

- **Ultra low NOx and CO without FGR**
- **Dual-fuel capability**
- **High intensity flame allows significant reductions in firing chamber size**
- **5 to 400 million Btu/hr**
- **Single UV monitoring**

Applications:

- **air heaters**
- **process heaters**
- **dryers & calciners**
- **incinerators**
- **aggregate dryers**
- **soil remediation**

Magna-Flame LEx systems greatly reduce the typical pollutants (NOx, CO) from gas combustion. Utilizing lean premix technology the patented burner produces NOx emissions of less than 10 ppm in many applications. The companion burner reaction chamber completes over 80 percent of the combustion producing very compact flame geometry. This compact flame allows significant reductions in furnace size and overall installed cost.

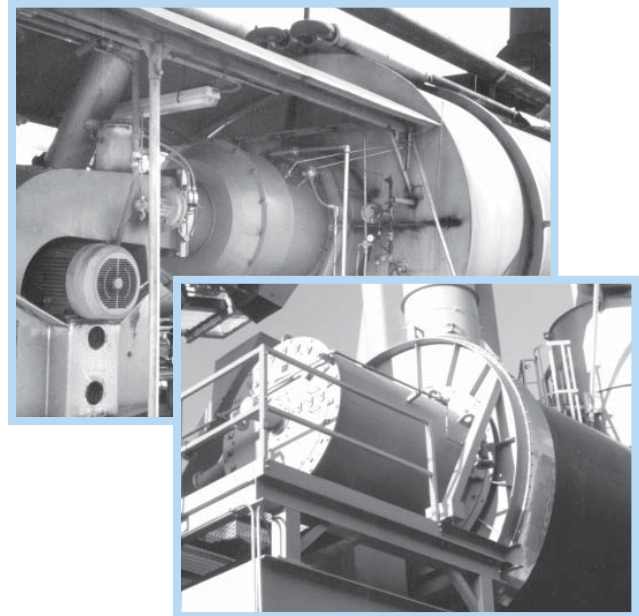
Operation

The burner incorporates internal mixing elements that premix the fuel and air prior to combustion in the reaction chamber. By completing over 80 percent of the combustion in the burner reaction chamber, the low NOx characteristics of the burner are protected from process influences.

The burner is designed to operate at 10"wc main air pressure and 8 psig gas pressure. The burner and control system are designed to hold to a preset ratio over a 4:1 turndown. Thermal turndowns of 10:1 or greater are also possible in most applications.

Control

A characterizable mass flow ratio control device is recommended. This gives the operator the tools to tailor the burner ratio through the turndown for optimum emissions performance.



Pilot and Flame Supervision

The 4020-HP nozzle mix pilot is recommended for use on the burner. Refer to Bulletin 4020 for specific information on the operation of this pilot.

For flame supervision the pilot must be the interrupted type. A single UV scanner monitors both the main flame and the pilot.

Burner Construction

The burner is of rugged construction suitable for industrial applications. The front face of the burner is constructed of high temperature refractory. The anti-flashback mixers are made of high grade alloy components.

Other Fuels

The LEx burner can fire many gaseous fuels with similar low emission performance. The LEx reaction chamber makes it extremely effective for low Btu gases. Light fuel oils may be used as a back up fuel. Consult your North American Sales and Application Engineer for your specific needs.

NOx and CO Emissions Comparison*

Example at 1200 F Temp.

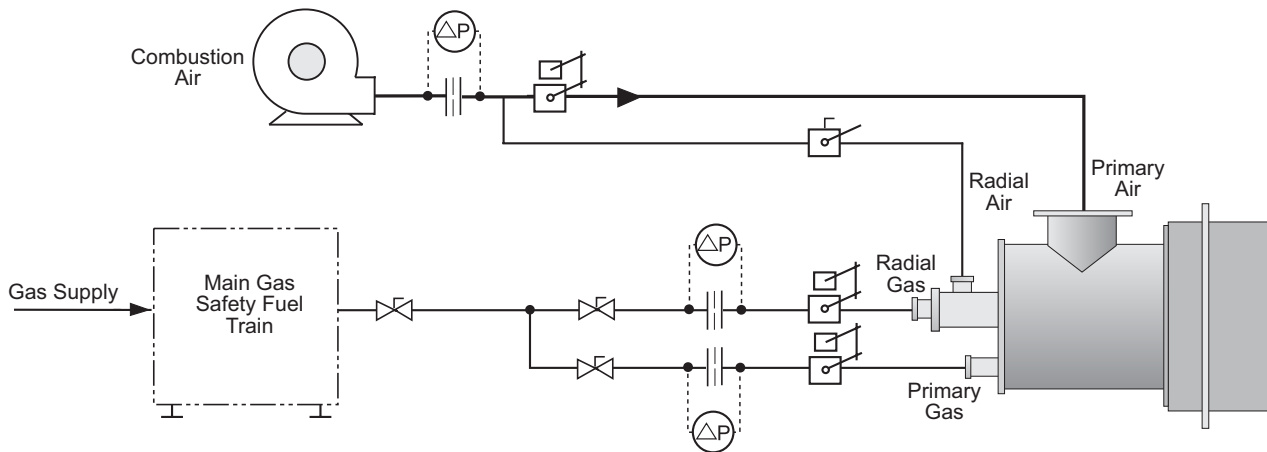
	Typical Cold Air Burner	Magna-Flame LEx System
NOx	82	9
CO	20	5

Emissions ppm_v at 3% O₂

*Application dependent

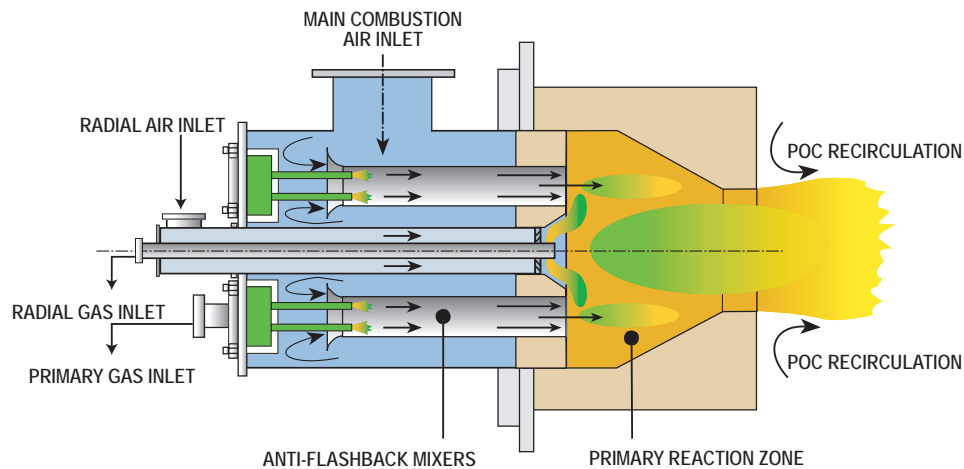
Flow Control Concept

Figure 1. Typical Control Concept for Single Burner MAGNA-FLAME™ LEx Combustion System.
A characterizable mass flow ratio control device is recommended for tailoring burner ratio through turndown.



Simplified Burner Design — No Moving Parts — No FGR

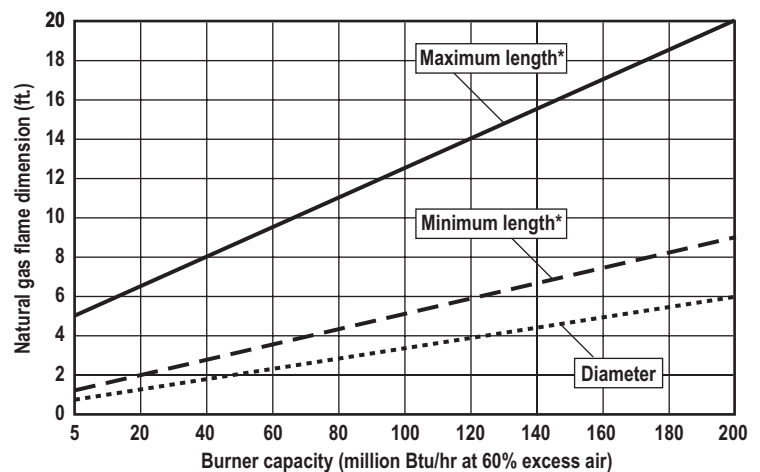
Figure 2. The Magna-Flame LEx uses patented premix technology to establish a lean premix and then combusts the mixture in a controlled reaction zone without the use of FGR, complex staging devices or moving parts. The fuel and air are introduced separately into the burner where they are intimately mixed within anti-flashback mixers. This mixture is then directed into the reaction region where lean combustion takes place.



Gas Burner Flames

Figure 3. Gas Flame Dimensions vs. Burner Capacity (Btu/hr)

The LEx flame exits the reaction chamber 80 percent combusted resulting in shorter, more compact flame geometry. In most applications the firing chamber size can be significantly reduced.



* Application dependent

WARNING: Situations dangerous to personnel and property may exist with the operation and maintenance of any combustion equipment. The presence of fuels, oxidants, hot and cold combustion products, hot surfaces, electrical power in control and ignition circuits, etc., are inherent with any combustion application. Parts of this product may exceed 160F in operation and present a contact hazard. Fives North American urges compliance with National Safety Standards and insurance Underwriters recommendations, and care in operation.

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