

(RE)BUILT TO LAST

RETROFITTED FANS IMPROVE SYSTEM RELIABILITY & REDUCE COSTS FOR ELECTRIC POWER PLANT

THE CHALLENGE

In a recent application at an electric power plant in Ohio, a customer had installed two identical Heat Recovery Steam Generators (HRSGs) that were equipped with fans that would pull hot flue gas for an ammonia injection process. Each HRSG system consisted of two fans—with one fan running during normal operation, and the second fan as a stand-by backup.

In one of the two systems, the fan bearings were experiencing excessive temperatures that led to premature wear, and the equipment required frequent repair and replacement. The customer had attempted to mitigate the problem by blowing compressed air into the space between the bearings. However, the customer needed a more permanent solution to increase system reliability and reduce the cost of frequent maintenance, replacement parts, and unplanned downtime.

They turned to the experts at New York Blower (nyb) for help, starting with a on-site inspection.



An inspection is conducted by a technician to determine the cause of overheated bearings.

OVERVIEW

Industry - Power Generation

Application - Electric Power Plant

Problem - Premature bearing failure due to excessive heat.

Solution - Redesigning the fan and changing the type of bearings.

THE SOLUTION

The engineering team was able to diagnose the problem and provide an option that would ensure long-term, reliable operation. To start, the underlying cause(s) of the excessive operating temperatures needed to be determined.

After a careful inspection of all four fans, the team identified two underlying factors contributing to the overheating problem. The primary cause was heat conduction due to the direct connection between the fan casing and the drive base, and a secondary cause was radiation from the exposed hot casing wall between the heat slinger guard and the insulation jacket.

Once the troubleshooting was complete, the engineering team provided details for redesigned fans to ensure optimal performance in the real-world environment of the application. The fans were redesigned to include:

- Separation between the casing and drive base to prevent the conduction of heat between the two.
- Modification of the cooling wheel and guard configuration to insulate the exposed hot casing wall and improve air circulation around the cooling wheel to keep the bearing area cool.
- Change the bearings to an oil lubricated, mono-block tunnel bearing arrangement for optimal alignment and robustness.

With these three design changes, nyb was able to offer a solution to replace the customer's ineffective system with a cost-effective solution built to withstand the application's unique challenges.



THE NEW YORK
BLOWER COMPANY

800-208-7918 | nyb.com