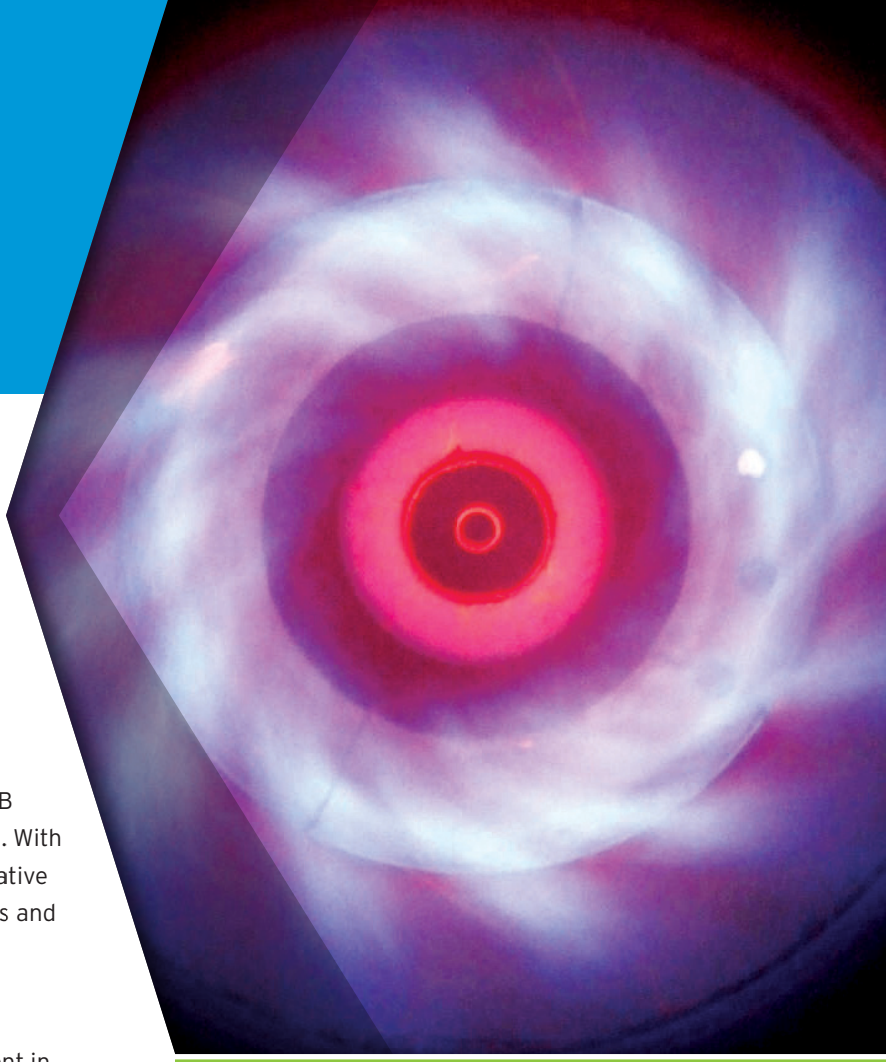
JOHN ZINK HAMWORTHY COMBUSTION®

Rapid Mix Burner (RMB™)



Ultra-Low NOx Emissions From Incinerator And Thermal Oxidizer Systems

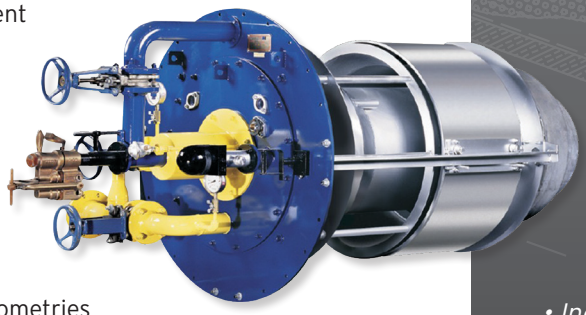
Initially, ultra-low NOx levels could only be achieved in incinerator and thermal oxidizer systems via SCR or SNCR technologies—both accompanying hefty price tags. The RMB system, however, offers a reliable, more affordable solution. With its rapid-mix technology, the RMB system is an ideal alternative to the catalytic control of NOx emissions, cutting both costs and space requirements.

A New Horizon For Thermal Oxidation

Tightening NOx emission limits necessitated an improvement in conventional incinerator burner technology. JZHC met this challenge by redesigning and repurposing the proven RMB technology for waste oxidation applications. The technology in the RMB system is a result of "start-over" thinking on how to avoid the fundamental conditions for NOx formation:

+ Fuel-rich regions with their potential for prompt NOx formation
+ Higher flame temperatures that produce thermal NOx

The solution: a radically different gaseous injection and mixing system that utilizes:



+ Rapid mixing of combustion air and fuel gas prior to the ignition point to minimize fuel-rich regions
+ Burner and waste injector geometries that produce an extremely stable flame
+ The addition of flue gas recirculation in select systems to further reduce NOx emissions while also saving fuel consumption

JOHN ZINK HAMWORTHY COMBUSTION® | COEN®

Proven technology redesigned for a new, more affordable solution.
That's smart. That's JZHC.

At A Glance.

- *NOx emissions as low as 0.01 lbs/MMBtu*
- *Up to 99.9999% DRE*
- *Complete turnkey services available, installation through startup*
- *TruFire UltraFlex pilot provides reliable startup and complete system heat-up and curing requirements*
- *Elimination of refractory impingement due to a compact, short flame*
- *Increased reliability and reduced maintenance due to no-moving-parts design*
- *Streamlined air quality permitting tasks and opportunities for emission-reduction credits*
- *Heat inputs to 300 MMBtu/hr (90 MW) per burner*

Proven Results, Reliable Operation

+ Single-digit NOx and Ultra-low CO and VOC emissions
+ Over 400 boiler installation
+ Over 50 thermal oxidizer and heater installations
+ No moving parts or online adjustments
+ Compact flame reduces oxidizer dimensions and eliminates impingement
+ Outstanding performance for a variety of thermal oxidizer applications

Earn Valuable Emission-Reduction Credits

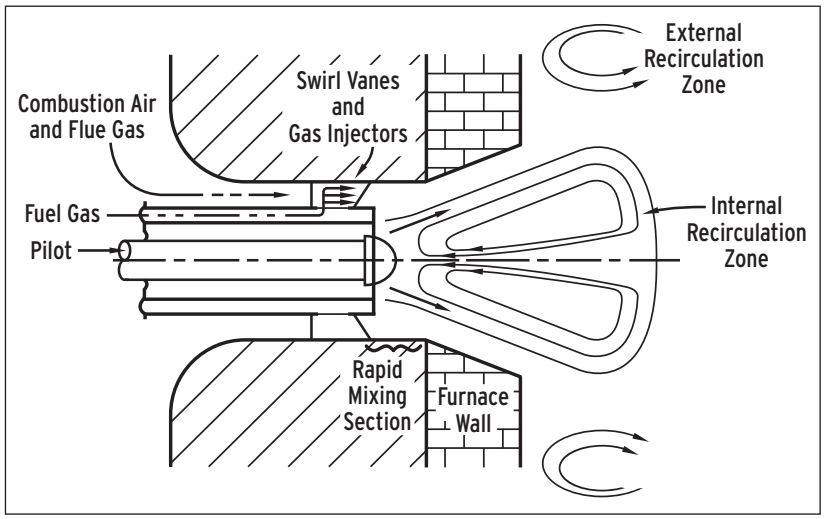
The Rapid Mix Burner helps reduce NOx levels below your local limits, which can result in emission-reduction credits that may be sold or traded on the open market. Credits can be "banked" to offset future expansion, comply with future regulations, or make other retrofits unnecessary.

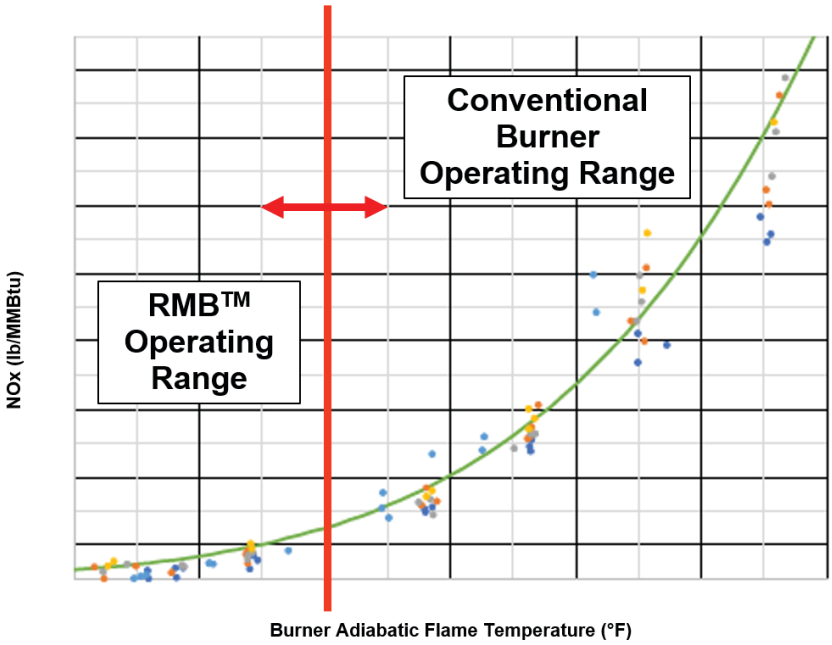
Ultra-low NOx emissions also provide welcomed opportunities for positive or improved community relations. In many cases, ultra-low emissions can also keep new NOx sources below certain "trigger points" for permits, reviews, monitoring and other compliance activities.

In many cases, installing an RMB system and achieving NOx levels below local limits can result in reduction credits that will actually pay for your retrofit.

The Ultimate NOx Control By Design

+ Parallel-flow air register with no moving parts
+ Swirl vanes and gas injectors create near-perfect fuel/air mixture
+ Minimized thermal NOx mixed with combustion air upstream of the burner to control flame temperature
+ No pre-mixing of fuel and air eliminates the risk of flashback





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