



# Ecomax®

Direct-Fired Self-Recuperative Metallic Gas Burner



## Features

- Self-recuperative design
- Heat resistant silicon carbide combustor and cast alloy recuperator
- Various recuperator lengths available
- Insulated cast aluminum body
- Multiple air/gas inlet and exhaust gas outlet orientations
- Integral air and gas orifices
- High exit velocities up to 525 ft/sec (160 m/sec)
- Direct spark igniter/flame rod; UV flame supervision option
- Low NOx version available

## Benefits

- Eliminates the need for separate centralized recuperator system
- Efficiencies up to 70% for maximum fuel savings
- Air preheat up to 1490°F (810°C)
- Eductor capable of 100% exhaust gas removal
- Furnace temperature uniformity via pulse firing and high exit velocity
- Low emissions option to achieve regulatory agency requirements



Hauck and LBE are jointly offering the Ecomax® direct-fired self-recuperative metallic gas burners for high temperature furnace applications in the US market. Equipped with an eductor system, the burner is capable of 100% exhaust gas removal. The high temperature alloy recuperator is designed to allow for maximum combustion air preheat which results in efficiencies up to 70% for maximum fuel savings. Capable of firing any clean industrial fuel gas with a higher heating value of 500 Btu/scf (19.7 MJ/nm<sup>3</sup>) or greater, the Ecomax® is available in five sizes with capacities from 57,000 to 945,000 Btu/hr (15 to 250 kW) for process temperatures up to 2100°F (1150°C). Higher temperature and low NOx emissions versions are available.

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COMPANY**

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**Combustion Excellence Since 1888**



Ecomax-1



## Hauck Manufacturing Company

# Ecomax®

DIRECT-FIRED SELF-RECUPERATIVE METALLIC GAS BURNER



### ADVANTAGES OF THE Ecomax®

**Eliminates Need for Separate Centralized Recuperator System**

**High Efficiency - Up to 70% for Maximum Fuel Savings**

**Eductor Capable of Up to 100% Removal of Exhaust Gases**

**Furnace Temperature Uniformity via Pulse Firing and High Exit Velocity**

The Ecomax® burner is widely used in the heat treating industry for direct heated roller hearth and batch furnaces. It utilizes preheated combustion air from the furnace exhaust gas allowing the burner to achieve a maximum combustion air temperature of 1490°F (810°C). The energy savings coupled with the burner's simple design and easy installation result in cost effective payback periods.

The burner is constructed with a multifunctional housing through which it is mounted, supplied with air, cooled and exhaust gas is discharged. This makes the burner easy to assemble and install. The housing is constructed of insulated cast aluminum and is double-walled for durability.

The Ecomax® is self-recuperative utilizing hot furnace exhaust gas for preheating the combustion air. The heat resistant alloy recuperator and silicon carbide combustor allow the burner to stand up to the high temperature environment.



**Ecomax® burner showing recuperator, eductor and BCU control unit**

The burner's eductor system allows up to 100% of exhaust gas removal. This eliminates the need for a complicated, costly centralized recuperator, insulated hot air piping and the inherent maintenance issues.

The burner is designed for process temperatures up to 2100°F (1150°C) with higher temperature versions available. High exit velocities up to 525 ft/sec (160 m/sec) are achieved resulting in excellent furnace temperature uniformity.

The Ecomax® is designed to operate on any clean industrial fuel gas with a higher heating value of 500 Btu/scf (19.7 MJ/nm³) or greater. The burner is available in five sizes with capacities from 57,000 to 945,000 Btu/hr (15 to 250 kW).

[www.hauckburner.com](http://www.hauckburner.com)





## CAPACITIES

### ECOMAX<sup>®</sup> DIRECT-FIRED METALLIC SELF-RECUPERATIVE GAS BURNER

		MODEL NUMBER				
		1M	2M	3M	4M	5M
MAX INPUT	Recuperator Length (in)	21.5	21.5	21.5	21.5	27.4
	<b>Burner Input @ 15% Excess Air (Btu/hr)</b>	<b>136,000</b>	<b>227,000</b>	<b>378,000</b>	<b>680,000</b>	<b>945,000</b>
	Burner Air Flow (scfh)	1,470	2,460	4,090	7,370	10,200
	Burner Min. Air Inlet Pressure ("wc)	9.4	12	17	20	20
	Burner Min. Gas Inlet Pressure ("wc)	9.8	14	17	21	21
	Burner Flame Length (in)	10	18	24	35	42
	Burner Air Preheat Temperature (°F)	1,110	1,010	1,010	865	840
	Burner Efficiency (%)	65.2	62.7	62.9	59.4	58.8
	Eductor Air Flow (scfh)	2,130	3,510	5,860	10,600	14,700
	Eductor Min. Air Inlet Pressure ("wc)	35	35	35	35	35
MIN INPUT	<b>Burner Input @ 15% Excess Air (Btu/hr)</b>	<b>56,700</b>	<b>114,000</b>	<b>189,000</b>	<b>340,000</b>	<b>472,000</b>
	Burner Air Flow (scfh)	614	1,230	2,050	3,690	5,100
	Burner Min. Air Inlet Pressure ("wc)	1.8	3.3	4.6	5.3	5.4
	Burner Min. Gas Inlet Pressure ("wc)	1.9	3.7	4.6	5.5	5.7
	Burner Air Preheat Temperature (°F)	1,490	1,340	1,310	1,170	1,140
	Burner Efficiency (%)	73.9	70.4	69.7	66.4	65.8
	Eductor Air Flow (scfh)	895	1,750	2,950	5,260	7,320
	Eductor Min. Air Inlet Pressure ("wc)	6.0	8.8	8.8	8.8	8.8

#### NOTES:

- Capacities based on natural gas with HHV of 1034 Btu/ft<sup>3</sup>, 0.59 S.G., and a stoichiometric air/gas ratio of 9.74:1 with burner firing into 2100°F furnace under slightly positive pressure @ 15% excess air.
- Burner air preheat temperature and efficiency based on 90% eductor suction rate of exhaust gas at 2100°F furnace.
- Maximum furnace temperature for standard metallic (M) burner is 2100°F; consult Hauck for higher temperature applications.
- Air and gas flows based on 60°F @ sea level.
- Static burner air and gas inlet pressures measured at the downstream burner air and gas orifice pressure tap; static eductor air pressure measured at the eductor air inlet pressure tap.
- Flame lengths measured from the end of the recuperator tip. (See Reverse Side for Metric Capacities)
- All data based on industry standard air and gas piping practices.
- Flame detection available via flame rod up to 1740°F furnace temperature or UV scanner above 1740°F furnace temperature.

In accordance with Hauck's commitment to Total Quality Improvement, Hauck reserves the right to change the specifications of products without prior notice.

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**ECOMAX-2**

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## ECOMAX-3



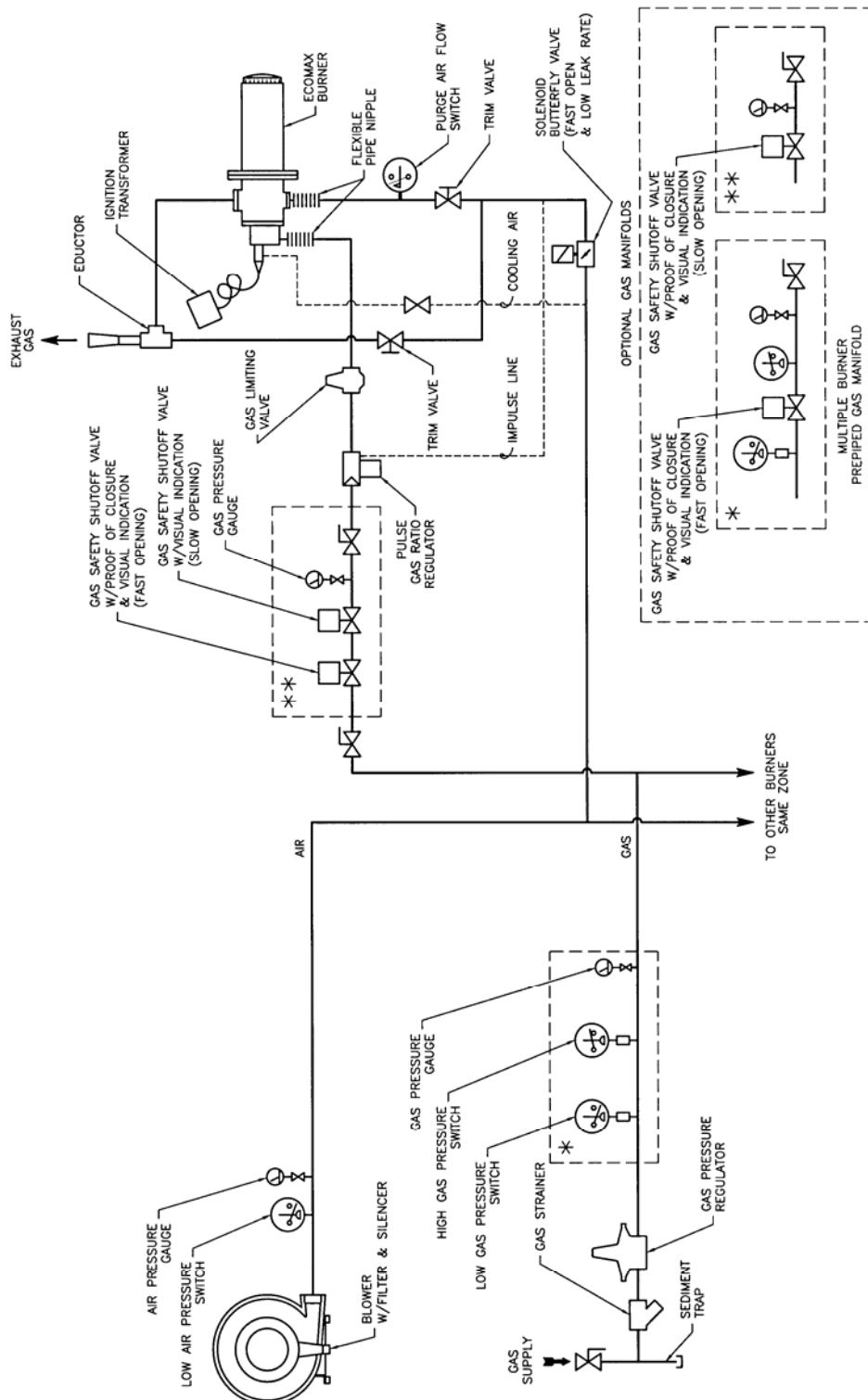
**MORTERA Y COMPAÑIA, S. A DE C. V.**



## SUPPLEMENTAL DATA

# ECOMAX<sup>®</sup> DIRECT-FIRED METALLIC SELF-RECUPERATIVE GAS BURNER

## TYPICAL MULTIPLE BURNER SYSTEM ON-OFF CONTROL



X7876  
(NOT TO SCALE)

- NOTES:
1. OPTIONAL GAS MANIFOLDS ARE PERMITTED AS AN EXCEPTION PER NFPA 86 2003 EDITION REQUIREMENTS FOR MULTIPLE BURNERS FIRING INTO A COMMON HEATING CHAMBER, HOWEVER, SPECIAL FEATURES ARE REQUIRED IN THE ASSOCIATED CONTROL SYSTEM (SEE HAUCK APPLICATION SHEET GJ76).  
OPTIONAL IGNITER COOLING AIR ONLY REQUIRED FOR HIGHER FURNACE TEMPERATURE APPLICATIONS; CONSULT HAUCK.
  - 2.

(OVER)

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8/06

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