Ecoflam

PRODUCT RANGE 2018



www.ecoflam-burners.com

Ecoflam

CUSTOMIZED BURNERS SOLUTIONS FOR ANY TYPE OF APPLICATION



OUR EXPERIENCE

Thanks to 45 years of experience in the design and production of burners, Ecoflam offers a full range of blown air pressure jet burners covering an extremely wide range of power, from small products for residential heating applications to high power burners dedicated to the industrial segment.

Ecoflam burners are renowned worldwide for providing high efficiency and reliable operation with significant energy savings and feature extreme ease of installation, maintenance and flexible boiler-burner matching.

OUR MISSION

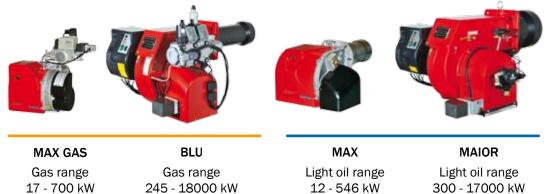
Following a philosophy of continuous improving, the R&D Laboratory is constantly working to produce better results, such as the reduced NOx level emissions.

The development of new advanced combustion technologies allows to propose solutions in respect of the most stringent environmental regulations and to create the perfect condition to face the new upcoming market requests, such as Ultra Low NOx performance and ErP-ready products.



OUR PRODUCT RANGE

The flexibility of Ecoflam solutions allows the manufacturing of highly customized products covering a range from 12 kW to 34 MW:





MAXFLAM/OILFLAM Heavy oil range 68 - 17000 kW

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245 - 18000 kW

page 6 🕨

12 - 546 kW

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page 10 ►

page 12 ►



OUR PROFESSIONAL TEAM

Ability to design state-of-the-art burners, manage demands of products for specific applications, ability to solve problems in real time are just some of the characteristics of our technicians and engineers.

But not only: Ecoflam has a worldwide network of service technicians able to support the installation, the commissioning and the periodic maintenance activities of the burner.

OUR INTERNATIONAL APPROACH

Our products are designed, developed and manufactured in Italy, combining quality, reliability and high performance. All these features are necessary for the end-user satisfaction, which is the first target for Ecoflam. Reaching this outcome throughout its extensive worldwide network of distributors and customers has always been a challenging task for Ecoflam, which was achieved only by developing a close and personalized relationship with each customer, always taking into account the needs and the distinctive characteristics of each individual market.





MULTICALOR Dual fuel (gas/light oil) 190 - 17000 kW

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MULTIFLAM Dual fuel (gas/heavy oil) 414 - 17000 kW

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TS RANGE All fuels 230 - 34000 kW

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SPECIAL VERSIONS

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MONOBLOCK GAS BURNERS FROM 17 TO 700 kW

RANGE OVERVIEW



Low NOx Class 3 (NOx \leq 80 mg/kWh)

		0	100	2	00	300	400	500	600	700 kV
MAX GAS 700	150 700 kW									
MAX GAS 500	120 500 kW							-		
MAX GAS 400	100 400 kW		_							
MAX GAS 350	100 350 kW		_							
MAX GAS 250	55 240 kW									
MAX GAS 170	55 175 kW									
MAX GAS 120	40 120 kW									
MAX GAS 105	46 108 kW									
MAX GAS 70	34 70 kW									
MAX GAS 40	17 48 kW									

MAIN FEATURES

- Two stage PAB models available with different burner controllers, with or without digital informative display
- High efficiency fan ventilation system (HPV) allowing easy burner-boiler matching even with high combustion chamber pressure



- Combustion head easy to assemble and adjust
- The hinge flange allows easy access to the combustion head without losing the original settings (starting from MAX GAS 350)



- All models are available to work with 50 and 60 Hz electrical frequency
- All models up to MAX GAS 400 are in compliance with ErP Directive







MAX GAS range is available in the following operation modes:

MAX GAS P	MAX GAS PAB	MAX GAS PR
One stage Low NOx Class 3, ErP ready	Two stages Low NOx Class 3, ErP ready	Two stage progressive/modulating mechanical Low NOx Class 3, ErP ready
All models	MAX GAS 120 700	MAX GAS 350 700

Other available configurations:

- Progressive versions are available starting from MAX GAS 350 and can be transformed into modulating with an optional kit
- LPG versions
- Continuous ventilation versions
- High temperature versions
- · OEM and other special versions on request according to feasibility

FUEL

- Natural gas (G20, G25 according to EN676)
- LPG

EWISSIONS Class NOx mg/kWh 1 170

2

All models are in compliance with EN 676 European Standard

All models up to MAX GAS 400 are in compliance with ErP Directive (NOx \leq 56 mg/kWh, based on GCV)

120

80

CONFORM TO

All products are in accordance with the following directives:

- 2006/42/EC Machinery Directive
- 2014/30/UE EMC Directive
- 2014/35/UE Low Voltage Directive
- 2009/142/CEE Gas Appliances Directive

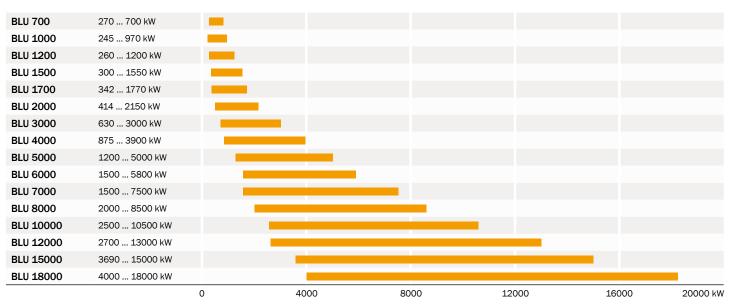


MONOBLOCK GAS BURNERS FROM 270 TO 18000 kW

RANGE OVERVIEW

Low 2 Low 3 ULTRA Low 30 E



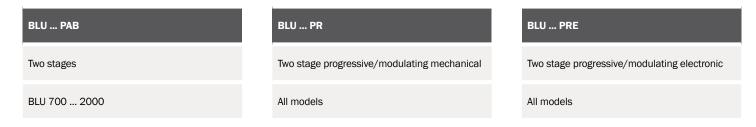


MAIN FEATURES

- Modulating version with PID controller with digital set point display and real time value
- Version with fully electronic Burner Management System available for all models
- Adjustable combustion head for easy regulation and matching with different combustion chambers
- High turndown ratio up to 1:8
- All models are available in Low NOx class 2 or Low NOx class 3 versions
- Versions with FGR System (Flue Gas Recirculation) are available and allow to reach NOx emissions below 30 mg/kWh
- Configurated and special versions on request according to feasibility



BLU range is available in the following operation modes:



Other available configurations:

- LPG versions up to BLU 6000.1
- Continuous ventilation versions
- Swirl system for flame geometry customization
- Version with FGR System to reach Ultra Low NOx emissions (NOx \leq 30 mg/kWh)
- · OEM and other special versions on request according to feasibility

FUEL

- Natural gas (G20, G25 according to EN676)
- LPG

EMISSIONS					
Class NOx mg/kWh					
1	170				
2	120				
3 80					

All models are in compliance with EN 676 European Standard

CONFORM TO

All products are in accordance with the following directives:

Low 4

NOx

Class

Low NOx

Class

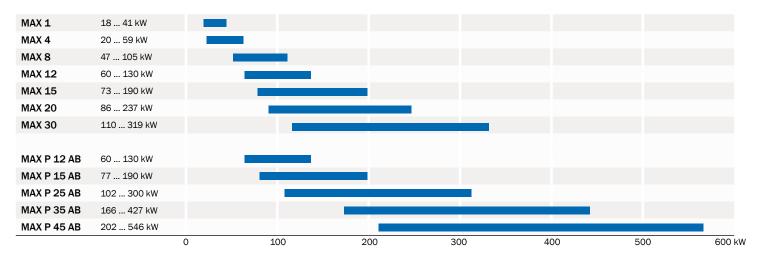
Low

- 2006/42/EC Machinery Directive
- 2014/30/UE EMC Directive
- 2014/35/UE Low Voltage Directive
- 2009/142/CEE Gas Appliances Directive



MONOBLOCK LIGHT OIL BURNERS FROM 18 TO 546 kW





MAIN FEATURES

- High efficiency fan ventilation system (HPV) allowing easy matching with boilers having high combustion chamber back pressure
- Electrical wiring simple to disassemble for easy maintenance
- Combustion head easy to assemble and adjust
- The hinge flange allows easy access to burner head without losing burner settings (MAX 35 and MAX 45)
- Models from MAX 1 to MAX 12 work with 50-60 Hz electrical frequency
- ECOFLAM is upgrading all the models up to 400 kW to respond to the requirements of the ErP Directive



MAX range is available in the following operation modes:

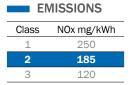
МАХ	МАХ Р АВ	MAX P AB HS
One stage	Two stages	Two stages with hydraulic jack
All models	MAX P 35 AB - P 45 AB	MAX P 12 AB HS P 45 AB HS

Other available configurations:

- Continuous ventilation versions
- High temperature versions
- Versions with specific pump for light oil with maximum viscosity 5°E at 20°C
- OEM and other special versions on request according to feasibility

FUEL

- Light oil (viscosity from 1,6 cSt to 6 cSt at 20 $^{\circ}$ C)



All models are in compliance with EN 267 European Standard

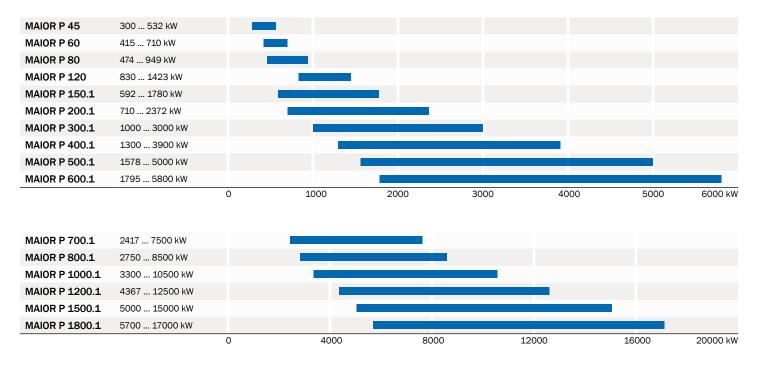
All products are in accordance with

- the following directives:
- 2006/42/EC Machinery Directive
- 2014/30/UE EMC Directive
- 2014/35/UE Low Voltage Directive



MONOBLOCK LIGHT OIL BURNERS FROM 300 TO 17000 kW

RANGE OVERVIEW



MAIN FEATURES

- Two stage version with hydraulic jack or electric servomotor up to MAIOR P 400.1
- Progressive mechanical version with flow return nozzle
- Modulating version with PID system controller with digital set point display and real time value
- Version with fully electronic Burner Management System available for all models
- Version with sliding bars standard for models from MAIOR 700.1 to MAIOR 1200.1
- Adjustable combustion head for easy regulation and matching with different combustion chambers



MAIOR range is available in the following operation modes:

MAIOR P AB	MAIOR P AB HS	MAIOR P PR	MAIOR P PRE
Two stages	Two stages with hydraulic jack	Two stages progressive/modulating mechanical	Two stages progressive/modulating electronic
MAIOR P 60 AB P 400.1 AB	MAIOR P 60 P 400.1 AB HS	MAIOR P 45 P 1800.1 PR	MAIOR P 45 P 1800.1 PRE

Other available configurations:

- Continuous ventilation versions
- Versions with specific pump for light oil with maximum viscosity 5°E at 20°C
- OEM and other special versions on request according to feasibility

FUEL

 Light oil (viscosity from 1,6 cSt to 6 cSt at 20°C)

EMISSIONS					
Class	NOx mg/kWh				
1	250				
2	185				

3

All models are in compliance with EN 267 European Standard

120

CONFORM TO

All products are in accordance with the following directives:

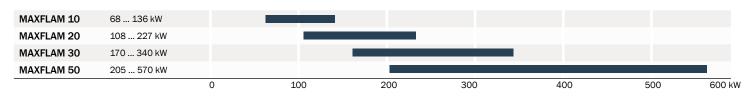
- 2006/42/EC Machinery Directive
- 2014/30/UE EMC Directive
- 2014/35/UE Low Voltage Directive

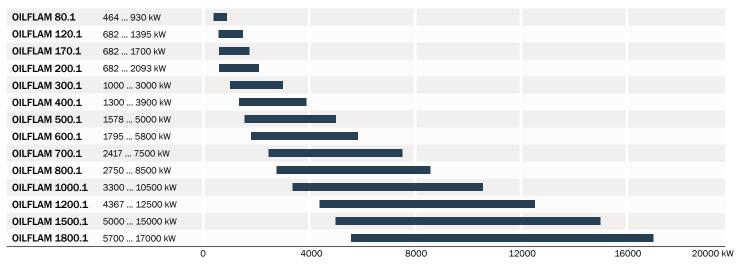


MAXFLAM / OILFLAM

MONOBLOCK HEAVY OIL BURNERS FROM 68 TO 17000 kW

RANGE OVERVIEW





MAIN FEATURES

- All models are suitable to work with heavy oil up to 50°E at 50°C
- Two stage version with electric servomotor available up to model OILFLAM 400.1
- Version with fully electronic Burner Management System available for all models
- Integrated electrical panel complete with pre-heater management system
- Digital thermoregulator integrated on the front panel to grant temperature stability of the fuel (from OILFLAM 300.1)
- Self-cleaning filter installed in the pre-heater in order to keep the nozzle clean from OILFLAM 300.1
- Adjustable combustion head for easy regulation and matching with different combustion chambers
- Heavy oil electric heating system
 on board
- Ring system for oil preparation can be designed and supply on request

OILFLAM 300.1 AB



MAXFLAM range is available in the following operation modes:

MAXFLAM	MAXFLAM AB		
One stage	Two stages		
MAXFLAM 10 30	MAXFLAM 30 50 AB		

OILFLAM range is available in the following operation modes:

OILFLAM AB	OILFLAM PR	OILFLAM PRE
Two stages	Two stage progressive/modulating mechanical	Two stage progressive/modulating electronic
All models	OILFLAM 80.1 PR 1800.1 PR	OILFLAM 80.1 PRE 1800.1 PRE

Other available configurations:

- Continuous ventilation versions
- High temperature versions
- High viscosity versions suitable for 118 cSt (15°E) at 80°C available on request

FUEL

• Heavy oil (max viscosity 380 cSt (50°E) at 50°C)

CONFORM TO

All products are in accordance with the following directives:

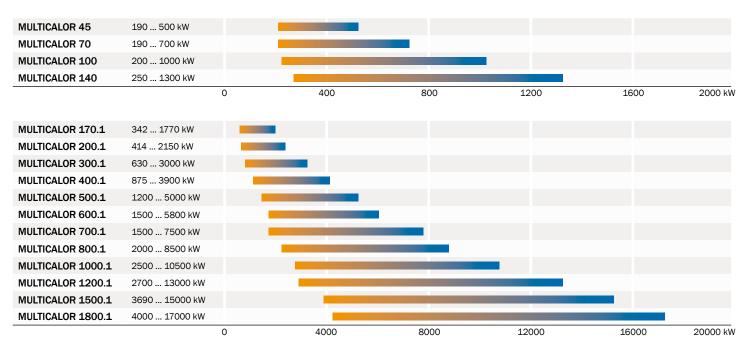
- 2006/42/EC Machinery Directive
- 2014/30/UE EMC Directive
- 2014/35/UE Low Voltage Directive



MULTICALOR

MONOBLOCK DUAL FUEL (GAS/LIGHT OIL) BURNERS FROM 190 TO 17000 kW

RANGE OVERVIEW



MAIN FEATURES

- Two stage version with electric servomotor and integrated system for the regulation of air and fuel (from MULTICALOR 45 to MULTICALOR 200.1)
- Progressive version with electric servomotor and double adjustable mechanical cam that allows air and fuel fine tuning
- Version with fully electronic Burner Management System available for all models
- Adjustable combustion head for easy regulation and matching with different combustion chambers
- Configurated and special versions on request according to feasibility



MULTICALOR range is available in the following operation modes:

MULTICALOR	MULTICALOR PR/AB	MULTICALOR PR	MULTICALOR PRE
Two stages in gas and in light oil	Two stage progressive/modulating mechanical in gas / two stages in light oil	Two stage progressive/modulating mechanical in gas and in light oil	Two stages progressive/modulating electronic in gas and in light oil
MULTICALOR 45 200.1	MULTICALOR 70 200.1 PR/AB	MULTICALOR 70 1800.1 PR	MULTICALOR 70 1800.1 PRE

Other available configurations:

- Continuous ventilation versions
- Swirl system for flame geometry customization
- OEM and special versions on request according to feasibility

FUEL

- Natural gas (G20, G25 according to EN676)
- LPG
- Light oil (viscosity from 1,6 cSt to 6 cSt at 20°C)

EMISSIONS

Close	Gas NOx mg/kWh		Class	Oil
Class			Class	NOx mg/kWh
1	170		1	250
2	120		2	185
3	80		3	120

All models are in compliance with EN 676 and EN 267 European Standard

CONFORM TO

All products are built in accordance with the following directives:

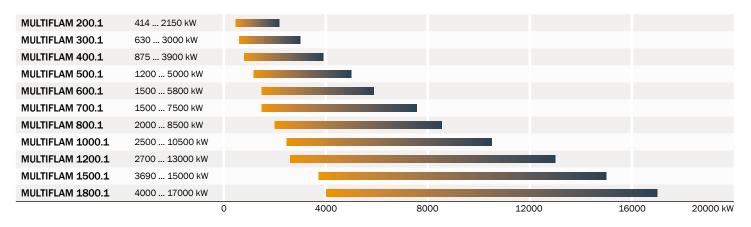
- 2006/42/EC Machinery Directive
- 2014/30/UE EMC Directive
- 2014/35/UE Low Voltage Directive
- 2009/142/CEE Gas Appliances Directive



MULTIFLAM

MONOBLOCK DUAL FUEL (GAS/HEAVY OIL) BURNERS FROM 414 TO 17000 kW

RANGE OVERVIEW



MAIN FEATURES

- Two stage version with electric servomotor and integrated system for the regulation of air and fuel (for MULTIFLAM 200.1)
- Progressive version with electric servomotor and double adjustable mechanical cam that allows air and fuel fine tuning
- Modulating version with PID system controller with digital set point display and real time value
- Version with fully electronic Burner Management System available for all models
- Digital thermoregulator integrated on the front panel to grant temperature stability of the fuel (from MULTIFLAM 300.1)
- Adjustable combustion head for easy regulation and matching with different combustion chambers
- Gas pilot included with separate supply line
- Heavy oil electric heating system on board
- Configurated and special version on request according to feasibility



MULTIFLAM range is available in the following operation modes:

MULTIFLAM

MULTIFLAM 200.1

Two stages in gas / two stages in heavy oil

MULTIFLAM ... PR

Two stage progressive/modulating mechanical in gas and in heavy oil

MULTIFLAM 300.1 PR ... 1800.1 PR

MULTIFLAM ... PRE

Two stage progressive/modulating electronic in gas and in heavy oil

MULTIFLAM 300.1 PRE ... 1800.1 PRE

Other available configurations:

- Continuous ventilation versions
- High temperature versions
- High viscosity versions suitable for 118 cSt (15°E) at 80°C available on request

FUEL:

- Natural gas (G20, G25 according to EN676)
- LPG
- Heavy oil (max viscosity 380 cSt (50°E) at 50°C)

CONFORM TO

- All products are built in accordance with the following directives:
- 2006/42/EC Machinery Directive
- 2014/30/UE EMC Directive
- 2014/35/UE Low Voltage Directive
- 2009/142/CEE Gas Appliances Directive

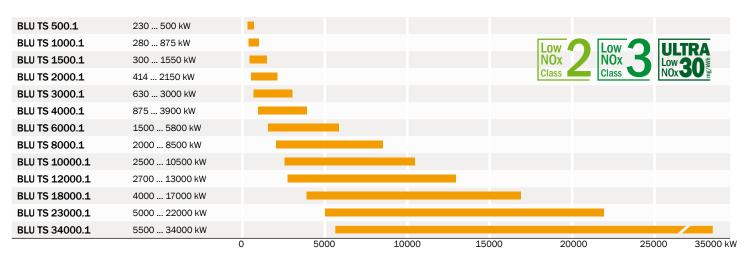


TS RANGE

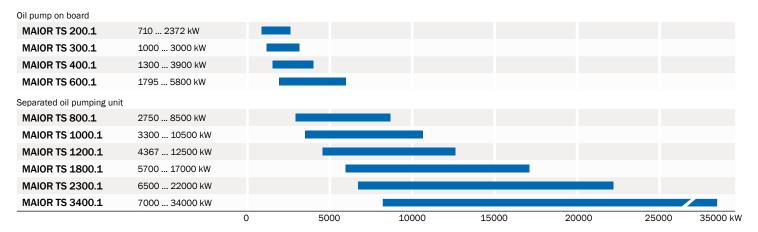
DUOBLOCK BURNERS FROM 230 TO 34000 kW

RANGE OVERVIEW

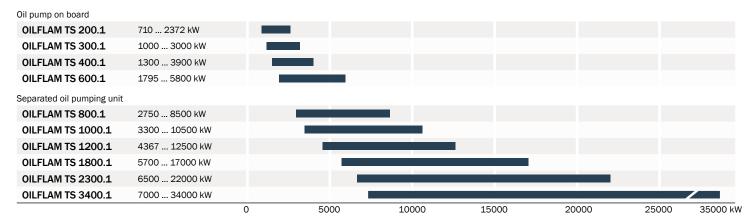
GAS



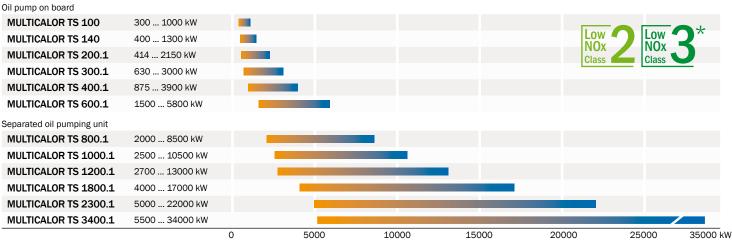
LIGHT OIL



HEAVY OIL

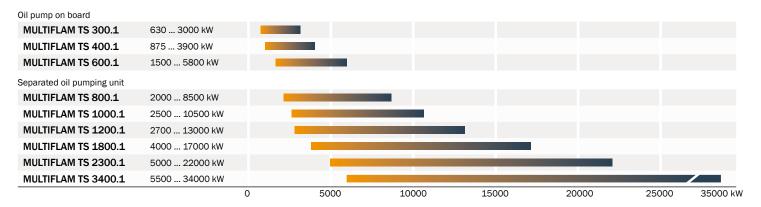


DUAL FUEL (GAS/LIGHT OIL)



*: starting from MULTICALOR TS 800.1

DUAL FUEL (GAS/HEAVY OIL)



CONFIGURATIONS

Two stages (Models up to 2 MW)

TS Range is available in the following operation modes:

"Range" TS ... AB

"Range" TS ... PR

Two stage progressive/modulating mechanical

"Range" TS ... PRE

Two stage progressive/modulating electronic



SPECIAL VERSIONS

MONOBLOCK AND DUOBLOCK BURNERS UP TO 34 MW

Ecoflam is renowned for its ability to conceive and build flexible products and to propose customized solutions for any type of applications.

Successful and satisfied customers, both from OEM or distribution fields, demonstrate throughout the years that Ecoflam is able to meet their requests offering a wide range of special products capable to satisfy even the most difficult ones.

High Temperature versions



Two-gas burners



FGR (Flue Gas Recirculation)



Small products for industrial applications



Two/four head burners



Remote control panel



RESIDENTIAL OIL RANGE

MONOBLOCK LIGHT OIL BURNERS FOR OEM APPLICATIONS

Ecoflam is continuously focused on an environmental program, both for optimisation of existing products and new developments, with the target to offer efficient, reliable and technologically advanced solutions able to meet the most restrictive European legislation requirements, in particular in terms of emission and energy saving.

New series of low NOx oil burners have been made available with one stage, two stage or modulating operation for OEM «Unit» applications.



MAX 4 LN

24 - 34 kW

MAX LN – Low NOx one stage burners

- One stage light oil burners available in different rating sizes from 15 to 65 kW
- · ErP ready versions able to guarantee NOx emissions below 115 mg/kWh (EN 267:2009) and Blue Flame models reaching NOx values below 100 mg/kWh (EN 267:2009)
- High ventilation performance
- · Easy installation, adjustment and maintenance



- Two stage light oil burners covering an output range from 11 to 42 kW
- Blue Flame combustion technology with NOx emissions below 110 mg/kWh (EN 267:2009)
- · Suitable to operate in altitude with high performances



F10/F15 E2-5 – Low NOx modulating burners

- · Innovative modulating light oil burners with an output range from 8 to 62 kW
- Blue Flame combustion technology granting NOx emissions below 100 mg/kWh (EN 267:2009)
- · Patented modulating system
- · High ventilation performance
- · Low noise and low electrical consumption
- · Easy setting through a 3-point curve



Burners suitable for low sulphur oil and light oil/biofuel blends (B10, biofuel up to 10%). Special dedicated burner models available for kerosene Low NOx applications.



FGR SYSTEM

ULTRA LOW NOx BURNERS (NOx \leq 30 mg/kWh)

FGR: PRINCIPLE OF OPERATION

Ecoflam developed a performant range of products which uses the external FGR technology

(Flue Gas Recirculation) to reduce NOx emissions and satisfies even the most stringent regulations. The principle of external flue gas recirculation consists in sending a mixture of comburent air and flue gas to the combustion head, thus reducing the NOx emissions. This process allows the possibility to reach NOx emissions **below 30 mg/kWh**, a value

which is hard to reach with conventional combustion systems.

FGR ON MONOBLOCK BURNERS

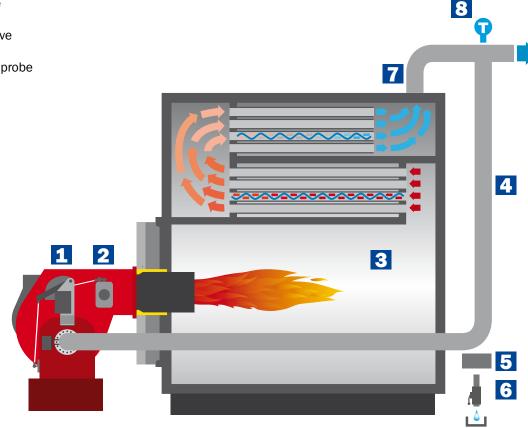
The FGR system on monoblock burners provides that the flue gas is drawn in by the burner fan.

The installer must therefore install a line connecting the flue gas outlet to the burner fan inlet. The extraction point is generally at the base of the flue pipe, where the pressure is close to zero. A suction is generated in the burner intake box which is a function of the fan curve fan and the air damper position.

In order to ensure an adequate rate of flue gas from the stack and thus to provide the required NOx reduction, the pipeline between the flue and the burner must be sized to minimise the pressure drop.

Legenda

- 1 Burner
- 2 Gas inlet
- **3** Furnace
- 4 Flue pipeline
- **5** Drainage
- 6 Drainage valve
- 7 Stack
- 8 Temperature probe





FGR SYSTEM

ULTRA LOW NOx BURNERS (NOx ≤ 30 mg/kWh)

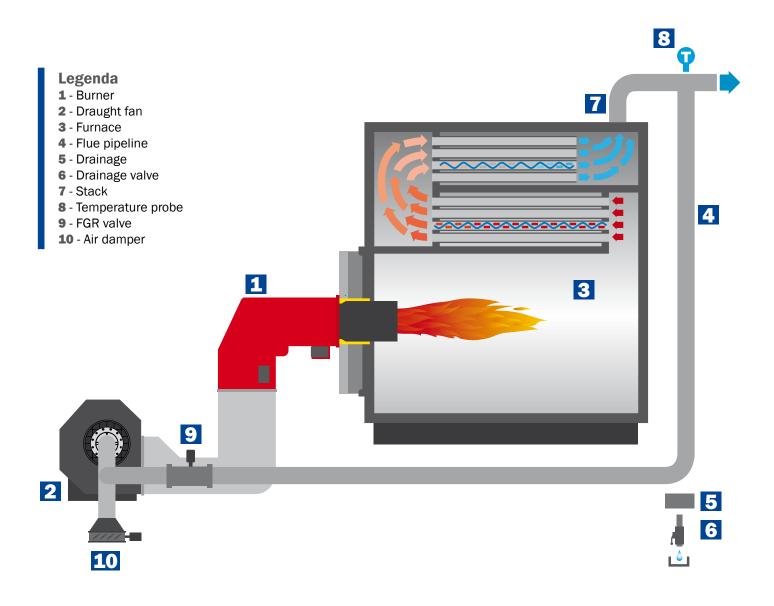
FGR ON DUOBLOCK BURNERS

The FGR system for duoblock burners, in which the drughtfan is installed in a remote position,

has a different layout, since the flue gas line must enter the circuit upstream of the fan itself.

Furthermore, to generate the required suction to convey the flue gas into the fan and mix it with the comburent air, the flow regulation device must be located upstream of the flue gas inlet into the fan suction circuit.

As for monoblock units, also here the flue gas line must be properly sized.





WORLDWIDE REFERENCES



Mexico City (Mexico)

156x MAX GAS 40



Moscow (Russia)

4x MULTICALOR 600.1



Rēzekne (Latvia)

3x MULTICALOR TS 600.1 PR



Vilnius (Lithuania) 1x MULTIFLAM TS 1800.1



Köln (Germany) 1x BLU 1500.1 LN



Volgograd (Russia)

1x BLU 2000.1 PR 1x BLU 2000.1 PRE 2x BLU 6000.1 PR 1x BLU 6000.1 PRE

WORLDWIDE REFERENCES



Irapuato (Mexico)

1x MAIOR P 150.1



Beijing (China)

ULTRA Low 30

5x BLU 6000 FGR 1x BLU 2000 FGR



Beijing (China)

2x BLU 5000 FGR 2x BLU 4000 FGR 1x BLU 2000 FGR





Montevideo (Uruguay) 3x BLU 2000.1 PAB



Beijing (China) 2x BLU 6000 FGR





Beijing (China) 2x BLU 4000 FGR



CUSTOMER CARE

COMMISSIONING

For safe and efficient operation of the burner system it is very important that the burner is commissioned by an expert. The combustion will be optimally adjusted over the whole power range of the burner, and all the safeties will be tested. Ecoflam service technicians are able, like no other, in performing this job adequate and competent, to run the installation worry-free.



MAINTENANCE AND INSPECTION

The burner is a crucial part of the installation. To keep the installation in good conditions, it is important to maintain the burner periodically. It is also very important to inspect all the safeties to ensure that the system operates safely. The professional services of Ecoflam can perfectly perform this service for any type of installation.



THE BURNER ACADEMY

In order to respond to the needs of the customers Ecoflam created the Burner Academy, a real school where the know-how of the internal technicians is diffused to partners and customers.

It's an opportunity for boiler room personnel, operators and engineers to attend a series of training sessions carried out on test bench by highly qualified instructors, who held the courses in English, German, French, Italian and Dutch language.

The Burner Academy uses various training locations where boilers are installed and where people can be trained in theory and in practice. Courses are available in different levels and there is also the possibility to handle customer-specific training.

WORLDWIDE SERVICE NETWORK

Ecoflam uses a worldwide network of partners, consisting of well-trained local engineers, to carry out its service operations. These technicians are able to perform both commissioning and local service and they do it in a very professional way.





RELIABLE SUPPLY OF SPARE PARTS

Spare parts have always had a great importance inside the Ecoflam world. Considering the high amount of parts involved in every single product, some of these parts might naturally need to be substituted. Ecoflam can count on a international network offering original spare parts in order to guarantee the highest quality, reliability and safe continued operation of the appliance.

WORLWIDE NETWORK

Manufacturing is carried out in the factory of Resana (Treviso - Italy) and products are distributed worldwide thanks to a wide and highly qualified network of partners.

In 45 years spent on the field, Ecoflam has been capable to build loyal partnerships and today can count on reliable partners in more than 100 Countries. They distribute Ecoflam products in their Countries of competence, they have good knowledge of the products, and can carry out commissioning and service by keeping constantly in touch with the headquarter.

Thanks to this international network Ecoflam is also able to offer original spare parts in order to guarantee reliability and safe continued operation of the end user installation.



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Version 1.0 - 28/02/2018 ECOFLAM Bruciatori S.p.A. reserve the right to make any adjustments, without prior notice, which is considered necessary or useful to its products, without affecting their main features.

www.ecoflam-burners.com