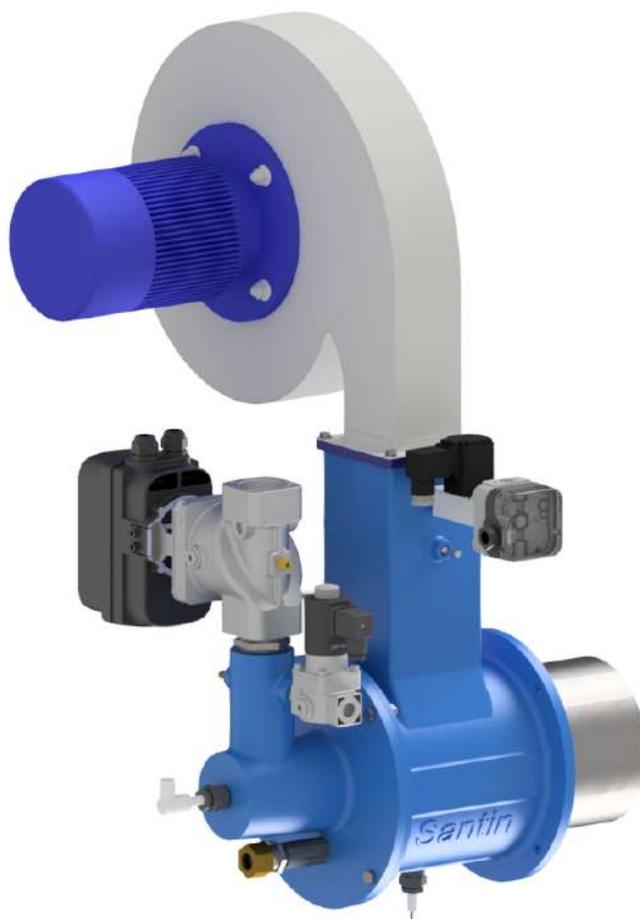


Bruciatori Santin

MXS Burner

[Bulletin 30-1 MXS -26/10/18 -]



Low emissions

Applications

Bruciatori Industriali Santin's MXS series is the world most flexible and reliable industrial burner.

MXS burners provide an extraordinary performance in furnaces, ovens and dryers, paint finishing lines, textile and paper machines, coffee roasters, food ovens incinerators and grain dryers.

MXS is available in compact mode with blower or in WB version with external blower.

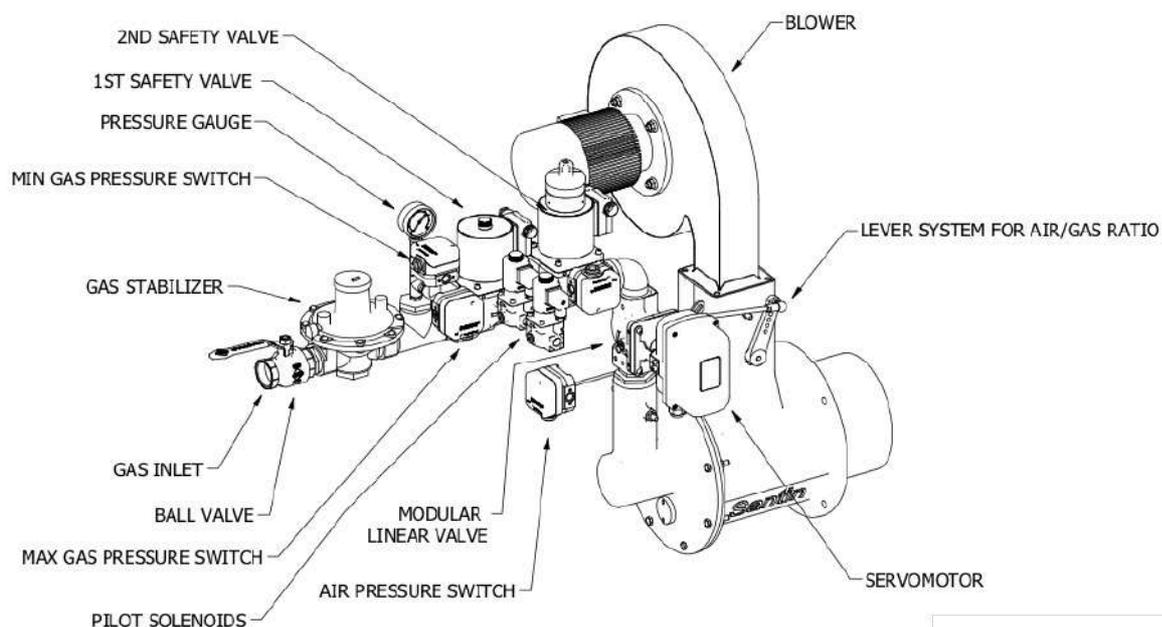
MXS Gas Burners



One of the most flexible industrial burner:

- More than 40:1 turndown
- More than 10 different styles and sizes
- Max capacity up to 2300 kW
- Packaged solution or with external blower

Typical piping layout



MXS Packaged Gas Burners



Pre- assembled packaged burner includes:

- MXS high turndown burner
- Gas train EN746-2 or NFPA86 pre-wired and assembled
- Control panel with control unit
- Optional as temperature controllers, PLC etc

- MXS provide clean combustion with low NOx levels
- The package burner design provide easy and simple installation in existing duct

MXS Compact Package design can also provide mounted in pre-fabricated combustion duct



Burner Design

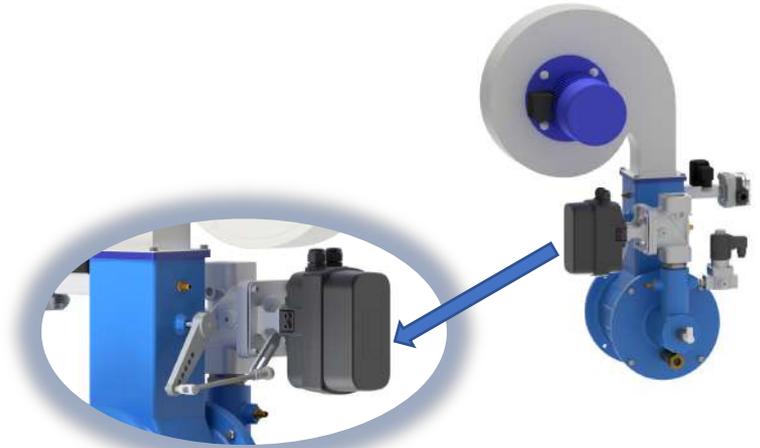
MXS are nozzle mix burners suitable for any industrial applications. MXS-2 Versions from 15 to 930 KW are available with aluminium or cast iron burner housing.

MXS1-2 – Compact composition includes:

- Combustion air blower
- Cast iron nozzle
- Cast iron air mixing cone
- Ignition rod with plug
- Flame rod with plug (UV adapter available)
- Blower

As Optional:

- KIT ratio controller that includes:
 - Integrated butterfly valve
 - Modular line valve
 - Actuator (std 3 points, also available 4-20mA or 0-10V)
- Min Air pressure switch
- 3 ways valve
- Pilot solenoid with flow regulator



MXS1-2 WB includes:

- Cast iron nozzle
- Cast iron air mixing cone
- Ignition rod with plug
- Flame rod with plug (UV adapter available)
- Air tube inlet

As Optional:

- KIT ratio controller as described above



MXS3 includes:

- Cast iron nozzles
- Cast iron air mixing cone
- Ignition rod with plug
- Flame rod with plug (UV adapter available)
- Air flange DN150

As Optional.

- MLRC – Modular Linear Ratio controller



Function

Burner must be managed by a control unit that opens the gas and air control valves. The mixture produced downstream of the burner head is electrically ignited by an ignition rod.

Flame is controlled by an ionization electrode or UV sensor as optional.

For an easy and simple field adjustment, ratio controllers is made through control motor, integrated butterfly valve and Kit levers.

Project information and Accessories

Ignition transformer must be $> 7,5$ kV – Santin model 1820 230V or 110V

Return gas valve are not required and flame control is performed with electrode or UV sensor as optional.

While the burner is switched off, there must air flow in order to ensure safe ignition and monitoring of the burners, and for cooling the burner components. For this, leave the air fan switched on until the furnace has cooled down completely.

Control unit



QBK Full + b

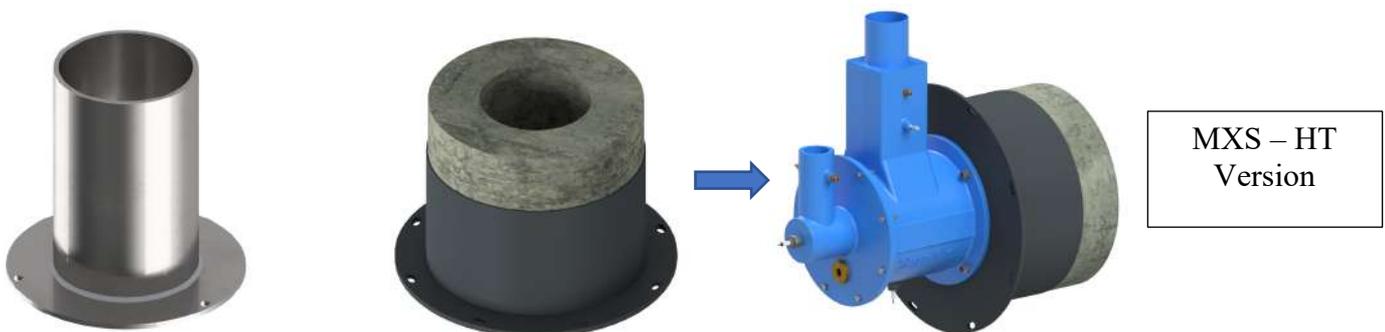
Automatic Burner Control Unit for gas burners.

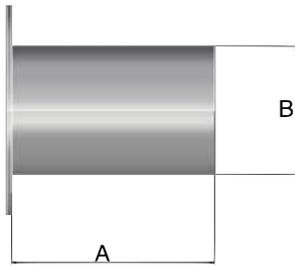
Pilot and Main fuel valves + Air valve and pressure switch

Remote control through process inputs or fieldbus
High-temperature option for flame surveillance
bypass Intermittent or continuous operation.

Burner Tube:

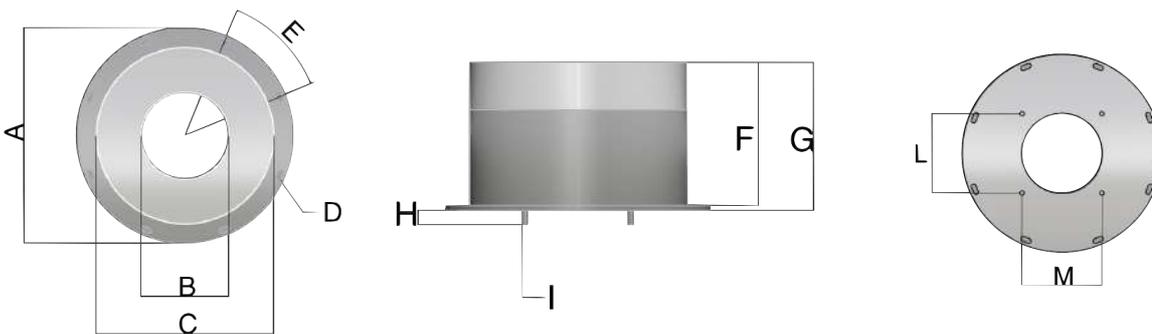
Standard tube is stainless steel 310S, also available for high temperature application (up to 1550°C) the refractory block.





<i>Model</i>	A*	B	Material	°C max
<i>MXS1</i>	120	170	SS310S	1.100
<i>MXS2</i>	120	220		
<i>MXS3</i>	200	281		

Refractories Blocks standard flame for temperature up to 1550 °C



Model	A	B	C	D	E	F	G	H	I	L	M
MXS1	450	180	350	N°8 13x25	22.5°	300	310	50	10	162,6	162,6
MXS2	550	240	450	N° 8 A13x30	22.5°	300	310	50	12	212	212
MXS3	600	300	500	N° 8 A13x30	22.5°	300	310	50	12	N°12 A 14x30	

*Burner tube length is available up to 500 mm

Ratio control system for MXS1/2



Composition:

- Modular valve + control motor
- Double levers with linkage \varnothing 8 mm
- Integrated butterfly air valve

Code LMV	Burner model	LMV	ΔP mbar LMV gas*	ΔP mbar Air valve
EK1027	MXS1-200	1" Reduced	10	7,8
EK1026	MXS1-200	1"	4	
EK1031	MXS1-400	1"-1/2 Reduced	8	
EK1030	MXS1-400	1"-1/2	3,5	
EK1031	MXS2-500	1"-1/2 Reduced	12	9
EK1030	MXS2-500	1"-1/2	5	
EK1030	MXS2-800	1"-1/2	15	
EK1100	MXS2-800	2"-1/2 Reduced	6	

*Approx. ΔP , calculated with burner at max capacity

External ratio regulator for a simple field adjustment and maintenance.

Ratio control system for MXS3

Code LMV	Burner model	LMV gas Valve	ΔP mbar LMV gas	VF air Valve	ΔP mbar Air valve DN150 **
EK1100	MXS3-1200	2"-1/2 Reduced	10	DN150 – 2 steps	4
EK1102	MXS3-1200	2"-1/2	4		
EK1102	MXS3-1600	2"-1/2	7	DN150 – 2 steps	8
EK1102	MXS3-2000	2"-1/2	10	DN150 – 1 Step	6

** Air flow with 30% excess air

Control motors available



Code	Model	Description
EK1098	MZ3 - 110	Control motor 3 points 110V
EK1034	MZ3 - 220	Control motor 3 points 230V
EK1035	MZ5	Control motor multi-tension 4.20mA or 0-10V

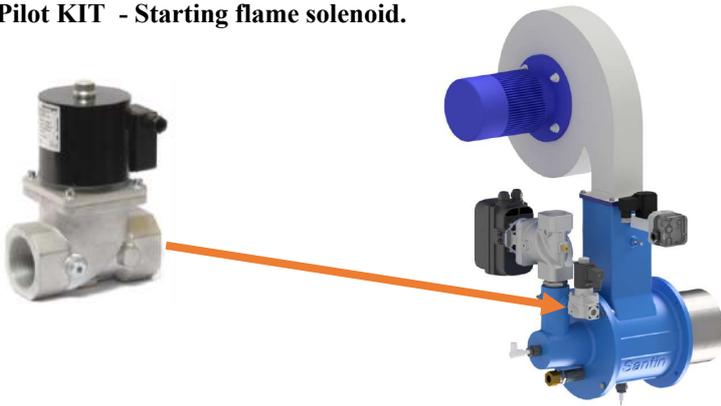
Air valve and pressure switch



It is recommended install 3 ways valve in combined with air pressure switch.

Code	Model	Description
AT7018	6014 with connector	3 ways valve 230V
DG32036	LGW A 2P	Min. air pressure switch 1-10 mbar

Pilot KIT - Starting flame solenoid.



NOTE

Pilot KIT must be connected between the two main solenoids as shown in the “Typical piping layout “ page 2.

If Pilot KIT is connected upstream the two main solenoids, another pilot solenoid is mandatory.

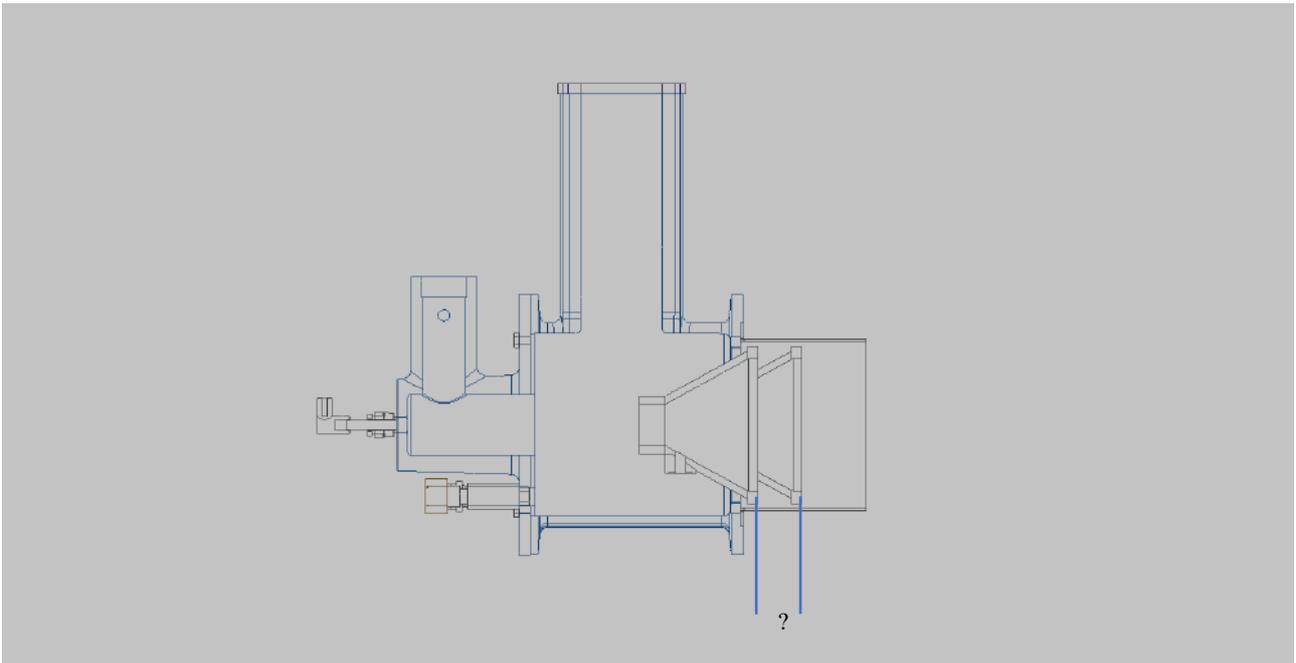
In this last case, pilot gas reducer could be necessary.

Code	Model	Description
EL12054	Pilot KIT	Solenoid 230V with flow regulator

Other Accessories

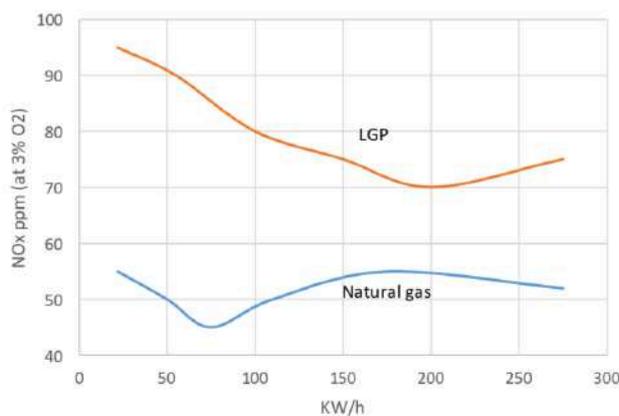
Id	Picture	Description
1		Mounting Gasket
2		UV Sensor
3		Solenoids
4		Gas Stabiliser with filter
5		Air valve
6		Ball valve
7		Ignition transformer
8		Thermoregulators / PLC
9		Pressure gauge
10		Blower

Nozzle Extended



Burner model	Nozzle Extended (cm)
MXS1/TP all versions	+ 4
MXS2/TP all versions	+ 8
MXS3/TP all versions	+ 8

LOW NOX SERIES CLEAN AND EFFICIENT COMBUSTION



All information is based on laboratory testing. Different chamber conditions will affect the data.

Data: Combustion air 20°C, chamber 400°C, 0 chamber pressure

Emissions are influenced by:

- Fuel type
- Combustion air temperature
- Chamber conditions
- % of excess air

Noise volume of the burner depends on refractory block geometry and installation (for example inside a furnace). Noise volume at a distance of 1 m is about from 75 dBA to 95 dBA. Silencer allows to reduce dBA about 10%.

Please note. Do not forget to inert the gasket insulation between furnace wall and burner. Contact us for the correct product tecnico@bruciatorisantin.com

Please note.

The pipe connection is a critical choice. The following suggestions can help you:

- Ensure that size of air and gas pipe are large enough to avoid excessive pressure losses.
- The number of elbows is kept to a minimum.
- Flexible pipe can cause more pressure drop than standard pipe. Check flexible detail.
- Put in a pipe union in a burner can simplify maintenance service

All models: General Data WB Models. With External Blower.

<i>Model</i>	MXS1-200	MXS1-400	MXS2-500	MXS2-800	MXS3-1200	MXS3-1600	MXS-2000
<i>kW (Kcal/h)</i>	232	465	580	930	1.395	1.860	2.325
<i>max</i>	(200.000)	(465.000)	(500.000)	(800.000)	(1.200.000)	(1.600.000)	(2.000.000)
<i>Gas type</i>	Natural gas / LPG / Others						
<i>Min + Pilot (Kw)</i>	20	20	30	45	100	100	100
<i>“Pilot”(Kw)</i>	15	15	15	22	35	35	35
<i>Gas Connection (Inch)</i>	1”-1/2	1”-1/2	2”	2”	2”	2”	2”
<i>Air Connection (Inch)</i>	See drawing						
<i>Control Type</i>	Low/High Modulating						
<i>Flame detection</i>	With ionization electrode or UV sensor as option						
<i>Ignition</i>	With ignition transformer 8 KV						
<i>Max Furnace Temperature (°C)</i>	AlSi Version MXS2 with tube 310S max 500°C Cast Steel models (all versions) with tube 310S 1100°C Cast Steel models (all versions) with concrete block 1550°C						
<i>Max Air Temperature (°C)</i>	AlSi version 200°C Cast Steel version 450°C						
<i>Flame Length (cm)</i>	100 - 800		600 - 1000		700 - 2000		
<i>Material</i>	Cast iron	Cast iron	Alsi Cast iron	Alsi Cast iron	Stainless Steel	Stainless Steel	Stainless Steel
<i>Weight (Kg) Approx.</i>	Cast Iron - 51 Cast Iron + Block - 109		Cast Iron - 63 Aluminium - 33 Cast iron + block - 163		Stainless Steel - 67 Stainless Steel + Block 197		

Compact model: General Data*

Burner model		MXS1-200	MXS1-400	MXS2-500	MXS2-800	
	KW	0,55	0,75	0,75	2,2	
Blower details	Model/V/Hz	S-AP280/400/50	S-AP310/400/50	S-AP310/400/50	S-AP400/400/50	
Max Capacity (kW)	DUCT STATICS	-5	284	534	726	1052
		-2,5	261	500	656	988
		0	232	465	580	930
		2,5	197	424	500	866
		5	162	383	395	790
Min Capacity (kW)	Main + Pilot	20	20	30	45	
	Only Pilot	15	15	15	22	
Approx. visible flame length in still						
	air (mm)	100 - 400	400 - 800	600 - 1000		

*For chamber pressures outside the given range or for varying chamber pressure conditions, contact Bruciatori Santin

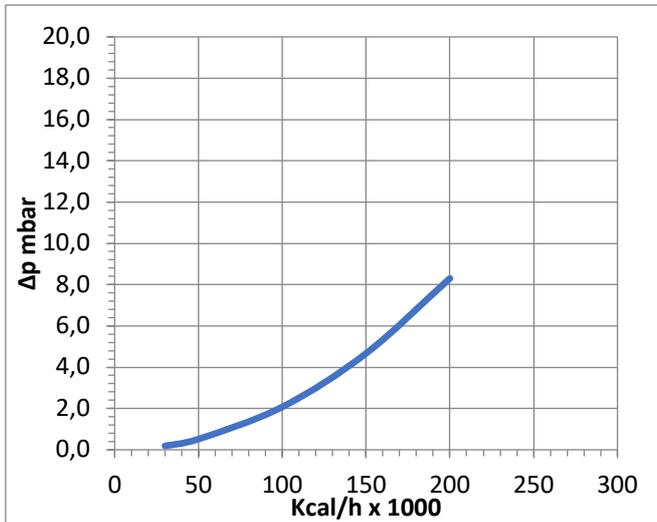
Type code

	Description
<i>MXS</i>	Burner model
<i>1</i>	Size 1
<i>2</i>	Size 2
<i>3</i>	Size 3/
<i>200</i>	Max 200. 000 kcal/h (232 kW)
<i>400</i>	Max 400. 000 kcal/h (465 kW)
<i>500</i>	Max 500. 000 kcal/h (580 kW)
<i>800</i>	Max 800. 000 kcal/h (930kW)
<i>1200</i>	Max 1.200. 000 kcal/h (1.395 kW)
<i>1600</i>	Max 1.600. 000 kcal/h (1.860 kW)
<i>2000</i>	Max 2000. 000 kcal/h (2.300 kW)
<i>WB</i>	Remote blower
<i>Compact</i>	With Blower
<i>HT</i>	High Temperature with concrete block
<i>P</i>	Kit Pilot (Voltage must be indicated)
<i>LK..</i>	Lever system for ratio control (Code must be indicated see pag.7)
<i>TP</i>	Nozzle extended

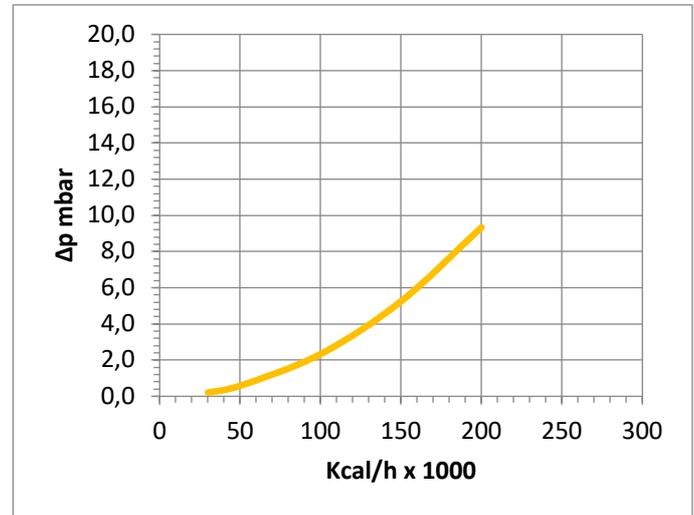
Diagrams

MXS1-200

Air ΔP

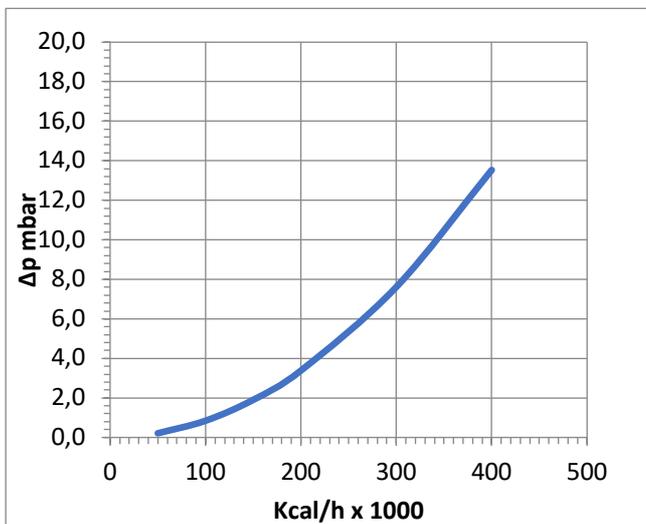


Natural Gas ΔP

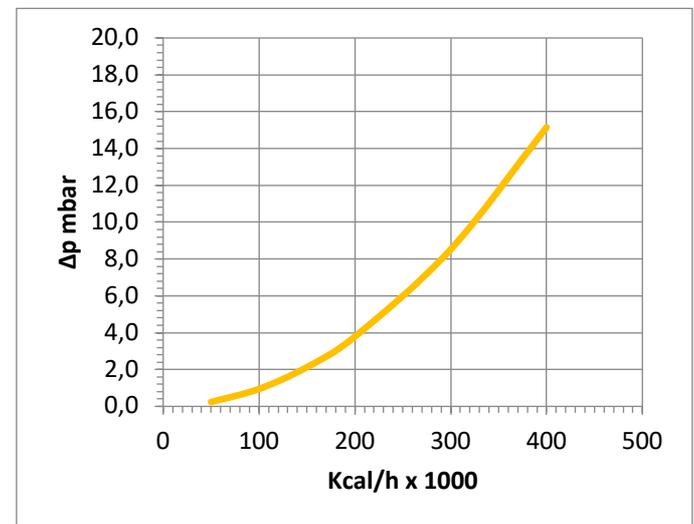


MXS1-400

Air ΔP



Natural Gas ΔP

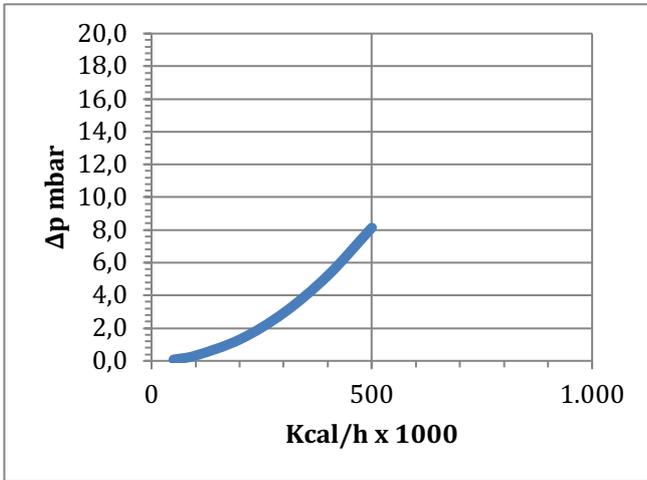


In the air ΔP charts butterfly valve is not included. Please consider a ΔP about 7,8 mbar

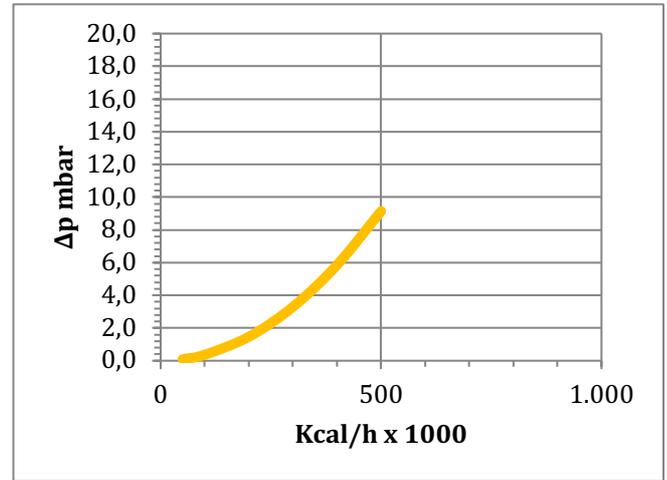
P.N. ΔP charts between test connection on the combustion head and chamber.

MXS2-500

Air ΔP

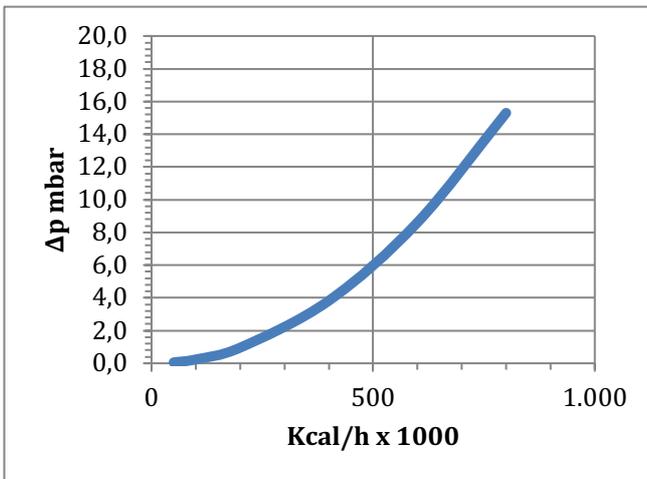


Natural Gas ΔP

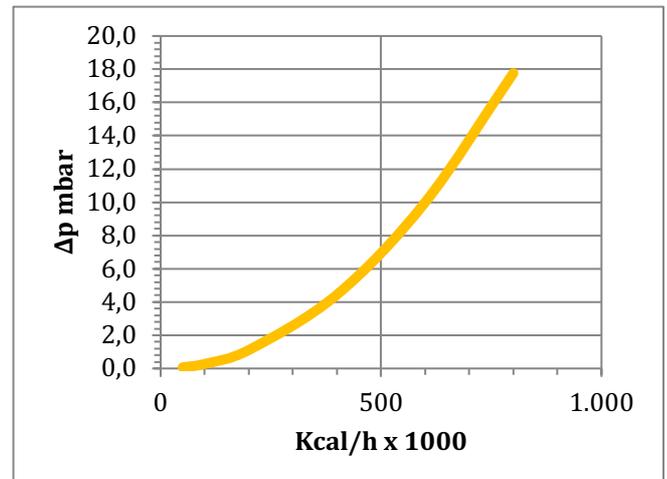


MXS2-800

Air ΔP

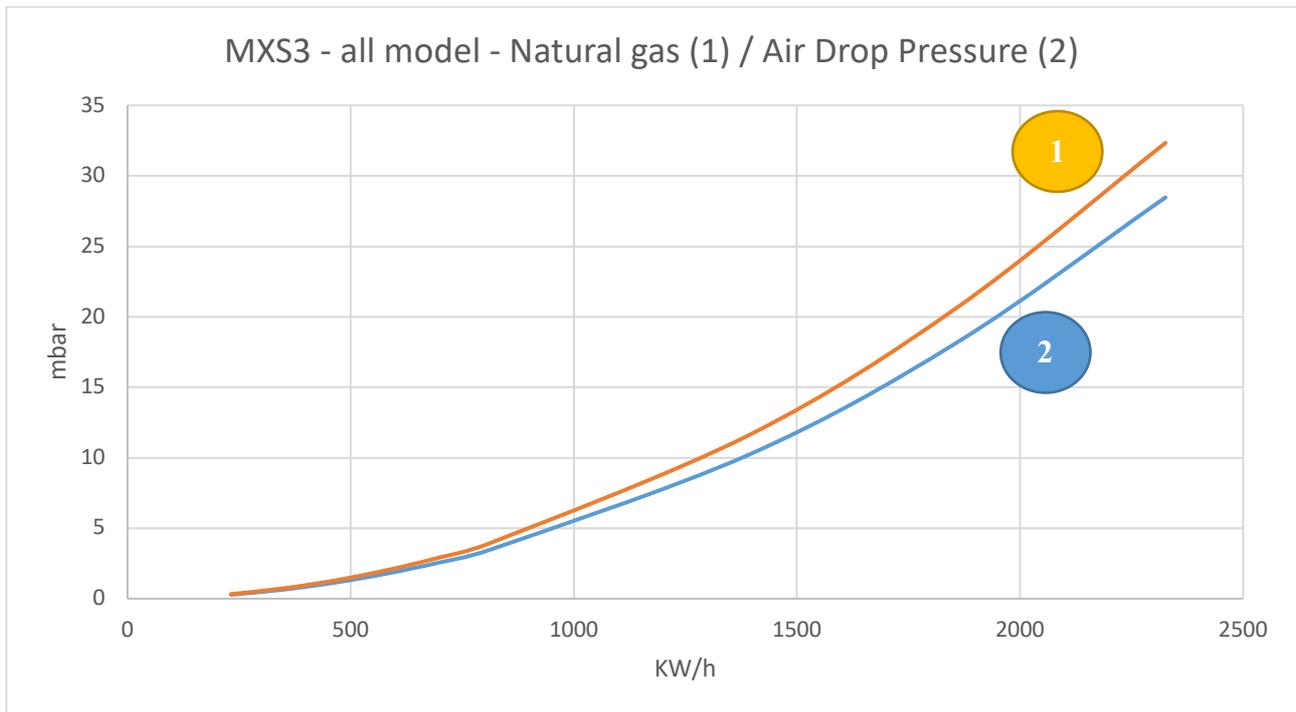


Natural Gas ΔP

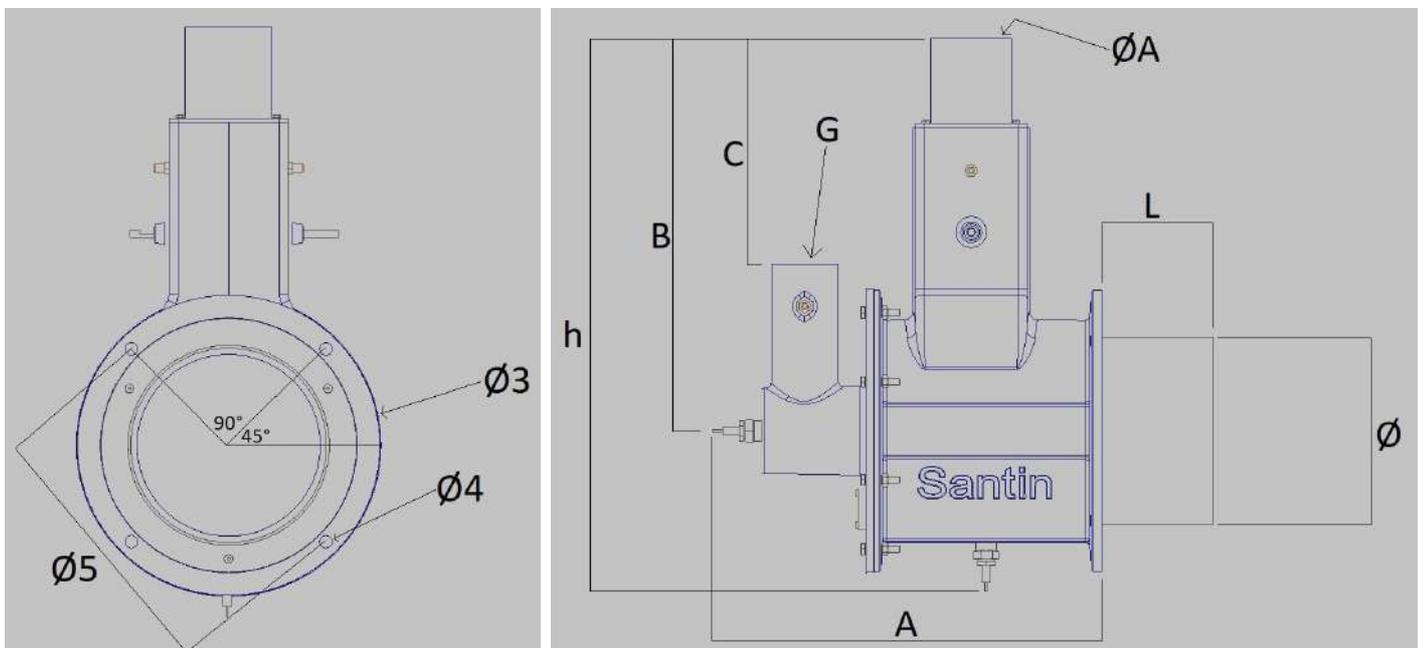


In the air ΔP charts butterfly valve is not included. Please consider a ΔP about 9 mbar

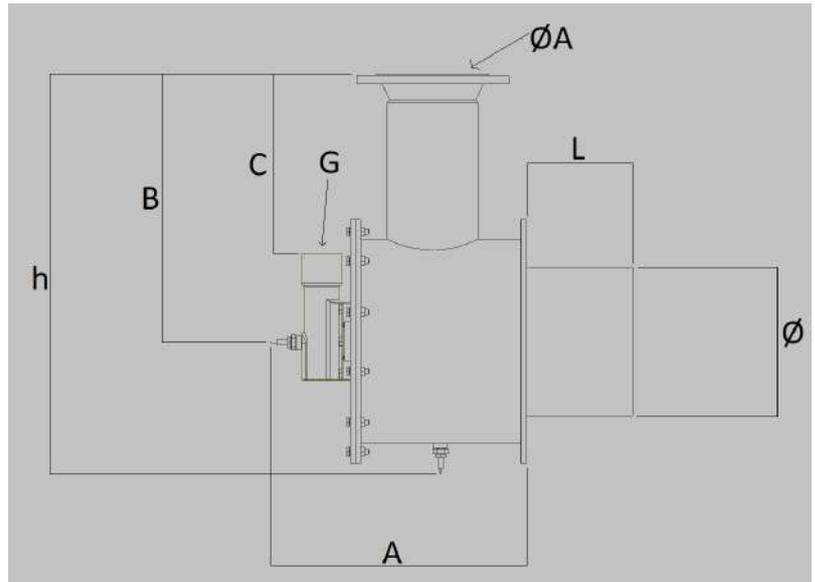
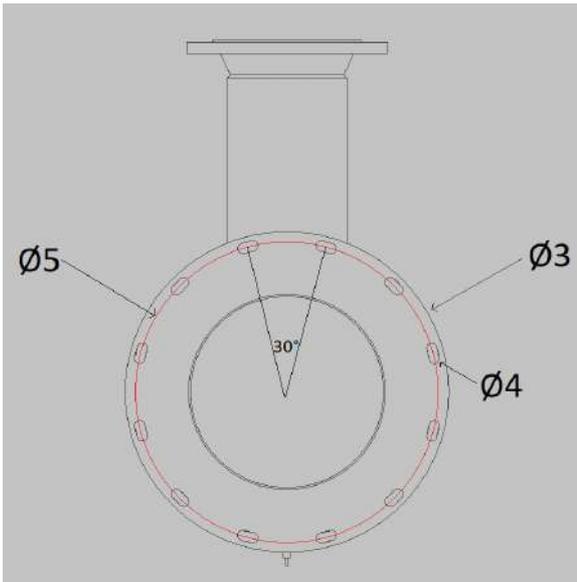
P.N. ΔP charts between test connection on the combustion head and chamber.



Overall dimensions (mm)WB version (External blower):

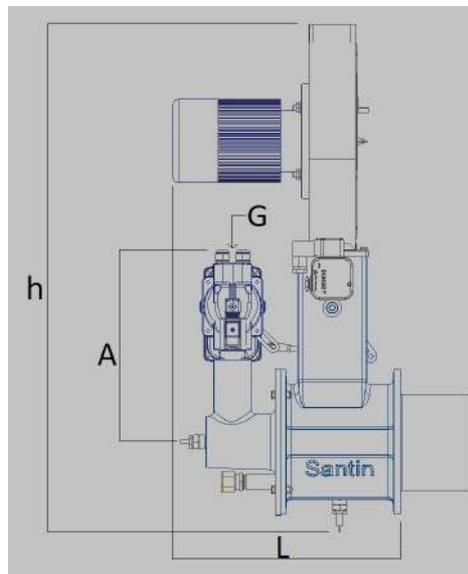
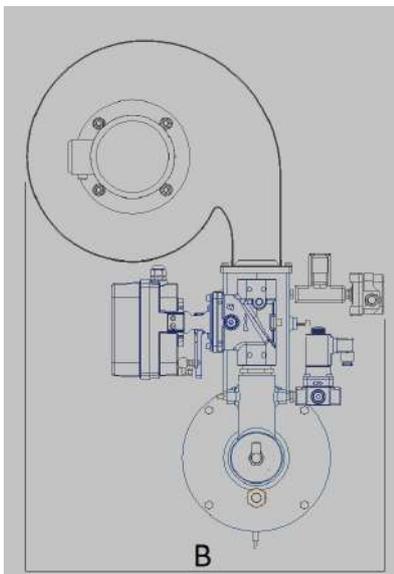


Model	A	B	C	h	G	ØA	L	Ø	Ø3	Ø4	Ø5
MXS1-200	398	428	285	587	1"-1/2	90	120	170	255	10,25	230
MXS1-400	398	428	285	587	1"-1/2	90	120	170	255	10,25	230
MXS2-400	451	458	265	648	2"	114	120	220	330	14	300
MXS2-800	451	458	265	648	2"	114	120	220	330	14	300



Model	A	B	C	h	G	ØA	L	Ø	Ø3	Ø4	Ø5
MXS3	477	506	338	754	2"	DN150	200	280	460	A	430
All models										15x30	

Overall dimensions (mm) Compact version (with blower):



Model	A	B	G	h	L
MXS1-200	328	618	1"	890	395
MXS1-400	328	618	1"-1/2	890	395
MXS2-400	400	651	1"-1/2	841	429
MXS2-800*	400	741	1"-1/2 or 2"-1/2**	1063	497

Note
 *It's recommended to buy a blower with base support.
 ** Gas inlet could be different according to ΔP desired. See table page 7

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- Tutti di dati / grafici indicati e presentati in questo documento sono approssimativi.
- Le emissioni sono influenzate da: Tipo di gas, temperatura di combustione aria, condizioni della camera di combustione e % di eccesso d'aria.
- The performances mentioned are indicative. Performance and dimensions are guidelines only. The information contained in this catalogue is updated at the time of printing but can be changed without notice or obligation to notify.
- All data / graphs shown in this document are approximate.
- Emissions are influenced by: fuel type, combustion air temperature, chamber conditions and % of excess air.

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