MEETING THE COMPETITION HEAD-ON

With its lower NOx performance, lower energy consumption, higher turndown and a simpler design than conventional burners, COEN’s Delta-NOx burner challenges the competition in setting the new packaged boiler standard.

DELTA-NOx BURNER PERFORMANCE

Boiler Steam Capacity, x1000 lbs/hr

APPLICATION

A large hazardous waste incineration facility required a new, efficient replacement burner for its package watertube boiler. The boiler had an existing burner with limited fan capacity and CO emissions over 400 ppm. Lowering CO would increase boiler efficiency. Plus, future NOx regulations needed to be met without the use of expensive flue gas recirculation (FGR).

COEN replaced the existing burner with a new Delta-NOx burner to meet these requirements, reusing the existing fan, windbox and damper to reduce the retrofit cost. COEN also supplied the throat assembly, control valve, turnkey installation and start-up services.

RESULTS

The start-up results were even better than expected:

LOW NOx - NOx averaged 0.066 lbs/mmBtu over a ten-to-one turndown (60% NOx reduction).

LOW CO - CO averaged 0.033 lbs/mmBtu over load range and an 85% CO reduction.

STEAM CAPACITY - The low draft loss of the Delta-NOx resulted in a 20% increase in steam capacity with the existing air fan.

LOW OPERATING COST - Fan operating horsepower is 10% less even with a 20% increase in capacity. Also, the high operating costs associated with FGR are eliminated.

START-UP - The new Delta-NOx was tuned and set for automatic operation in one day.
When you need a simple and reliable low NOx burner designed to optimize system efficiency and emissions performance, you are ready for COEN’s Delta-NOx burner. Our industry-leading engineers crafted this simple yet rugged burner to feature no moving parts, allowing its venturi shape to provide uniform air distribution while lowering the airside pressure drop. The resulting decrease in fan horsepower is just the beginning of this low cost, low NOx solution.

COEN’s Delta-NOx burner achieves between 0.06 and 0.1 lbs/mmBtu NOx, firing natural gas without the maintenance and expense of flue gas recirculation (FGR). Additionally, lower NOx emissions are easily achieved with minimal FGR. Maximum system efficiency can be achieved by packaging the Delta-NOx with COEN’s Fyr-Monitor Combustion Control System and a variable speed drive on the forced-draft fan. The Delta-NOx is specifically designed to complement today’s compact boiler designs.

Destined to be the standard for industrial watertube boiler applications, COEN’s Delta-NOx solution delivers high efficiency, low NOx performance with low installed costs. COEN engineers questioned every detail of the Delta-NOx design. The result – a low NOx burner like no other in the industry.

**Optimum Performance**

- **Low NOx:** 0.06 to 0.1 lbs/mmBtu/hr (50 ppm to 83 ppm) on gas without FGR
- Lower NOx emissions easily achieved with minimal FGR
- Low NOx capability with oil firing
- Capacity range: 20 to 380 mmBtu/hr
- Compact flame with no harmful impingement
- Low VOC, CO and particulate emissions
- Low excess air and low airside pressure drop
- Wide range of gaseous and liquid fuels
- Designed for safe operation with simple controls
- Increased stability and turndown

**Clean combustion. Powerful results.**

- Simple, rugged design with no moving parts
- Venturi style burner to provide superior air distribution with reduced pressure drop
- Unique “Delta-Spud” radial gas injectors to reduce prompt and thermal NOx
- Secondary axial gas spuds to entrain furnace gases to further reduce NOx
- “Isothermal-Shield” for increased stability
- Optional auxiliary oil atomizer
- Optional removable spuds for firing refinery gases

**DELTA-NOx – THE ENERGY EFFICIENT, LOW NOx SOLUTION**
MEETING THE COMPETITION HEAD-ON

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DELTA-NOx BURNER PERFORMANCE

COEN CLIENTS ACHIEVE GREAT RESULTS WITH THE DELTA-NOx BURNER

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