



POWERMAX



POWER MAX BOX, THE NEW MODULAR SYSTEM, FLOOR-STANDING CONDENSATION

POWER MAX BOX IS THE CABINET-BASED VERSION OF POWER MAX, BERETTA'S SOLUTION AS A MODULAR POWER SYSTEM.

Designed and developed with the aim of maximizing **flexibility and ease of installation**, the basement system ensures the **continuity of service** typical of modular systems.

A wide range of configurations is offered with POWER MAX BOX, being installable either individually (from 114 up to 524 kW) or in cascade (from 655 up to 1310 kW), with the use of specific accessories.

The cabinets, consisting of an assembled anodized aluminum

frame and painted panels, containing 2, 3 or 4 thermal elements, depending on the model, are equipped with low-power modulating circulators. The output delivered by the individual modules is managed with the **control electronics, compatible with the MOD-BUS protocol**, which, thanks to advanced operating logics, ensures its optimal management, as well as allowing the distribution of heat precisely to the various circuits.

All models are internally equipped with plumbing, gas, condensate drain and flue gas manifolds, thus making it possible for **open-chamber indoor installation and, with**

appropriate kits, sealed or outdoor installation, all in an extremely small space, ideal for both new thermal power plants and old large systems. Compactness, versatility and electronic management, coupled with the patented dual-principle stainless steel exchanger and premixed burner with a wide modulation range, make POWER MAX BOX an **extremely efficient system with low pollutant emissions**.

To support the designer in identifying the best solution, Beretta has developed **configuration software** to support the process of selecting accessories specifically developed for this system.



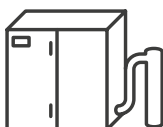
**DIGITAL
ELECTRONIC
CONTROL**



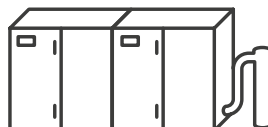
**PATENTED
HEAT EXCHANGER
IN STAINLESS STEEL**



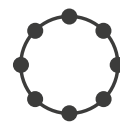
**LOW NOX
COMPLIANCE
CLASS 6**



**STAND-ALONE
CONFIGURATIONS
UP TO 524 KW**



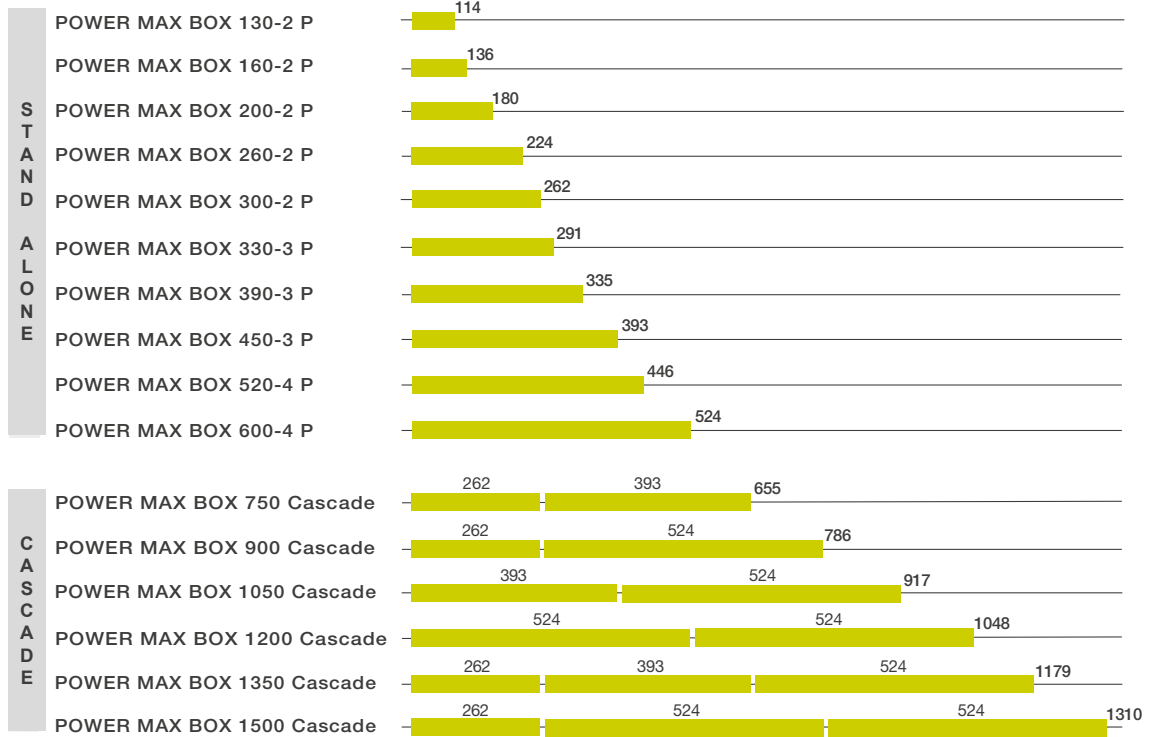
**CASCADE
CONFIGURATIONS
UP TO 1310 KW**



**WIDE RANGE OF
ACCESSORIES FOR
MAXIMUM FLEXIBILITY**

THE RANGE

POWER MAX BOX IS AVAILABLE IN THE FOLLOWING VERSIONS AND OUTPUTS:



STAND-ALONE CONFIGURATIONS

- › Possibility of flue/air exhaust and hydronic connections on the right or left side
- › Simplified maintenance operations thanks to the rotatable control display (inside or outside)
- › Simplified installation thanks to the terminal block dedicated to the wiring
- › Indoor installation (or outdoor with accessory kit)
- › Open chamber combustion (or sealed with accessory kit)

LINEAR CASCADE CONFIGURATIONS

- › Possibility to couple up to 10 modules
- › Modulation ratio up to 1:50
- › Linear installation



FLEXIBILITY APPLICATIONS

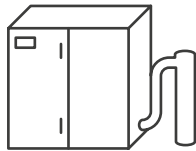
POWER MAX BOX stands out for the modularity and flexibility of the solutions it allows, a plus that is increasingly appreciated even in thermal power plants.

The 10 models of which the POWER MAX BOX range is composed, all applicable in single configuration, cover a power range from 114 to 524 kW. Of these, 3 models can also be combined in

cascade, reaching a maximum capacity of 1310kW. Adding up the single configurations to those in cascade, the POWER MAX BOX range thus allows for 16 configurations, which, with the use of specific accessory kits, come to total **dozens of different application types (sealed chamber, for outdoor use, with plate exchanger or separator, etc.)**, responding to a wide variety of plant requirements.

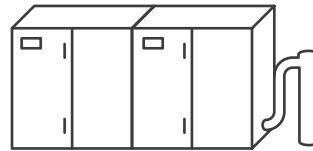
STAND-ALONE CONFIGURATIONS

10



LINEAR CASCADE CONFIGURATIONS

6

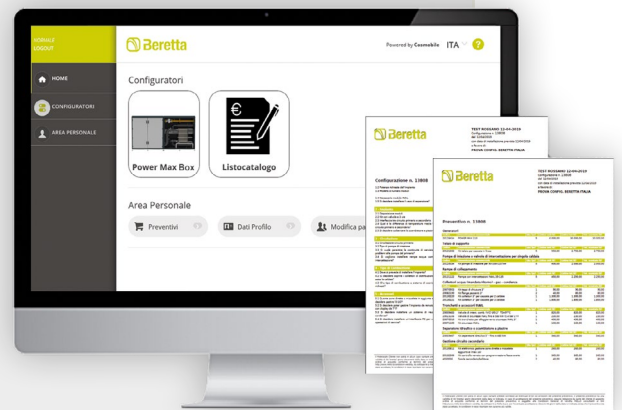


SIMPLIFY THE COMPLEXITY

Beretta provides with POWER MAX BOX an articulated and rich range of accessories for maximum configurability. Choosing the solution that best interprets the characteristics of the project can be an onerous task with a certain degree of complexity, which Beretta simplifies by providing a dynamic configuration system.

Starting with the basic information of the total heat output required, the Configurator as it goes along automatically asks for further clarifications and progressively proposes possible solutions. The tool thus guides the Designer toward the best technical choice, which can be translated directly into a quote and accompanied by product documentation.

Once again Beretta turns complexity into an ongoing challenge, therefore an opportunity.



Beretta CONFIGURATOR

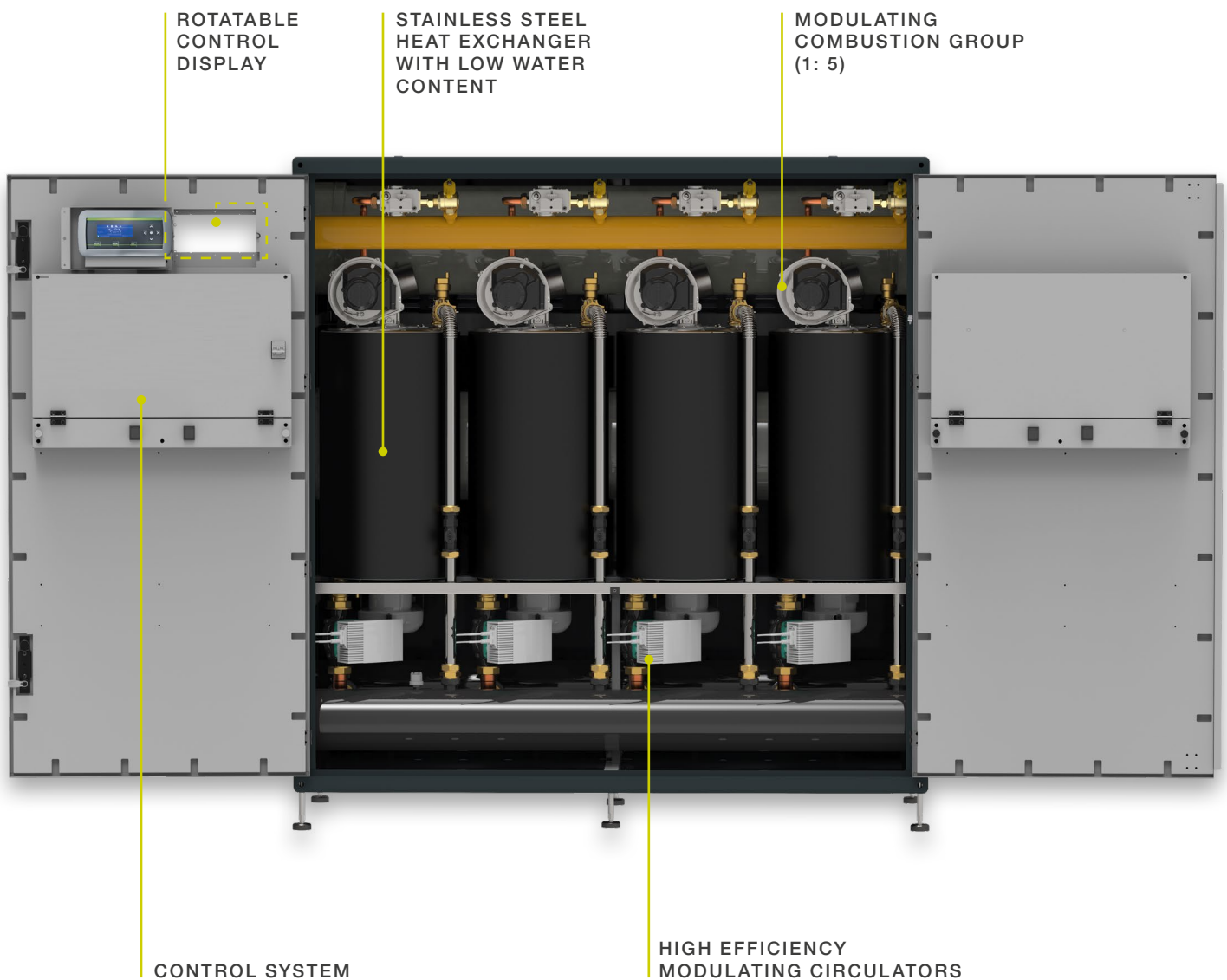
TECHNOLOGY

MODULARITY

Modularity is synonymous with flexibility and continuity of service, which must be coupled with careful system management. For this, **POWER MAX BOX is designed through sophisticated electronic logic** to ensure efficient management of individual modules, as well as

accurate coordination of their cascade operation. To ensure proper hydraulic management, **each module is equipped with non-return valves**, which prevent the circulation of water in off modules, a condition that could be generated at partial loads.

SYSTEM LAYOUT

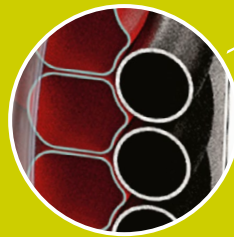


COMBUSTION UNIT

Each POWER MAX BOX module consists of a **premix burner**, operating in synergy with the **heat exchanger**, so as to achieve efficient conversion of the chemical energy of the fuel into thermal energy available to the water and low pollutant emissions, ensuring operation even under the most severe conditions.

The heat exchanger, with **low water content**, was developed with the aim of rapidly lowering the flue gas temperature, limiting pressure drop and ensuring **efficient heat transfer** to the water due to the high exchange surface area.

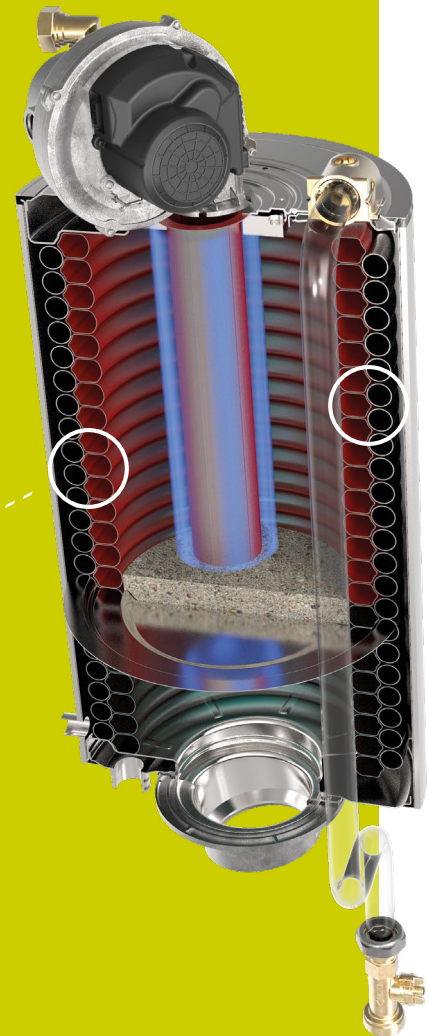
It is composed of two concentric helical coils made of smooth stainless steel tubes: the innermost with a pentagonal cross-section, and the outermost with a circular cross-section. The double circuit allows water motion in parallel with high ΔT , so as to reduce the system set-up time.



A **flowmeter**, a safety device capable of controlling the water flow rate inside the exchanger, is installed on the discharge of each module to ensure optimal operation under all operating conditions.

The premix burner is designed to keep pollutant emissions below the most stringent European limits, allowing POWER MAX BOX to be in **NOx class 6 according to UNI EN 15502-1**.

In particular, it is equipped with a modulating combustion unit capable of delivering power according to the plant's needs, guaranteeing a **1: 5 modulation ratio** for each module, so as to minimize ON-OFF cycles, making POWER MAX BOX suitable for installation both as a replacement on existing plants and as a new generator on new plants for low-energy buildings.



ELECTRONIC CONTROL AND DISPLAY

The electronic control of POWER MAX BOX has complex tasks, having to quickly monitor and process a lot of information from the system in order to ensure the best comfort to the Utility with the least expenditure of energy and maximum operational safety. The control of POWER MAX BOX has been developed with great attention to the sophistication of computing programs, detection efficiency and processing speed. Boiler operation logics in **'managing' and 'depending' modes** are preset and integrated into the boards, ensuring efficient cascade operation. The interface display is backlit, intuitive and multilingual to simplify the dialogue between the machine and those operating it.

POWER MAX BOX uses a control system that integrates **climate control** with advanced functions for plant management.

Functions integrated into control:

- Linear or curved climatic adjustment, in combination with the external probe
- Management of the cascade of the modules inside the cabinet
- Managing cascades of boilers with Managing-Depending logic
- Power control for operation at constant ΔT
- DHW production management and direct circuit
- Possibility of system expansion through accessory control additional heating zones (direct / mixed)
- Pumps modulating control (PWM / 0-10 V)
- Remote management via MODBUS
- External power control via 0-10 V input
- Automatic SUMMER / WINTER switching



THE ELECTRONIC ADJUSTMENT IS COMPLEMENTED BY THE BACKLIT DISPLAY, WHICH IS EASY TO USE WITH AN INTUITIVE MENU THAT COMBINES GRAPHICAL ELEMENTS WITH TEXT STRINGS.

It allows system regulation, including heat distribution on the secondary circuit, with climate curves and time bands dedicated to each managed system; the user interface is equipped with 8 keys for menu navigation and for setting operating parameters.

FEATURES OF THE DISPLAY

- > MULTILINGUAL MENU, MULTI-LEVEL TREE
- > PASSWORD PROTECTED USER PROFILE MANAGEMENT
- > LARGE BACKLIT SCREEN, 255X80 PIXELS
- > MANAGEMENT OF WEEKLY TIME SCHEDULES
- > ERROR HISTORY BOILER

ACCESSORIES FOR ALL NEEDS

POWER MAX BOX is completed with a wide range of accessories that can adapt to the needs for any type of plant.

Accessories are specially designed to maximize the flexibility of the system and to achieve the ideal solution for every installation requirement.

All models in the range, in standard configuration for indoor and open chamber installations, with the choice of appropriate, easy-to-install accessory kits, can be converted to either watertight or outdoor configuration.

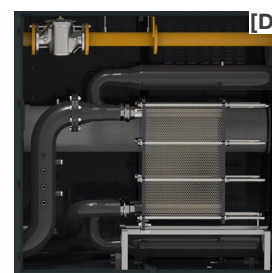
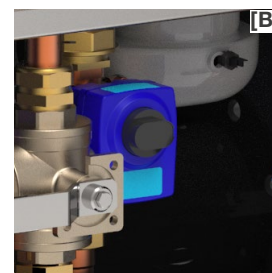
Thanks to specially developed accessory kits, **it is also possible to connect flue, air (if present) and hydraulic manifolds on both sides of the machine.**

The safety kit is also available for all models, which is completed with specific fuel shut-off valves (VIC) and safety valves, both to be selected according to the model.

Also offered is the **possibility of installing either a hydraulic separator or, to protect the boiler in the case of installation on old systems, SP plate heat exchangers**, for which combinations are available depending on the operating conditions on the primary and secondary circuits.

Both components can also be installed in specific technical cabinets.

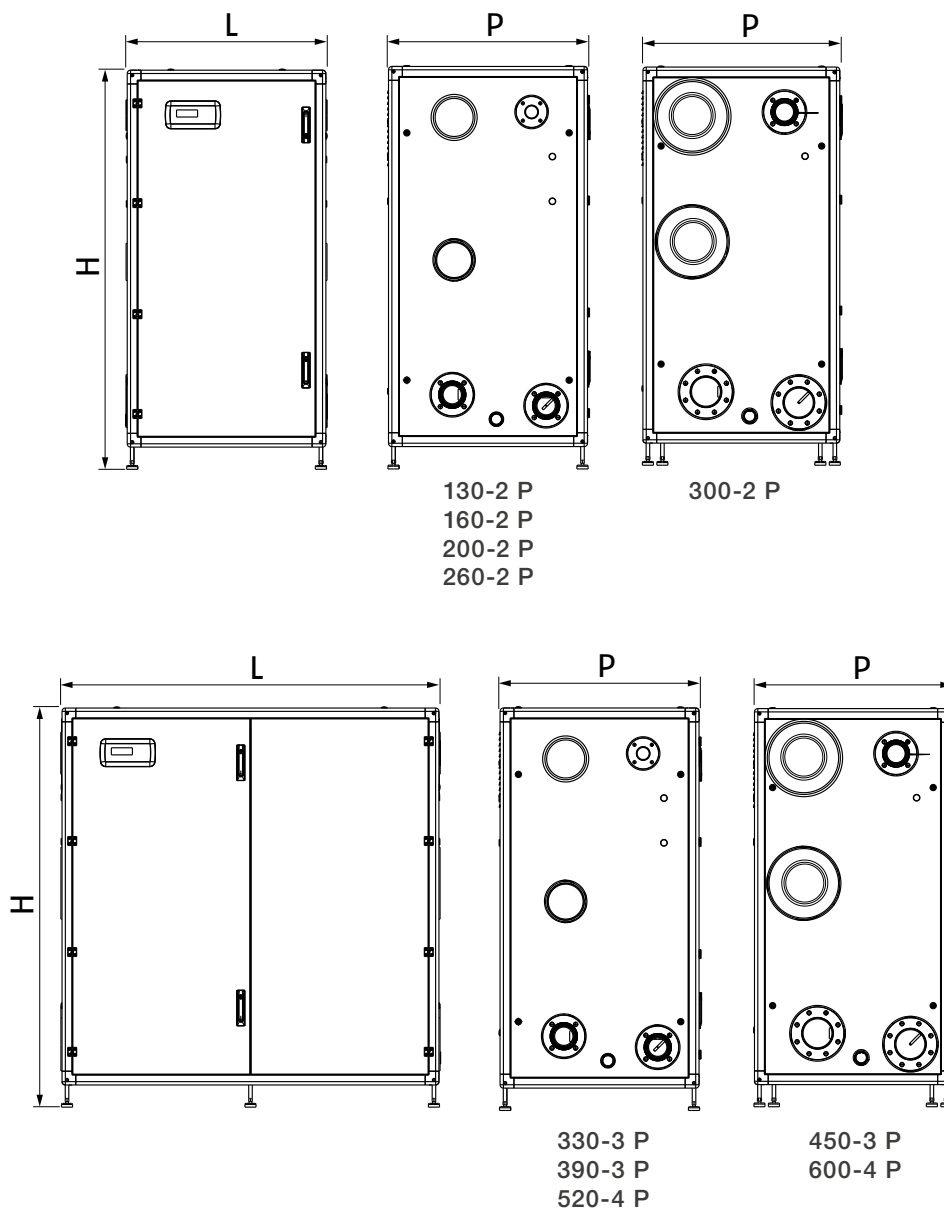
A number of useful accessory kits are also available for maintenance and service functions, such as LED lights inside the cabinet, moving wheels, as well as the support kit for lifting with a crane.



- [A] SAFETY KIT
- [B] FUEL SHUT-OFF VALVE (VIC)
- [C] HYDRAULIC SEPARATOR
- [D] PLATE HEAT EXCHANGER
- [E] DISPLACEMENT WHEELS
- [F] SPECIFIC FLUE GAS COLLECTOR

TECHNICAL DRAWINGS

POWER MAX BOX has small dimensions, facilitating installation and handling operations:



MODEL	UoM	130-2 P	160-2 P	200-2 P	260-2 P	300-2 P	330-3 P	390-3 P	450-3 P	520-4 P	600-4 P
Height	H	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Width	L	900	900	900	900	900	1800	1800	1800	1800	1800
Depth	P	890	890	890	890	890	890	890	890	890	890
Net weight	kg	270	270	280	300	350	450	490	540	560	600

TECHNICAL DATA

MODEL	UoM	130-2 P	160-2 P	200-2 P	260-2 P	300-2 P	330-3 P	390-3 P	450-3 P	520-4 P	600-4 P
Code		20141085	20141086	20141087	20141088	20141089	20141090	20141091	20141092	20141093	20141095
Maximum rated heat input (Hi)	kW	114	136	180	223,2	262	291	334,8	393	446,4	524
	kcal/h	98088	117017	154876	191917	225430	250382	287876	287876	383835	287876
Max Nominal heat output 80-60 °C	kW	111,4	134	176,6	219,6	258	285,9	329,4	387	439,2	516
	kcal/h	95851	115296	151950	188948	221989	245994	283423	332983	377897	443977
Max Nominal heat output 50-30 °C	kW	123,8	147,8	194,8	242,2	284,2	315,3	363,6	426,3	484,4	568,4
	kcal/h	106520	127170	167610	208394	244532	271291	312849	366797	416788	489063
Minimum heat input (Hi)	kW	13,7	13,7	19,4	22,4	26,3	19,4	22,4	26,3	22,4	26,3
	kcal/h	11788	11788	16692	19273	22629	16692	19273	22629	19273	22629
Minimum heat output 80-60 °C	kW	13,5	13,5	19,2	22,1	26,0	19,2	22,1	26,0	22,1	26,0
	kcal/h	11616	11616	16520	19015	22371	16520	19015	22371	19015	22371
Minimum heat output 50-30 °C	kW	14,9	14,9	21,1	24,5	28,9	21,1	24,5	28,9	24,5	28,9
	kcal/h	12820	12820	18155	21080	24866	18155	21080	24866	21080	24866
Useful efficiency at nominal heat output 80-60 °C (Hi)	%	97,72	98,53	98,11	98,40	98,47	98,25	98,40	98,47	98,40	98,47
Combustion efficiency	%	99,0	99,0	99,0	99,3	99,3	99,0	99,3	99,3	99,3	99,3
Useful efficiency at nominal heat output 50-30 °C (Hi)	%	108,6	108,1	108,3	108,6	108,3	108,2	108,6	108,3	108,6	108,3
Useful efficiency at minimum heat output 50-30 °C (Hi)	%	109,3	109,3	109,2	110,0	110,0	109,2	110,0	110,0	110,0	110,0
Useful efficiency 30% 50-30 °C (Hi)	%	109,4	109,3	108,9	108,9	109,4	108,9	108,9	109,4	108,9	109,4
Electrical power consumption with the boiler to max power	W	198,0	264,0	460,0	706,0	964,0	951,0	1059,0	1446,0	1412,0	1928,0
Power supply	V-Hz	230-50/60									
Electrical protection level	IP	X4D									
Maximum working pressure	bar	6									
Maximum working temperature	°C	100									
Mass flue gas flow rate at power max-min (G20)	g/s	53/6	6/6	84/9	104/10	122/12	136/9	156/10	183/12	208/10	245/12
NOx		Classe 6									



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