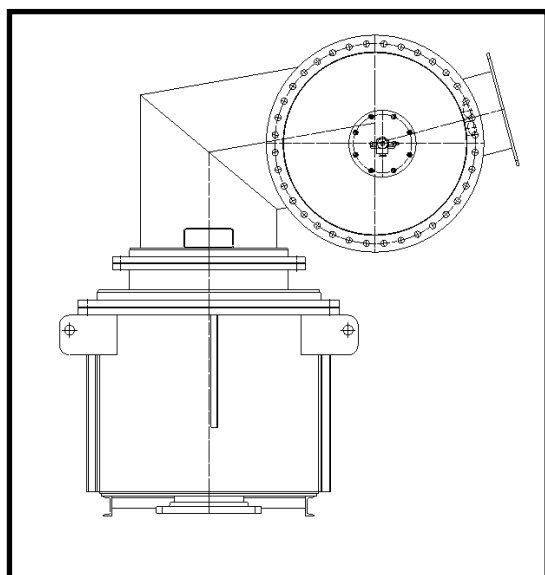


1130 Series

1130 REGENERATIVE BFG BLASTOFLAME™ ULTRA LOW NO_x BURNER



APPLICATIONS

- Steel Reheat Furnaces
- Forge Furnaces
- Ladle Heating
- Heating Applications within Integrated Steel Plants which have an excess of Blast Furnace Gas

FEATURES

- Unique Ultra Low NO_x regenerative baffle design utilizing a variation on Bloom's ¹1610 Series Cyclops non-symmetrical combustion concept
- Regenerative gas and Recuperative air
- Hot and Cold Start Designs available

CAPABILITIES

- 100% Blast Furnace Gas (BFG) firing capability
- Very low NO_x emissions
- Very high efficiency
- Increased production on existing furnaces
- Excellent Turndown
- Oil and other rich gases can be used as backup fuels (not required)

¹1650: PATENT PENDING—APPLICATION NO. 61/881,163

www.bloomeng.com

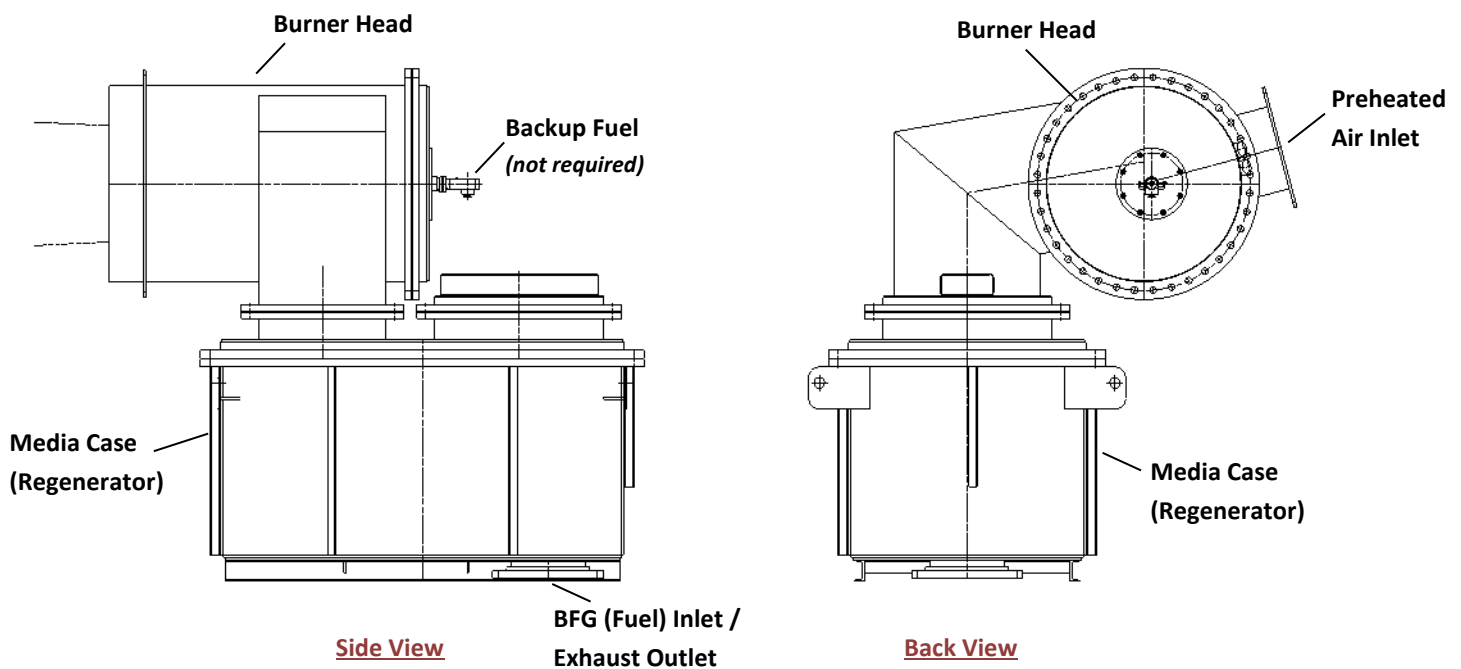
CAUTION: The improper use of combustion equipment can result in a condition hazardous to people and property. Users are urged to comply with National Safety Standards and/or Insurance Underwriters recommendations

DESIGN

The 1130 Series BlastoFlame™ Regenerative Burner was developed specifically for operation with Blast Furnace Gas (BFG). The Higher Heating Value (HHV) of **BFG** can be as low as approximately 80 Btu/ft³ (755 kcal/Nm³). In comparison, the HHV of **Natural Gas** is approximately 1,000 Btu/ft³ (9,435 kcal/Nm³), meaning that you will need more than 10 times the volume of BFG as Natural Gas in order to provide the same fuel heating capacity for the burner. The use of BFG fuel results in low flame temperature and low combustion efficiency. To combat this issue, BFG is often enriched with another fuel to increase its heating value. Alternatively, efficiency can also be increased by preheating the fuel, which the 1130 Series design accomplishes through an integral regenerator.

The 1130 Series BlastoFlame™ Regenerative burner expands on the concepts of a standard 1150 Series burner. The burner assembly comes complete with a regenerator (fuel media case). The burners operate in pairs and cycle back-and-forth between firing and exhausting. The regenerators are used to preheat the incoming BFG during the firing cycle and store waste heat during the exhaust cycle. High Performance butterfly valves are utilized for cycling. Preheated Combustion air is supplied to the burner through the use of a central recuperator.

Figure 1
1130 Burner and Media Case Assembly—Layout



PERFORMANCE

The innovative design helps to overcome the inherent inefficiencies of using BFG as a fuel and further expands the versatility of Bloom’s regenerative technology. **Table 1** compares different methods of preheating the air and gas and the resultant Air Temperatures, BFG Temperatures, and Theoretical Flame Temperatures. The 1130 Series design maximizes operating efficiency while minimizing the amount of additional equipment necessary to use a regenerator for both the air and gas.

Table 1
Comparison of Combustion Strategies for BFG in High Temperature Furnaces
 (BFG at 83 BTU/ft³ HHV)

Design Case	Air Preheat		BFG Preheat		Theoretical Flame Temp	
	°C	°F	°C	°F	°C	°F
Recuperative Air Cold Gas	550	1022	21	70	1423	2594
Recuperative Air Recuperative Gas	550	1022	350	662	1593	2899
Regenerative Air Cold Gas	1038	1900	21	70	1595	2903
Regenerative Air Recuperative Gas	1038	1900	350	662	1698	3088
Cold Air Regenerative Gas	21	70	1038	1900	1646	2995
Recuperative Air Regenerative Gas	600	1112	1038	1900	1827	3321
Regenerative Air Regenerative Gas	1038	1900	1080	1976	1923	3493

1130 Blastoflame™

CAPACITY

Table 2
Nominal Capacities - Blast Furnace Gas with 10% Excess Air

Burner Designation 1130 - ____	Nominal Capacity	
	MMBtu/hr	MMkcal/hr
-025	2.5	0.63
-035	3.5	0.88
-050	5	1.26
-075	7.5	1.89
-100	10	2.52
-150	15	3.78
-200	20	5.04
-250	25	6.30
-300	30	7.56
-350	35	8.82

Notes:

- Combustion air differential pressure requirement of approximately 12” w.c. (29.9 mbar) at nominal capacity
- BFG differential pressure requirement of approximately 18” w.c. (44.8 mbar) at nominal capacity (includes pressure drop through media case and baffle)
- Custom designs available for some nominal capacities not listed in Table 2 (Please consult your local sales representative for more information)

CAUTION: The improper use of combustion equipment can result in a condition hazardous to people and property. Users are urged to comply with National Safety Standards and/or Insurance Underwriters recommendations

Application Guidelines *

FUEL CAPABILITIES **:

- Blast Furnace Gas
- Oil and other rich gases as a backup fuels (*not required*)

****Please Consult a Bloom Representative for availability of other fuel types**

BURNER IGNITION:

- Pilot
-

CONTROL:

- Volumetric Fuel/Air Ratio (recommended)
 - Impulse
-

FLAME MONITORING:

- UV Detector

NOTE: Individual UV detectors for the pilot and main flame are used.

OPTIONS:

- Quick opening door
 - Quick change media case
 - Angled Firing
 - Dual Burner head arrangement (2 burner heads per 1 media case)
-

*** NOTE: Due to continual developments in the Bloom Laboratory and results from field research, the applicability of different fuels and other options listed above are constantly being updated. Please consult a Bloom Representative to inquire about the availability of any guidelines/options that are not shown above.**

SPARE OR REPLACEMENT PARTS

Spare Parts and Replacement parts are available for virtually all industrial burners and combustion systems supplied by Bloom Engineering in the past 50 years. Spare and replacement parts are manufactured to original dimensions and tolerances to ensure performance is maintained. For more information, please visit our website at www.bloomeng.com/burner-spare-parts.

CAUTION: The improper use of combustion equipment can result in a condition hazardous to people and property. Users are urged to comply with National Safety Standards and/or Insurance Underwriters recommendations

To **REQUEST A QUOTE** *, Please Contact your local representative at www.bloomeng.com/locate-arep
and provide the following information:

INFORMATION	UNITS
<i>General Information:</i>	
Application	-
Burner Input	(MMBtu/hr; kcal/hr; kW) in (HHV or LHV)
Quantity of Burners	-
Ignition Type and Fuel	-
<i>Main Fuel Information:</i>	
Fuel (s) and Heating Value (s)	(Btu/ft ³ ; kcal/Nm ³ ; MJ/Nm ³) in (HHV or LHV)
Fuel Flow	(scfh; Nm ³ /hr)
Available Fuel Pressure	("w.c.; psi; mbar; kPa)
Fuel Constituents	-
<i>Combustion Air Information:</i>	
Combustion Air Temperature	(°F; °C)
Combustion Air Pressure Available	("w.c.; psi; osi; mbar; kPa)
Minimum / Maximum Excess Air Required	(%)
<i>Flame Information:</i>	
Desired Flame Length	(feet; inches; m; mm)
Desired Flame Diameter	(feet; inches; m; mm)
<i>Furnace / Combustion Chamber Information:</i>	
Wall thickness	(feet; inches; m; mm)
Burner Assembly / Connection Requirements	-
Furnace / Chamber Dimensions or Drawings for Emissions estimate	-
POC (Products of Combustion) / Furnace Temperature	(°F; °C)
<i>Other Information:</i>	
Operational / Control Requirements (i.e. Turndown, Control Type)	-
Emissions Requirements (NOx, CO)	-
Chamber Backpressure	-
Oil / Atomizing agent Details	-
Any other special requirements	-

* **NOTE:** Information required to process a quote includes, but may not be limited to, the information specified above.
Additional details may **also** be required to quote a combustion control system.

Bloom Engineering Company, Inc.
Corporate Headquarters
5460 Horning Road
Pittsburgh, PA 15236-2822
Main: 412-653-3500
Email: info@bloomeng.com
Web: www.bloomeng.com

For more details and a complete listing of products,
please visit our website at:
www.bloomeng.com/industrial-burners