

Electrical Power Generation

Superheat, Low NOx Boiler Used for Start-up

One of the largest fossil-fuel based, electric-power-generating facilities in the U.S. is operated by PG&E Company at Moss Landing, California. Two oil-fired boilers provide steam to two steam turbines which, in turn, drive two 750 megawatt generators. When a system is taken off line for maintenance, superheat steam is required during the system restart.

Occasionally, both boilers that provide steam to the two turbines at the Moss Landing facility must be taken off line at the same time. When this occurs, an auxiliary steam supply capable of providing 700 degree Fahrenheit steam is needed to pre-heat the system and draw a vacuum on the condensers. Because of the strict environmental standards, emissions produced by any boiler used for this purpose must not exceed 25 ppm NOx and 50 ppm CO.

A 55,000 lb/hr, 700 F package boiler was available in stock at Nationwide Boiler's Fremont, California facility. Although this boiler had sufficient capacity and met the steam temperature and pressure requirements, it did not meet the current NOx and CO emission limits of the Monterey Bay area. The boiler was immediately retrofitted with a new low NOx burner and fully tested at the Nationwide Boiler test facility. In addition, due to the salt-air environment of where the boiler was planning to be based and since plans called for using this boiler only twice each year on average, special protection was provided to ensure optimal performance. This protection consisted of all NEMA 4X electrical enclosures and panels, seal tight conduit, special priming and exterior paint, and a dry nitrogen blanket system that maintains a positive pressure of 10 inches of water inside the boiler. The protective inert-gas environment is used when plans call for the boiler to be out of service for an extended period.

Sixteen weeks after the contract was awarded, Nationwide Boiler delivered the complete, fully tested boiler system with the low NOx burner and added protection. The boiler was installed with the support of Nationwide Boiler technicians and was available for service whenever needed to support start-up procedures. Actual NOx emissions fell well below the required limits and third-party source tests confirmed levels of 15 ppm NOx and 10 ppm CO at full-load conditions.

Nationwide Boiler provided a complete solution that easily met the specific requirements for this project. The customer was satisfied with the solution and has become a loyal repeat rental customer of Nationwide Boiler.



Customer Profile

- Large fossil-fuel based, electrical power generating facility
- Moss Landing, CA
- Harsh salt-air environment

Supplied Equipment

- Skid-mounted 55,000 lb/hr, 700 F superheat package boiler
- Low NOx burner
- NEMA 4X electrical enclosures and panels