



**JOHN ZINK**

JOHN ZINK COMPANY LLC

RMB™  
Ultra-low Emissions Rapid Mix Burner

**TODD®**  
Combustion



## SCR Emission Levels. Low-NOx Burner Prices

Ultra low-NOx emissions used to come with a catch – the high costs and complexities of SCR systems. The patented TODD® Rapid Mix Burner (RMB) from John Zink Company revolutionizes the concept of economical NOx reduction by delivering single-digit NOx emissions, ultra-low CO and VOC emissions at a fraction of the cost of SCRs.

Quite simply, the RMB is the smart, ultra low-NOx solution that *delivers*.

### Guaranteed Emissions

- Less than 9 ppm NOx
- Less than 25 ppm CO
- Less than 3 ppm VOC

With the added benefits of:

- easy installation and start-up;
- a compact, stable flame that eliminates the risk of flame impingement;
- no moving parts provides reliable and repeatable operation with nothing to adjust;
- streamlined air quality permitting tasks; and
- opportunities for emission-reduction credits.



### Clean Combustion is the TODD® Solution

Previously, ultra low-NOx levels could only be achieved with SCRs – and hefty price tags. The TODD RMB has changed this with its revolutionary rapid-mix technology, which not only cuts costs but space requirements as well. Today, RMB technology is the best commercially available and proven alternative to the catalytic control of NOx emissions.

### Breakthrough Thinking for Advanced Performance

The RMB's innovative technology comes from "start-over" thinking on avoiding the fundamental conditions for NOx formation:

- fuel-rich regions with their potential for prompt NOx formation; and
- higher flame temperatures that produce thermal NOx.

The answer? A radically different gaseous injection and mixing system that utilizes:

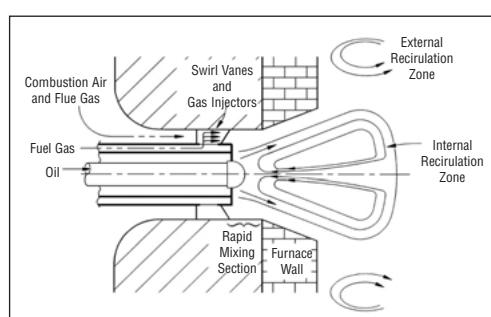
- rapid mixing of combustion air and fuel gas prior to the ignition point;
- burner geometry that produces an extremely stable flame; and
- the introduction of FGR to dramatically reduce peak flame temperatures.

### The Ultimate NOx Control by Design

The basic RMB design utilizes a parallel-flow air register with no moving parts. Combustion air premixed with FGR enters the register where the entire mixture passes through a set of axial swirl vanes. These vanes, which are attached to a central gas reservoir, have hollow bases that are machined for gas injection. In fact, the swirl vanes

actually are the gas injectors, which create the RMB's near perfect fuel/air mixture.

Desired stoichiometry and this ideal fuel/air mixture virtually eliminate prompt NOx (the first 15-20 ppm of NOx typically formed in other burners). Thermal NOx is then minimized using FGR mixed with combustion air upstream of the burner to control flame temperature.





## Guaranteed Results, Reliable Operation

For boilers firing natural gas, the RMB's single-digit NOx and ultra-low CO and VOC emissions are guaranteed. Regardless of heat input. With or without preheated combustion air. What's more, a variety of gaseous fuels can be fired by the RMB with similar results. It's no surprise then that TODD burners account for more successful 9 ppm results than any other brand operating today.

When firing oil, the RMB uses TODD's advanced atomizers and FGR to provide NOx levels consistent with conventional low-NOx oil burners.

The RMB contains no moving parts and requires no burner adjustments. Its stable, extremely compact flame is half the length of a staged combustion flame, reducing the required furnace dimensions and eliminating impingement. Unlike other burners, this makes the RMB suitable for use on both new boilers and retrofits of existing units.

## Earn Valuable Emission-Reduction Credits

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

Ultra low-NOx and CO 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, the result of installing a TODD RMB and achieving NOx levels below local limits can result in reduction credits that will actually pay for your retrofit.

## The Right Ultra Low-NOx Solution for Your Application

The RMB is ideal for a variety of applications, including packaged water-tube boilers and field-erected units. In addition, the RMB offers outstanding performance on refractory-lined furnaces for dryers or fluid bed boiler warm up, meeting the same ultra-low emissions by operating with approximately 50 percent excess air and zero FGR. And because the RMB is easy to install and start up, it expedites the construction of new plants, expansions and retrofits.

As the world's provider of cost-effective, ultra-low NOx solutions for combustion applications, John Zink Company has helped companies across the globe turn NOx emission concerns into affordable answers. Find out today how TODD burners can start working for your plant to achieve the clean, economical combustion you're looking for.



## IN THE USA

John Zink Company, LLC  
TODD Combustion Group  
2 Armstrong Road, Third Floor  
Shelton, Connecticut 06484  
UNITED STATES OF AMERICA  
800-225-0085 or +1-203-925-0380  
Fax: +1-203-925-0384  
[www.toddcombustion.com](http://www.toddcombustion.com)

John Zink Company, LLC  
World Headquarters  
11920 East Apache  
Tulsa, Oklahoma 74116  
UNITED STATES OF AMERICA  
800-421-9242 or +1-918-234-1800  
Fax: +1-918-234-2700  
[www.johnzink.com](http://www.johnzink.com)

## IN EUROPE

John Zink International Luxembourg Sàrl  
Zone Industrielle Riedgen  
L-3401 Dudelange  
LUXEMBOURG  
+352-518991  
Fax: +352-518611

## IN ASIA-PACIFIC

John Zink Asia-Pacific, a division  
of Koch Asia-Pacific, Inc.  
7th Floor, KSS Gotanda Bldg.  
21-8 Nishi-Gotanda 1-chome, Shinagawa-ku  
Tokyo, 141-8538  
JAPAN  
+81-3-5435-8551  
Fax: +81-3-3491-3584

## OTHER LOCATIONS

Houston  
Los Angeles  
Calgary  
London  
The Netherlands  
Rotterdam  
Paris  
Frankfurt  
Milan  
Madrid  
Singapore  
Sydney

Developing Clean Air  
Solutions for Planet Earth™

*Manufactured Under Patent  
Numbers 5,407,347 and 5,470,224*