COEN®
COEN COMPANY, INC.

TODD®

DYNASWIRL-LN™

Low-NOx Gas/Oil Burner for Multi-Burner and Utility Boilers

Lower Emissions. Higher Performance.

Improve your overall boiler performance while lowering NOx emissions with the high-efficiency, gas/oil-fired burner that's built to last.

With more than 13,000 MW of successful low-NOx utility retrofits, the *TODD® Dynaswirl-LN* burner offers the kind of hard-working performance and superior reliability that have made it the preferred choice for demanding utility applications.

- For heat inputs ranging from 30-300 MMBtu/hr per burner
- Capable of simultaneous gas and oil firing
- *COOLflow™* modeling process guarantees equal distribution of combustion air and flue-gas recirculation (FGR) for remarkably efficient operation

Dynaswirl-LN *Burners, Ready for Shipment*

Venturi Register - Eliminating the Guesswork

The *Dynaswirl-LN* burner's venturi register eliminates operator adjustments and guesswork by providing an even, turbulence-free axial air flow. The venturi shape also minimizes pressure loss through the burner and maximizes velocity. This not only allows the use of existing forced-draft fans, but also reduces fan horsepower requirements. An optional piezometer ring in the venturi facilitates measurement of combustion air flow over a wide operating range.

Dynaswirl-LN *Utility Burner Benefits*

- Up to 50% NOx reduction over conventional burners; and up to 90% reduction when combined with FGR or over-fire air (OFA)
- Operable with excess O_2 levels of 0.5% or less
- Extremely stable combustion minimizes boiler vibration
- Stable flames with FGR rates as high as 45%
- High turndowns of 8:1 on oil and up to 20:1 on gas
- Low CO, particulate and opacity emissions
- Reduced downtime, maintenance, fuel and operating costs

Swirler - Fixing the Ignition Point

Primary air exits the venturi register through the *Dynaswirl-LN* burner's swirler which provides the rotational vortex necessary for flame stability and thorough mixing. The swirler creates a tightly controlled, substoichiometric primary combustion zone with a fixed ignition point that never varies – regardless of load. The low-pressure zone formed by the swirler also recirculates hot gases within the flame pattern. This "internal FGR" is another key reason behind the *Dynaswirl-LN* burner's impressive NOx reductions. Secondary air exits the venturi register around the swirler. The remaining air flow exits through a separate sleeve as tertiary air, completing combustion downstream.

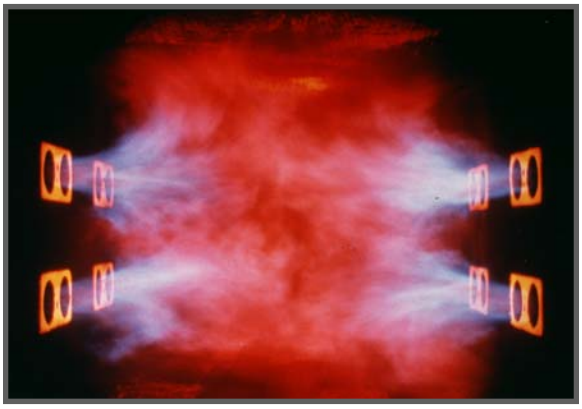
Oil Burner - Controlling Precise Flame Geometry

The *Dynaswirl-LN* burner's steam or mechanical atomizer achieves a precisely controlled flame geometry that creates substantial NOx reductions over conventional oil-fired burners. The low-energy-consuming steam atomizer provides a turndown ratio as high as 8:1, with steam consumption of <0.07 lbs per pound of oil burned. The atomizer eliminates the need for a more complex constant differential system and operates at a constant pressure. With the high-pressure mechanical atomizer, the *Dynaswirl-LN* burner provides substantial NOx and excess O_2 reductions through unique machining arrangements in our patented* multi-jet sprayer plate.

Dynaswirl-LN *Burner Firing End*

Gas Burner - Setting New Standards In Staging

The *Dynaswirl-LN* burner effectively controls NOx by staging fuel and air. Using both a multi-poker injector and center-fired gas burner, fuel-rich and fuel-lean zones are created within the flame envelope. The ratio of center-fired gas to poker gas, together with poker orientation and machining, is carefully optimized for each application.



Dynaswirl-LN *Burner Flames*

Quarl Extension - Creating Exceptional Stability

To further ensure an aerodynamically stabilized flame, the *Dynaswirl-LN* burner employs a unique, air-cooled, stainless steel quarl extension. The throat-exit shape is meticulously matched with the register and swirler designs to optimize combustion performance.

Pneumatic Air Slide - Providing Reliable On/Off Control

Combined with our *COOLflow* modeling, the pneumatic airslide allows for simplified "on/off" air flow control eliminating the need for complex modulating devices. The heavy-duty slide closes the air inlet to burners out of service, allowing control of furnace excess oxygen levels through the remaining burners. When closed, cooling air flows through the register to prevent front-end components from overheating. The results? Proven reliability, reduced maintenance and lower cost.

Demand Flexibility

- Achieve high-turndown ratios even with options such as running substoichiometric or with high FGR rates
- Fire oil and gas in the same burner; or gas in some, oil in others
- Switch fuels at various loads without affecting boiler operation

Coen Company has the highest quality, most advanced and dependable burner systems in the world. Coen's low NOx and ultra low-NOx technologies offer significant financial and performance benefits compared to other burner or post combustion systems.

For more information, talk to your Coen sales representative about designing a dependable, integrated system to your company's specifications using the *DYNASWIRL-LN* burner or any of Coen's other outstanding products.

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