that the P2 pressure jumped to 185 psi when the speed ratio valve was commanded to open, as compared to an expected value of around 40 psi. They also noticed similar oscillations at certain points during ramp up to FSNL, indicating that the pressure was constantly trying to stabilize.

Based on these observations, the RDS team determined that the speed ratio valve was causing the issue. The team first recommended that the customer calibrate the valve, stroke it for proper operation, and replace the servos. However, after performing these actions the P2 pressure was still oscillating, so the RDS team determined there was internal damage on the valve making it unable to properly control the pressure.

At this point the RDS team recommended replacing the valve as soon as possible to prevent continued rough starts putting additional stress on the unit and eventually damaging the combustion system. Customer followed RDS team recommendation and the unit returned to normal operation.

Main customer benefits:

- Root cause diagnosed in ~2 hours among 100s to 1,000s of potential causes
- Total time of 10 hours to diagnose and address issue
- Saved \$20,000 to \$300,000 in potential unit trips and equipment repairs
- Saved \$20,000 to \$750,000 in or more in potential forced outages, lost generation/availability

Closing

The Nexus Controls RDS team was able to quickly diagnose and recommend a successful resolution to this customer before any damage or other negative impacts could occur. Without this support, the issue could certainly have resulted in unit trips and turned into something much worse—like valve failure where components from the valve could go downstream and damage the gas control valves, clog fuel nozzles, or impair other combustion hardware—which would result in extended downtime, lost generation or availability, expensive equipment repair costs, and extensive outage costs.

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