EMS/ Gas Heating Modules for Air Handling Units and Process Plants

WHY TO CHOOSE EMS:

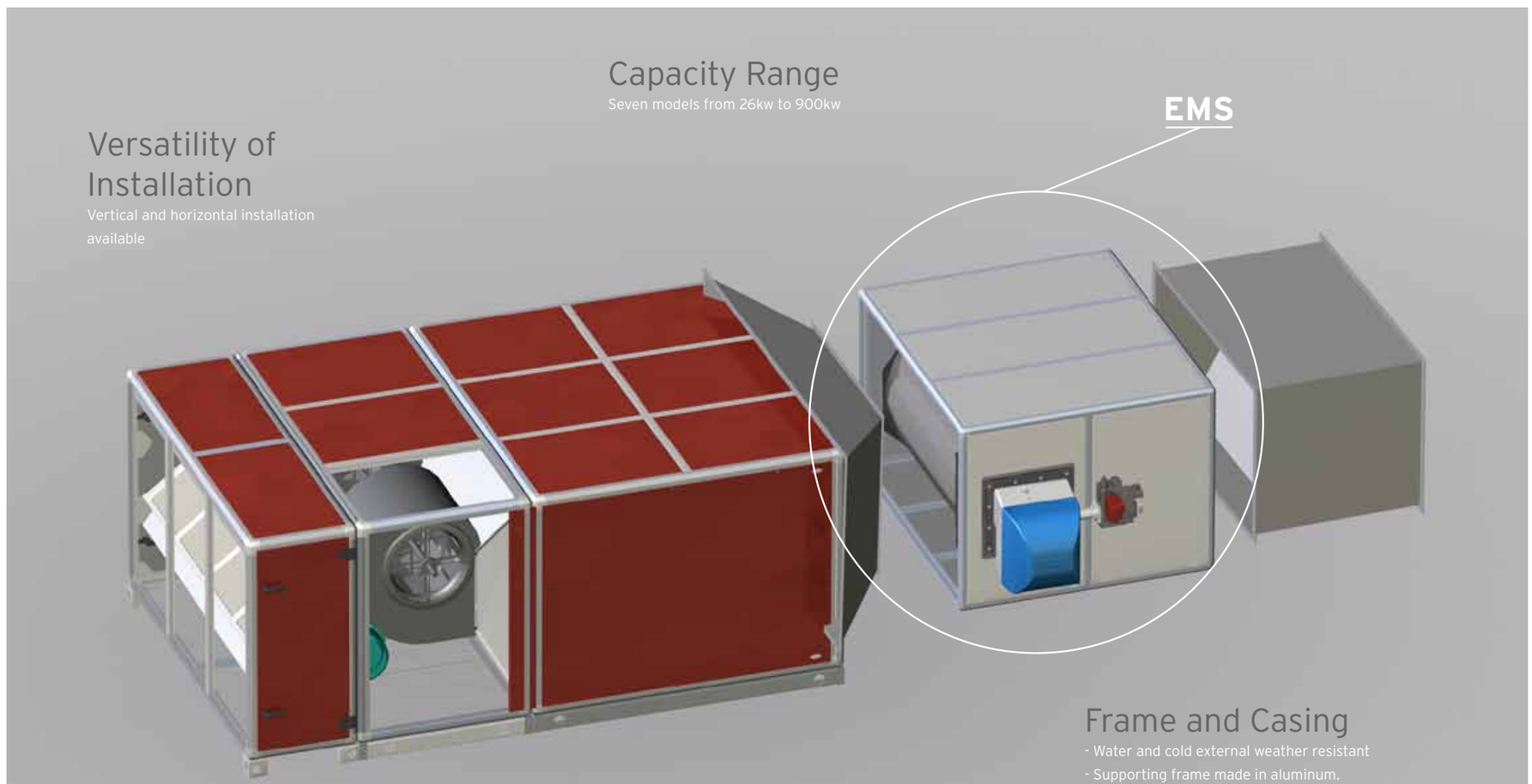
- Highest energy efficiency and dramatic reduction in gas consumption.
- NOx emission class 4/5.
- Reduced "Greenhouse effect" – reduced carbonic anhydride emissions – thanks to low combustible consumption and to high efficiency.
- Efficiency level as high as 102 % (referred to net calorific value).
- Sensible saving on gas consumption (up to - 40 %).
- Kyoto Protocol will benefit from the new technical Kondensa gas heater.
- Power range from 32 kW to 900 kW.

Capacity Range

Seven models from 26kw to 900kw

Versatility of Installation

Vertical and horizontal installation available



Frame and Casing

- Water and cold external weather resistant
- Supporting frame made in aluminum.
- Double sandwich panels insulated with glass wool to limit the heat losses and improving the thermal efficiency
- Rigid casing frame in order to support very high air flow static pressures

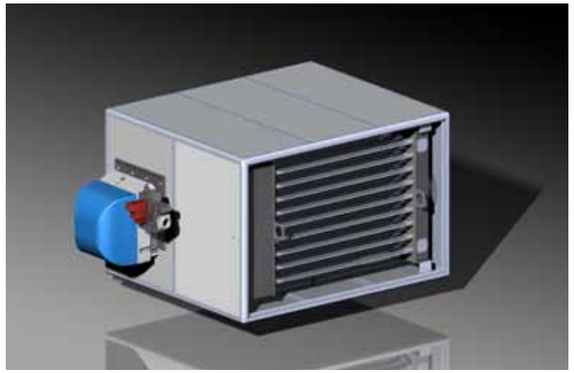
Wide burners compatibility

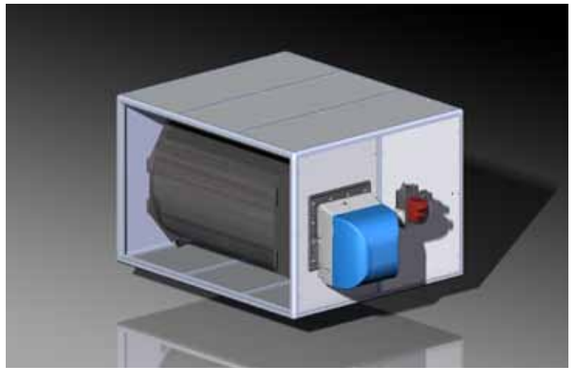
EMS modules can be coupled with main burners brand

Indoor/Outdoor Installation

Vertical and horizontal installation available

13 models (capacity from 26kW to 900kW)





EMS / Gas Heating Modules for Air Handling Units and Process Plants

HEATING MODULS FOR AIR HANDLING UNITS
Warm air heaters series EMS have been designed to be installed on air handling and roof-top units air ducts as heating equipment. In addition, each module can be assembled into any kind of equipment where air needs to be heated (dryers, blowers, industrial processing plant etc), Heat exchangers can be produced in special thickness and stainless steel materials suitable for the specific process heating application.

VERY WIDE POWER RANGES
EMS Modules heat output goes from 26 to 920 kW. For higher values, several heaters must be combined. They can be assembled in series or parallel layout, to reach the required output.

EASY COUPLING WITH MAIN MARKET BURNERS BRANDS
EMS modules can be installed with main burner brands: Riello, Cuenod, Cib Unigas, Ecoflam, Weishaupt, Lamborghini, etc.
The setting depends on the burner installed and can be one of the following:
- modulating;
- two stages (high/low flame);
- ON / OFF.

EMS EMS-K, TWO SERIES WITH HIGH EFFICIENCY 94%-102% (condensing)
Apen Group has designed and developed two different series:
-EMS standard version: efficiency up to 94%, for gas and oil burners;
-EMS-K condensing version: efficiency up to 102%, and minimum efficiency of 92%, only for the installation of gas burners (burner with modulation or two stage are suggested).

CLEAN COMBUSTION UNDIRECT HEAT EXCHANGE
The heat produced by EMS is transferred to the ambient air through undirect exchange on the internal surface of the module.
These gas combustion products flow inside a sealed system, totally separated from the air heated for environment.
No intermediate fluid is required, so an hydraulic circuit is unnecessary and water freezing becomes an out-of-date issue.
A few minutes are enough for the environment to warm up thanks to the absence of thermal inertia.

EMS/ Features

AVOIDING WATER BATTERY AND BOILER HEAT PLANT ADVANTAGES
- Savings on plant building cost (boiler, burner, pumps, safety and regulation devices, masonry work);
-Less space is required (units are smaller and require less clearance);
-No need for plant certification (our PCH module is already fully certified).

FRAME AND CASING
- Supporting frame made in aluminum.
- Double sandwich panels insulated with glass wool to limit the heat losses and improving the efficiency:
• Insulated panels with 25mm thick, complete with gaskets, made of external precoated galvanised sheet iron panel, protected with 1 mm thick plastic film, insulating material made of glass wool 32 kg/m3, internal panel in galvanised sheet iron 0,6 mm thick, fixed with rivets on the external panel.
easily to the left.
- All heaters are equipped with lifting lugs.

HEAT EXCHANGER
Furnace and air/flue exchanger are entirely built with stainless steel (with low carbon content) AISI 441 and 430 which assures maximum reliability and long life cycle. The drop-shaped furnace and the air/flue exchanger, whose tube bundle is custom designed, guarantee performance that place EMS modules among the leading units for heat efficiency, with an outstanding value of 94% (EMS standard models) and of 102% (EMS-K special gas condensing models).
(GH standard models) and of 102% (GH-K special gas condensing models).

SAFETY
The exchanger comes fully equipped with safety thermostat devices, with manual reset that have to be necessarily installed by the manufacturer of the equipment in which the exchanger is going to be assembled.

OPTIONAL CONNECTION CONTROL DEVICE
EMS modules can be matched to a wiring control panel supplied as an optional by Apen Group S.p.A.
Control panel consists of a box containing an electronic card and a relay, a main switch to lock the door and a LED board. It allows connection of a two-stage controller for the burner and of an operation selector, the power line, the safety thermostat and the burner can be easily wired to the GH module through this panel.

Terminals are available to wire safety devices and connect burner controls to be used. A board for remote control of operation modes and faults is also available.

CAD DRAWINGS
When ordering EMS module, ask for its size drawings.
We supply drawings in CAD format to ease your assembling work of the EMS module into your installation!

GAS DIRECTIVE CERTIFICATION
Technical features of EMS module have been thoroughly checked and tested, then they been approved and certified by KIWA GASTEC, the respected and renowned Body for European Certification. By assigning to EMS module the approval number 0694BP0758, KIWA GASTEC has certified that this modules comply with the following Directives: - 90/396/EEC - Directory on appliances burning gaseous fuels 90/392/EEC - Machinery Directive - 72/23/EEC - Low Voltage Directive - 89/336/EEC - Directive on Electromagnetic Compatibility.

Condensing Product

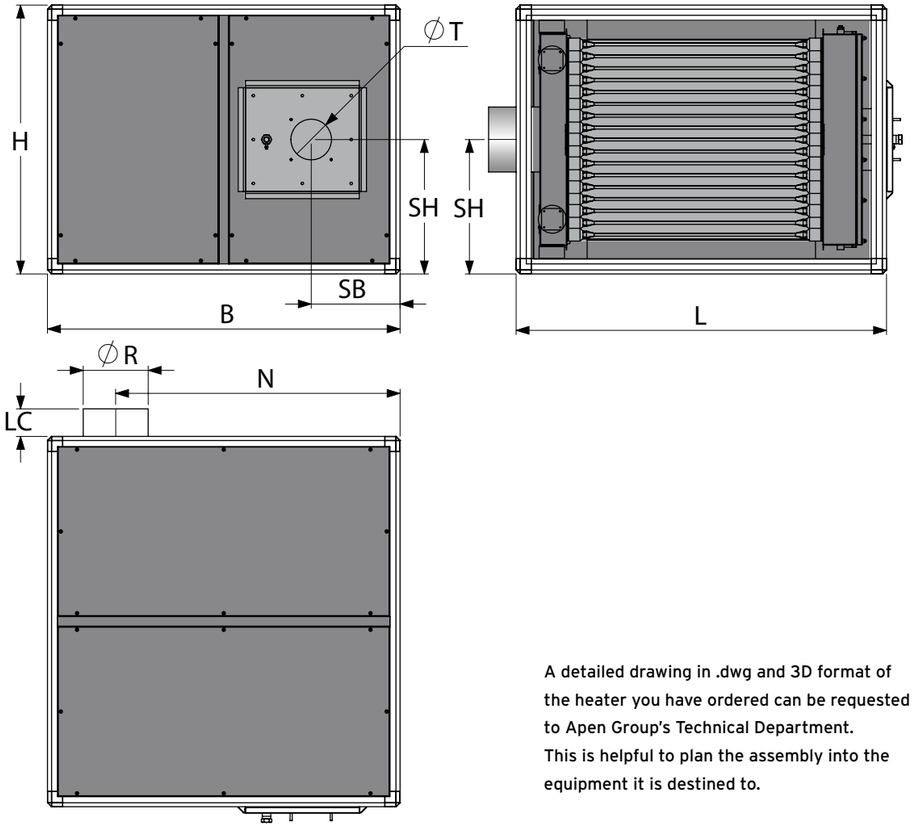
EMS/ Technical Data

Model		EMS032N		EMS035N		EMS060N		EMS100N		EMS120N		
Type of Appliance		B23										
EC Approval		0694BP0758										
NOx Class		4 - 5 with LOW NOx GAS BURNERS										
		MIN	MAX	MIN	>91%	MAX	MIN	>91%	MAX	MIN	MAX	MIN	>91%	MAX
Furnace Heat Input	kW	24,8	34,8	24,8	34,0	49,5	43,0	61,3	86,0	68,5	110,7	68,5	100,5	137,0
Useful Heat	kW	23,5	31,6	23,5	31,0	43,6	40,4	56,0	75,2	64,4	100,4	64,3	91,9	120,1
Combustion Efficiency	%	94,8	90,8	94,8	91,2	88,1	94,0	91,3	87,9	94,0	90,7	94,0	91,4	87,7
Chimney loss - Burner ON	%	5,2	8,0	5,2	8,8	11,9	6,0	8,7	12,1	6,0	9,3	6,0	8,6	12,3
Chimney loss - Burner OFF	%	<0,1			<0,1			<0,1		<0,1			<0,1	
Casing losses	%	2,61			1,83			1,64		1,81			1,46	
Furnace Pressure	Pa	7	15	7	15	17	11	18	25	14	32	14	30	40
Furnace Volume	m^3	0,06			0,06			0,12		0,24			0,24	
Minimum air flow rate	m^3/h	1.350	1.850	1.350	1.800	2.500	2.350	3.250	4.350	3.700	5.800	3.700	5.300	6.900
Module pressure loss		see chart												
Max. applicable pressure		800			800			800		800			800	
Max Air Temperature		120			120			120		120			120	

Model		EMS140N			EMS190N			EMS250N			EMS320N		
Type of Appliance		B23											
EC Approval		0694BP0758											
NOx Class		4 - 5 with LOW NOx GAS BURNERS											
		MIN	>91%	MAX	MIN	>91%	MAX	MIN	>91%	MAX	MIN	>91%	MAX
Furnace Heat Input	kW	96,0	131,4	195,0	115,0	202,5	230,0	154,0	252,0	310,0	185,0	309,0	380,0
Useful Heat	kW	90,2	120,3	171,0	108,1	184,7	205,9	145,0	230,2	275,0	173,9	282,1	335,9
Combustion Efficiency	%	94,0	91,4	87,7	94,0	91,2	89,5	94,0	91,3	88,7	94,0	91,3	87,7
Chimney loss - Burner ON	%	6,0	8,6	12,3	6,0	8,8	10,5	6,0	8,7	12,3	6,0	8,7,0	12,3
Chimney loss - Burner OFF	%		<0,1			<0,1			<0,1			<0,1	
Casing losses	%		1,26			1,16			1,17			1,02	
Furnace Pressure	Pa	13	28	50	10	32	40	10	36	50	15	45	60
Furnace Volume	m^3		0,37			0,52			0,76			1,06	
Minimum air flow rate	m^3/h	5.200	6.900	9.850	6.200	10.600	11.850	8.350	13.200	15.800	10.000	16.200	19.300
Module pressure loss		see chart											
Max. applicable pressure			800			800			800			800	
Max Air Temperature			120			120			120			120	

Model		EMS420N			EMS550N			EMS700N			EMS900N		
Type of Appliance		B23											
EC Approval		0694BP0758											
NOx Class		4 - 5 with LOW NOx GAS BURNERS											
		MIN	>91%	MAX	MIN	>91%	MAX	MIN	>91%	MAX	MIN	>91%	MAX
Furnace Heat Input	kW	260,0	398,0	508,0	320,0	515,0	670,0	397,0	677,0	818,0	447,0	865,0	1028,0
Useful Heat	kW	245,0	364,0	450,0	301,0	471,0	592,0	374,0	619,0	730,0	422,0	792,0	920,0
Combustion Efficiency	%	94,4	91,5	88,6	94,3	91,5	88,4	94,3	91,4	89,3	94,4	91,6	89,5
Chimney loss - Burner ON	%	5,6	8,5	11,4	5,7	8,5	11,6	5,7	8,6	10,7	5,6	8,4	10,5
Chimney loss - Burner OFF	%		<0,1			<0,1			<0,1			<0,1	
Casing losses	%		1,03			0,97			1,00			1,01	
Furnace Pressure	Pa	28	85	120	21	80	110	25	92	120	28	98	130
Furnace Volume	m^3		1,55			1,79			4,78			5,58	
Minimum air flow rate	m^3/h	14.050	20.900	25.800	17.300	27.050	33.950	21.450	35.500	41.900	24.200	45.450	52.750
Module pressure loss		see chart											
Max. applicable pressure			800			800			800			800	
Max Air Temperature			120			120			120			120	

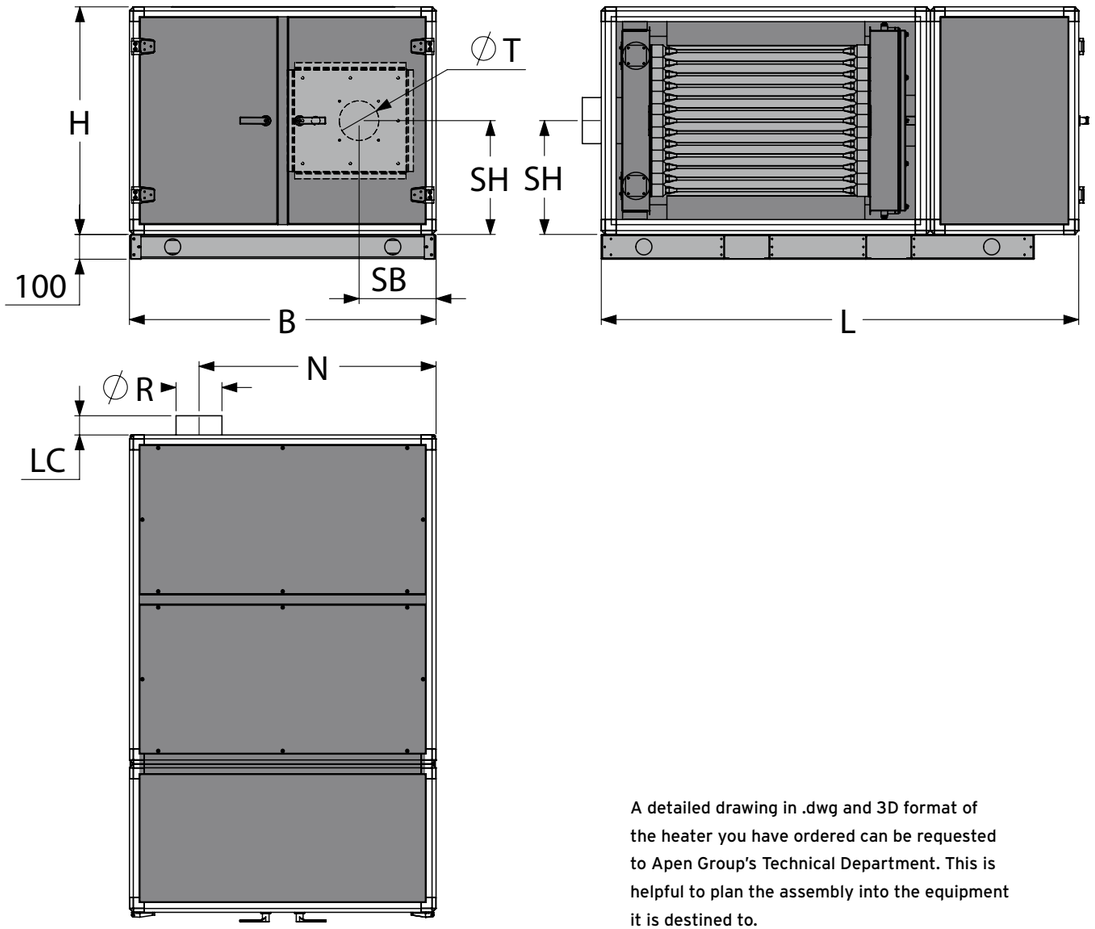
EMS-N/EMS-K/ Dimensions



A detailed drawing in .dwg and 3D format of the heater you have ordered can be requested to Apen Group's Technical Department.
This is helpful to plan the assembly into the equipment it is destined to.

Model	Size			Chimney		Burner			Profile		Weight
	L	B	H	N	ØR	SB	SH	ØT	P	G	Kg
EMS032/035	750	860	530	577	120	230	265	135	40	25	70
EMS060	995	990	700	727	150	248	350	135	40	25	100
EMS100/120	1.100	1.180	800	920	180	350	400	135	40	25	144
EMS140	1.330	1.240	920	960	180	315	460	190	40	25	186
EMS190	1.460	1.390	1.060	1.120	250	370	530	190	40	25	289
EMS250	1.750	1.490	1.140	1.200	250	380	570	190	40	25	312
EMS320	1.960	1.490	1.140	1.200	250	340	570	230	40	25	354
EMS420	2.170	1.800	1.340	1.480	300	440	670	230	50	30	538
EMS550	2.600	1.880	1.340	1.510	300	440	670	230	50	30	632
EMS700	2.950	2.110	1.600	1.770	350	500	800	260	50	30	870
EMS900	3.550	2.330	1.700	1.955	400	585	850	260	50	30	1.185

EMS-HEA/ Dimensions



A detailed drawing in .dwg and 3D format of the heater you have ordered can be requested to Apen Group's Technical Department. This is helpful to plan the assembly into the equipment it is destined to.

Model	Size			Chimney		Burner			Profile		Weight
	L	B	H	N	ØR	SB	SH	ØT	P	G	Kg
EMS032/035	1.250	860	530	577	120	230	265	135	40	25	102
EMS060	1.495	990	700	727	150	248	350	135	40	25	141
EMS100/120	1.600	1.180	800	920	180	350	400	135	40	25	205
EMS140	1.930	1.240	920	960	180	315	460	190	40	24	268
EMS190	2.190	1.390	1.060	1.120	250	370	530	190	40	25	397
EMS250	2.550	1.490	1.140	1.200	250	380	570	190	40	25	443
EMS320	2.760	1.490	1.140	1.200	250	340	570	230	40	25	502
EMS420	3.020	1.800	1.340	1.480	300	440	670	230	50	30	716
EMS550	1.600	1.880	1.340	1.510	300	440	670	230	50	30	854
EMS700	3.950	2.110	1.600	1.770	350	500	800	260	50	30	1.120
EMS900	4.550	2.330	1.700	1.955	400	585	850	260	50	30	1.460

ApenGroup aermaxline

EMS-K/ Technical Data

Model		EMS032K		EMS060K		EMS100K		EMS140K	
Type of Appliance		B23							
EC Approval		0694BP0758							
NOx Class		4 - 5 with LOW NOx GAS BURNERS							
		MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX
Furnace Heat Input	kW	14,0	34,6	22,0	72,0	26,5	114,0	38,0	152,0
Useful Heat	kW	14,3	32,0	22,5	66,5	27,1	105,4	38,5	140,8
Combustion Efficiency	%	102,5	92,5	102,4	92,4	102,4	92,5	101,2	92,6
Chimney loss - Burner ON	%		7,5		7,6		7,5		7,4
Chimney loss - Burner OFF	%		<0,1		<0,1		<0,1		<0,1
Casing losses	%		2,61		1,64		1,81		1,26
Furnace Pressure	Pa	8	40	12	100	14	100	15	140
Furnace Volume	m^3		0,06		0,12		0,24		0,37
Minimum air flow rate	m^3/h	820	1.835	1.290	3.815	1.555	6.050	2.210	8.075
Module pressure loss		see chart							
Max. applicable pressure		800		800		800		800	
Max Air Temperature		120		120		120		120	

Model		EMS190K		EMS250K		EMS320K		EMS420K	
Type of Appliance		B23							
EC Approval		0694BP0758							
NOx Class		4 - 5 with LOW NOx GAS BURNERS							
		MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX
Furnace Heat Input	kW	48,0	200,0	61,0	270,0	74,0	347,0	83,0	455,0
Useful Heat	kW	48,3	182,2	61,6	248,9	74,8	319,8	83,8	419,4
Combustion Efficiency	%	100,5	92,6	101,0	92,2	101,0	92,2	101,0	92,2
Chimney loss - Burner ON	%		7,4		7,8		7,8		7,8
Chimney loss - Burner OFF	%		<0,1		<0,1		<0,1		<0,1
Casing losses	%		1,16		1,17		1,02		1,03
Furnace Pressure	Pa	15	130	19	175	23	225	30	275
Furnace Volume	m^3		0,52		0,76		1,06		1,55
Minimum air flow rate	m^3/h	2.770	10.450	3.535	14.270	4.290	18.335	4.805	24.050
Module pressure loss		see chart							
Max. applicable pressure		800		800		800		800	
Max Air Temperature		120		120		120		120	

Model		EMS550K		EMS700K		EMS900K	
Type of Appliance		B23					
EC Approval		0694BP0758					
NOx Class		4 - 5 with LOW NOx GAS BURNERS					
		MIN	MAX	MIN	MAX	MIN	MAX
Furnace Heat Input	kW	95,0	595,0	126,0	756,0	175,0	880,0
Useful Heat	kW	96,1	549,1	127,6	697,2	179,7	813,1
Combustion Efficiency	%	101,2	92,3	101,3	92,2	102,7	92,4
Chimney loss - Burner ON	%		7,7		7,8		7,6
Chimney loss - Burner OFF	%		<0,1		<0,1		<0,1
Casing losses	%		0,97		1,00		1,01
Furnace Pressure	Pa	40	365	45	410	45	420
Furnace Volume	m^3		1,79		4,78		5,58
Minimum air flow rate	m^3/h	5.510	3.485	7.320	39.975	10.305	46.620
Module pressure loss		see chart					
Max. applicable pressure		800		800		800	
Max Air Temperature		120		120		120	

Condensing Product