

Diverse Combustion Technologies, One Reliable Source



Heat Technology Company

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PROFILE Selas Profile

Selas industrial burners incorporate innovative combustion technology to ensure maximum performance and process efficiency. With a wide variety of reliable burners and complete industrial combustion systems, Selas remains the best choice for value, reliability and performance.

Recognized as one of the true pioneers in combustion, Selas has a manufacturing heritage that is approaching 120 years. Passionate about combustion, Selas began with gas lamps then expanded into a full offering of combustion components and eventually transformed itself into a leader of heat processing furnaces. With this growth, Selas built up its team of talent to invent and engineer many proprietary burners and technologies, including press and fired ceramics burners. Throughout history, Selas has amassed one of the deepest collections of patents in the combustion industry.

Industries Served

Selas products are used worldwide in numerous industries where heating products are critical to manufacturing goods. Selas burners are commonly found in automotive, food, petrochemical, metal, paper, forest products, aggregate, glass, and plastics manufacturing.

These industries require reliable burners for applications such as preheating, heat treating, annealing and tempering, melting, surface coating and modification, brazing, drying, finishing, baking and searing, and many more. Some of the industries in which you'll find Selas products at work include:



Selas Engineering & Manufacturing

Selas has 120 years of experience designing and manufacturing quality burners and thermal combustion components for industrial heating systems.

The culture at Selas is focused on providing the most technologically advanced burners, combustion controls, safety devices and energy efficient thermal accessories, along with the expert staff to make it perform at its peak. Our knowledge base comes from over 100 years as a furnace manufacturer for industrial applications as diverse as heat treating and baking to glass manufacturing and powder coating, in installations all over the world. We keep them running in top shape with new



replacement parts, aftermarket support and expert counsel. But our thermal processing expertise doesn't stop there. We provide the same quality products and services to non-Selas furnace users and OEMs alike.

Engineering Services



You can trust the experienced engineers at Selas to custom design a heating solution for your unique application.

Selas manufactures

high quality industrial burners and thermal combustion components, then backs them with comprehensive engineering services that include design assistance, custom modifications and system optimization.

We have 120 years of engineering expertise to help you design a reliable and energy efficient thermal heating solution for your operation.

Capabilities such as finite element analysis, SolidWorks 3D modeling and computational fluid dynamics enable us to solve design challenges, speed up product development, reduce costs, optomize efficiency and improve product quality and reliability.



Finite Element Analysis



SolidWorks 3D Modeling



Computational Fluid Dynamics

SUPPORT Service & Support

We offer pre- and post-sale technical support for the design, maintenance and optimization of your industrial heating applications.

Application Support

Selas pre-sale application services ensure that you get exactly what you need. Our engineering team is available to visit your plant and assist with installation and startup supervision of complex combustion systems

Aftermarket Services



Selas offers service contracts for whatever interval your preventive maintenance routine requires, whether it's monthly, quarterly, annually or

on an emergency basis only. We can make recommendations for updates to your equipment and control panels with newer systems to improve efficiency and reduce process variability.

Replacement Parts

Selas provides a wide range of combustion components to help you meet NFPA compliance, and a huge variety of energy efficient burners to retrofit existing ovens, furnaces, and other process applications. A good way to find what you need is to visit our online Burner Finder, or contact a Selas customer support team member, below.

Upgrades & Retrofits

Although Selas components are designed to last a long time under extreme conditions, refurbishments and upgrades for larger equipment are required occasionally. This includes combustion controls, mixing valves, compressors, qual-o-rimeters, ribbon burners and more.

Field Service

Selas provides comprehensive Field Service support with experienced personnel who will minimize downtime and keep your operation running efficiently and reliably. We can assist you with on-site evaluation, installation, start-up, testing and maintenance of your heat processing equipment.

Turnkey Installation Services

Selas has a national network of factoryauthorized service technicians to ensure proper installation and operation of all your advanced combustion systems.

Safety Audits

Selas understands the importance of combustion safety and provides full audit services including safety compliance, annual safety reviews, and energy saving solutions that enhance efficiency.

Contact Selas Customer Support

For help any time, reach out to a Selas team member at sales@selas.com or 800-523-6500.

High Temperature Nozzle Mix: Standard

Selas nozzle mix burners are designed to thoroughly mix combustion air and fuel gas at the nozzle so that it can burn quickly and completely. Burner types include flat flame, excess air, and the cup-like DNS burner series.

Superflame[™] Low NOx Medium & High Velocity Burner

Designed for process temperatures up to 2500°F with two-stage combustion for low NOx.



- 150,000 to 5,000,000 BTU/hr (40 to 1465 kW)
- Turndown: 50:1 (2%)
- High excess air capability
- Improved temperature uniformity
- Alloy or silicon carbide firing tubes
- Flame rod or ultra violet flame detection
- Low NOx formation
- High and medium velocity flame
- Uniform temperature distribution

Superflame[™] Pak

A pre-assembled and factory-calibrated package burner that virtually eliminates calibration.



- 800,000 to 1,800,000 BTU/hr (200 to 500 kW)
- Turndown: 40:1 (2.5%)
- 500° F to 2500° F (260° C to 1370° C) process range
- Complete packaged burner assembly with air blower, controls, filter and gas train; factory-tested and calibrated for drop-in installation
- Low CO² and NOx levels
- Variable speed air-blower with PWM Control to save on energy costs

SW Flat Flame Burner

The swirling air stream produces a negative vortex at the mouth of the refractory block.



- 125,000 to 2,500,000 BTU/hr (30 to 660 kW)
- Turndown: 10:1 (10%)
- Negative vortex at the refractory block mouth mixes gas rapidly to produce intense combustion
- Burner block port pulls flames flat to furnace wall
- No forward velocity at normal firing rates
- Flanged air and gas connections
- Applications include billet heaters, car furnaces, roof-fired rotary furnaces, and crucible melters

XNM Excess Air Burner

Nozzle mixing types designed for 800% excess air for single tunnel, cool flame applications.



- 200,000 to 6,000,000 BTU/hr (50 to 1600 kW)
- Turndown: 100:1 (1%)
- 2500° F (1370° C) application limit
- Designed for 500% 800% excess air
- Excellent flame stability with excess air, excess gas, and on-ratio firing
- Applications include annealing furnaces, air heaters, heat treat furnaces, and metal melters

High Temperature Nozzle Mix: Velocity

This group of Selas/Pyronics burners is made for high velocity combustion applications where reduced NOx emissions and lower fuel costs are critical.



Used primarily where a high recirculation rate of the products of combustion is required.



- 300,000 to 5,200,000 BTU/hr (80 to 1400 kW)
- Turndown: 10:1 (10%)
- 3000° F and 3300° F (260° C to 1370° C) tile option
- Pressure: 20 oz (35 inches W.C.) (9 kPa0
- Velocity: 250 ft/sec (76 m/sec)
- Steel or alloy block casings for fiber-lined furnaces
- Air/gas connections; flanged for easy installation

Nozzle mixing oil or gas units designed for up to 350% excess air or on ratio firing.



- 6,500,000 BTU/hr (1700 kW) gas or light oil
- Turndown: 10:1 (10%)
- 10 PSIG (70 kP) furnace backpressure
- Nozzle mix design for ratio control of excess air
- Excellent flame stability and instant lighting

High Velocity Single Tunnel Dual Fuel Burner

Nozzle-mixing high velocity burner which will burn most gaseous fuels and light distillate oils.



- 5,600,000 BTU/hr (1500 kW) gas or light oil
- Turndown: 8:1 (12%)
- High velocity: 300 ft./sec. (oil), 250ft./sec (gas)
- Refractory block: 3000°F (3300°F available)
- Block casings: Steel or alloy for fiber-lined furnaces
- 5 sizes: 1-1/2" to 6" NPT air connections

High Temperature Nozzle Mix: Radiant Tube

For radiant performance, choose our waste-reducing SER burner or compact U- or W-Tube units.

Energy Sabre™ 600 Single-Ended Radiant Tube Burner

Highest efficiencies and excellent heat flux.



- 200,000 BTU/hr (55 kW)
- Turndown: 4:1 (25%)
- Thin-wall silicon carbide for high temperature operation with excellent thermal shock resistance
- Helical channels increase surface area to maximize pre-heated combustion air temperatures
- Ideal for reducing fuel consumption in steel and aluminum processing furnaces
- High efficiency combustion reduces fuel usage
- Reduced emissions

UHF Radiant Tube Burner

Compact, efficient, sealed nozzle-mix unit



- 350,000 to 750,000 BTU/hr (90 to 200 kW)
- Turndown: 15:1 (7%)
- Sealed nozzle mix design
- Superior flame stability and mixing at all firing rates
- Typical oxygen levels in the exhaust gases: 3 to 4% @ high fire, 12 to 16% @ low fire
- Accepts hot air up to 480°C
- Low air and gas pressures

Single-End Recuperative Radiant Tube Combustion System

Radiant tube burners are recuperative style and available as single end (SER) or direct fired (UHF).



- 75,000 to 150,000 BTU/hr (20 to 40 kW)
- Turndown: 5:1 (20%)
- Patented system combines burner, radiant tube and recuperator in a single, compact unit
- Single-end tube design reduces wasted heat for fuel savings of up to 50%
- Delayed mixing and progressive combustion create even tube heating and temperature uniformity

High Temperature Nozzle Mix: Self-Recuperative

High velocity burners with integrated steel recupertors for direct and indirect heating.

Recuperative High Velocity Burner with Steel Recuperator



- High-velocity burner with integrated recuperator for efficient heat recovery
- Wide power scope, from 7 to 250 kW
- Maximum application temperature up to 1150°C
- · Low-emission, multi-stage combustion
- Excellent temperature distribution
- Easy direct ignition at high fire
- Direct flame monitoring to ensure safety

Recuperative High Velocity Burner with Ceramic Recuperator



- High-velocity burner with integrated ceramic recuperator for direct and indirect heating
- Wide power scope, from 9 to 250 kW
- Maximum application temperature up to 1300°C
- Low-emission multi-stage combustion
- High burner momentum for excellent temperature distribution
- Patented high-fire ignition system

Recuperative High Velocity Burner with Ceramic Recuperator Burner Tube

Series K-RHGBE

- Cost-efficient high-velocity burner with integrated recuperator combustion tube for heat recovery
- Power scope from 9 to 100 kW
- Maximum application temperature up to 1300°C
- Low-emission single-stage combustion
- Excellent temperature distribution due to high burner velocity
- Easy direct ignition at high-fire due to patented ignition system
- Maintenance-friendly, modular set-up
- All media connections can be adjusted at 90° angles
- Direct flame monitoring to ensure maximum safety in all stages of operation

High Temperature Nozzle Mix: Oxyfuel

Selas provides a range of burners to the glass industry for a variety of glass operations.

Oxyfuel Forehearth Burner

Designed to provide temperature homogeneity.



- 30,000 and 50,000 BTU/hr (8 and 13 kW)
- Turndown: 10:1 (10%)
- Cooler tip and block temperature for safe maintenance-free operation
- Improved mixing resulting in improved forehearth temperature homogeneity
- 60% reduction in fuel consumption compared to air gas firing
- Improved nozzle design for safe operation

Oxyfuel Gas Flat Flame Burner

Nozzle-mix design burns oxygen and natural gas.



- 2,500,000 to 20,000,000 Btu/hr (660 to 5300 kW), five sizes
- Turndown: 5:1 (20%)
- Unique oxygen and gas flow condition promotes an even, well-distributed flame
- Separate staged injector and block provide long block life and easy maintenance
- Precise control of staging oxygen, optional remote flame length adjustment
- Staged oxygen can be set from 10% to 50% of total oxygen flow
- Available in a low nickel option for float furnace

Oxyfuel Gas Conical Burner

Oxy Gas Conical Flame 400



- 4,000,000 BTU/hr (1100 kW)
- Turndown: 4:1 (25%)
- Nozzle design promotes delay in mixing of gas and oxygen for increased cracking and soot generation in the flame, enhancing radiative heat flux.
- Optional staged oxygen set-up is available for added control of oxygen to the burner
- Flame length can be changed and controlled

Staged Flat Flame Burner

Nozzle-mix design for uniform flame distribution.



- Up to 10,000,000 BTU/hr (2930 kW)
- Turndown: 5:1 (20%)
- Oxygen and gas flow promotes an even flame
- Separate staged injector and block provide long block life and easy maintenance
- Precise control of staging oxygen with option for remote flame length adjustment
- Staged oxygen can be set from 10% to 50% of total oxygen flow

Low Temperature Nozzle Mix: Package

Configurable packages for a wide range of oven, drying, metal processing, air heating applications.

PC Package Oven Burner – Round

These round discharge air heating burners install in process plant recirculation systems.



- 200,000 to 30,000,000 BTU/hr (65 to 7900 kW)
- Turndown: 25:1 (4%)
- Gas train meets requirements of NFPA 86 and CSA
- Reliable ignition and flexible air/gas control options for efficient operation
- Applications include ovens, air heaters, textile machines, and paper drying

PH Package Oven Burner – Linear

Square discharge burner heats fresh/recirculated air in ovens, air ducts, and other applications.



- 500,000 to 9,000,000 BTU/hr (130 to 2400 kW)
- Turndown: 25:1 (4%)
- Gas train meets requirements of NFPA 86 and CSA
- Standard and customizable packages offer compact, pre-piped, pre-wired burners
- Applications include dryers, air replacement systems, drying and curing rooms, industrial spray booths and air handling units

PP Package Air Heating Burner

Pre-wired, pre-piped oven burner with sealed mounting flange for pressure side applications.



- 500,000 to 2,500,000 BTU/hr (130 to 660 kW)
- Turndown: 25:1 (4%)
- Gas train meets requirements of NFPA 86 and CSA
- Pre-piped, pre-wired packages come ready to fire
- Configurable for a range of applications including ovens, air heaters, paper & pulp, incinerators, plastic processing and metals

RSP Duct Insert Burner

Pre-packaged, fan-assisted gas burners suit all types of low temperature gas-fired application.



- 500,000 to 9,000,000 BTU/hr (130 to 2400 kW)
- Turndown: 25:1 (4%)
- Gas train meets requirements of NFPA 86 and CSA
- Velocity: 17 to 82 ft/sec (25 ft/sec); 5 to 25 m/sec (7.5 m/sec)
- In-line PH combustion head mounted to sideplate fires parallel in the direction of air flow
- Viewing window to inspect flame during operation

Low Temperature Nozzle Mix: Air Heating

Industrial air heating package burners – pre-piped and pre-wired for oven and dryer applications.

AHP Indirect Fired Air Heater

Indirect air heat exchangers designed for commercial applications.



- 250,000 to 4,500,000 BTU/hr (65 to 1200 kW)
- Turndown: 7:1 (15%)
- Gas train meets requirements of NFPA 86 and CSA
- Consists of heat exchanger with combustion chamber, primary tube bank, 2-pass economizer
- Heat exchanger rated for transfer rate of 12.62 kW per M3
- Operate with natural gas, LP gases or light fuel oils

HEM Indirect Fired Process Air

To heat process air from ambient temperatures up to process plant heat requirements.



- 250,000 to 4,000,000 BTU/hr (65 to 1100 kW)
- Turndown: 7:1 (15%)
- Gas train meets requirements of NFPA 86 and CSA
- Operating air temperatures up to 300° C
- Supplied with pre-packaged, pre-wired assembly
- Can be fitted for operation with natural gas, LP gases or light fuel oils
- Fires horizontally in the direction of air flow

Nozzle Mix: Immersion

Selas manufactures fully pre-wired, pre-piped package burners for OEM immersion heating applications.

TFR Package Immersion Tube

Burner can be supplied with high fire thermal inputs.



- 170,000 to 3,3000,000 BTU/hr (45 to 870 kW)
- Turndown: 7:1 (15%)
- Gas train meets requirements of NFPA 86 and CSA
- 3 to 12 in firetube (pipe size); 80 to 300 mm (normal bore)
- System fires into immersion tubes for liquid heating, produces high-fire thermal inputs

TF Package Immersion Tube

Precise burner package required for most types of immersion tube process heating applications.



- 240,000 to 2,600,000 BTU/hr (65 to 700 kW)
- Turndown: 7:1 (15%)
- Gas train meets requirements of NFPA 86 and CSA
- Basic burner assembly consists of burner, spark ignitor, flame rod, and peep sight
- Use with Natural Gas or Propane
- Applications include parts cleaning, water heating, salt bath heaters, quench tanks and more

Nozzle Mix: Chemical Burners

Low NOx flat flame fluid burners for refining, petrochemical and chemical processes.

Selas ISGAD[™] Low NOx Burner

Custom-engineered flat flame wall burner.



- 1,000,000 to 1,500,000 BTU/hr (270 to 400 kW)
- Turndown: 3:1 (33%)
- Designed for ethylene cracker furnaces
- Typical gas pressure 20-25 PSIG
- Inspirated air, required draft 0.2"w.c.

Premix: Radiant Cup Burners

Radiant cup burners are precise ceramic combustion tools designed to radiate heat to work pieces without flame impingement. Applications include glass, building materials, metals, steel and textiles.

Refrak[™] Screen Burner

A sealed-in tunnel burner with superior flame retention and combustion characteristics.



- 60,000 to 4,000,000 BTU/hr (15 to 1100 kW)
- Turndown: 10:1 (10%)
- Two models: < 2100° F, > 2100° F (< 1150° C , > 1150° C)
- A wide operating range reduces the number of burners required
- Easy installation into furnace masonry
- Handles high operating pressures without blow off
- Low operating pressure with no flashback
- Complete combustion at the burner

KVA Burner

Wide turndown range of 20:1 and high speed radiant heat transfer.



- 175,000 BTU/hr (50 kW)
- Turndown: 20:1 (5%)
- 2000° F (1093° C) application limit
- A wide operating range reduces the number of burners required
- Easy installation into furnace masonry
- Superior flame retention
- Easy replacement
- Low operating pressure with no flashback
- Complete combustion at the burner

Duradiant[®] Furnace Wall Burner

Two burner types (above/below 2000°F/1093°C), high and low capacity range.



- 1,000 to 160,000 BTU/hr (3 to 45 kW)
- Turndown: 10:1 (10%)
- 2000° F (1093° C) application limit
- Designed for use above and below 2000°F (1093°C) – each type made for high and low capacity range.
- All parts exposed to heat are ceramic in high temperature burners; low temperature burners employ alloy tip-holder components
- Burners satisfy a wide range of furnace wall types

Duradiant[®] Open Firing Radiant Cup Burner

Controlled radiant heat to improve product quality, enhance productivity.



- 1,000 to 160,000 BTU/hr (3 to 45 kW)
- Turndown: 10:1 (10%)
- High-speed radiant heat transfer for proximity to workpiece without flame impingement
- Differential heating with burner outputs of varying intensities
- Range of sizes, cup contours and housings, can mount in any position
- Brazing, soldering, drying, curing and more

Duradiant[®] Light-Duty, Panel-Type Burner

For use in furnace walls or roofs, anywhere that close burner spacing is required.



- 1,000 to 160,000 BTU/hr (3 to 45 kW)
- Turndown: 10:1 (10%)
- 2000° F (1093° C) application limit
- Recommended for use where temperatures do not exceed 2000°F (1093°C)
- All critical metallic parts are fabricated of heat resistant alloy material
- Design permits removal of tip-holder assembly

Duradiant[®] Semi-Furnace Burner

Designed to mount into vertical refractory walls or panels.



- 1,000 to 160,000 BTU/hr (3 to 45 kW)
- Turndown: 10:1 (10%)
- 1800° F (980° C) application limit
- Mount easily to vertical refractory walls or panels where 4-1/2" thick wall construction is acceptable
- Critical metallic parts are fabricated of heat resistant alloy steel
- Series 551 burners have flanges which overhang the burner blocks for bolting to steel frameworks
- Series 552 burners have flanges small enough to permit close nesting of burners

Duradiant® Line Arrangement Burner

Close coupling of radiant heat sources for light-duty heating applications.



- 1,000 to 160,000 BTU/hr (3 to 45 kW)
- Turndown: 10:1 (10%)
- Close coupling of radiant heat sources for line arrangements in light heating jobs
- Designed to heat moving webs and ovens, as well as stationary objects
- 500 Series is availablein several cup configurations to permit self-piloting geometric arrangements
- 200 Series and 700 Series are for straight-line use

Premix: Blast Tips & Burners

Selas impingement burners are designed to deliver extremely concentrated heat in a variety of shapes, depending on the application. Applications include glass finishing, building materials, plastics metals, steel and textiles.

Cast-Iron Utility Ribbon Burner

Ideal for processes with small, direct flame impingement.



- 1,000 to 10,000 BTU/hr-inch (0.01 to 0.1 kW/mm)
- Turndown: 4:1 (25%)
- Pressure: 1.25 inches W.C. (3 mbar)
- Distance: 2 to 36 inches (50 to 915 mm)
- Wide range of capacities, flame patterns and sizes
- Patented stainless steel ribbon construction produces balanced heat and flame

Extended Length Superheat[™] Burner

Constructed like mini refractory-lined furnaces; capable of heating up to 25,000 BTU/hr/inch.



- 25,000 BTU/hr-inch (0.3 kW/mm)
- Turndown:10:1 (10%)
- Pressure: 0.75 to 60 inches (20 to 1525 mm)
- Gas/air mixture fed through precision ports, into a close-tolerance ceramic structure
- High velocity, "superheated" combustion gas results in uniform heat transfer to the work piece

Tunnel Burner

Will burn any standard fuel gas at mixture pressures ranging from 0.1 to 60 WC.



- 50,000 to 2,000,000 BTU/hr (10 to 500 kW)
- Turndown: 15:1 (7%)
- Pressure: 0.1 to 60 inches W.C. (0.25 to 150 mbar)
- Patented design of refractory plug "E" and combustion tunnel for stable operation
- Annular orifice reduces back firing at low mixture pressures
- Positive flame retention at high mixture pressures

PRS Spear Flame Gas Burner

The piloted spear-like flame offers wide turn-down, flexibility, performance and long life.



- 2,000 to 60,000 BTU/hr (0.5 to 16 kW)
- Turndown: 4:1 (25%)
- Available in many flame intensities and lengths
- Perforated refractory screen resists clogging, maintains port size
- Heat-resistant alloy pilot ring minimizes corrosion and oxidation
- Designed for easy mounting in any position
- Easy to clean or replace

Anti-Involution Burner

High velocity combustion, uniform glass melting.



- 40,000 to 170,000 BTU/hr (10 to 45 kW)
- Turndown: 4:1 (25%)
- 2410° F (1320° C) application limit
- Employs a high velocity combustion method that provides uniform glass melting
- Durable steel nozzle, temperatures up to 1320°C
- Can be used with Selas Premix Combustion System

Superheat[™] Burner

More effective selective open heating through high heat to very specific areas of the workpiece.



- 25,000 BTU/hr-inch (0.3 kW/mm)
- Turndown:10:1 (10%)
- 2800° F (1540° C) flame temperature limit
- Distance: 0.75 to 60 inches (20 to 1525 mm)
- High heat release to localized areas
- Perfect for automated high-speed production lines
- Low-cost alternative to oxy-gas burner tips

Multiple PR Burner, Gas Type

Combine positive flame geometry with maximum heat release and low turndown.



- 4,000 to 110,000 BTU/hr (1 to 30 kW)
- Turndown: 4:1 (25%)
- Concentrated, high intensity "flat face" round flame
- Inhibits flashback and prevents flame blowoff
- · Heat-resistant, screw-on pilot ring
- Durable, kiln-fired refractory screen performs well under severe conditions
- Interchangeable, easy-to-replace components
- Versatile installation and mounting

Blast Tip Model BTSA–Alloy

Tunnel nozzle mix burner - stable operation.



- 1,500 to 150,000 BTU/hr (4 to 40 kW)
- Turndown: 4:1 (25%)
- Used on single/multiple tunnel nozzle mix burners
- Can also be used for spot heating operations
- All blast tips in the series are extremely stable
- Will operate with air/fuel ratios ranging from
- 70% to 100% aeration

Premix: Atmosphere, Immersion

Selas atmosphere and immersion burners are Intelligently designed for proper and complete atmospheric combustion.

Atmospheric Nozzle

Open-type burners designed for high capacities with good flame retention characteristics.



- 2,000 to 2,600,000 BTU/hr (0.5 to 700 kW)
- Turndown: 10:1 (10%)
- Comes in four pipe sizes 1/8, 1/4, 3/8 and 1/2.
- Excellent flame retention with strong turn-down
- Pilot holes around main burner opening prevent flame "blow off"
- AN Nozzles can operate at low mixture pressures due to large port areas and rich fuel mixtures

Atmospheric Gas Burner

Achieve high turndown ranges on combustion chambers or furnaces under negative pressure.



- 600,000 to 9,500,000 BTU/hr (150 to 2500 kW)
- Turndown: 7:1 (15%)
- Pressure: 10 PSIG (70 kPa)
- No air blower needed
- One-valve automatic control
- Low cost proportioning system
- Not affected by variations in draft
- High heat releases

Coil Cage Burner

For gas-firing, immersed tubes for heating water, solutions, oils, and other liquids.



- 40,000 to 500,000 BTU/hr (10 to 140 kW)
- Turndown: 4:1 (25%)
- Complete assemblies for gas-firing immersed tubes for heating water, oils, and other liquids
- Engineered to allow ample secondary

Premix: Ribbon Burners

Our many styles of line and ribbon burners have enhanced product guality in bakery and industrial applications for decades.



- 45,000 BTU/hr-inch (0.5 kW/mm)
- 60,000 BTU/hr-inch (0.65 kW/mm), triple slot
- Turndown: 4:1 (25%)
- Applications include searing, roasting, singeing, flame curtains, dye heating, pre-welding and kilns
- Triple slot burners are the most powerful linear burners in the industry

• 60,000 BTU/hr-inch (0.65 kW/mm)

- Turndown: 8:1 (12%)
- Distance: 42 feet (12.8 m)
- Direct impingement burner for applications requiring maximum heat and flame balance
- For singeing, laminating, drying, curing and other operations where positive flame control is essential
- Burners up to 42 ft in length have been built

Water-Cooled Burner

The only water-cooled ribbon burner where the cooling core is integral to the burner casting.



- 17,000 BTU/hr-inch (0.2 kW/mm)
- Turndown: 25:1 (4%)
- Continuous level, direct flame; no flame pattern distortion
- The only truly water-cooled ribbon burner where the cooling core is an integral part of the casting
- Used all over the world for lamination of poly materials of virtually any length.

Ribbon Burner

Special heating units for use where a narrow, uniform sheet or ribbon of flame is desired.



- 32,000 BTU/hr-inch (0.35 kW/mm)
- Turndown: 8:1 (12%)
- Produces a narrow, uniform sheet of flame
- Geometric and combustion stability for continuous heat processing applications
- Perforated refractory ribbon plates create maximum flame retention
- Interchangeable end-flange assemblies available.
- Ideal for glass, printing, textile, metal-fabricating and wire applications

Premix: Line and Pipe Burners

We have many styles of line and pipe burners that have enhanced product quality in bakery and industrial applications for decades.

Pyroline[™] & Midget Pyroline Burner

Cast iron, drilled port continuous line burners with alloy side rails.



- 300,000 BTU/hr-inch (3 kW/mm)
- Turndown: 20:1 (5%)
- Pressure: 20 inches W.C. (50 mbar)
- Distance: 3, 6, 12 inches (76, 152, 305 mm)
- Unique side rail mounting improves flame retention; cooler operation at high temperatures
- Performs best with 70% to 80% aeration
- Universal pilot mounting bracket
- Single point spark ignition and flame protection

Hi-Tri[™] Trizone Burner

2", 2-tube arrangement improves heat recovery time and reduces waste in critical applications.



- 150,000 BTU/hr (40 kW), two tube
- Turndown: 4:1 (25%)
- Distance: 4 inches (100 mm)
- Replaces 1.5" black pipe models for higher turndown
- Superior zone control and zone heat recovery
- Lateral balance
- Feed nipple and burner of 2" heavy-duty black pipe
- Pinned every 4" for unmatched stability
- Custom configured to desired zone distribution

TriZone Burner

Replacement for BP/APV Turkington pipe burners used primarily in bakeries.



- 90,000 BTU/hr (24 kW), 3-tube
- 100,000 BTU/hr (26 kW), 2-tube
- Turndown: 4:1 (25%)
- Pressure: 32 and 2 inches W.C. (80 and 5 mbar)
- Distance: 10'-4", 12'-4" and 13'-4" (3.1, 3.8 and 4.1 m) for 960 or 970 ovens
- · Leak-proof with easy-to-read dial settings

Pipe Burner Schedule 160

Twice as heavy as our standard Schedule 80 pipe burners.



- 13,600 BTU/hr-inch (0.15 kW/mm)
- Turndown: 4:1 (25%)
- Replaces cast iron band burners, extruded burners, and drilled pipe burners
- Resists bowing even at high ambient temperatures
- Competitively priced, can be fabricated to any length
- Easily adaptable to TriZone type burners

Pipe Burner Schedule 80

Can be utilized anywhere direct flame impingement is required.



- 10,000 BTU/hr-inch (0.10 kW/mm)
- Turndown: 4:1 (25%)
- Distance: 1 inch to 21 feet (25 mm to 6.5 m)
- Used for bakery, wire, glass and plastics industries
- Constructed with extra heavy cast iron pipe or stainless, with a wide range of ribbon designs
- Pipe diameters range from 1/2" to 4"

Custom Pipe Burners

Designed for specific applications such as deflashing and surface modification.



- 13,600 BTU/hr-inch
- 0.15 kW/mm
- Turndown: 4:1 (25%)
- Available in many shapes and sizes including circular, curved, oval, octagonal, and rectangular
- For deflashing and surface modifications
- To serve very specific, unique combustion needs
- Typical applications include tank heating, flame reating, deflashing, and surface modifications

Infrared Burners

Metal and ceramic infrared burners are widely used for a variety of industrial and food processing applications.

MR-12 Infrared Burner

A fine porosity metal refractory grid offers excellent resistance to impact and thermal shock.



- 20,400 BTU/hr (340 BTU/hr-in2)
- 5.5 kW (140 kW/m2)
- Turndown: 2.5:1 (40%)
- 1650° F (900° C) surface temperature
- Flat-faced, flash-resistant metallic foam emitter
- Input fuel is converted to 65% infrared, 35% convective energy
- Cast iron housing with high temperature expanding gasket material
- Modular burner sections with steel orifice union connectors

Apollo-Ray® Gas Infrared Burner

Metal fiber infrared burners with high radiance and all-metal construction, available in two sizes.



- 22,000 and 30,000 BTU/hr (485 BTU/hr-in2)
- 6 and 8 kW (200 kW/m2)
- Turndown: 2.5:1 (40%)
- 1800° F (980° C) surface temperature
- Corrosion-resistant, stainless steel body
- High performance, multi-layer sintered metal fiber alloy emitter
- Fuel efficient, cost-effective operation
- Quick heating and cooling

MR-86 Infrared Burner

Gas-fired infrared surface combustion burner with a stainless steel body for food production.



- 17,000 BTU/hr (340 BTU/hr-in2)
- 4.5 kW (140 kW/m2)
- Turndown: 2.5:1 (40%)
- 1650° F (900° C) surface temperature
- Distance: 16 Ga (0.063 inch); 1.6 mm sst body
- Flash-resistant, fine porosity, metallic foam emitter
- Input fuel is converted to 65% infrared, 35% convective energy
- Modular burner sections with steel orifice union connectors

Model K Infrared Burner

An air-gas mixture impinges directly on the finned refractory to produce maximum radiance.



- 56,000 BTU/hr (1210 BTU/hr-in2); 15 kW (495 kW/m2)
- Turndown: 4:1 (25%)
- 2000° F (1100° C) surface temperature
- Finned cordierite ceramic refractory emitters uniformly distribute radiant heat
- 30% IR, 70% convective energy output
- Stainless steel spacer to deliver combustion mix
- Modular burner sections with carbon steel unions
- No ported holes to clog, fewer dark spots
- Longer wear resistance than cast iron baffle
- Designed to reduce maintenance costs

Model F Infrared Gas Burner

Industrial applications include battery making, pre-drying, paint flow coating, and resin curing.



- 28,000 and 48,000 BTU/hr (955 BTU/hr-in2); 7.5 and 13 kW (390 kW/m2)
- Turndown: 4:1 (25%)
- 2000° F (1100° C) surface temperature
- Finned cordierite ceramic refractory emitters
- 30% IR, 70% convective energy output
- Stainless steel spacer (slit orifice) to deliver an even air/gas mixture
- High temperature, corrosion-resistant alloy side plates
- Modular burner sections with carbon steel orifice union connectors

E-Class Infrared Burners

Intense, concentrated radiation for use in industrial and food applications.



- 30,000 and 60,000 BTU/hr (1350 BTU/hr-in2); 8 and 16 kW (550 kW/m2)
- Turndown: 10:1 (10%)
- 2200° F (1200° C) surface temperature
- 8 inches W.C. (20 mbar) mixture pressure
- 30% IR, 70% convective energy
- High thermal transfer for enhanced drying

MR12Ni Infrared Burner

A corrosion-resistant version of the MR-12 that's more suitable for food processing ovens.



- 20,400 BTU/hr (340 BTU/hr-in2); 5.5 kW (140 kW/m2)
- Turndown: 2.5:1 (40%)
- 1650° F (900° C) surface temperature
- Flash resistant, fine porosity, metallic foam emitter
- 65% infrared, 35% convective energy
- Nickel-plated cast iron housing with high temperature expanding gasket material
- Full perimeter stainless steel frame
- Quick heat, quick cool capabilities

Angled Media Infrared Burner

Metal fiber burner replaces ribbon burners, saving fuel and increasing product quality.



- 10,200 and 17,500 BTU/hr (485 BTU/hr-in2);
 3 and 5 kW (200 kW/m2)
- Turndown: 2:1 (50%)
- 1800° F (980° C) surface temperature
- High performance, multi-layer metal fiber alloy emitter
- 65% infrared, 35% convective energy output
- High surface area to entrain air gas mixture
- 145 degree infrared radiant pattern
- Corrosion resistant all stainless steel construction
- Rapid heating and cooling

Low Profile Infrared Burner

Metal fiber design used in tortilla chip ovens and industrial ovens requiring high heat flux density.



- 22,000 BTU/hr (485 BTU/hr-in2); 6 kW (200 kW/m2)
- Turndown: 3:1 (33%)
- High performance, multi-layered sintered metal
- 1800° F (980° C) surface temperature
- Fiber alloy emitter
- 65% IR, 35% convective energy output
- Corrosion-resistant, all stainless steel burner body
- Very fast heating and cooling
- Low profile, standard or high profile configurations
- Durable performance in harsh conditions

MR-7 Infrared Burner

A compact atmospheric infrared burner that can be fed with an inspirator mixer.



- 4,900 BTU/hr (190 BTU/hr-in2); 1.5 kW (80 kW/m2)
- Turndown: 1.3:1 (75%)
- 1500°F (820° C) surface temperature
- Flash resistant, fine porosity, metallic foam emitter
- 65% infrared, 35% convective energy output
- Flat-faced construction
- Durable cast iron housing with high temperature expanding gasket material
- Modular burner sections with carbon steel orifice union connectors
- Replaceable emitter with secure attachments

Impingement Line Burner

Designed for easy installation, the radiation surface is ceramic to handle high temperatures.



- 30,000 BTU/hr (860 BTU/hr-in2); 8 kW (350 kW/m2)
- Turndown: 6.7:1 (15%)
- 2000° F (1100° C) surface temperature
- High efficiency
- Low operating cost
- Easily maintained
- Superior modular design
- · Withstands high air stream velocities
- Applications include convection systems, paint, plastics, mold and die heating, and food processing

Impingement, All-Ceramic Burner

Designed for easy installation, the radiation surface is ceramic to handle high temperatures.



- 40,000 BTU/hr (1140 BTU/hr-in2); 10.5 kW (465 kW/m2)
- Turndown: 10:1 (10%)
- 2000° F (1100° C) surface temperature
- High efficiency
- Simple modular design
- All ceramic face
- Rugged cast iron body
- Easy maintenance
- Stable flame in high drafts

Air/Gas Mixing Equipment

From simple blending valves to advanced custom systems, Selas is the air/gas mix master!

Redi-Pak[®] Control Unit

Compact operating and control unit generates premix air-gas blends for industrial burners.



- 150,000 and 400,000 BTU/hr (40 and 110 kW)
- Turndown: 6.7:1 (15%)
- UL recognized; CE and CSA approved
- All components of premix delivery system in one compact unit
- Manual or remote start and modulation
- Ignition & programmed automatic relighting
- Constant flame supervision with LED indicator

Posimix® Blender Valve

A blender valve that accurately mixes a variety of gases with air to be compatible with natural gas.



- 1000 to 125,000 scfh (mixture SG = 1.0); 30 to 3500 Nm3/hr (mixture SG = 1.0)
- Turndown: 5:1 (20%)
- Full floating adjustable design
- Accurately blends gas and air at constant pressure
- · Automatic and instant response to load changes
- Mixture ratio is independent of discharge pressure
- Works on available gas pressure

CAV Combustion Control System

Flexible combustion control system can be configured for constant heat or variable heating.



- 500 to 150,000 scfh (13 to 4020 Nm3/hr) air-fuel mixture
- Turndown: 20:1 (5%)
- 6 PSIG m (40 kPa) pressure
- Available with two valve types: Posimix® valves for applications requiring constant heat, or CAV valves for processes requiring variable heating
- Completely self-contained
- Output pressure to 6 psi
- Available with automatic ratio controlAvailable with automatic ratio control

Air and Gas Inspirator

Inspirators and gas air mixers mix air and gas in combustion systems.



- 20,000 to 450,000 BTU/hr (5 to 120 kW)
- Turndown: 6:1 (17%)
- An economical way to blend air and gas fuel in a tube
- Fueljectors, or proportional air/gas mixers, use air as the catalyst through an orifice to create a vacuum and achieve a stoichiometric flame

Customized Combustion System and Controls

Air/gas mixtures delivered and controlled the way you need it.



- 2,000 to > 7,000,000 BTU/hr per customer specs; 0.5 to > 2000 kW per customer specs
- Can be designed to meet NFPA, CE/UL, TSSA and OSHA
- Custom systems from simple atmospheric to intelligent closed-loop systems

Hijector[™] Air/Gas Mixer

Uses high pressure gas to entrain the air needed to make a complete combustible mixture.



- 4,500 to 1,325,000 BTU/hr (1 to 350 kW)
- Turndown: 3:1 (33%)
- Orifice spud may be removed easily without disconnecting piping
- Overall length of unit is materially cut down
- Orifice and air entrainment space easily accessible for cleaning or inspection
- Shutter cannot get lost

Lojector Mixer



- 20,000 to 1,000,000 BTU/hr (6 to 270 kW)
- Turndown: 1.3:1 (75%)

Midget Mixer/Mixing T

Suction-type proportional air-gas mixers.



- 9,000 to 120,000 BTU/hr
- 2 to 30 kW
- Turndown: 2.5:1 (40%)
- Compact, soldered bodies
- Single valve control
- Rugged construction and plated surfaces
- Ratio easily set
- Marked inlets

Combustion Accessories

Burners are only part of our story. No combustion system is complete without the right accessories. And we've got 'em!

Motorized Packaged Valves

Motor-operated butterfly valves modulate air/gas flows for most types of combustion systems.



- 900 to 55,000 scfh (25 to 1,500 Nm3/hr) air
- Adjustable automatic flow control valve
- For most fuel gases and air
- Double bearing shaft positive alignment
- O-ring sealed shaft
- Disc position indicator
- Cast iron body and steel disc
- 90° of 160° motor operation field adjustable
- 1/8 NPT tap for pressure

Flanges, Adapters & Sight Ports

Our flanges, adapters and view ports provide utility and ease of connection for multiple burners.



- Turndown: 2:1 (50%)
- Adapter plates for adding ERB peep sights, electrodes, etc. to the burner opening
- Peep sights in stainless or cast iron for low to high temperature burner applications up to 700°
- Observation ports provide a view of the furnace, kiln, or oven interior during burner operation
- Coil cage burner adapters extend the burner further when it would not otherwise mount far enough through the furnace wall

High Blast Torch

A small amount of high pressure air entrains incoming gas at the mixer.



- 40,000 to 3,000,000 BTU/hr (10 to 800 kW)
- Available in 8 sizes
- Air blower not required
- Rugged heavy duty construction
- Compact trouble-free assembly
- Orifices are easy to clean and inspect

Gas Cocks

Small valves engineered for dependable operation.



• 20 to 30,000 scfh (1 to 1000 Nm3/hr) gas

- Adjustable valve
- Larger valves have UL/CSA approvals and listings

Atmospheric Nozzles

Open, high capacity burners with good flame retention.



- 2,000 to 2,600,000 BTU/hr (0.5 to 700 kW)
- Turndown: 10:1 (10%)
- Four pipe sizes 1/8, 1/4, 3/8 and 1/2
- Durable cast iron construction
- Applications include air heaters, bake ovens, drying ovens, soft metal melting furnaces, etc.

Electronics Monitors

Selas provides reliable ignitors, monitors, controls and scanners to ensure the highest quality for your thermal process.

Qual-O-Rimeter[®] (QOR)

A monitor that detects deviations in flame temperature to automatically adjust gas/air ratio.



- 2,000 BTU/hr (0.5 kW)
- Continuous and accurate correction for gas and ambient air variations
- Pushbutton control, digital display, and microprocessor circuitry assure easy operation
- Two models are available to handle either raw gas or complete mix of air/gas premixing systems

Custom Control Panels

Our packaged control cabinets come factory assembled and tested.



- 2,000 to > 7,000,000 MMBTU/hr (0.5 to > 2000 kW) per customer requirements
- All standard Nema types available: wall mounting, free standing, multi-door and consoles
- Factory engineered, assembled and tested
- Control panel includes circuit breakers, switches, pushbuttons, transformers, motor starters, relays, timers, lights, meters and more

Pilot Igniters

Reliable lighting and monitoring infrared burners.



- 8,500 BTU/hr (2 kW)
- Turndown: 1.7:1 (60%)
- Air/gas mixture feeds from the manifold to the pilots
- Kanthal spark ignitors and flame rods, Inconel pilot tips
- Brass pet cocks on ignitor and monitor feeds
- 14 gauge stainless end bracket

Igniters, **Detectors**

Heavy-duty, reliable flame ignition and monitoring.



- Complies with CSA (Canadian and USA requirements)
- 14 Ga 0.078 inch (2 mm) sst bracket
- Heavy-duty igniters are available in many lengths and designs
- Compliant flame safeties include SNS-120, SNS-122, and the 24V S-87 which comes in a sturdy aluminum box

UV Scanners

Photo-sensitive flame sensor for flame monitoring systems.



- UL/CSA/FM approval
- Weather-resistant, die cast housing
- Standard 5 PSIG pressure seal
- Optional 25 PSIG window or lens
- Optional integral quartz magnifying lens
- 1 sighting connection for maximum aperture

Flow Regulators

Measure, adjust, meter and calibrate air/gas flow with our line of precision flow regulators.

Balanced Zero Regulators

The BZR delivers gas at a precise, balanced pressure even with inlet pressure variations.



- 450 to 18,100 scfh (10 to 500 Nm3/hr) natural gas
- Turndown: 200:1 (0.5%)
- 150° F (65° C) operating limit
- 0.1 to 0.3 inches W.C.; 2 PSIG; 14 inches W.C.
- 0.2 to 0.7 mbar; 14 kPa; 35 mbar
- Accuracy: Low Flow: 0.1 W.C., Full Flow: 0.3 W.C.
- All units factory tested and sealed before shipment

Flanged Gas Adjusters

Adjustable orifice valves are designed for setting gas and/or air flow on combustion systems.



- 270 to 38,000 scfh (10 to 1000 Nm3/hr) natural gas
- Flanged adjustable-limit orifice valve
- 5 PSIG (34 kPa)
- Gas-tight construction, O-ring sealed valve
- Rising stem, micro-control adjustable
- Lock nut for positive valve position
- Rugged cast iron construction
- Available in a wide variety of inlet and outlet sizes

Midget Air Ductors

Designed to supply combustion air up to 16 osi utilizing a small quantity of high pressure air.



- 90 to 1,000 scfh (2 to 30 Nm3/hr) air
- Turndown: 2:1 (50%)
- 5 PSIG (34 kPa)
- Compressed air passing through the calibrated metering orifice entrains atmospheric air and delivers it to a gas-air mixer.
- For selection table showing approximate volumes of low pressure air which Midget Air-Ductors will deliver, visit our website at www.selas.com

Calibrated Orifice Flow Meters

Designed to measure flows of air or natural gas at pressures up to 5 psig and temperatures to 500°F.



- 20 to 100,000 scfh (1 to 2700 Nm3/hr) natural gas or air
- Turndown: 10:1 (10%)
- 500° F (260° C) operating limit
- 5 PSIG (34 kPa)
- Measures air and gas flows in combustion systems
- Inexpensive flow metering device
- Simple four bolt construction
- Plates available in mild steel or stainless
- 5% maximum flow error

Blast Gate

These rugged, low cost pull-handle valves manually control air flow on combustion systems.



- 1,000 to 72,000 scfh (30 to 2000 Nm3/hr) air
- Valve (adjustable)
- Stainless steel gates are standard for all sizes
- Swivel-mounted gate and shaft assembly
- Thumb screw shaft locks
- Free floating gate will not bind
- Cast iron construction
- Available with minimum stop arrangement

Oil-Air Ratio Regulator

Oil-Air Ratio Regulators are used to proportion fuel flows to modulating oil burners.



- 50 to 100 GPH (fuel oil; < 100 SSU);
- 190 to 380 L/hr (fuel oil; < 20 cSt)
- Turndown: 10:1 (10%)
- 250° F (120° C) operating limit
- Pressure: 40 to 100 PSIG (300 to 700 kPa)
- Precise control of outlet pressure
- Pressure balance system for single valve control
- Balanced valve design
- Accurate 30:1 oil to air pressure ratio at all firing rates

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