

energy solutions



**PRIOR INDUSTRIES
AUSTRALIA PTY LTD**

Contents

Contents



section 1:
prior high turn down combustion systems

section 2:
cuenod gas oil and dual fuel burners

section 3:
prior gas oil and dual fuel register burners

section 4:
hotwork combustion technology

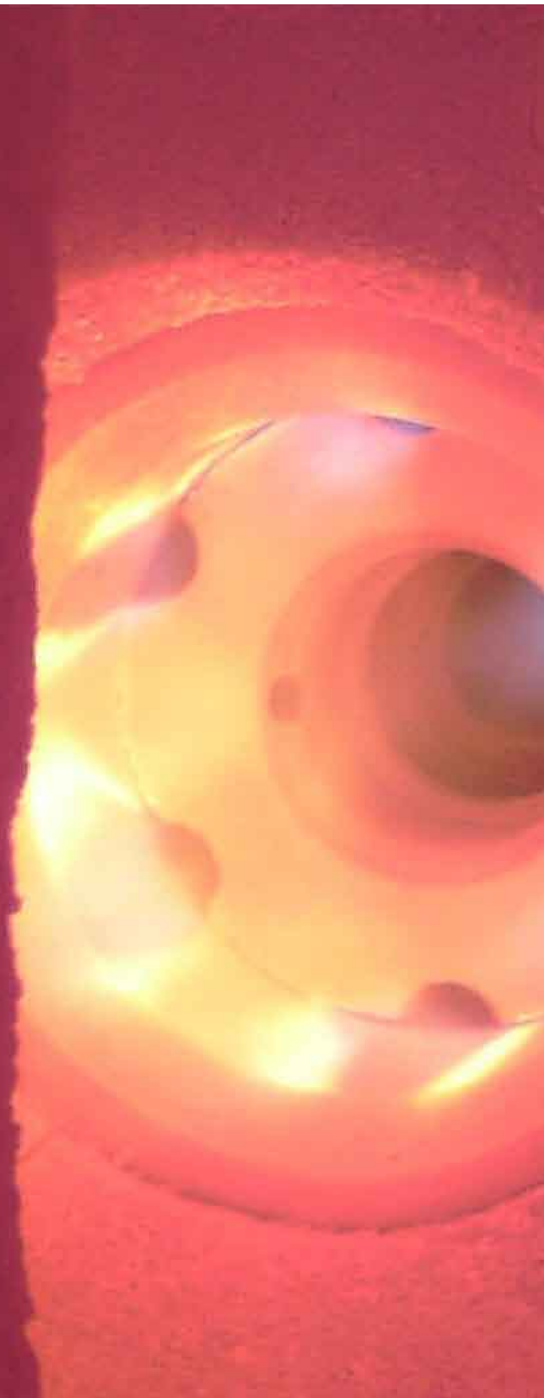
section 5:
scam filters

section 6:
refractories combustion chambers and
packaged systems

section 7:
combustion control systems and
automation

section 8:
ancillary equipment

section 9:
consultancy, design, engineering and
special combustion applications



Company Profile



Established in 1970, **Prior Industries Australia** design, supply, install and commission combustion systems and associated equipment for projects worldwide. Prior has extensive experience in the design and supply of combustion systems for mineral processing, particularly Nickel, Copper and Aluminium. In addition, we service clients from a diverse range of industries such as Food Processing, Petro-Chemical, Power Generation, Textile, Brick, Ceramic, Cement, Glass and Asphalt. Our OEM clients include manufacturers of furnaces, boilers, smelters, kilns, dryers, calciners and incinerators.

QUALITY ASSURANCE

In accordance with our ongoing commitment to the provision of quality combustion equipment, Prior is pleased to advise that in March 2006, our Quality Assurance system was audited and confirmed to be in compliance with international standard ISO 9001 : 2000.



PRIOR's range of products and services includes:

- Prior High Turn-down Heavy Oil Fired Burner Systems;
- Cuenod Gas, Oil and Dual Fuel Burners, for applications ranging from 15 kW to 45 000 kW;
- Prior Gas, Oil and Dual Fuel Register Burners, for applications up to 56 000 kW;
- Hotwork Industrial and Furnace Burners, suitable for high temperature applications;
- Custom designed Combustion Systems for special fuels and applications;
- Packaged systems, including Crucible / Ladle Heating Systems, Aluminium Reduction Cell and Cathode Block Pre-heating, Hot Gas Generators and Air Heaters;
- Scam Filters for low and high viscosity liquids;
- Combustion Control Systems and Automation;
- Ancillary equipment, including Oil and Gas Valve Trains, Oil Pumping and Heating Systems and Combustion Air Fans;
- Refractory supply and consultancy services, including combustion chamber design;
- Process engineering consultancy;
- Installation, Commissioning and after sales service;

Prior High Turn Down Combustion Systems

Developed by our engineers to fulfil precise combustion requirements, PRIOR High Turn-Down Combustion Systems are suitable for various applications, both pressurised and non-pressurised. Such aspects as accurate combustion ratio control throughout the entire firing range, very wide turn-down ratios, increased burner capacities and improved flame control are all prominent features of the High Turn-Down Burner range.

At the centre of the PRIOR High Turn-Down Combustion System is a Prior On-ratio Burner, capable of providing single lever control of fuel and air. PRIOR has expanded on this concept by the addition of ancillary equipment, enabling dramatically increased maximum throughput of fuel and air, while only marginally increasing the burner capacity at low fire.

Despite the additional amount of equipment that increased burner turn-down requires, the entire PRIOR High Turn-Down Combustion System is still controlled by the operation of only a single lever. All components are designed to interlock mechanically, and operate from the actuation of the burner; this results in a significant saving when compared with systems requiring multiple electric, hydraulic or pneumatic actuators and controllers. There is also the added benefit of fewer required PLC modules.

Like all PRIOR equipment, the High Turn-Down Combustion System has been designed to endure arduous conditions. Extensive use has been made of stainless steel, especially in those areas subject to heat. The burner nozzles in particular are cast machined AISI 310 grade stainless steel.

PRIOR High Turn-Down Combustion Systems are operating successfully in air heaters, boilers, vaporisers, reduction furnaces, gasifiers and various other heavy industry installations.



Prior SSB07 Heavy Oil Burner



Prior SSB07 Heavy Oil Burner - Nozzle View



Prior SSB07 and Plenum Chamber

PRIOR HIGH TURN DOWN COMBUSTION SYSTEMS - BURNER DATA

Burner Model	Fuels	Maximum Capacity	Maximum Viscosity	Fuel Supply Pressure	Combustion Air Pressure	Maximum Turn Down
SSB 07	Light Oil, Heavy Fuel Oils (if pre-heated) including Bunker C	132 lph (35 US GPH)	90 SSU	100 kPa	7 kPa (Light Oil), 15 kPa (Heavy Fuel Oil)	8 : 1
SSB 10	Light Oil, Heavy Fuel Oils (if pre-heated) including Bunker C	170 lph (45 US GPH)	90 SSU	100 kPa	7 kPa (Light Oil), 15 kPa (Heavy Fuel Oil)	8 : 1

Cuenod Gas Oil And Dual Fuel Burners

Applications from 15 kW to 45 000 kW

Prior Industries Australia is the sole Australian representative for Cuenod of Annemasse France. With a history dating back to 1899, Cuenod has developed a reputation as one of Europe's leading burner manufacturers. Cuenod draw upon innovative technology to offer clients high quality solutions to specific requirements which minimize energy consumption and environmental impact.

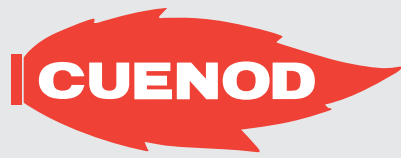
Cuenod burners are manufactured to the highest standards of quality control, including European standards EN 676 (Gas Burners), EN 267 (Oil Burners) and International standard ISO 9002 for manufacturing. Additionally, Cuenod burners supplied to the Australian market include gas/oil valve trains and control systems which are fully compliant with all relevant standards and codes.

PRIOR engineers are always available to discuss client's requirements and make recommendations for specific projects. Through our engineering department, we offer installation and commissioning as well as after sales service and spare parts, ensuring trouble free operation of all Cuenod burners. Cuenod has established an international network of subsidiaries and agents, thus Original Equipment Manufacturers undertaking overseas projects can be assured of the after sales service and support required.

Through their extensive investment in research and development, Cuenod is able to offer a number of innovative patented systems to further enhance the efficiency and operation of their burner systems. These include:

- AGP - Proportional Air/Gas Ratio Control System.
- RHP - Burner Ventilation System.
- IME - Multi Stage Injection System to meet the most stringent NOx requirements.
- MDE - Operating Data Memorization System providing instantaneous and historical burner data.
- RTC - Functional housing design and advanced combustion head technology.
- Variatron - Speed Control System for increased turn-down, lower electricity consumption and reduced operating costs by extending component life.
- GEM - Simultaneous Microprocessor control of one or more Servomotors.



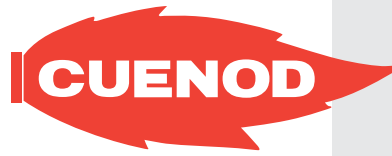


Cuenod Process Duoblock Oil Burners

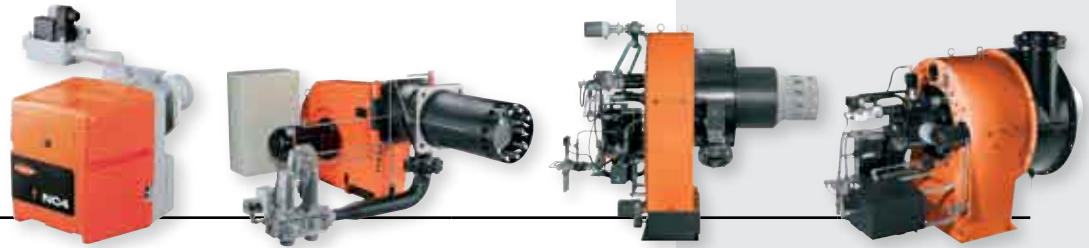


Cuenod Monoblock Dual Fuel Burners

Summary of Cuenod Burner Models



Gas Burner Types

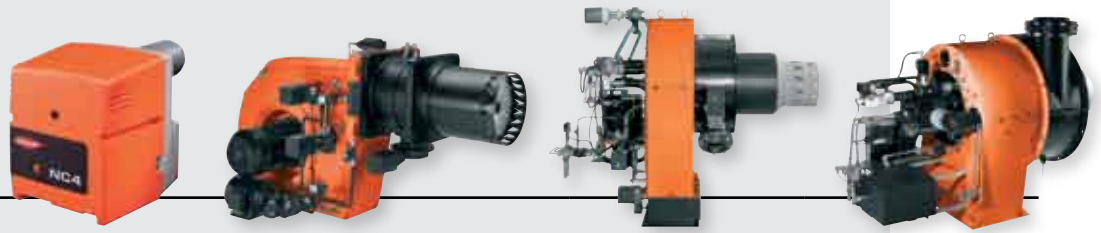


Burner Models and Outputs

Single Stage	Two Stage	AGP System	AGP & GEM Systems (Monoblock)	AGP System (Duoblock)	AGP System & Progressive (Duoblock)	Progressive (Process Duoblock)
NC 4 - C 30	NC 12 - C 43	NC 12 - C 210	C 260 - C 1100	CC 501 - CC 802	CC 600 - CC1600	CP 600 - CP 4500
15 kW - 300 kW	80 kW - 430 kW	80 kW - 2100 kW	1060 kW - 10275 kW	2000 kW - 10000 kW	3600 kW - 16000 kW	4030 kW - 45000 kW



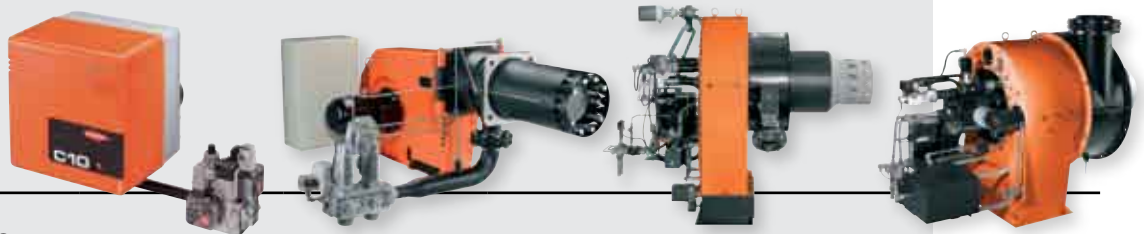
Oil Burner Types



Burner Models and Outputs

Single Stage Oil	Two Stage Oil	Progressive with GEM System (Monoblock)	Three Stage & Progressive (Duoblock)	Progressive (Duoblock)	Progressive (Process Duoblock)
NC 4 - C 30	NC 12 - C 210	C 260 - C1100	CC 501 - CC 802	CC 600 - CC 1600	CP 600 - CP 4500
18 kW - 300 kW	80 kW - 2100 kW	1315 kW - 11400 kW	2000 kW - 9000 kW	4100 kW - 16000 kW	4150 kW - 45000 kW

Dual Fuel Burner Types



Burner Models and Outputs

Single Stage Dual Fuel	Two Stage Dual Fuel	AGP System	AGP System & Progressive (Monoblock)	AGP System (Duoblock)	AGP System & Progressive (Duoblock)	Progressive (Process Duoblock)
C 10 - C 22	C 28 - C 34	C 75 - C 210	C 260 - C 1100	CC 501 - CC 802	CC 600 - CC 1600	CP 600 - CP 4500
35 kW - 240 kW	170 kW - 440 kW	350 kW - 2100 kW	1060 kW - 9200 kW	2000 kW - 10000 kW	3600 kW - 16000 kW	4030 kW - 45000 kW

Prior Gas Oil and Dual Fuel Register Burners

Capacities up to 56 000 kW

PRIOR Air Register Burners are available in gas, light oil, heavy oil and dual fuel versions for applications up to 56 000 kW. This range of burners, built to ISO 9001 standards of quality control, has been designed to provide performance for high output applications, at minimal economic and environmental cost. Our highly experienced Combustion Engineers are available to analyse your application, then design a system customized to meet your specific requirements and expectations.

Technical Characteristics:

- Gas Versions: Suitable for Natural Gas and LPG, with a minimum supply pressure of 25kPa.
- Light Oil versions: Maximum Viscosity: 1.5°E at 20°C.
- Heavy Oil Versions: Maximum Viscosity of 60°E at 50°C.
- Standard burners are supplied with mechanical atomization. For high viscosity oils, steam or compressed air atomizing models are also available.
- Combustion Air temperature for standard burners is a maximum of 60°C. Special versions are also available for pre-heated combustion air with temperatures up to 250°C.
- Low NOx versions are available on request.
- Dual Fuel burners are available for either alternate or simultaneous firing, with electrically controlled automatic changeover.
- Ship's execution versions are available, built to the highest standards, such as Lloyd's Register of Shipping.
- Standard burner turn-down is 4:1, although higher turn-down versions are available on request.
- Burner modulation is controlled by a servomotor with variable profile cam, which adjusts both combustion air and fuel flow. Optimal combustion efficiency is maintained via the PID electronic adjustment system.

PRIOR Air Register Burners are suitable for use with any type of combustion chamber, as the flame shape can be adjusted using air vanes. This capability provides flexible solutions for applications such as Power Station Boilers, Fluidized Bed Boilers, Start Up Burners, Kilns, Process Furnaces, Hot Gas Generators and Rotary Dryers.





Scope of Supply:

All burners are supplied complete including:

- Steel case complete with flange and gasket
- High temperature flame tube
- Air/fuel mixing and combustion head
- Vanes for adjustment of flame shape
- Servo motors
- Pilot with valve train
- Flame scanner
- Air Pressure Switch
- Terminal strip
- Burner controls (to customer specification)

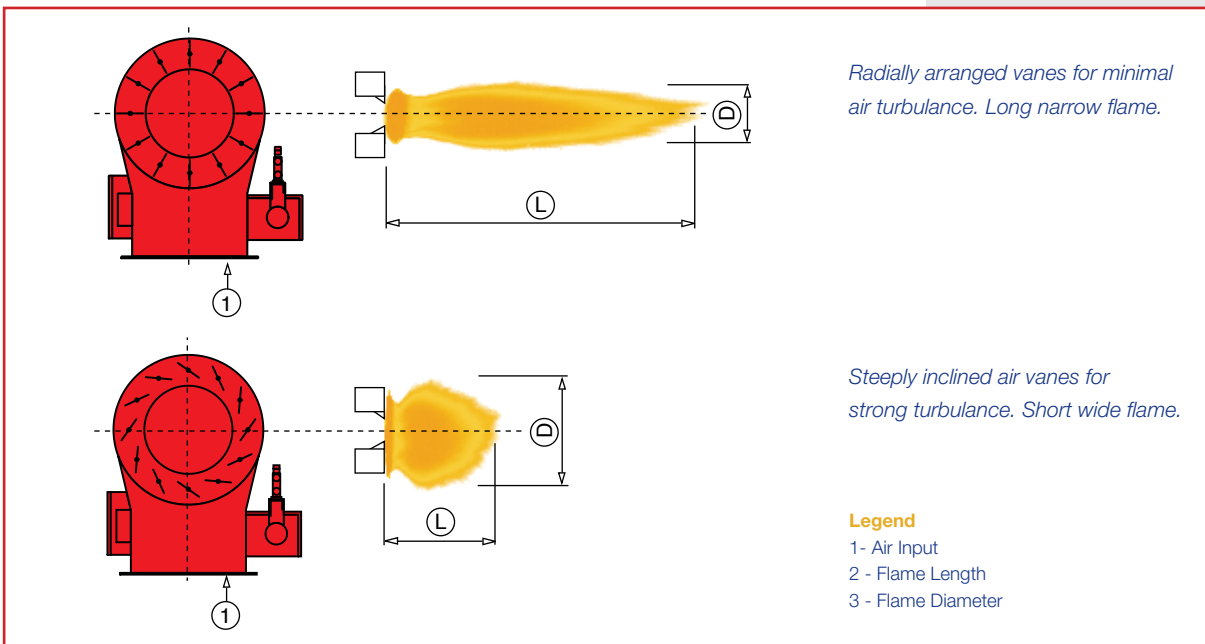
PRIOR additionally, offers all ancillary equipment, including gas / oil valve trains, oil pumping / heating equipment, combustion air fans with compensator and combustion control systems. PRIOR Air Register Burners can also be supplied with Oxygen Trim and Variable Speed Drive systems, ensuring optimal combustion, lower emissions and reduced fuel and electricity costs for the end user.



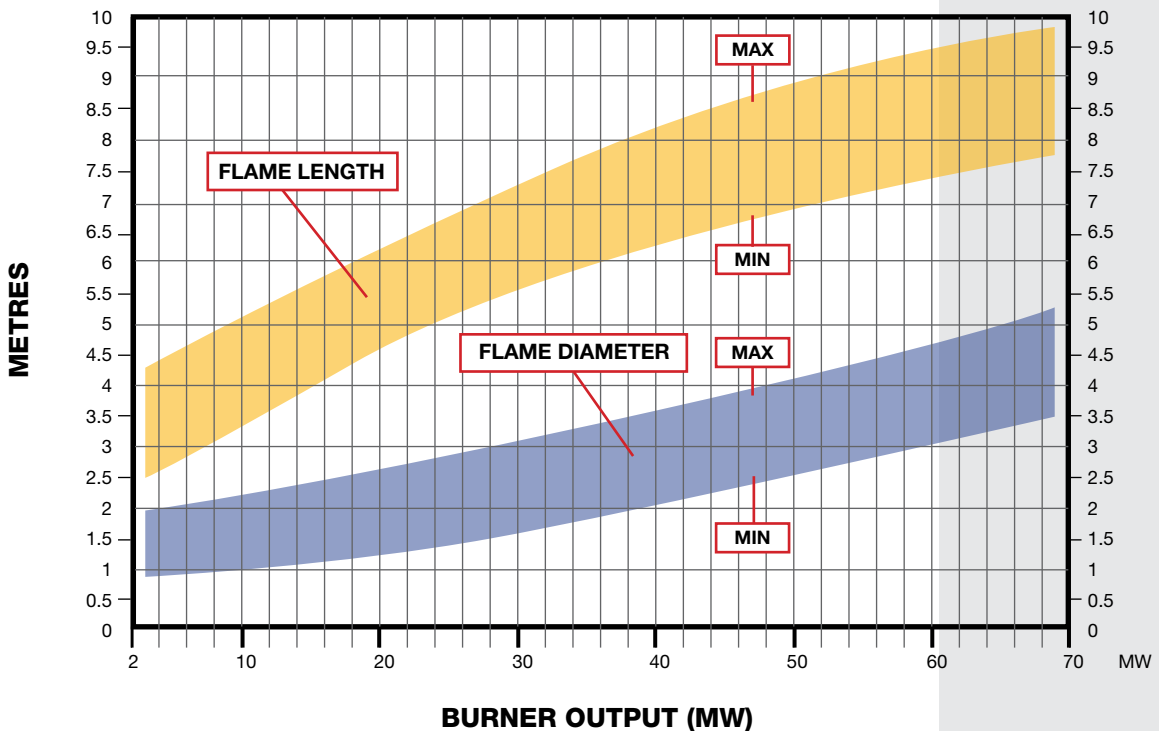
Flame Shaping Capability

The burner has a combustion air register on the head that enables the form of the flame to be varied within wide limits of diameter and length in a way to suit the shape of the combustion chamber.

ADJUSTING THE POSITION OF THE MULTIPLE AIR VANES



FLAME LENGTH DIAGRAM



BURNERS WITH SEPERATE COMBUSTION AIR FAN

Model	Kg/h	m ³ /h	kW	Gcal/h
AM 10	2 200	2 500	24 550	21.12
AM 9	1 800	2 030	20 100	17.28
AM 8	1 400	1 580	15 630	13.44
AM 7	1 000	1 130	11 160	9.60
AM 6	850	950	9 480	8.16
AM 5	550	620	6 140	5.28
AM 4	350	390	3 900	3.36
AM 3	250	280	2 800	2.40
AM 2	150	170	1 670	1.44
AM 1	75	85	640	0.72



BURNERS WITH SEPERATE COMBUSTION AIR FAN & FLAME REGISTER

Model	Kg/h	m ³ /h	kW	Gcal/h
AM 16R	5 000	5 600	55 800	48.00
AM 15R	4 500	5 050	50 200	43.20
AM 14R	4 000	4 500	44 650	38.40
AM 13R	3 500	3 930	39 000	33.60
AM 12R	3 000	3 370	33 500	28.00
AM 11R	2 600	2 920	29 000	24.96
AM 10R	2 200	2 500	24 550	21.12
AM 9R	1 800	2 030	20 100	17.28
AM 8R	1 400	1 580	15 630	13.44
AM 7R	1 000	1 130	11 160	9.60
AM 6R	850	950	9 480	8.16
AM 5R	550	620	6 140	5.28
AM 4R	350	390	3 900	3.36





Low NOx Regenerative Burner (RCB)

Hotwork Combustion Technology

Combustion technology for industrial processes using furnaces, kilns, incinerators, ovens and process heaters.

Prior Industries Australia is the sole Australian representative for Hotwork Combustion Technology of the UK. Hotwork offer a range of energy efficient and high performance burners with thermal ratings ranging from 30kW to 9000 kW, with high, medium or low forward velocity and which can be used for direct firing or indirect heating in oxidising, stoichiometric, reducing or inert atmospheres. The burners have been proven in the most arduous of conditions such as steel reheating, forging, heat-treatment, aluminium melting, incineration and glass melting.

BENEFITS

- High Productivity
- Fuel Savings and Process Improvements
- Safety And Reliability In Operation
- Increased Plant Availability
- Low Emissions
- Professional Project Management
- Quality Workmanship
- Excellent Service

SCOPE OF SUPPLY

High performance, highly energy efficient and environmentally friendly burners and industrial combustion systems.

Hotwork

HOTWORK

COMBUSTION TECHNOLOGY

SYSTEMS

PRIMARY ALUMINIUM

- Reduction cell pre-heating systems
- Cathode block pre-heating systems
- Crucible pre-heating systems

SECONDARY ALUMINIUM

- Combustion systems for melting and holding furnaces
- Furnace modernisation

IRON & STEELMAKING

- Dry-out and pre-heat systems for refractory-lined vessels (ladles, tundishes, torpedoedoes, etc.)
- Nozzle pre-heating systems

STEEL REHEATING, FORGING & HEAT-TREATMENT

- Combustion systems for furnaces
- Furnace modernisation

GLASS

- Refractory dry-out and pre-heat systems

INCINERATION

- Combustion systems for waste incinerators and fume incinerators

CERAMICS

- Combustion systems for kilns

PROCESS INDUSTRIES

- Combustion systems for ovens and process heaters

BURNERS

High Velocity Burners (HV)



Self-Recuperative Burners (HRB)



Minijet Burners (MJ)



Flat Flame Burners (FFB)



Self-Recuperative Radiant Tubes (RT)



Ultra Low NOx Regenerative Burners (EJ)



Scam Filters

Prior Industries Australia is the sole Australian representative for Scam Filters of Marq-en- Barœul in Northern France. Scam, through PRIOR, offer engineered filtration solutions adapted to individual requirements. PRIOR can offer our clients the best possible filter selection for the process whilst providing very competitive pricing. The range includes Self Cleaning and Static filters, available in basket, ultrasonic, bag and cartridge varieties. We will of course be able to provide you with your spare parts requirements. Liquids with low or mean viscosities as well as high viscosities, with a range of flows and pressures are all catered for within the range.

Scam filters have been successfully applied in various industries, including:

- Energy
- Iron and Steel
- Petro-Chemical
- Mineral Processing
- Cement Manufacturing
- Automotive
- Naval
- Water Treatment and Distribution
- Desalination
- Agriculture
- Food
- Cosmetic
- Pharmaceutical

Scam filters are designed and manufactured with high quality materials to ensure a long service life and low maintenance. PRIOR's engineers are available to discuss and analyse your filtration requirements, from feasibility to manufacturing and installation.





Summary of Scam Filter Models

Filter Type	Application
Self Cleaning	
Scam Disc	High viscosity self-lubricating liquids (oil, tar, fuel, glue, paint resins).
Scamatic	Low viscosity self-lubricating liquids (cutting liquid, fuel).
Scamjyr	Low and average viscosity liquids (water treatment, solvents, oil, paint, resin, molasses).
FTL, FTLMV, FTLC	River water, canal water and drilling water filtration. Water filtration in the protection of circuits.
Static Filters	
Basket	All viscosity types with average concentration of solids.
Scamsonic	River water and drilling water filtration.
Bag	Low and High viscosity liquids, used in Petro-Chem industry, water treatment.
Cartridge	Low and High viscosity liquids with low concentration of solids, used in Petro-Chem industry, water treatment, paint, cosmetics.

Refractories, Combustion Chambers and Packaged Systems

Prior Industries Australia offers a range of refractory design and supply services, including packaged systems, custom designed through our engineering department. Our experience includes design and supply of:

- Combustion chambers for the Mining Industry, including Nickel, Copper and Aluminium applications
- Burner Tiles
- Air Heaters
- Hot Gas Generators
- Incinerators and Cremators
- Afterburner systems
- Ladle pre-heating systems

Additionally, PRIOR offers a range of high grade fire bricks and refractory materials, including basic, insulating and high alumina bricks, castables, mortars, high temperature fibre insulation and anchoring systems. Please contact our sales department for further details.



Incinerator Combustion Chamber

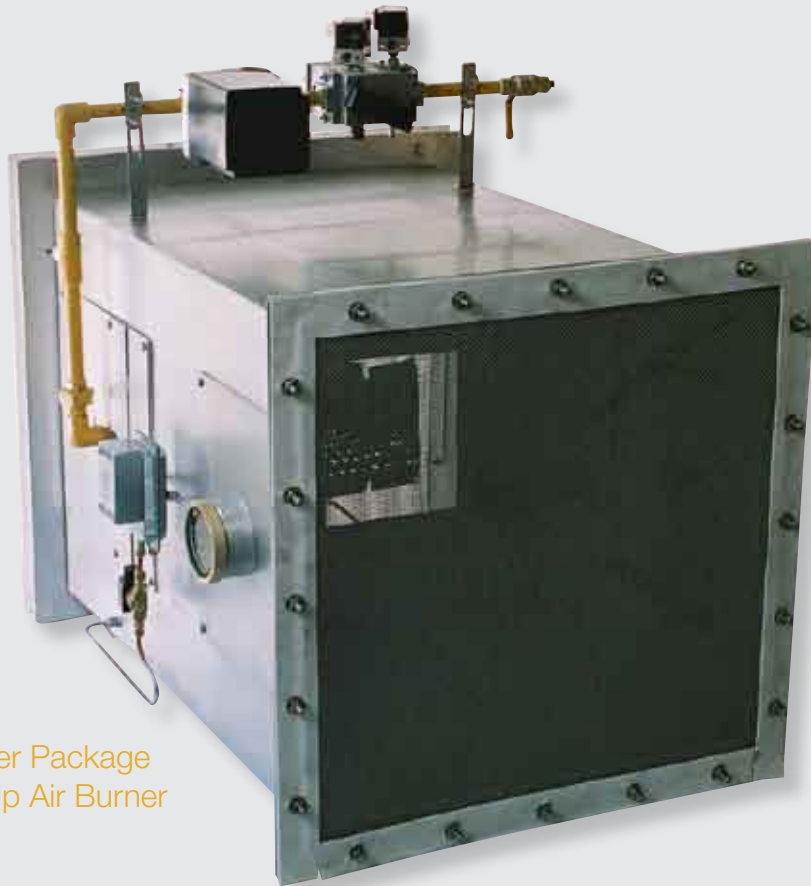


'Hotwork' Crucible Pre-heater

Refractory installation of After burner system



Custom Designed Animal Cremator



PRIOR Air Heater Package
including Make Up Air Burner

Refractories

Plenum and Combustion Chamber including 1 000 kW Gas Burner



Combustion Control Systems and Automation

Prior Industries Australia designs and manufactures virtually all control equipment needed for the operation of your combustion system. PRIOR can supply reliable and robust control systems for:

- Combustion control and flame scanning
- Temperature control
- Furnace air pressure control
- Combustion air anti-surge control
- Air flow control
- Boiler control
- Pulse firing control
- All other custom process/control systems



Depending on customer needs, PRIOR can develop a wide variety of control systems ranging from a simple burner control panel through to integrated PLC controls and the latest microprocessor control systems. All PRIOR combustion control systems conform with the relevant safety standards, and are designed to customer specifications. Combustion control systems can be supplied either as stand alone units or for interfacing with the customer's distributed control system.

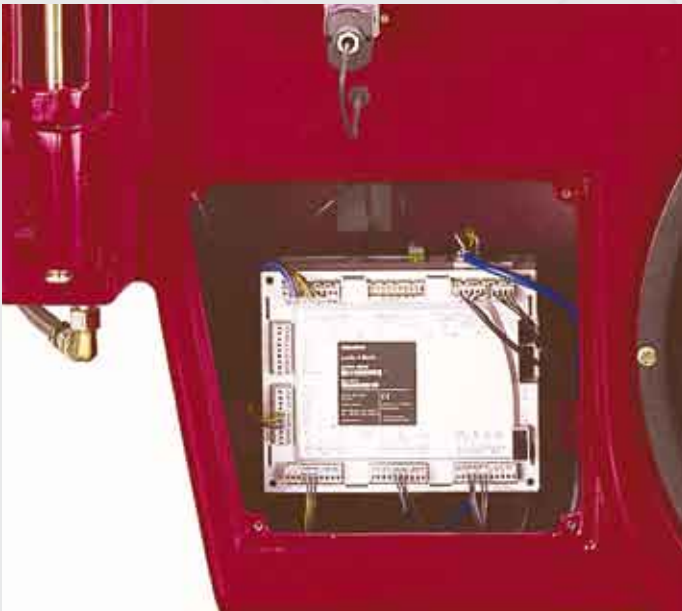
DIGITAL COMBUSTION MANAGEMENT

Prior Industries Australia offers the latest Digital Combustion Management technology. The primary advantage of this system is that all aspects of combustion management are now controlled by a single module. This results in reduced costs to the customer, not only for the initial purchase of the system, but also for commissioning and servicing. Other advantages include:

- The fuel / air ratio control is set and controlled with digital precision. The optimal combustion values can be preset and continually reproduced, resulting in fuel savings and minimal emissions.
- Electronic Compound Regulation - the Can Bus controls the servomotors (air damper, oil regulator, gas butterfly and mixing head), each of which is fitted with its own microprocessor, and driven by a highly accurate stepping motor.

- User friendly operation - all necessary external components connect with plug in terminal blocks. The control and display unit can be mounted anywhere within 100 metres of the module via Can Bus cable.
- Choice of flame monitoring.
- Integrated valve proving.
- Integral capacity controller.
- Integral speed control.
- Easy to connect oxygen module for O2 trim.
- Flexible communication possibilities through a variety of interfaces.
- Remote operation, fault diagnosis and plant monitoring.

Contact us for further details.





Ancillary Equipment

Prior Industries Australia designs, manufactures and supplies a variety of combustion ancillary equipment, engineered to individual applications. Our sub-systems are pre-assembled on our premises for quality assurance through shop testing procedures.

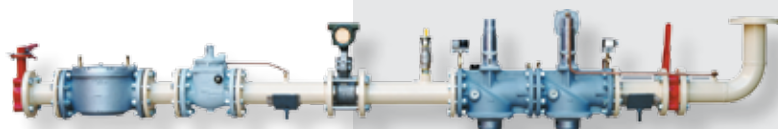
Valve Trains and Oil Pumping / Pre-Heating Systems

PRIOR offers burner and pilot valve trains suitable for a wide variety of fuels, (such as Natural Gas, LPG, Bio-Gas, Waste Gas, Naptha, Kerosene, Diesel and Heavy Oil) at various supply pressures. Special applications include valve trains for Oxy-fuel, Inert Gas and Land Fill Gas Power Generation. All valve trains are fully compliant with relevant Australian or overseas standards.

Additionally, PRIOR supplies Oil Pumping and Pre-Heating Systems to suit various types of combustion equipment, all of which provide an efficient, dependable supply of fuel at the correct atomizing viscosity. Systems include factory assembled pump and motor sets, electric or steam suction oil heaters, and electric or steam oil line heaters. Alternatively, systems can be custom designed. Pre-packaged oil supply units are skid mounted for installation, and can be supplied with simplex or duplex pump arrangements, with or without filtration as required.



PRIOR Heavy Oil Valve Train



PRIOR Gas Valve Train to suit 5 000 kW Burner

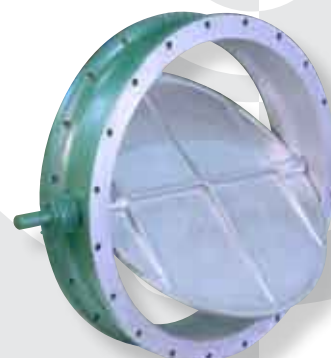
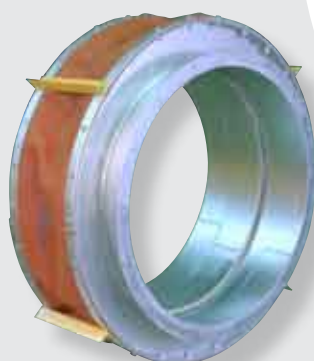
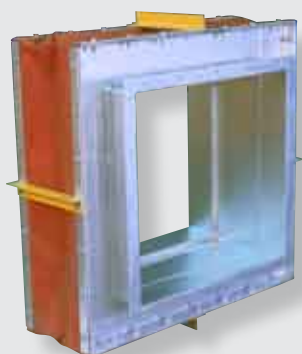
Combustion Air Blowers

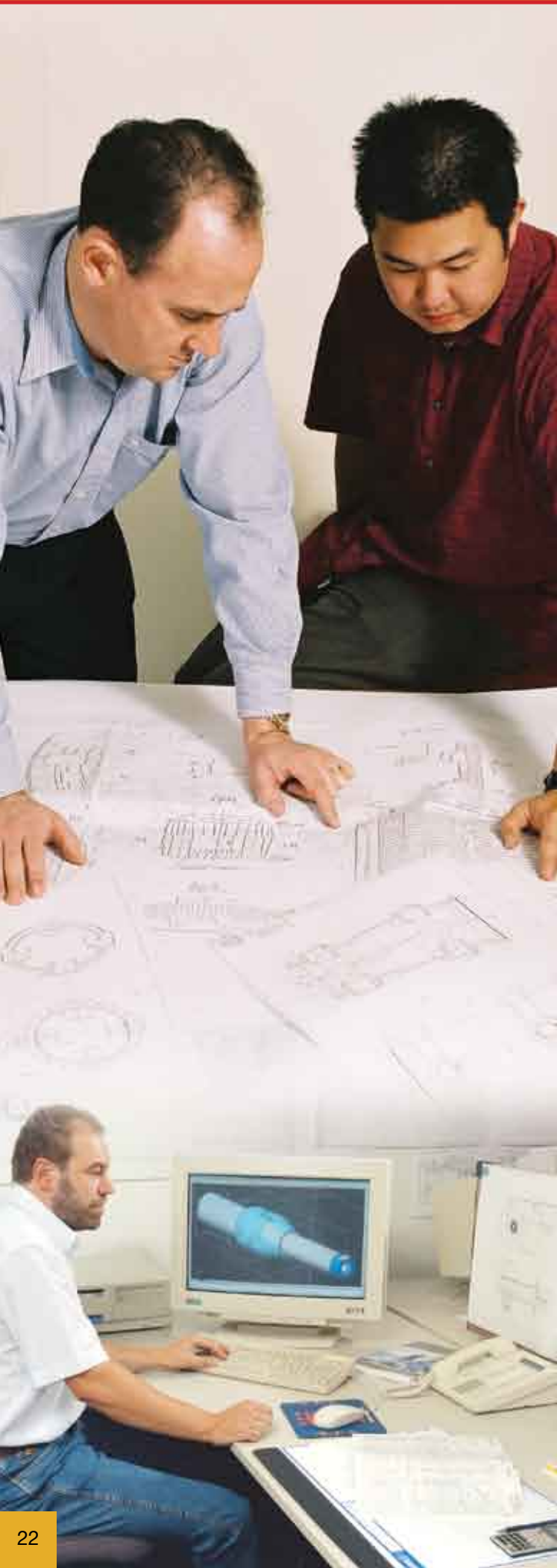
PRIOR design and supply blowers, customised to suit your application. A large range of discharge and inlet pressures is available with a wide variety of volume capacities. We cater for extensive variations in operating conditions: hot or cold air, dirty environments, domestic or foreign electrical supplies. PRIOR offer a complete range of accessories and controls, including:

- Filters - essential for protecting blowers and downstream equipment.
- Silencers - to satisfy environmental and occupational health/safety concerns whilst minimising air flow resistance.



- Blower brakes and Shaft Locks - to stop blowers and prevent them from free-wheeling when in service but not running.
- Blower Control Panels.
- Anti-Surge Equipment for minimising damaging pulsation in air lines.
- Shut off Dampers - Butterfly or Knife Valves with virtually any actuation required.
- Control Dampers - Louvre, Butterfly or Knife Valves, again with almost any type of actuation.





Consultancy, Design and Engineering

Consultancy and Design:

PRIOR Engineers are highly experienced in the application and development of Oil, Gas, Dual Fuel and low calorific value fuel Burner Systems for a wide variety of processes as well as associated burner and process automation control systems. Utilising that experience, we are able to assist the client or consulting engineer in achieving higher efficiencies from existing plant, or to design and supply completely new thermal processing systems.

In addition to combustion related projects, we offer consultancy and design services in other areas including mineral processing, general process control, fuel and air supply systems, automation and PLC technology, filtration, refractory selection and layout. Our design engineers make extensive use of the latest computer technology (including software and simulation techniques) in assessing system requirements.

PRIOR has long had a reputation for providing quality equipment and engineering solutions and to that end, our staff are committed to working with our clients from initial contact through to equipment supply, commissioning and after sales support. We understand the importance of reliability, suitability, operability and ease of maintenance in your selection.

Installation and Commissioning:

PRIOR'S services range from engineering supervision to complete installation and commissioning services, depending upon customer requirements. Subsystems may be pre-assembled on our premises for quality assurance to ISO 9001 standards through shop testing procedures.

Spare Parts and Service:

PRIOR offers preventative maintenance and service for all of our installations. Our service engineers are able to offer advice on service requirements and spare parts. In order to minimize service costs and maintain maximum operating efficiency, we are able to offer clients fixed price service contracts.

Special Combustion Applications



Kiln Igniter Burner rated at 18 000 kW



Multiple Fuel Burner capable of firing Producer Gas, Tar and Heavy Oil



PRIOR specialises in the design and supply of combustion equipment for special applications, where no generic solution is available. We are able to offer combustion systems for a variety of special requirements, including:

- Multiple fuel capability;
- Special fuels such as Kerosene, Producer Gas, Tar and Heavy Oils;
- Dual Gas Burners for the combustion of Natural Gas and Bio Gas;
- Low NOx Burners to ensure compliance with environmental requirements;
- Custom Designed Kiln Igniters and Dryer Burners;
- Simultaneous combustion of dual fuels;
- Special Burner versions accredited to all major Shipping Standards;
- Incineration of waste gas;
- Combustion Equipment for Power Generation;

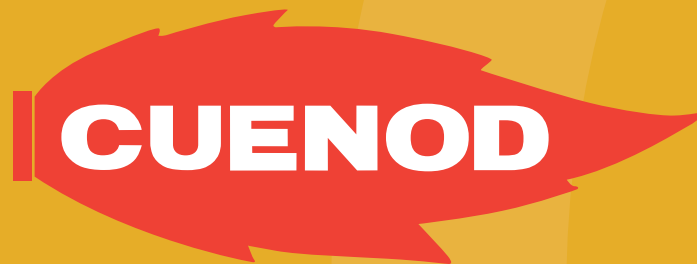


Natural Gas Burner rated at 2 500 kW for Rotary Holding Furnace

energy solutions



**PRIOR INDUSTRIES
AUSTRALIA PTY LTD**



HOTWORK

COMBUSTION TECHNOLOGY





www.priorindustries.com

energy solutions



**PRIOR INDUSTRIES
AUSTRALIA PTY LTD**

BRISBANE
3/26 Birubi Street
(PO Box 260)
Coorparoo QLD 4151
Australia

Telephone: +61 7 3394 3833
Fax: +61 7 3394 3836

SYDNEY
20 Wetherill St South
(PO Box 75)
Lidcombe NSW 2141
Australia

Telephone: +61 2 9647 1265
Fax: +61 2 9647 1634

HAVANA
Edificio Raffaello Apto 408
5ta Avenida y 80
Miramar Municipio Playa
Ciudad de la Habana
Cuba

Teléfono: 7 204 5477
Fax: 7 204 5478

Email: info@priorindustries.com