

# North American Magna-Flame™ LEx



Cutting emissions through cutting-edge technology

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Implementing the LEx burner into your thermal process will provide you with lower emissions, higher combustion efficiency, and better process control — all with proven reliability.

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# Breakthrough technology for the ultimate in performance

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## Unique patented design

The Magna-Flame LEx provides unparalleled reductions in burner NOx and CO emissions through patented premix technology. With hundreds of LEx installations worldwide, North American is the leader in delivering ultra low emissions combustion solutions for air heating, mineral processing, drying, incineration, and soil remediation applications.

## Low NOx and CO without FGR

The Magna-Flame LEx emissions of NOx are less than 10 ppm for most air heating and drying applications. Additionally, CO emissions are under 50 ppm even when process temperatures are low.



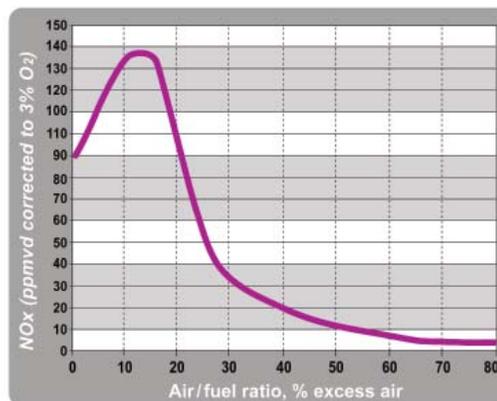
Compact flame geometry,  
high heat release

The LEx system generates compact, high intensity flames, reducing process influence on the combustion system performance.

## Lower total installed cost

With the high capacities (up to 400 million Btu/hour) available in the LEx, a single burner is able to meet large input needs instead of manifolded several line burners. The result is a simplified system design. The LEx has no moving parts or complicated staging devices normally found in competing low emission burners.

Fig. 1



## Multi-fuel capability

The LEx is capable of firing a wide range of gaseous fuels cleanly; from low Btu waste streams to conventional purchased gases to refinery gases. Additionally, the LEx is capable of firing No. 2 oil providing back-up fuel options.

## Applications

- Air heating
- Process drying
- Incineration
- MACT pharmaceutical
- Soil remediation
- Calcining

### PATENT NUMBERS

US 5,407,345  
US 5,554,021  
US 5,667,376  
US 5,730,591  
EP 0 804 647 B1  
US 5,605,452

## Reduced chamber length

Unlike conventional burners, the LEx flame exits the reaction chamber fully combusted and ready to heat the process.

In most applications, the combustion chamber size may be reduced to take advantage of LEx high combustion intensity.

## Compliance test data of natural gas, NO<sub>x</sub>, and CO emissions

APPLICATION	NO <sub>x</sub>	CO
Yankee hood	8.2	50.3
Air heater / spray dryer	8.7	2.1
Gypsum board dryer	8.7	69.7
Emissions in ppmv corrected to 3% O <sub>2</sub>		

## How it works

The LEx uses a method of lean premix combustion and a controlled reaction zone to achieve ultra low NO<sub>x</sub> and CO operation.

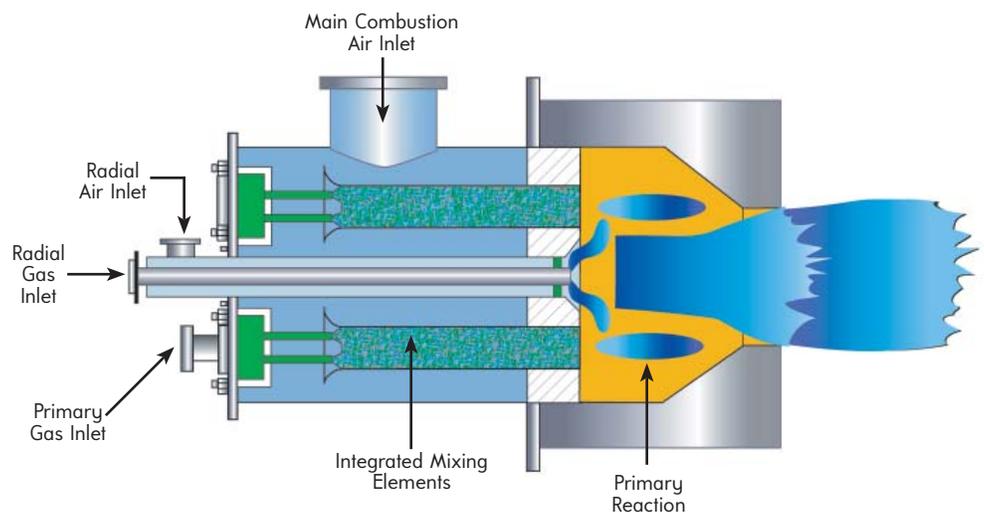
NO<sub>x</sub> emissions from premix combustion decrease rapidly as the amount of excess air is increased. LEx burners use this method to provide ultra low NO<sub>x</sub> emissions. See Fig. 1

The LEx burner establishes a lean premix and then combusts the mixture in a controlled reaction zone. The fuel and air are introduced separately into the burner where they are intimately mixed within the integrated mixers. This mixture is then directed into the reaction zone where the lean combustion takes place.

## LEx Features

- Ultra low NO<sub>x</sub> and CO without flue gas recirculation
- High heat release
- Sizes up to 400 million Btu/hr
- Turndown up to 20:1
- Multi-fuel capability
- Patented technology
- Robust design
- Rugged and reliable
- No moving parts

## LEx - CROSS SECTION





## The North American Commitment

We continuously provide our customers with innovative solutions for all their combustion needs. Our creative energy and engineering expertise come together to provide the latest in combustion technology – supplying breakthrough new products and solutions that improve your facility’s performance – and your bottom line.

We provide our customers with full-service support. End-to-end, we ensure every customer is completely satisfied. From initial consultations through field installation and service, North American provides complete customer support throughout the entire process.



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