ECLIPSE®
Innovative Thermal Solutions

PRODUCTGUIDE

safe | reliable | efficient | clean

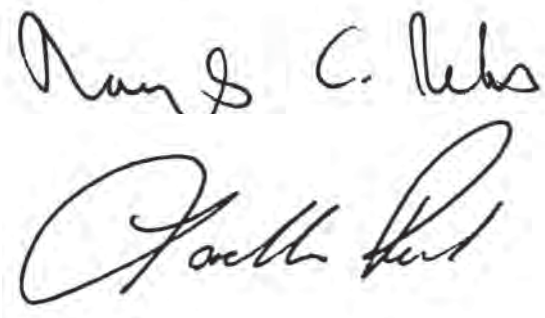
THE NEXT 100 YEARS

Clean Heat. Clean Air.

Douglas C. Perks - CEO (left)
Lachlan L. Perks - President (right)

At Eclipse, clean heat and clean air are at the center of our investments and our decision-making process. We recognize that providing efficient process heating equipment is valuable to our customers, our employees and the communities in which we all live. We not only see this as a responsibility, we engrain it as a core value of our company. Our investments in research, product development and service offerings are built on the premise of Clean Heat and Clean Air for Industry.

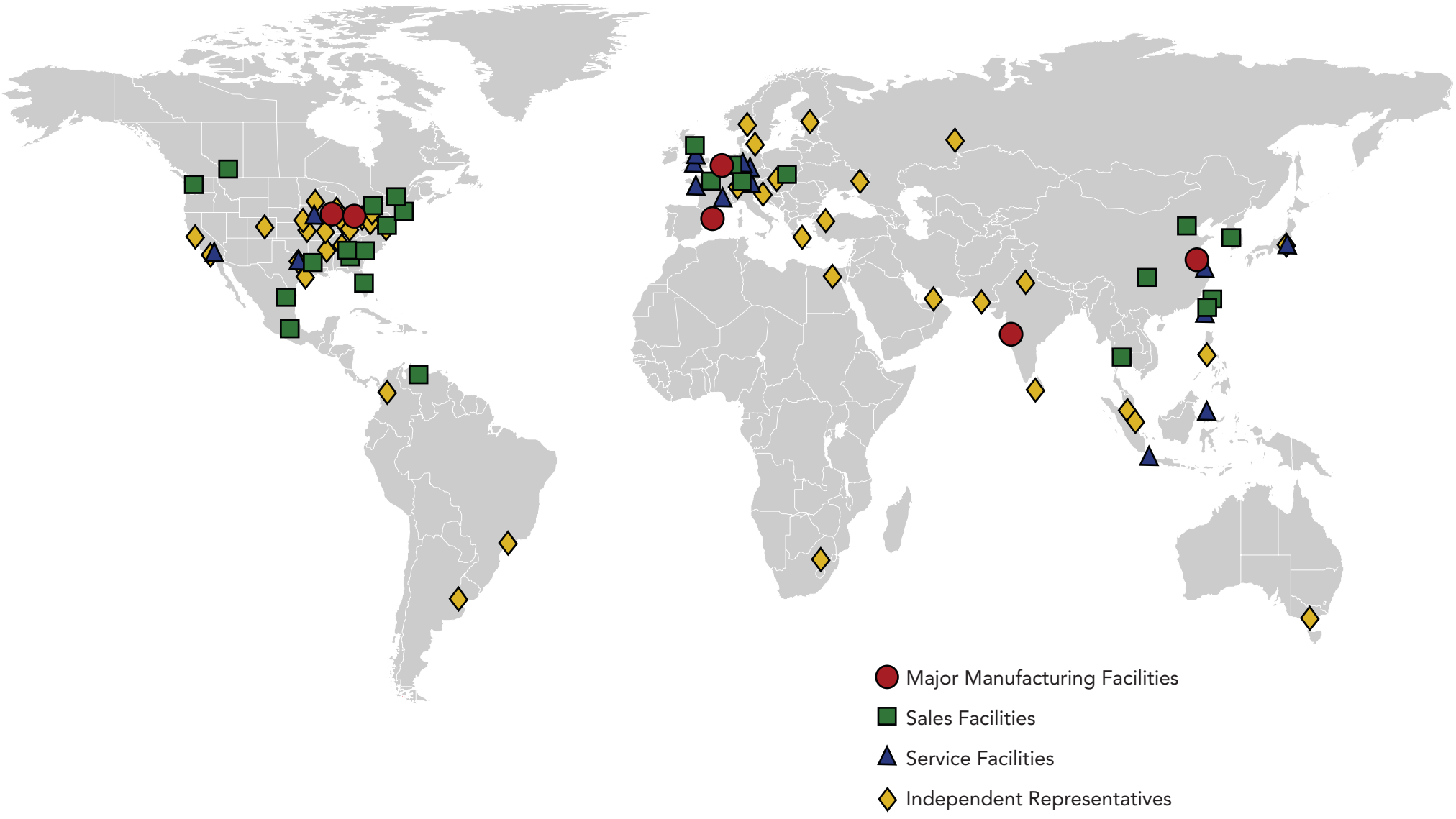
Eclipse is a third generation, family-owned business. We believe that being family owned is an advantage for both our customers and Eclipse. The investments we make are focused on the long term. Our personal promise is to help make you more profitable. Our products, solutions and services help you save fuel, reduce emissions, reduce ambient heat and noise, and help you and your employees succeed. We are proud of our past and excited about our future. How can we help you?



THE NEXT 100 YEARS

GLOBAL REACH

No matter where you are located, Eclipse is there to support you. We design, manufacture, service and support products designed to meet the complete combustion needs of industrial process heat users with a global network of sales and engineering offices in major cities around the world.



Industries Served

Eclipse is recognized worldwide as a leading source of high performance combustion solutions for scores of diverse industries. Eclipse industrial process heating products and systems regularly exceed customer expectations for performance, fuel efficiency, low emissions, reliability and safety.

Metals

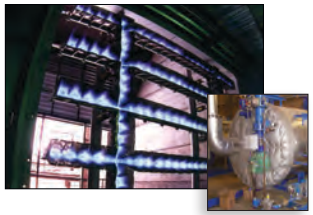
We offer a full line of high efficiency burners for the specialized needs of the metal processing industry, from ferrous heat treating to primary iron and steel, annealing, galvanizing and non-ferrous metal treating.

Glass

Eclipse offers the most complete portfolio of advanced combustion equipment for the glass industry, worldwide. From burners to complete systems, we provide combustion solutions for every process in the glass plant.

Industrial Drying

Our technology delivers precise, consistent heat for drying applications including pulp and paper, lumber, publishing, gypsum, and textile industries. Eclipse burners and heat exchangers are specified by OEMs around the world.



Commercial Heating

Eclipse offers the perfect burner to fit any commercial heating application. Our engineers know how to apply the heat to make-up air heating, mine air heating, thermal fluid process heaters and countless others.

Food

From cookies baked in ovens to beverage malt dried in a low temperature airstream, the food industry relies on Eclipse for process heating solutions to maintain product quality and consistency.

Automotive

Eclipse designs and manufactures world class combustion products and systems for all automotive finishing applications–from surface preparation through painting, curing, VOC destruction and heat recovery.

Finishing

Our extensive range of immersion and air heating burners is ideal for the washing, dry-off and baking processes used in product finishing operations. We deliver the right combustion solution for each application.

Incineration

Eclipse has the expertise and the products to deliver precise heat and low emissions for a wide range of incineration applications from solid waste, fume inceration to cremation and many others.

Other Industries

Eclipse also provides innovative thermal solutions for a multitude of other industries including Petrochemical, Ceramics, Bio-fuels, Power Generation, Plastics, Rubber, Gas Distribution and Electrical.

Global Services

Eclipse is committed to providing safe, reliable, efficient and clean combustion solutions, not only in our products, but also through our technical support and services. You can depend on our factory certified technicians to deliver expert service for all our products and systems long after the sale. Eclipse is proud to offer the largest team of factory-trained service technicians in the industry, strategically located around the globe.

Our portfolio of service and support programs is carefully crafted to help our customers manage the maintenance and optimize the performance of their process heating equipment.

Global Services Benefits

- Maximize fuel efficiency
- Achieve trouble-free startups
- Minimize production downtime
- Increase productivity
- Improve process quality
- Ensure safe operating conditions
- Reduce insurance costs
- Meet environmental and legislative regulations

Service & Maintenance

Service and maintenance are available through the Eclipse network of field service technicians and factory-authorized service providers. Emergency phone support is available 24 hours per day, 7 days a week through our Service Action Center.

Our comprehensive program includes:

- Project Management
- Turnkey Start-Up & Commissioning
- System Ugrades & Rebuilds
- Multi-Plant Support Agreements
- Oven & Furnace Optimization
- Insurance, Safety and NFPA Audits
- Proactive Maintenance
- Combustion Efficiency Audits
- Troubleshooting & Repairs

Training

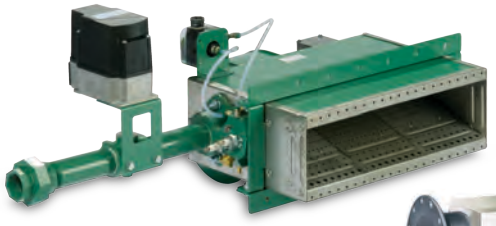
At our new Training Center in Rockford, Illinois, Eclipse offers Combustion Workshops in the fundamentals of combustion and the application of industrial combustion equipment. We also offer customized on-site training at customer facilities.

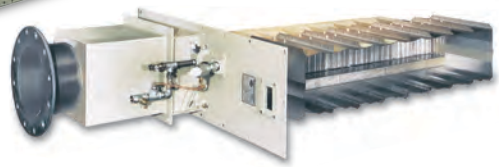
Process Air Heating Burners

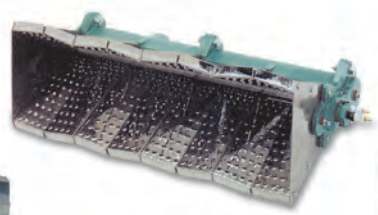
Eclipse offers the broadest line of process air heating burners in the industry. More models, more sizes, lower emissions. Easier to install, set-up, and maintain. Simplified fuel: air ratio control and fuel specific orifice plates facilitate initial adjustment and continued smooth, trouble-free operation.

Product Name:	RatioMatic	Winnox	ThermAir / RatioAir	Vortometric
Type:	Nozzle Mixing	Nozzle Mixing	Nozzle Mixing	Nozzle Mixing
Number of Sizes:	14	8	9/11	12
Capacity Range:	500,000 to 30,000,000 (Btu/hr) 147 to 8785 (kW)	550,000 to 12,500,000 (Btu/hr) 161 to 3660 (kW)	150,000 to 20,000,000 (Btu/hr) 44 to 5860 (kW)	6,000,000 to 210,000,000 (Btu/hr) 1764 to 61,540 (kW)
Turndown:	21:1 up to 100:1	12:1	30:1	30:1
Max. Process Temperature:	1900°F, 1038°C	1800°F, 982°C	1900°F, 1038°C (TA) /2800°F, 1538°C (RA)	2200°F, 1204°C
Fuels:	Natural Gas, Propane, Butane	Natural Gas, Propane, Butane	Natural Gas, Propane, Butane Landfill Gas, Low BTU Gas	Natural Gas, Propane, Butane, Oil, Landfill Gas, Low BTU Gas
Literature Number:	110	111	114 -ThermAir / 115-RatioAir	248
Typical Applications:	Dry-off and curing ovens Incinerators Indirect air heating Textile drying Food processing/baking Annealing Aluminum homogenizing	Dry-off and curing ovens Incinerators Indirect air heating Textile drying Food processing/baking Annealing Aluminum homogenizing	Dry-off and curing ovens Incinerators Indirect air heating Textile drying Food processing/baking Annealing Aluminum homogenizing	Dryers Rotary kilns Thermal fluid heaters Thermal oxidizers Liquid and waste incineration Boilers
Key Attributes:	Easy set-up. No gas adjustment with ratio control. Safety you can trust. Robust, reliable performance.	Robust, reliable performance. 5 - 20 ppm NO_x emissions. Simple operation. Safe and reliable.	All the features of RatioMatic, plus a wide range of low calorific value fuels.	Robust, reliable performance. Compact design. Gas, oil or combination.

THE NEXT 100 YEARS







Product Name:	AirHeat	Linnox and Minnox	AH-MA	FlueFire
Type:	Nozzle Mixing	Premix	Nozzle Mixing	Nozzle Mixing
Number of Sizes:	Modular	Modular	Modular	Modular
Capacities:	1,000,000 (Btu/hr/LF) 961(kW/m)	90,000 - 2,725,000 (Btu/hr/LF) 87 - 2620(kW/m)	1,200,000 (Btu/ hr/LF) 1150 (kW/m)	1,200,000 - 2,400,000 (Btu/ hr/ LF*) 1150 to 2300 (kW/m*)
Turndown:	40:1	10:1	30:1	10:1
Max. Process Temperature:	1500°F, 815°C	1470°F, 800°C	850°F, 454°C	2200°F, 1200°C
Fuels:	Natural Gas, Propane	Natural Gas, Propane	Natural Gas, Propane, Butane	Natural Gas, Propane, Butane
Literature Number:	135, 140, 142, 144	159	160	165
Typical Applications:	Incinerators Dry-off and curing ovens Indirect air heating Textile drying Food processing/baking Ceramic drying	Food processing Malting Paint finishing Pulp and paper Direct fired food drying Low emissions applications	Make-up air heating Drying processes	Heating turbine exhaust gases Spray dryers Agricultural drying Incineration
Key Attributes:	Lowest CO emissions. Compact, modular design. Robust, reliable performance. Industry standard.	Lowest NOx in class. 2 -10 ppm NO_X emissions.	Robust, reliable performance. Compact, modular design.	Robust, reliable performance. Compact, modular design.

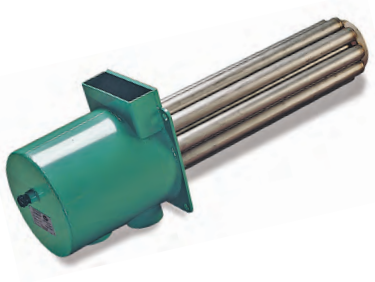
*Subject to exhaust gas oxygen level.

Furnace Burners (Direct Fired)

From ThermJet high-velocity burners to ThermThief radiant tube burners, Eclipse furnace type burners improve continuous or batch operation productivity while reducing energy costs and controlling emissions.

Product Name:	ThermJet	TJSR v5 (ThermJet Self-Recuperative)	Furnnox	Extensojet
Type:	Nozzle Mixing	Nozzle Mixing	Nozzle Mixing	Nozzle Mixing
Number of Sizes:	14	3	5	3
Capacity Range:	150,000 to 20,000,000 (Btu/hr), 44 to 5860 (kW)	200,000 to 600,000 (Btu/hr), 60 to 175 (kW)	25,000 to 2,000,000 (Btu/hr), 73 to 586 (kW)	250,000 to 750,000 (Btu/hr), 73 to 220 (kW)
Turndown:	50:1	10:1	10:1	10:1
Max. Process Temperature:	2800°F, 1540°C	2200°F, 1205°C	2800°F, 1540°C	2250°F, 1230°C
Fuels:	Natural Gas, Propane, Butane	Natural Gas, Propane, Butane	Natural Gas, Propane, Butane	Natural Gas, Propane, Butane
Literature Number:	205, 206	208	210	230
Typical Applications:	Tempering furnaces Reheating furnaces Hardening furnaces Fluidized bed dryers Thermal oxidizers Non-ferrous melting Laddle/Tundish, Glass lehrs Environmental applications Preheated air	Tempering furnaces Reheating furnaces Hardening furnaces Fluidized bed dryers Thermal oxidizers Non-ferrous melting Laddle/Tundish, Glass lehrs Environmental applications Preheated air	Galvanizing furnaces Slot type forge furnaces Heat treating furnaces	Ceramic kilns Thick wall furnaces
Key Attributes:	Easy set-up with built-in metering. Best high velocity burner on the market. Robust, reliable perfomance.	All the features of the ThermJet with dramatically improved efficiencies.	Less than 30 ppm NOx with ambient air. Robust, reliable perfomance. Compact, modular design.	Adaptable length for varying wall thickness. Efficient design. Capable of preheated air for even greater efficiency.

Furnace Burners (Indirect Fired)



Product Name:	TFB	Bayonet Recuperators	Bayonet-Ultra Recuperators	SER v5
Type:	Nozzle Mixing	Recuperator	Recuperator	Nozzle Mixing
Number of Sizes:	3 (3" thru 10" tubes)	3 (4", 5", & 6" Tubes)	4 (3" thru 8" Tubes)	3 (4.5", 6", 8" Tubes)
Capacity Range:	300,000 to 2,000,000 (Btu/hr), 88 to 586 (kW)	150,000 to 250,000 (Btu/hr), 44 to 73 (kW)	60,900 to 900,000 (Btu/hr), 48 to 234 (kW)	100,000 to 300,000 (Btu/hr), 29 to 88(kW)
Turndown:	40:1	N/A	N/A	10:1
Max. Process Temperature:	1900°F, 1040°C	2100°F, 1090°C	2100°F, 1090°C	1850°F*, 1010°C*
Fuels:	Natural Gas, Propane, Butane	N/A	N/A	Natural Gas, Propane, Butane
Literature Number:	310	317	318	325
Typical Applications:	Indirect fired furnaces Tempering Hardening Continuous lines Annealing Galvanizing Liquid heating	Indirect fired furnaces Tempering Hardening Continuous lines Annealing Galvanizing	Indirect fired furnaces Tempering Hardening Continuous lines Annealing Galvanizing	Indirect fired furnaces Tempering Hardening Continuous lines Annealing Galvanizing
Key Attributes:	Easy set-up with built-in orifice plates. One burner for multiple sized radiant tubes. Outstanding heat distribution.	Cost effective heat recovery. Improves burner efficiency to 60%. Robust, reliable performance.	Outstanding heat recovery value. Improves burner efficiency up to 65%. Air cooled housing.	Up to 80% efficiency. Compact design incorporates burner and recuperator. Easy installation and set-up.

*2300°F (1260°C) with ceramic tube

Oxygen - Fuel Burners

Eclipse offers a full line of industry proven oxygen-fuel burners to the glass and other high temperature process markets.

Product Name:	Primefire® 100	Primefire® 300	Primefire® 400	Primefire® Forehearth
Type:	Oxygen Fuel/Nozzle Mixing	Oxygen Fuel/Nozzle Mixing	Oxygen Fuel/Nozzle Mixing	Oxygen Fuel/Nozzle Mixing
Number of Sizes:	4	3	4	3
Capacity Range:	1-20 (MM Btu/hr), 293-5860 (kW)	.5-8 (MM Btu/hr), 147-2344 (kW)	.5-20 (MM Btu/hr), 147-5860 (kW)	5,000-25,000 (Btu/hr), 1.5-7.3(kW)
Process Temperature:	3000°F / 1650°C	3000°F / 1650°C	3000°F / 1650°C	1100°F / 1300°C
Flame Shape:	Conical-Adjustable	Flat-Adjustable	Flat-Adjustable	Conical
Fuels:	Natural Gas, Propane, Fuel Oil	Natural Gas, Propane, Fuel Oil	Natural Gas, Propane, Fuel Oil	Natural Gas
Literature Number:	1120	1130	1190	1125
Typical Applications:	Glass Furnaces, Copper Frit, Aluminum, Steel, Ceramics	Glass Furnaces, Copper, Frit, Aluminum, Steel, Ceramics	Glass Furnaces, Copper Frit, Aluminum, Steel, Ceramics	Glass Furnaces, Forehearth

Air - Oil Burners

Eclipse offers air-oil burners suitable for both underport and throughport firing.

Product Name:	Series O3FA	GTCPA
Type:	Air Fuel/Nozzle Mixing	Air Fuel/Nozzle Mixing
Capacity Range:	2-20 (MM Btu/hr), 586-5860 (kW)	.8-17 (MM Btu/hr), 245-4920 (kW)
Turndown:	4:1	10:1
Process Temperature:	3000°F / 1650°C	3000°F / 1650°C
Fuels:	Fuel Oil	Fuel Oil
Literature Number:	1115	1137
Typical Applications:	Glass Furnaces	Glass Furnaces

Air - Gas Burners

Eclipse air-gas burners can be used for side-of-port, underport and throughport firing.

Product Name:	Brightfire™	O4V	WRASP-DI
Type:	Air Fuel/Nozzle Mixing	Air Fuel/Nozzle Mixing	Air Fuel/Nozzle Mixing
Capacity Range:	2-20 (MM Btu/hr), 586-5860(kW)	1-10 (MM Btu/hr), 293-2930 (kW)	1-28 (MM Btu/hr), 292-8200 (kW)
Turndown:	3:1	4:1	5:1
Process Temperature:	3000°F / 1650°C	3000°F / 1650°C	3000°F / 1650°C
Fuels:	Natural Gas, Propane, Fuel Oil	Natural Gas, Fuel Oil	Natural Gas
Literature Number:	1110	1160	1136
Typical Applications:	Glass Furnaces	Glass Furnaces, Metals, Frit, Ceramics	Glass Furnaces

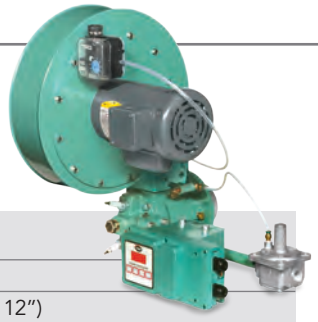
Product Name:	GTNG	WGD	WTPUG
Type:	Air Fuel/Nozzle Mixing	Air Fuel/Nozzle Mixing	Air Fuel/Nozzle Mixing
Capacity Range:	3-35 (MM Btu/hr), 879-10255 (kW)	4-35 (MM Btu/hr), 1172-10255 (kW)	.7-3.5 (MM Btu/hr), 205-1026 (kW)
Turndown:	5:1	4:1	5:1
Process Temperature:	3000°F / 1650°C	3000°F / 1650°C	3000°F / 1650°C
Fuels:	Natural Gas	Natural Gas	Natural Gas
Literature Number:	1142	1135	1141
Typical Applications:	Glass Furnaces	Glass Furnaces	Glass Furnaces

Total Solutions for Glass

Eclipse is the leader in advanced combustion technology for all segments of glass production. With the largest portfolio of combustion products in the industry, we provide fuel-efficient, low emission burners and complete combustion systems for use with air, oxygen, gas or oil. Eclipse has the products and solutions to meet any specific glass heating requirement, in addition to Oxygen Enriched Air Staging, oxygen boosting, control systems and furnace monitoring solutions. More than 1,000 glass furnaces worldwide use Eclipse combustion equipment.

Immersion Burners

Immersion burners are used to heat a variety of liquids, from water to cleaning solutions to cooking oils. Since each liquid has a different heat transfer capability, it's important to apply the correct immersion heating burner technology to optimize the combustion system.



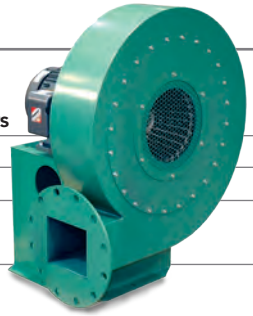
Product Name:	ImmersoJet	ImmersoPak
Type:	Nozzle Mixing	Nozzle Mixing
Number of Sizes:	5 (2", 3", 4", 6", 8")	6 (4", 5", 6", 8", 10", 12")
Capacity Range:	370,000 to 8,000,000 (Btu/hr), 108 to 2344 (kW)	300,000 to 4,000,000 (Btu/hr), 88 to 1172 (kW)
Turndown:	7:1 minimum	8:1 minimum
Radiant Efficiency:	80%	75%
Process Temperature:	200-400°F / 93-204°C	200-400°F / 93-204°C
Fuels:	Natural Gas, Propane, Butane	Natural Gas, Propane, Butane
Literature Number:	330	360
Typical Applications:	Wash and rinse tanks, dip tanks, pickling tanks, spray washers, deep fryers, salt baths, quench tanks	Wash and rinse tanks, dip tanks, pickling tanks, spray washers, deep fryers, salt baths, quench tanks
Key Attributes:	Up to 85% efficiency. Allows the use of smaller, lower cost tubes.	Energy efficient lower design. Easy set-up with no gas adjustment. Compact, modular design.

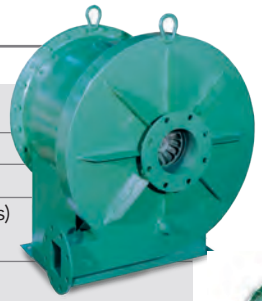
BoostPak Systems

The Eclipse BoostPak provides a reliable, cost-effective packaged solution for pumping low natural gas supply pressures up to meet the requirements of high performance combustion equipment. Units are available with flow rates from 2 CFH to 100,000 CFH and outlet pressures from 3"w.c. to 3 psig. Higher capacities are available for specific applications. The BoostPak is factory assembled, wired, tested, and ready for field power and gas connections. All essential components for automatic operation are enclosed in an industrial control panel to meet local and national electrical codes.

Literature Number : 630

Blowers and Boosters





Product Name:	SMJ Centrifugal Blowers	Hermetic Gas Boosters
Type:	Centrifugal	Hermetically Sealed
Number of Sizes:	65	34
Capacity Range:	4,800 to 210,000 (SCFH) 136 to 6,000 (m3/hr)	5,300 to 149,000 (SCFH Nat. Gas) 150 to 4,200 (m3/hr.)
Pressure:	7 to 60 outlet ("w.c.) 17 to 150 outlet (mbar)	6 to 38 added ("w.c.) 15 to 95 added (mbar)
Outlet Positions:	4	4
Literature Number:	610	620
Typical Applications:	Industrial combustion systems, Cooling, Conveying Drying, Liquid agitation, Smoke abatement, Fume exhausting	Raise pressure of fuel gas when supply pressure is insufficient to meet demand. Epoxy coating available for digester gas applications in landfills or wastewater treatment plants.
Key Attributes:	Robust, reliable performance.	Zero leakage design. Robust, reliable performance.

Flame Monitoring

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Eclipse offers a full line of single and multiple burner sequence controllers and relays. In addition, several flame rods, scanners and remote displays are available for use with these devices.

Product Name:	T400 Series Flame Safeguard	Veri-Flame	Bi-Flame / Multi-Flame	Peek-A-Flame
Type:	Sequence Controller	Sequence Controller	Sequence Controller	Relay
Number of Burners:	1	1	Bi-Flame (2), Multi-Flame (1-20)	1
Sensor Types:	FR (Ionization), UV, Self-Check UV	FR (Ionization), UV, Self-Check UV	FR (Ionization), UV, Self-Check UV	FR (Ionization), UV, Self-Check UV
Auxiliary Inputs:	None	None	4 auxiliary limits	None
Main Valve Check:	Closed Position Input	Closed Position Input	Closed Position Input, Valve Leak Test	None
Pre-Purge Modes:	No-Purge, Purge, Modulating, 0-225 sec.	No-Purge, Purge, Modulating, 0-225 sec.	No-Purge, Purge, Modulating, 0-60 min.	None
Pilot Modes:	Intermittent, Interrupted	Intermittent, Interrupted	Intermittent, Interrupted	None
Trial For Ignition:	5, 10, 15 seconds	5, 10, 15 seconds	5, 10, 15 sec.	None
Post-Purge:	None or 15 seconds	None or 15 seconds	None or 15 sec.	None
Communications:	None	None	RS-232 or RS-485	None
Approvals:	CE, UL, CSA	UL, UL for Canada, FM	UL, UL for Canada, FM	UL, UL for Canada, FM
Supply Voltage:	120/230VAC, 50/ 60Hz	120/230VAC, 50/ 60Hz	120VAC, 50/60Hz	120/230VAC, 50/60Hz
Remote Display:	Yes	Yes	Yes	No
Wiring Base:	Multiple Styles	Multiple Styles	Integral	Yes, 11 Pin Socket
Literature Number:	830	818	Bi-Flame - 826, Multi-Flame - 820	828

*2100°F (1090°C) with ceramic tube

Available Scanners

Scanner Type:	90° U.V.	U.V.	Self-Check U.V.
Model Number:	5600-90	5600-91, 5600-91 N4	5602-91
Literature Number:	852	854	856
For Use With:	Fireye only	Fireye only	Fireye only

Control Products

Control Panels

Eclipse Control Panels provide the most practical, cost efficient electronic system to optimize combustion process performance. There are a variety of standardized solutions to meet your burner control needs. The CP series provides a choice of three performance categories. Additional options within each category give the flexibility required for the best solution.

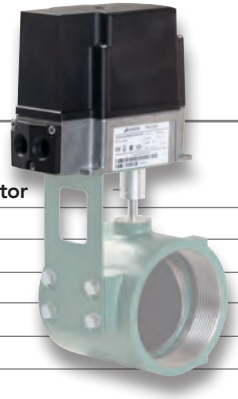
- CPL fulfills the basic single burner needs with a Veri-Flame control mounted and wired in a window enclosure.
- CPM offers larger enclosure, dual burner operation and expanded annunciation and temperature controls.
- CPH includes all the above with components for higher voltages and 3-phase currents required by larger burner blowers.

Accessories

Eclipse can supply a host of combustion accessories from spark rods and ignition transformers to valves, gas cocks, LP and VariSet Mixers, pressure regulators, proportionators and process measurement and control equipment.

- LP and VariSet Proportional Mixers
- Gas Cocks
- Butterfly Valves
- Adjustable Limiting Orifice Valves
- Blast Gates
- Pressure Regulators/Proportionators
- CR Automatic Temperature Control Valves
- Solenoid Valves
- Check Valves
- Process Measurement and Control Equipment
- Metering Orifice Systems
- Flame Safety and Ignition Components
- Pilots

Actuators



	T500 Series Rotary Actuator	Programmable Rotary Actuator
Product Name:		
Power Supply:	120 or 230 VAC, 50/60Hz	120 or 230 VAC, 50/60Hz
Shaft Rotation:	0 to 90° max	0 to 90° max
Minimum Step:	1°	1°
Shaft Rotation Direction:	Selectable: CW, CCW	Selectable: CW, CCW
Keypad Settings:	0 to 90°	0 to 90°
Keypad Orientation:	Four Positions	Four Positions
Speed:	15 sec. for 90° @ 60Hz	15 sec. for 90° @ 60Hz
Torque:	2.3 N-m (20 lb.-in.)	2.3 N-m (20 lb.-in.)
Terminal Connections:	Cord or Conduit	Cord or Conduit
Literature Number:	902	904

Shut - Off Valves

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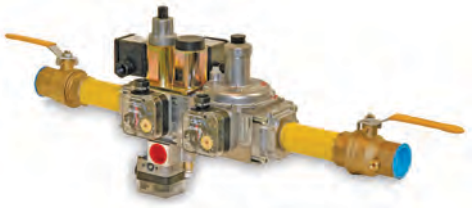
Eclipse manual and automatic reset shut-off valves are designed to shut off the gas supply to a combustion system in the event of an electrical power failure or the opening of an interlocking switch in the combustion system. All valves are UL listed, FM approved, and CSA certified.

Product Name:	LockTite Shutoff Valve (200LT)	AutoTite Shutoff Valve (2000AT)
Type:	Manual reset	Automatic reset
Sizes:	1", 1 1/4", 1 1/2", 2", 2 1/2", 3" & 4" NPT	1", 1 1/4", 1 1/2", 2", 2 1/2", 3" NPT and Rc
Body Material:	Aluminum and cast iron	Cast iron
Ambient Temperature Limits:	– 20°F to +125°F (– 29°C to +52°C)	– 20°F to +150°F (– 29°C to +65°C)
Gases:	Air, Natural Gas, Propane, Butane	Air, Natural Gas, Propane, Butane
Maximum Operating Pressure:	1"-2" @ 30psi (2 bar), 2 1/2"-4" @ 20psi (1.3 bar)	30psi (2 bar)
Normal Opening Time:	N/A	15sec. @ 60Hz (20 sec. @ 50Hz)
Maximum Closing Time:	1 second	1 second
Electrical Actuator:	115V/ 50Hz, 120V/ 60Hz, 220V/ 50Hz, 240V/ 60Hz	110V/50Hz, 120V/60Hz, 220V-240V/50Hz-60Hz
Auxiliary Switches:	(2) SPDT open or close position	(2) SPDT closed position; (2) SPDT open or closed position
Approvals (NPT Series):	UL listed, FM approved, CSA certified	UL listed, FM approved, CSA certified
Approvals (Rc Series):	N/A	N/A
Degree Of Protection:	NEMA 1 (For rain tight, must use 90° rigid fittings.)	NEMA 1, NEMA 4, NEMA 12
Literature Number:	750	756
Typical Applications:	Valve trains including NFPA and IRI requirements, Ovens, Furnaces	Valve trains including NFPA and IRI requirements, Ovens, Furnaces

Gas Valve Trains

Available in 7 sizes from 1/2" through 3" (23 configurable options).

- Inlet pressures to 7psi (.5bar)
- NEMA rated, 110-120V, 50-60Hz
- 3/8" or 1/2" pilot gas train options
- NPT Thread/ANSI Flange
- Depending on options selected, NFPA86, IRI IM. 4.2.0 Literature No. 790 and 791



Prepackaged Combustion Systems

Eclipse offers three different approaches to meet your application needs. Depending on the demands of your application, you can choose the system which is right for you, knowing that it is backed by the best warranty in the industry and a service organization that is second to none.

Standard Systems

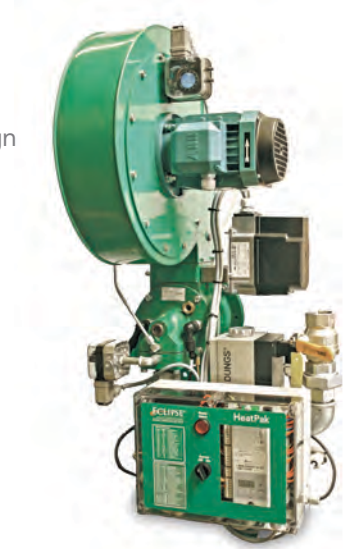
HeatPak

Packaged Burner Option

A simple, quick and reliable pre-configured packaged burner system for use with RatioMatic, ThermAir, Winnox, RatioAir, AirHeat, ImmersoJet and ImmersoPak burners.

All components of the HeatPak are pre-piped and pre-wired and will be shipped assembled to the burner for a completely packaged burner system. HeatPak is available for left-hand or right-hand burner piping options and can be supplied with upright or inverted burner configurations.

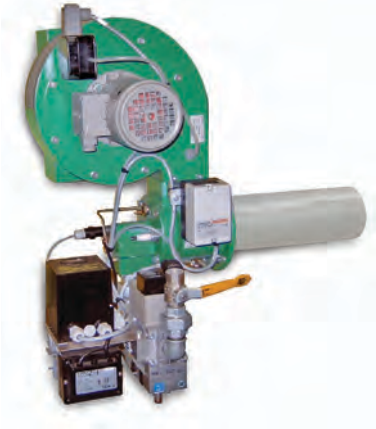
- Cost effective
- Quick delivery
- Easy to start up
- Low maintenance
- Single source design



Configured Systems

Configured systems provide even more flexibility with customizable options to meet your design criteria. Virtually every burner can be made into a complete combustion system, tailored to your needs. This includes:

- RatioMatic
- RatioAir
- AirHeat
- ImmersoPak
- ThermAir
- ImmersoJet
- Winnox



Custom Systems

Eclipse also offers custom combustion systems designed to meet specific customer requirements and jurisdictional codes anywhere in the world. By completely integrating a custom system within your heating process, Eclipse helps you increase the efficiency and quality of your process far beyond the capabilities of a stand-alone burner.

Complex Valve Trains

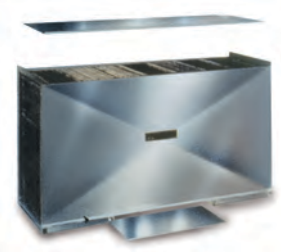
THE NEXT 100 YEARS

Eclipse designs complex valve trains for natural gas, oil, oxygen, air, nitrogen and propane to suit our customer's unique requirements. Our valve trains are built to conform to industry standards, including NFPA, UL, ANSI B31.3 and others, depending on the customer specifications.

EXOTHERMICS

Industrial Grade Heat Exchangers and Recuperators

Aluminum Air-to-Air Heat Exchangers



Description:	Fixed Plate, counterflow design
Model Types:	Hi-temp. Aluminum (HT) All Welded (AW)
Max. Operating Temp.:	450°F / 232°C
Volume Range:	700-25,000 (ACFM) 1190-42,475 (Am3/hr)

Mini-Stainless Heat Exchangers

Description:	Heat recovery in low air volume systems
Model Types:	Stainless Steel
Max. Operating Temp.:	1200°F / 650°C
Volume Range:	300-5,500 (ACFM) 510-9,345 (Am3/hr)

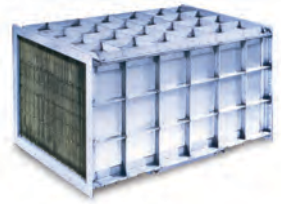
High-Temperature Insulated Heat Recuperators

Description:	Plate Type, counterflow design
Model Types:	Insulated Recuperator (IR)
Max. Operating Temp.:	1500°F / 815°C
Volume Range:	300-95,000 (ACFM) 510-161,405 (Am3/hr)

Cross Flow Plate Exchangers

Description:	Cross flow design
Model Types:	Stainless Steel
Max. Operating Temp.:	1200°F / 650°C
Volume Range:	300-75,000 (ACFM) 510-127,430 (Am3/hr)

Stainless Steel Heat Exchangers



Description:	Plate Type, counterflow design
Model Types:	Stainless Steel
Max. Operating Temp.:	1200°F / 650°C
Volume Range:	300-95,000 (ACFM) 510-161,405 (Am3/hr)

ER/ESP Heater

Description:	Indirect Fired Process Air Heater
Model Types:	Recirculating and Single Pass
Max. Operating Temp.:	750°F / 400°C
Volume Range:	300-47,000 (ACFM) 510-79,860 (Am3/hr)

Tubular Heat Recuperators

Description:	Cross flow and multiple pass designs
Model Types:	Tubular
Max. Operating Temp.:	1600°F / 870°C
Volume Range:	300 to 150,000 (ACFM) 510 to 254,850 (Am3/hr)

RHT Indirect Air Heaters

Description:	High temperature indirect air heater
Model Types:	Indirect air heater
Max. Operating Temp.:	550°F / 290°C
Nine Sizes:	170,600-2.73 MM (Btu/hr) 50-800 (kW)

Note: Custom designs that incorporate multiple units are available for greater than above single unit maximums.

Aquavaire Vertical Waterbath Vaporizers

- Operates on LPG or natural gas
- Single pass vertical design
- Optional IRI, CGA burner configuration
- 29.1-125.1 MMBTU/hr (8526-36,654 kW)
- 320-1375 GPH (612-2630 kg/hr)

POWER XP Electric LPG Vaporizers

- Energy for vaporization is provided by multiple heating elements cast into a finned aluminum heat exchanger.
- Heat exchanger temperature and on/off cycles at predetermined temperatures are monitored and regulated by a solid state controller.
- Options include: remote control box, automatic restart, and economy operation.
- 1.18-15.1 MMBTU/hr
- 12.5-80 GPH

QM Packaged Propane-Air Vaporizer/Mixing System

- Compact system comprised of vertical waterbath vaporizer and atmospheric venturi mixer
- Forced draft burner keeps the waterbath at optimum vaporizing temperature
- Delivery pressures up to 15 psig available with commercial propane LPG feedstock (and up to 8 psig with butane rich LPG)
- 28-125 MMBtu/hr (8204-36,625 kW)

XPV Packaged Vaporizer/ Mixing System

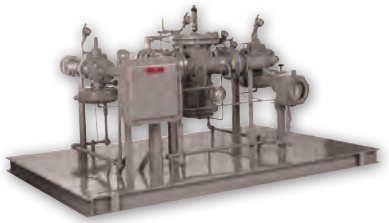
- Compact unit incorporates XP electric vaporizer, venturi, mixer, and surge tank for ease of installation and operation.
- System provides 100% turndown capability and is available in mixed gas delivery pressures of 5, 8, and 12 psig.
- Venturi silencer promotes quiet operation.
- 5-28 MMBtu/hr (1465-8204 kW)

Direct Fired Vaporizers 40/40 & 80/40

- Simple to install, no electricity required.
- Complete with all operating and safety controls.
- Offers uniform gas supply over a broad temperature range.
- Requires only 1.5 square feet and two connections to install these self-contained units.
- 3.64-7.28 MMBTU/hr
- 40-80 GPH

Blendaire/FVO LPG/Air Mixers

- Proportional mixer provides accurate LPG/Air mixtures within desired adjustable ratios and delivery pressures of up to 150 psig.
- 16-870 MMBtu/hr (4688- 254,910 kW)



Eclipse Locations Worldwide

Algas-SDI • Eclipse Canada • Eclipse China • Eclipse France • Eclipse Germany • Eclipse India • Eclipse Korea
Eclipse Mexico • Eclipse Poland • Eclipse The Netherlands • Eclipse Spain • Eclipse Thailand • Eclipse Taiwan
Eclipse United Kingdom • Eclipse USA • Exothermics, Inc.

Our Aim:
Eclipse will be the Leading Worldwide Source of Combustion Systems and Services for Industrial Processes

Our Strategy:
With Superior Application Expertise and Leading Knowledge of Combustion Solutions, We Deliver Safe, Reliable, Efficient and Clean Heat to Industry Worldwide

Our Mission:
- Be a Quality Driven Company by Doing What We Say; Doing It Right the First Time, on Time, Every Time
- Exceed Our Customers' Expectations Through Innovative Products, Processes, Solutions and Services
- Help Our Customers Increase Their Profitability
- Encourage, Recognize, Reward and Respect Our Employees
- Be an Ethical, Environmentally Responsible Company and Be Involved in Our Local Communities
- Surpass Our Shareholders' Expectations by Providing Superior Financial Returns and Revenue Growth

Eclipse Company Values
Integrity • Respect • Teamwork • Commitment • Compassion • Innovation • Joy

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Innovative Thermal Solutions