

XC-K oil

LARGE WATER CONTENT, STAINLESS STEEL, CONDENSING BOILER, 100 TO 1550 kW

- 12 MODELS FROM 100 to 1550 kW
- PRESSURIZED, for OIL and GAS
- FUEL LARGE WATER CONTENT
- TWO RETURN CONNECTIONS (high and low temperature)
- POSSIBILITY OF CASCADE OPERATION UP TO 8 x XC-K
- EFFICIENCY UP TO 109%
- SPECIAL MULTI-SECTION SMOKE PIPES IN STAINLESS STEEL AISI 316 L,



We have expanded the range of condensing boilers and now introduce the XC-K range.

The large water content condensing boiler, in stainless steel, for modulating pressure jet burners.

XC-K finds application in all those cases in which, for installation reasons, it is necessary to use a large water content condensing boiler.

The construction fully complies with the requirements stated in EN 303: Pt. 1. The components of the pressure vessel parts, such as steel plates and pipes, in contact with the smokes, are in stainless steel AISI 316 L and all the other pressure vessel parts are manufactured in certified carbon steel, according to the Tables EURONORM 25 and EURONORM 28.

The welders and welding procedures are approved by authorized Notified Bodies.

The upper part of the outer vessel is equipped with lifting hooks.

PRESSURIZED CONDENSING BOILER

RANGE	From 100 to 1550 kW
OPERATION TEMPERATURE	without any limitation on the return
TO BE OPERATED	OIL and GAS
MODELS	100 - 150 - 230 - 300 - 350 - 400 - 500 - 650 - 850 - 1000 - 1300 - 1550

XC-K, strong points



■ VERY HIGH QUALITY OF THE EMPLOYED METALS

Outer shell in high resistance carbon steel: smoke chamber in stainless steel AISI 316L

■ ESASECTIONAL SMOKE PIPES

With very high thermal exchange, stainless steel special pipes, armoured on the outside, with inside multi-section stainless steel tabulators

SELF-CLEANING OF THE TUBE BUNDLE

- thanks to the natural washout that the condensate produces for gravity

ELECTRONIC PANEL BOARD

■ MASTERMODUL (optional)

Certified and equipped with:

- Expandable electronic controller E8
- Burner manager with modulating operation

Prearrangement for cascade operation

■ with CASCATAMODUL panel board (optional)

Up to 8 off XC-K, managed by E8

LEAST THERMAL LOSSES

- XC-K is insulated with a layer of 100 mm of thermal and acoustic mineral wool insulation material. Carbon steel door with thermal insulation in light cement

MAXIMIZATION OF THE THERMAL

■ EXCHANGE

Outer shell with reversed flame structure: in the blind cylindrical furnace the first two passes of the combustion gases are completed; subsequently they take the particular tube bundle used for the third pass.

VERY HIGH SAVING AND SEASONAL

■ EFFICIENCY

Thanks to the adoption of fan assisted modulating burners and to the hydraulic connection prearranged for two return connections (high / low temperature)

CERTIFIED EFFICIENCY 109%

- at 30% part load

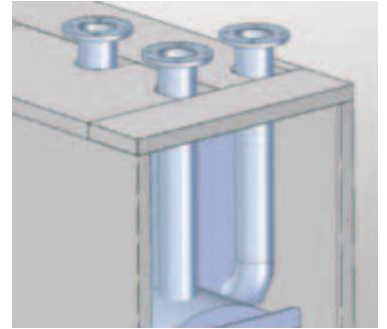
SIMPLIFIED INSTALLATION

- • Single smoke evacuation
- No hydraulic interface between boiler and C.H. system

WIDE RANGE OF REGULATION

■ ACCESSORIES

- Zones expansion via E8.1124 controller
- Temperature sensor for mixed zone flow connection
- Sensor PT 1000 for management of solar panels with E8
- Condensate neutralizers



Tuning between technology and environment

The XC-K range is constituted by a strong outer vessel, inside which it is present, in the upper part, a blind cylindrical furnace, in which the central burner flame reverses peripherally toward the front.

From here, the combustion gases are carried, through the special workmanship of the door insulation, in the pipes of the third pass, to reach the rear smoke chamber, where the drain of the condensates takes also place, for going then to the chimney.

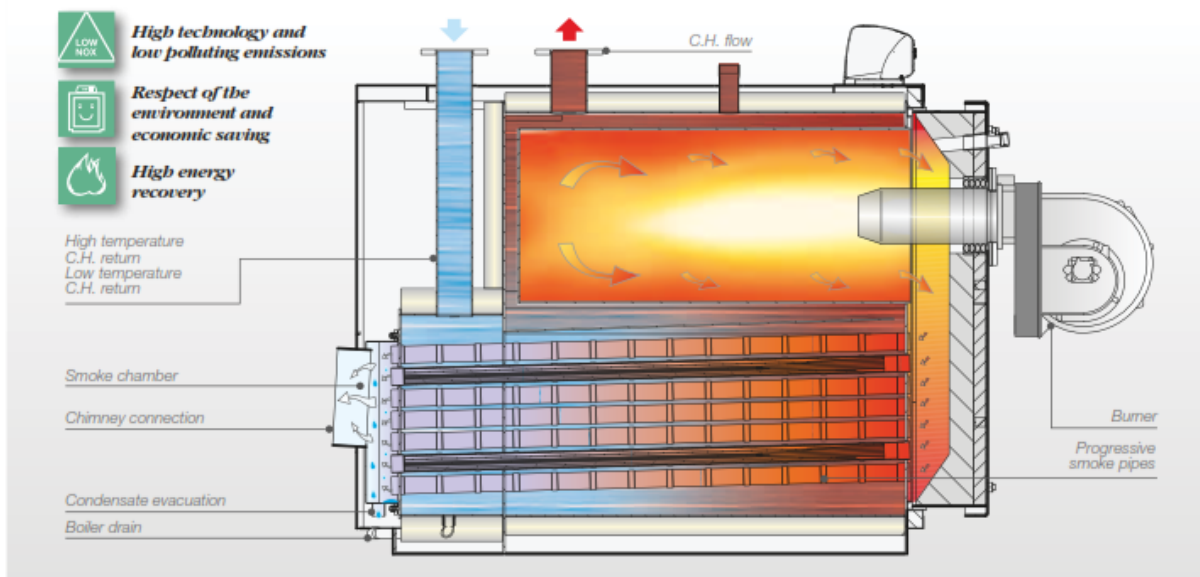
The tube bundle, horizontally placed in the lower part of the body, is composed of **stainless steel pipes in AISI 316 L and special multi-fin inserts in Al/Si/Mg alloy**, particularly effective in

the transfer of the heat to the water, favouring the condensation of the smokes.

The **tube bundle is slightly tilted** toward the smoke chamber for: natural outflow of the condensates, absence of wet acidic deposits and cleaning, for gravity, of the exchange surfaces.

The driven run of the combustion gases allows to exploit at the most the thermal exchange surfaces and to, uniformly, balance the stresses on the materials, both thermal that mechanical.

The **two connections of high/low return temperature** exploit an original position to reduce its hydraulic interferences, exalting the efficiency.



SPECIAL SMOKE PIPES

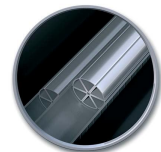
SMOKE PIPES:

- Exceptional thermal exchange
- Functional outflow of the condensate
- Absence of wet acidic deposits

- Washout, for gravity, of the smooth exchange surfaces
- Greater duration



Multi-Section
Stainless Steel
Turbulators



External pip
in stainless
steel AISI 316L

Power and flexibility of use



Electronic panel board MASTERMODUL

- The electronic panel board **MASTERMODUL** (Part N. 37892), endowed with **E8 controller and manager of the burner with modulating operation**, resolves brightly the more and more complex demands of the users. The temperature sensors (boiler sensor, outer sensor, flow sensor and D.H.W. storage tank sensor) standard supplied manage automatically the central heating installation.
- The availability of the hourly and weekly programmer and the presetting of programs already planned, widens and facilitates the customization operations.

In this way the burner modulation capacity and the boiler condensation capacity, are **fully exploited for the maximum energetic saving!**

In case of cascade installations, for the second and subsequent boilers, the electronic panel board **CASCATAMODUL** (Part N. 37900) shall be used. Thanks to this and to a simple "Bus" cable, the XC-K boilers will operate in completely automatic way, alternating them self or working together for the satisfaction of the exact heat request of the C.H. installation.

System optimization



Boiler heating Optimization

The heating controller, on the basis of the timer/ heating programme set by the user, once the system's characteristics have been evaluated, will activate the function for automatically bringing forward the heating ignition time so as to ensure that the set temperature is reached at the time requested by the user.



Fast set temperature

This is obtained by calculating the optimum ignition start-up time. This calculation can be carried out taking into consideration the outdoor temperature or the room temperature.



Overheating protection

The boiler's safety temperature is controlled via the pump's overrun time in order to get rid of any thermal inertia.



Self-adaption

Through the elaboration of data transmitted by the room sensor, this function adjusts the boiler's output to the building's characteristics, ensuring a constant monitoring of the indoor temperature on the basis of the variation of the outdoor temperature, keeping in consideration the building's thermal inertia and the contribution of "free" heat (solar radiation, internal heat sources etc).



Slope offset (heating slope distance)

The boiler temperature that is required for a mixed circuit is calculated by adding to the calculated temperature setting for the heating circuit temperature the heating slope distance. The heating slope distance compensates for sensor tolerances and heat loss up to the mixer.



Valve opening time

Based on the characteristics of the servomotor.



Number of burner ignitions

It stabilizes the number of ignitions of each burner.



Burner run hours

It stabilizes the run hours of each burner.



Frost protection mode

The frost protection operation mode prevents the CH system from freezing by automatically switching heating operation on. In the frost protection mode, the room temperature for all the heating circuits is set to 5°C and the storage tank sensor frost protection is activated when the temperature drops below 10°C.



DHW control



Domestic hot water production

There are many programmes which control the domestic hot water production. You can choose from the maximum of comfort to the maximum fuel saving. In order to permit the storage cylinder to supply hot water rapidly, the heating controller brings the boiler's temperature to the maximum set value.



Antilegion

Every 20th heating start-up or once a week on Saturday at 01:00 hrs, the storage tank is heated up to 60°C. This function will eliminate any eventual pathogens which have formed in the DHW.



DHW optimization (loading pump)

The DHW loading pump is switched on only if the boiler temperature exceeds by 5°C the storage tank temperature. It is deactivated when the boiler temperature drops below the storage tank temperature or if the storage tank temperature is higher than the nominal temperature.

Setting



Programme setting

The heating programmes can be set daily or weekly, with more than one On-Off firing times or temperature reductions during the arch of the day.



Multiple zone control

With the same heating control device you can control 2 independent circuits with different characteristics, though having ensured all the described functions, including the deep sliding temperature function.



Management of up to 15 mixed circuits

controlled by the outdoor sensor



0-10 volt signal

the great flexibility of the E8 also permits the MODULEX EXT set point to be controlled by an external control signal. This will enable, having at disposal an even more complex system, to exploit all the heating control's functions..

Energy sources control



Integration with renewable energy sources

As for example: solar systems and/ or solid fuel fired boilers.

PANELS BOARD for XC-K

MASTERMODUL panel board MASTERTWOSTAGE panel board



The panel boards MASTERMODUL and MASTERTWOSTAGE are equipped with:

- E8 controller
- LAGO controller for burner operation
- Outer temperature sensor
- Boiler temperature sensor
- D.H.W. tank temperature sensor
- Flow temperature sensor
- Primary circuit temperature sensor

CASCATAMODUL panel board CASCATATWOSTAGE panel board



The panel boards CASCATAMODUL and CASCATATWOSTAGE are equipped with:

- LAGO controller for burner operation
- Primary circuit temperature sensor

For boiler XC-K in combination with MODULATING BURNERS

SINGLE
BOILER

1 PANEL MASTERMODUL



2 BOILERS
XC-K
IN CASCADE

1 PANEL MASTERMODUL



1 PANEL CASCATAMODUL



(n) BOILERS
XC-K
IN CASCADE
(max 8 boilers)

1 PANEL MASTERMODUL



(n-1) PANEL CASCATAMODUL



For boiler XC-K in combination with TWO STAGE BURNERS

SINGLE
BOILER

1 PANEL MASTERTWOSTAGE



2 BOILERS
XC-K
IN CASCADE

1 PANEL MASTERTWOSTAGE



1 PANEL CASCATATWOSTAGE



(n) BOILERS
XC-K
IN CASCADE
(max 8 boilers)

1 PANEL MASTERTWOSTAGE

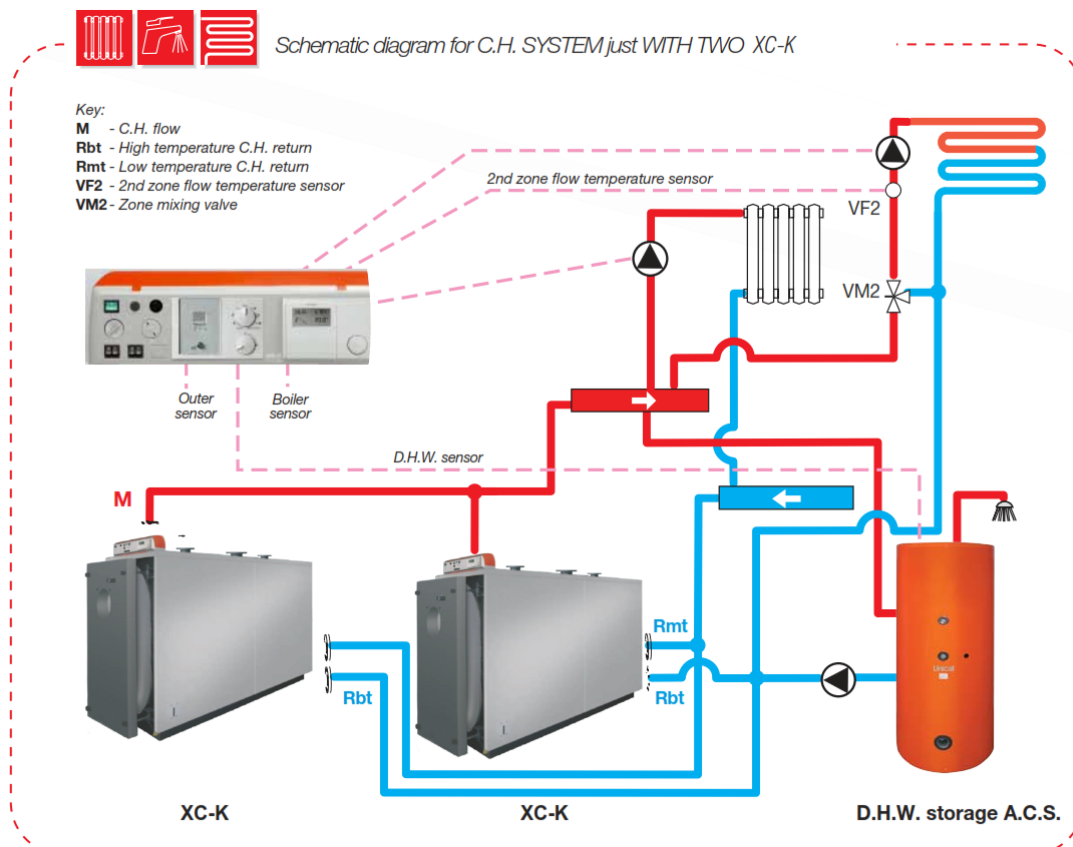


(n-1) PANEL CASCATATWOSTAGE



Note: available on request

PANEL MASTERMODUL AT HIGH TEMPERATURE - PANNEL MASTERTWOSTAGE AT HIGH TEMPERATURE



Technical data

OIL Fuel												
XC-K oil	100	150	230	300	350	400	500	650	850	1000	1300	1550
Nominal heat output (80°-60°C) [kW]:	85	133	199	275	322	379	475	617	778	948	1233	1470
Nominal heat output (50-30°C) [kW]:	90	140	210	290	340	400	500	650	820	1000	1300	1550
Nominal heat input [kW]:	88	137	206	284	333	392	491	637	804	980	1275	1520
Heat efficiency at nominal load 80°C-60°C [%]:	96,7	96,7	96,7	96,7	96,7	96,7	96,7	96,7	96,7	96,7	96,7	96,7
Heat efficiency at nominal load 50°C-30°C [%]:	102,0	102,0	102,0	102,0	102,0	102,0	102,0	102,0	102,0	102,0	102,0	102,0
Heat efficiency at 30% load 30% : (return 30°C)	104,0	104,0	104,0	104,0	104,0	104,0	104,0	104,0	104,0	104,0	104,0	104,0
Flue gas temperature tf-ta 80°C-60 [°C]:	60,0	60,0	60,0	60,0	60,0	60,0	60,0	60,0	60,0	60,0	60,0	60,0
Flue gas temperature tf-ta 50°C-30°C [°C]:	32,0	32,0	32,0	32,0	32,0	32,0	32,0	32,0	32,0	32,0	32,0	32,0
CO2 content [%]:	12,7	12,7	12,7	12,7	12,7	12,7	12,7	12,7	12,7	12,7	12,7	12,7
Flue gas mass flow rate [kg/h]	136,2	211,8	317,7	438,7	514,3	605,1	757,1	983,3	1240,5	1512,8	1966,6	2344,8
Combustion efficiency 80°C-60°C [%]:	97,2	97,2	97,2	97,2	97,2	97,2	97,2	97,2	97,2	97,2	97,2	97,2
Combustion efficiency 50°C-30°C [%]:	98,5	98,5	98,5	98,5	98,5	98,5	98,5	98,5	98,5	98,5	98,5	98,5
Heat loss at shell 80°C-60°C [%]:	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5
Heat loss at shell 50°C-30°C [%]:	0,4	0,4	0,4	0,4	0,4	0,4	0,4	0,4	0,4	0,4	0,4	0,4
Heat loss at chimney with burner on 80°C-60°C [%]:	2,8	2,8	2,8	2,8	2,8	2,8	2,8	2,8	2,8	2,8	2,8	2,8
Heat loss at chimney with burner on 50°C-30°C [%]:	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5
Heat loss at chimney with burner off [%]:	0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,05
Maximum condensation L/H	5,5	8,6	12,8	17,7	20,8	24,4	30,6	39,7	50,1	61,1	79,5	94,7
Max Pressure drop for boiler as normative mm.c.a.	8,3	15,7	25,4	33,1	36,9	40,7	47,4	55,7	63,0	69,3	77,6	83,2
Pressure drop flue side mm.c.a.	5,8	11,0	13,0	24,8	29,5	36,7	42,7	50,1	56,7	62,4	69,9	74,9
Pressure drop water side (H2O dt 15 kPa)	1,5	3,8	2,5	3,2	2,0	2,9	3,0	3,7	3,5	4,0	3,9	5,5

Directive 2009/15 / EC Technical Data

OIL Fuel Data		XC-K	oil 100	oil 150	oil 230	oil 300	oil 350	oil 400	oil 500
Description	Symbol	Unit							
Nominal Heat Output	Pnominale	kW	85	133	199	275	322	379	
Seasonal space heating energy efficiency	ηs	%	93	93	93	93	93	93	
Seasonal efficiency class in heating mode			A	A	A	A	A	A	*
For CH only and combination boilers: useful heat output									
Useful Heat Output in high- temperature regime (Tr 60 °C / Tm 80 °C)	P4	kW	85,1	132,2	199,2	274,6	322,0	379,1	
Useful efficiency at nom. heat output in high-temperature regime (Tr 60 °C / Tm 80 °C)	η4	%	90,3	90,3	90,3	90,3	90,3	90,3	
Useful heat output at 30% of nom. heat output in low-temperature regime (Tr 30 °C)	P1	kW	27,46	42,7	64,3	88,6	103,9	122,3	
Useful efficiency at 30% of nom. Heat output in low-temperature regime (Tr 30 °C)	η1	%	97,1	97,1	97,1	97,1	97,1	97,1	
Range-rated boiler: YES / NO			NO	NO	NO	NO	NO	NO	
Auxiliary electricity consumption									
At full load	elmax	kW	0,390	0,470	0,600	0,600	0,600	1,400	
At part load	elmin	kW	0	0	0	0	0	0	
In stand-by mode	PSB	kW	0,050	0,050	0,050	0,050	0,050	0,050	
Other items									
Stand-by heat loss	Pstb	kW	0,0440	0,0690	0,1030	0,1420	0,1670	0,1960	
Emissions of nitrogen oxides	NOx	Mg/kWh	57	55	55	55	55	55	
For CH & DHW production boilers									
Declared load profile			-	-	-	-	-	-	
Energy efficiency in DHW production mode	ηwh	%	-	-	-	-	-	-	
Daily electricity consumption	Qelec	kWh	-	-	-	-	-	-	
Daily fuel consumption	Qfuel	kWh	-	-	-	-	-	-	
Inside sound power level	Lwa	dB (A)	-	-	-	-	-	-	
Seasonal efficiency class in DHW production mode			-	-	-	-	-	-	

* Appliances not covered by Directive 2009/15 / EC

Technical data

Gas Fuel												
XC-K oil gas	100	150	230	300	350	400	500	650	850	1000	1300	1550
Nominal heat output (80°-60°C) [kW]:	85	133	199	275	322	379	474	616	777	947	1231	1468
Nominal heat output (50-30°C) [kW]:	94	147	220	304	357	420	525	682	860	1049	1364	1626
Nominal heat input [kW]:	88	137	206	284	333	392	491	637	804	980	1275	1520
Heat efficiency at nominal load 80°C- 60°C [%]:	96,6	96,6	96,6	96,6	96,6	96,6	96,6	96,6	96,6	96,6	96,6	96,6
Heat efficiency at nominal load 50°C-30°C [%]:	107,0	107,0	107,0	107,0	107,0	107,0	107,0	107,0	107,0	107,0	107,0	107,0
Heat efficiency at 30% load 30% : (return 30°C)	109,0	109,0	109,0	109,0	109,0	109,0	109,0	109,0	109,0	109,0	109,0	109,0
Flue gas temperature tf-ta 80°C-60 [°C]:	59,0	59,0	59,0	59,0	59,0	59,0	59,0	59,0	59,0	59,0	59,0	59,0
Flue gas temperature tf-ta 50°C-30°C [°C]:	28,0	28,0	28,0	28,0	28,0	28,0	28,0	28,0	28,0	28,0	28,0	28,0
CO2 content [%]:	9,8	9,8	9,8	9,8	9,8	9,8	9,8	9,8	9,8	9,8	9,8	9,8
Flue gas mass flow rate [kg/h]	132,6	206,3	309,5	427,4	501,0	589,5	737,5	957,9	1208,4	1473,7	1915,8	2284,2
Combustion efficiency 80°C-60°C [%]:	97,1	97,1	97,1	97,1	97,1	97,1	97,1	97,1	97,1	97,1	97,1	97,1
Combustion efficiency 50°C-30°C [%]:	98,6	98,6	98,6	98,6	98,6	98,6	98,6	98,6	98,6	98,6	98,6	98,6
Heat loss at shell 80°C-60°C [%]:	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5
Heat loss at shell 50°C-30°C [%]:	0,4	0,4	0,4	0,4	0,4	0,4	0,4	0,4	0,4	0,4	0,4	0,4
Heat loss at chimney with burner on 80°C-60°C [%]:	2,9	2,9	2,9	2,9	2,9	2,9	2,9	2,9	2,9	2,9	2,9	2,9
Heat loss at chimney with burner on 50°C-30°C [%]:	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,4	1,4
Heat loss at chimney with burner off [%]:	0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,05
Maximum condensation L/H	14,9	23,2	34,8	48,1	56,4	66,3	83,0	107,8	136,0	165,9	215,6	257,1
Max Pressure drop for boiler as normative mm.c.a.	8,3	14,8	23,1	29,7	33,0	36,3	40,9	50,7	60,4	68,7	79,7	87,1
Pressure drop flue side mm.c.a.	5,8	11,0	13,0	24,8	29,5	36,7	42,7	50,1	56,7	62,4	69,9	74,9
Pressure drop water side(H2O dt 15 kPa	1,5	3,8	2,5	3,2	2,0	2,9	3,0	3,7	3,5	4,0	3,9	5,5

Directive 2009/15 / EC Technical Data

GAS Fuel data		XC-K	oil 100	oil 150	oil 230	oil 300	oil 350	oil 400	oil 500
Description	Symbol	Unit							
Nominal Heat Output	P _{nom}	kW	85	133	199	275	322	379	
Seasonal space heating energy efficiency	η _s	%	94	94	94	94	94	94	
Seasonal efficiency class in heating mode			A	A	A	A	A	A	*
For CH only and combination boilers: useful heat output									
Useful Heat Output in high- temperature regime (Tr 60 °C / Tm 80 °C)	P ₄	kW	85,3	132,6	198,9	274,7	322,1	378,9	
Useful efficiency at nom. heat output in high-temperature regime (Tr 60 °C / Tm 80 °C)	η ₄	%	87,0	87,0	87,0	87,0	87,0	87,0	
Useful heat output at 30% of nom. heat output in low-temperature regime (Tr 30 °C)	P ₁	kW	28,9	44,88	67,3	93,0	109,0	128,2	
Useful efficiency at 30% of nom. heat output in low-temperature regime (Tr 30 °C)	η ₁	%	98,2	98,2	98,2	98,2	98,2	98,2	
Range-rated boiler: YES / NO			NO	NO	NO	NO	NO	NO	
Auxiliary electricity consumption									
At full load	e _{lmax}	kW	0,350	0,350	0,530	0,600	0,600	0,700	
At part load	e _{lmin}	kW	0	0	0	0	0	0	
In stand-by mode	PSB	kW	0,050	0,050	0,050	0,050	0,050	0,050	
Other items									
Stand-by heat loss	P _{stb}	kW	0,0440	0,0690	0,1030	0,1420	0,1670	0,1960	
Emissions of nitrogen oxides	NO _x	Mg/kWh	57	55	55	55	55	55	
For CH & DHW production boilers									
Declared load profile			-	-	-	-	-	-	
Energy efficiency in DHW production mode	η _{wh}	%	-	-	-	-	-	-	
Daily electricity consumption	Q _{elec}	kWh	-	-	-	-	-	-	
Daily fuel consumption	Q _{fuel}	kWh	-	-	-	-	-	-	
Inside sound power level	L _{wa}	dB (A)	-	-	-	-	-	-	
Seasonal efficiency class in DHW production			-	-	-	-	-	-	

* Appliances not covered by Directive 2009/15 / EC