

BURNERS OF THE NEW GENERATION



JBD-PA BURNERS



- GAS BURNERS
- LOW POLLUTANT EMISSIONS
- ADAPTABLE TO ALL TYPE OF COMBUSTION CHAMBERS
- ELECTRONIC REGULATION
- PREHEATED AIR UP TO 400 °C

E&M COMBUSTION IS INNOVATION

Since the foundation of the company, innovation has turned into one of the basic and fundamental goals of E & M Combustion. Our company tries to provide increasingly innovative equipment for the market based on three fundamental goals:

- Developing burners with more and more efficiency.
- Reducing emission of pollutants without losing energetic efficiency.
- Designing equipment in a way that they achieve qualities which are highly valued nowadays such as: decreasing the level of dB, easy access to burner elements, resistance, using new material, etc.

For achieving this goal, we think that there is no better way than the collaboration of our R+D+i department with technological centers of combustion in different countries. Thus, we work with the most efficient researchers, which allows us to exchange information and work on several investigations in such a way that the final result is achieving different options of improvement which is in other words, an extremely satisfactory and innovative product for the client.

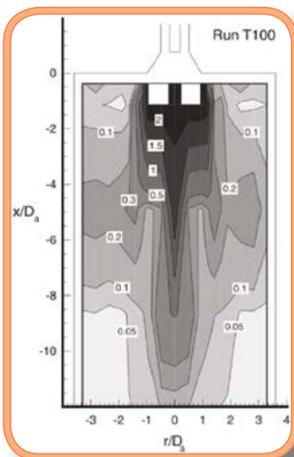
Our working implements are multiple. On the one hand, we use the most modern software for the simulation of fluids. On the other hand, our devices are fully tested in a complete group of installations such as: a semi –industrial combustor, laminated flow combustor, aerodynamic test bench , etc. Finally, our burners are tested in boilers and furnace plants in order to provide the market with a totally reliable and especially innovative product.



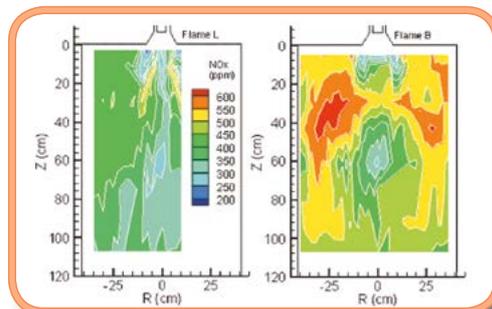
Gas flame.



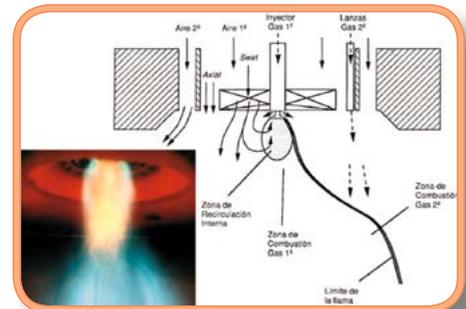
Industrial combustor.



Software simulation.

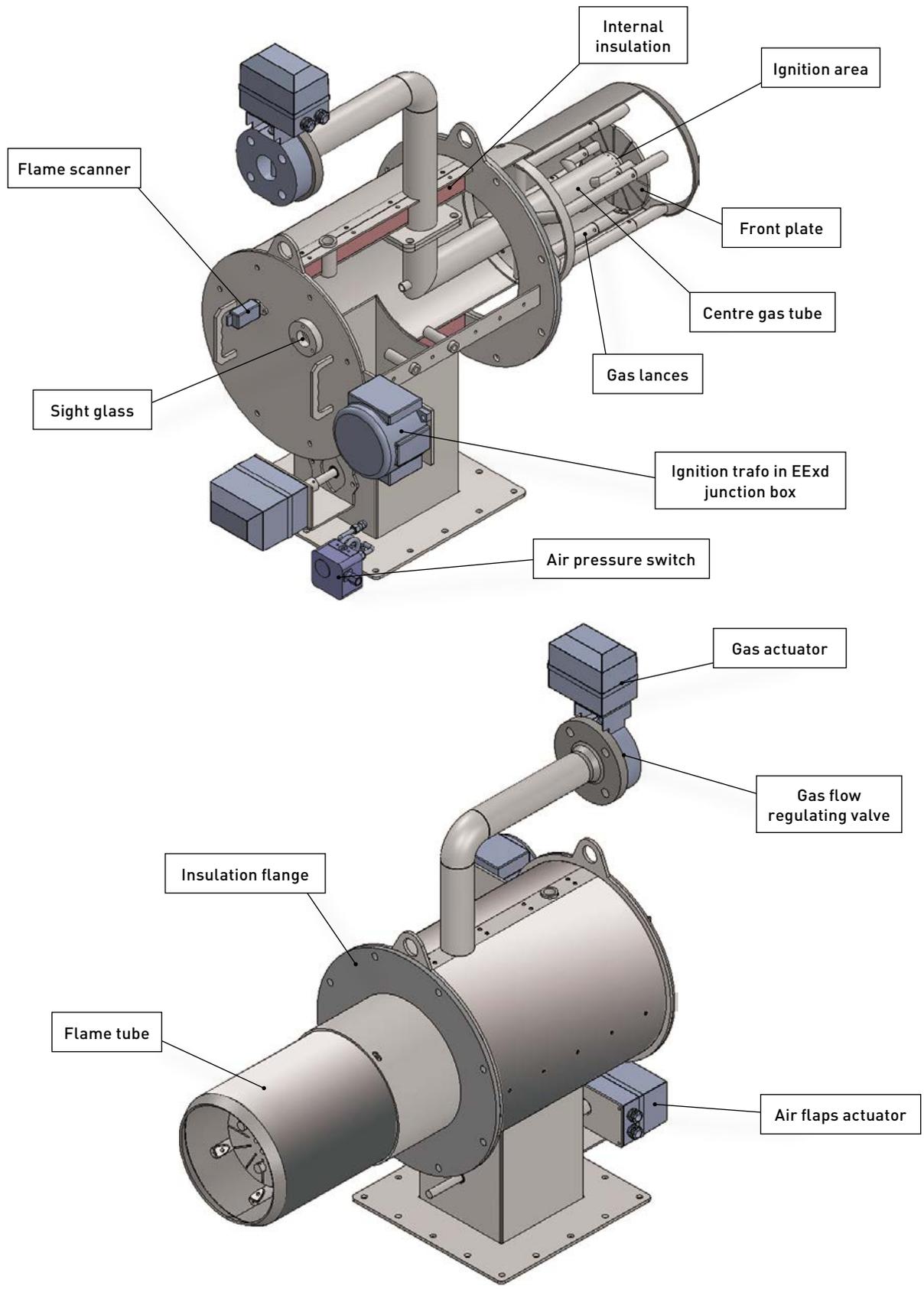


Flame simulation.



Low NO_x flame.

DESCRIPTION OF THE BURNER COMPONENTS





Innovative design of burner

E&M TECHNOLOGY

E&M Combustion, through its R+D+i department and with the collaboration of technological centres from different countries, who specialise in combustion techniques, has developed a new range of state-of-the-art burners whose main features are: high energy efficiency, low emission of pollutants and the reduced level of dB.

The design, development and manufacturing are based on the European standards EN 676 – EN 267 and have been carried out under strict quality control.

DESIGN INNOVATION

The innovative design is not only aesthetic but also allows us to obtain several features that considerably improve those which up to now have been obtained with conventional designs of burners.

THE DUOBLOC SYSTEM

EXTERIOR FAN

Given that the burners are separate, the fan is not integrated into the device. The burner body is made of carbon steel, with a box attached to it where we find the air flaps.

The air enters the equipment through the box where its flow is controlled and then enters the combustion head. These burners have the advantage that they can be placed in the boiler at any angle of rotation over the horizontal. **They can also be installed in vertical position.**

Another advantage of these burners is that they can work with preheated air up to a temperature of 400 ° C, therefore considerably increasing the combustion performance and the efficiency of the boiler.

To avoid this heat to be transmitted to the outside, these burners carry an insulation around the housing that makes the temperature transmitted to the outside through this body not to exceed of 40 °C. This insulation is covered by a stainless steel plate that protects it from any kind of damage or oxidation. The fact of carrying this insulation also supposes a reduction of the noise of the combustion.



Independent wind box for air regulation flaps. Air pressure switch

EASY ACCESS

The burner is designed for easy access to the different devices to facilitate its maintenance or the replacement of any of the components. It offers the following advantages:

- The rear cover of the burner can be removed manually and we can access inside the equipment. This allows easy assembly and disassembly of the internal parts.
- All parts of the burner can be accessed without having to disassemble it.
- Easy disassembly of the burner gas head, removing the front plate and the ignition electrodes easily, as well as the gas lances.
- Easy disassembly of the flame tube. It can be removed without removing the burner.



Easy access to the different components

ELECTRONIC SETTING

The burner is controlled from the external control panel, which includes a switchboard for electronic regulation. This controls the different servo-motors for the adjustment of the air flaps and the butterfly valve for gas. This switchboard controls all the operations of the burner (see page 9).

The electronic setting includes a display panel which shows the general condition of the burner. We can obtain information about:

- The load value of the burner.
- The set and real value of the pressure or temperature of the generator.
- The O₂ and CO value if using continuous measuring probes in both elements.
- Signals and history of faults record.

This display enables us to know straight away the condition of the burner and the fault warnings, and when these have occurred. This greatly reduces the time spent on repairs of faults or breakdowns.



Electrical control panel. Electronic regulation display

COMBUSTION HEAD

RESPECT FOR THE ENVIRONMENT

The Low NO_x heads of the burner have been carefully designed to achieve low levels of polluting emissions to be environmentally friendly as well as achieving a high level of heat optimization.



Low Nox Gas combustion head

GAS HEAD

DIFFERENT FLAME SHAPES AND LENGTHS

The gas head is made up of a centre gas tube from which a series of lances come out in the outside and in the centre part. The gas distribution consists of 20 percent in the central ring and 80 % in the external lances, producing a combustion in stages, therefore achieving a significant reduction of NO_x and greater flame stability.

By opening the burner's rear covering, the head allows to reorient the gas lances both internal and external. This, together with the possibility of using swirlers, allows this burner to vary the size of the flame and adapt to any kind of boiler.



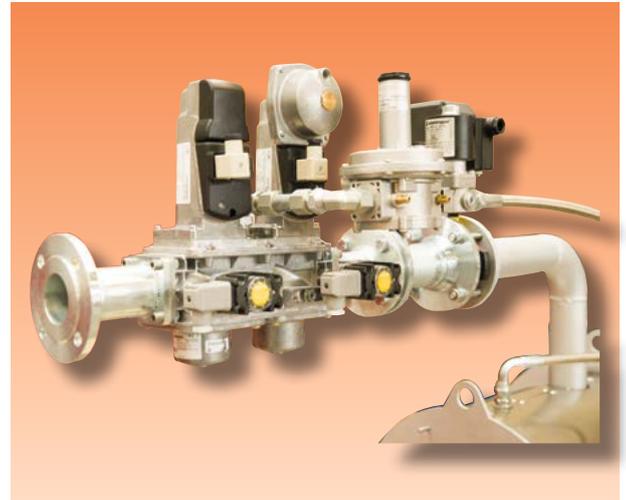
Different flame shapes and lengths

CIS IGNITION SYSTEM

The start or ignition in the burners, is made by an innovative system called C.I.S (Crown Ignition System). The pilot flame occurs just behind the front plate, creating it in the form of a crown and evenly around it. This system has the following advantages over conventional ones:

- Reduction of different pressure variations.
- Reduction of flame fluctuations.
- Softness and stability at start-up.

All components of the material that make up the head are made of refractory steel of first quality guaranteeing its duration

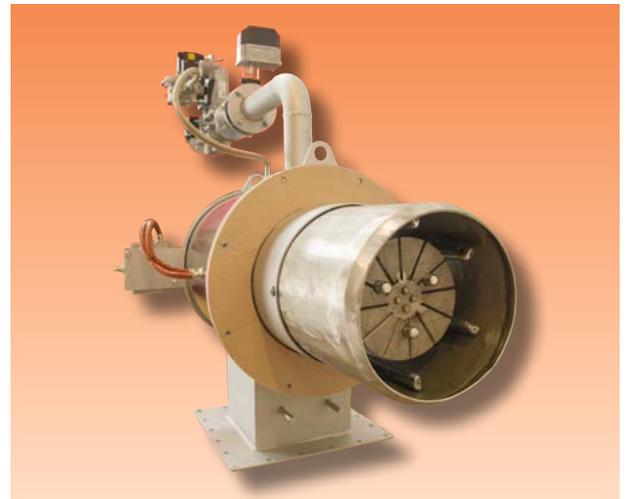


Burner Gas Train

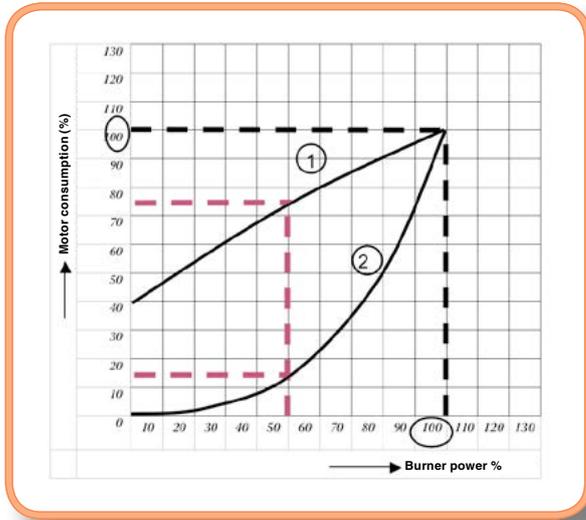
PROTECTION AGAINST HEAT TRANSMISSION

Due to the heat transmitted in boilers using preheated air, especially where the burner is installed vertically, the transformer is installed and protected in an ATEX EExd junction box to prevent heat from affecting this element. Ignition cables are also covered and insulated to protect against temperature.

Another characteristic in relation to this subject is that the burner is painted with a special anti-corrosion paint of resistance up to 400 °C.



Flame tube and gas front plate made of refractory steel



Comparison for energy saving between burner with only air flaps regulation or using a frequency converter.
 1 = Control by air flaps (traditional burners)
 2 = Control by frequency converter

ENERGY SAVING

A GREAT DEAL FOR SAVING

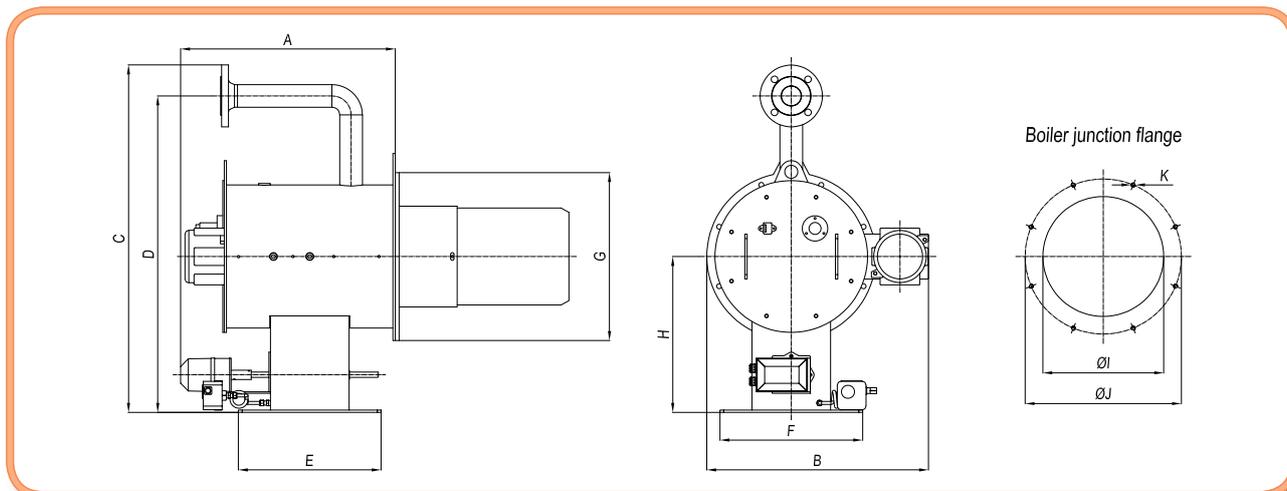
One of the greatest advantages that E&M burners of the new generation presents is its high energetic efficiency thanks to these three fundamental factors:

1. The combustion heads have been designed for achieving an excellent combustion with minimum excess of oxygen obtained, and as a result, a remarkable efficiency in combustion.
2. The fans are designed to achieve an excellent efficiency. They also allow us to use a frequency converter for the regulation of the air flow.
3. It is possible to use optimizing O₂ & CO systems for improving combustion efficiency.

CO - O₂ - CONTINUOUS MEASUREMENT

Factors for energy savings by using an O₂ & CO control system.

	NATURAL GAS		HEATING OIL	
	H	EI	S	
1. Heat value deviations.	1.5%	—	0.3%	
2. Alteration of burner burden due to oil/gas pressure, derivations, viscosity and temperature changes.	0.5%	0.4%	1.7%	
3. Air-temperature.	0.4%	0.4%	0.4%	
4. Air-pressure changes.	0.3%	0.3%	0.3%	
TOTAL	2.7%	1.1%	2.7%	
As extreme values were assumed for these alteration, only half of this sum can be reckoned with an average in the course of a year, ie;	1.35%	0.55%	1.2%	
Supposing that by O ₂ -regulation as a result of compensating for the fluctuation the burner adjustments can be set on average at approx. 1 vol.% O ₂ closer to optimum resulting in an improvement of	0.60%	0.70%	0.75%	
Average per year	1.95%	1.25%	1.95%	



DIMENSIONS OF THE EQUIPMENT

	A	B	C	D	E	F	ØG	H	ØI	ØJ	K
JBD-PA-1000-G	510	550	835	760	343	343	420	365	275	386	M12
JBD-PA-1500-G	510	550	835	760	343	343	420	365	275	386	M12
JBD-PA-2000-G	510	550	835	760	343	343	420	365	275	386	M12
JBD-PA-2500-G	520	580	915	835	368	368	448	415	300	414	M12
JBD-PA-3500-G	570	590	930	845	378	378	448	420	320	414	M12
JBD-PA-4500-G	605	630	970	890	413	413	488	440	360	454	M12
JBD-PA-600Q-1-G	620	670	1.005	915	438	438	541	445	395	506	M12
JBD-PA-600Q-2-G	630	690	1.035	945	453	453	560	465	415	506	M12
JBD-PA-8500-G	795	825	1.300	1.185	530	530	820	585	445	760	M14
JBD-PA-11500-G	855	880	1.390	1.270	570	570	820	625	480	760	M14
JBD-PA-14500-G	855	880	1.390	1.270	600	600	850	625	535	760	M14

Note: The illustrations and information demonstrated are orientative. E&M Combustion S.L keeps the right to make all necessary modifications for the improvement of our products.

DESCRIPTION OF BURNER COMPONENTS

Description	G
Body of burner heat insulated, assembly flange, air flaps for air regulation, combustion head, ignition trafo., ignition cable, ignition electrodes, flame tube, swirler.	•
Electronic switchboard BT 320(external)	•
Electric control panel (external)	•
Visualisation display (external)	•
Double motorized gas valves	•
Solenoid gas valve for pilot flame.	•
Butterfly flow gas valve	•
Air pressure switch	•
Flame scanner	•
Gas pressure switch	•
Actuating motor for air flaps	•
Actuating motor for gas butterfly valve	•

DENOMINATION OF THE BURNER

JBD-PA	6.000
Burner's system: Industrial duobloc burner	Burner power
G	LT ###
Fuel: G-Natural Gas LO-Light oil FO-Heavy oil GLO-N.G./Light oil- Natural gas GFO-N.G./Heavy oil- Natural gas	Length of flame tube



TECHNICAL SERVICE AND COLLABORATION WITH THE CLIENT

One of the big advantages of our company is the continuous communication and cooperation with our clients. Our success in this business is based in a close collaboration and relationship with our customers by showing them how to handle our equipments and with a technical personal assistance. We are a very flexible company in this material, giving a fast answer and a good service to all problems that can happen in our installations, with an easy accessibility to our engineers.

We really take care very much this aspect of business based in the close communication and friendship with our customer.

www.emcombustion.es

