

District Heating

Two Watertube Boilers Easily Meet AQMD NOx Requirements with Ammonia-Free CataStak™ SCR System

NRG Energy Center San Francisco supplies energy-efficient district heating services to over 170 customer buildings in a 2-square mile area within the central business district of San Francisco, California. Steam is used for space heating, domestic hot water, air conditioning and industrial processes, representing more than 37 million square feet of space.

NRG's central district heating plant housed two (2) 55,000 lb/hr (71.4 MMbtu/hr) natural gas fired Keeler boilers that were required to comply with the Bay Area Air Quality Management District's (BAAQMD) Reg. 9 Rule 7 NOx emission requirement of 9 ppm (a total reduction of 90% at all conditions). Overall, the project requirements included an easy to operate and energy efficient space saving solution.

A single Ammonia-Free CataStak™ SCR system that utilized Combustion Components Associates (CCA) patented TRIM-NOX® LT urea injection system was supplied by Nationwide Boiler. The SCR system used a common and readily available 32% urea solution called DEF (diesel exhaust fluid), providing NRG with confident SCR performance without the use of ammonia. To meet the constraints of the tight boiler room configuration, Nationwide Boiler also designed and supplied a rail hoisting system which helped expedite the entire installation process.

The Ammonia-Free CataStak™ SCR system easily reduced NOx emissions from 30 ppm and was tested at 1 ppm NOx throughout the firing range. The system was also optimized from 20-65% load (65% is full load). The system remains to operate dependably without any performance issues or concerns about meeting future NOx emission limits, providing the customer with hassle-free operations and confident, efficient performance.



Working closely with CCA engineers and performing actual fire testing on package boilers, Nationwide Boiler proved that CCA's technology can be supplied for both package firetube and watertube boilers. This breakthrough technology enables Nationwide to provide a cost effective, ammonia-free SCR system to achieve up to 95% NOx reduction at a very low capital and operating cost. Additionally, boiler owners and operators adverse to ammonia can economically obtain the superior performance of SCR technology and not be limited to the poor operating and energy intensive performance of 9 ppm burners.



Customer Profile

- NRG Energy Center
- San Francisco, CA
- Provides services to over 170 customer buildings

Supplied Equipment

- 5 ppm Ammonia-free CataStak™ selective catalytic reduction system
- CCA patented TRIM-NOX™ urea injection system including urea injection skid with PLC, flowmeters, pump, injectors and day tank

CataStak™
Ultra Low NOx Solutions