



CONDENSATION MODULAR BOILER



baltur
Energy for People



Modularity,
for a class A
comfort.



THE ADVANTAGES OF MODULARITY

Can modular boilers be a valid alternative to the traditional heating plants? In fact **a modular boiler is, for all purposes, a compact heating plant** pre-assembled, compliant with regulations, ready to be installed in a very short time, in outdoor spaces partially covered or in basements.

In centralized systems, boiler power is calculated as maximum requirement on the relatively few coldest days, therefore oversizing the generator for most of the season. A fortiori if the boiler is also used to produce domestic hot water, i.e. if it is kept running even when heating is not enabled.

Modularity allows to fraction power according to the system requirements and to always provide the amount of power strictly required, whether in heating or domestic hot water production, with modulation ratios unimaginable in traditional systems.

The result? **A four star heating plant (NOx class 6) with maximum average seasonal efficiency and quasi non-existent polluting emissions.**





Smile Energy MK, the new generation heat.



ENERGY SAVING THANKS TO THE MODULATION RATIO 1:10

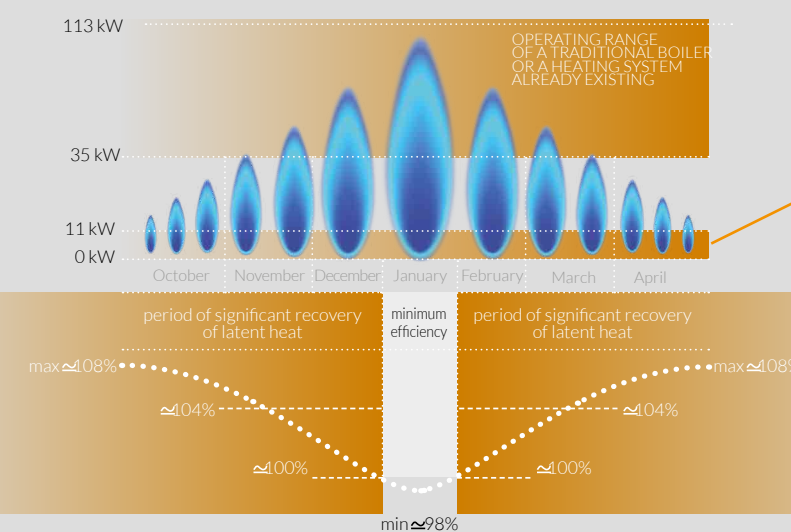
Performance increasing in building structures recently constructed or undergone to energy retrofitting led to a significant reduction in thermal power required to the boiler.

At the same time, consumptions can also be reduced in the older generation buildings, if the boiler is able to manage power output in an accurate way.

Boilers have to contribute to energy saving, increase comfort and reduce polluting emissions into the atmosphere, in every application in which their use is required.

Baltur's Smile Energy MK range introduces a new generation of boilers able to modulate the power available, eliminating energy waste due to sudden activations and deactivations, saving fuel and reducing environmental impact.

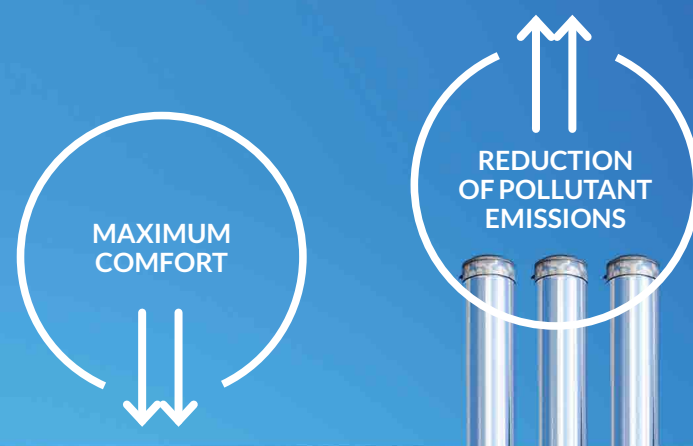
EXAMPLE OF AVERAGE SEASONAL EFFICIENCY OF SMILE ENERGY MK,
APPLIED TO A TRADITIONAL 113 KW
HEATING SYSTEM



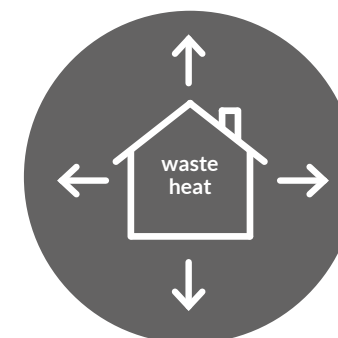
OPERATING RANGE
SMILE ENERGY MK



The efficiency of condensation boilers.

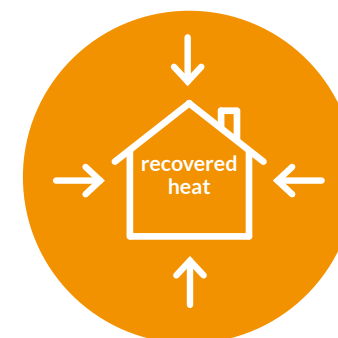


TRADITIONAL BOILER



Efficiency
85%

CONDENSATION BOILER



Efficiency
106%

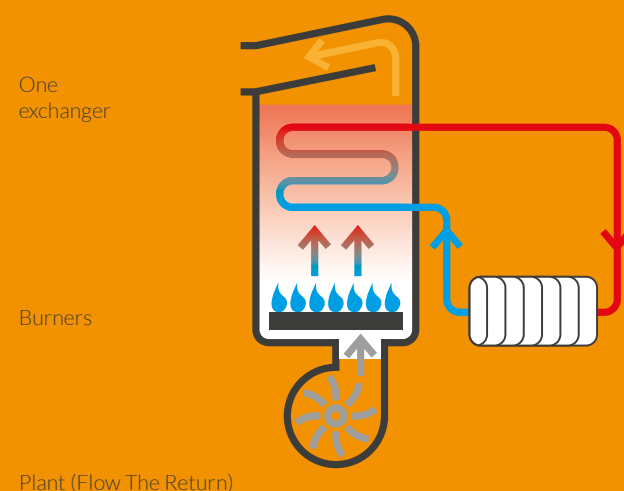
A NEW TECHNOLOGY: MORE POWERFUL, CHEAPER, CLEANER.

Heat generated by the combustion allows to recover the amount of heat contained in the discharge fumes through their cooling. During this procedure, water vapour contained in such fumes "condensates" and releases the heat it retained. This process significantly increases the equipment efficiency. Condensation gas boilers, that take their name from fume discharge process, allow - during their operation - to significantly save primary energy with respect to

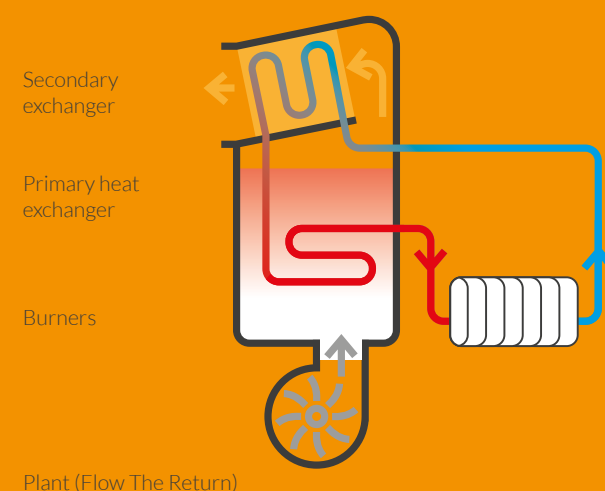
traditional gas boilers. Condensation boilers can be installed in any existing heating system. Low temperature systems (floor panels or ceiling radiation) are particularly advantageous; radiator systems allow to obtain excellent results as well. Those savings are obtained thanks to the transformation of water vapour generated by combustion process.



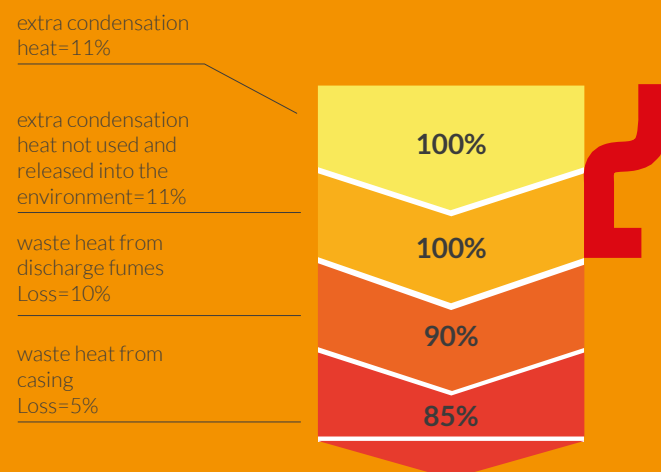
TRADITIONAL BOILER



CONDENSATION BOILER

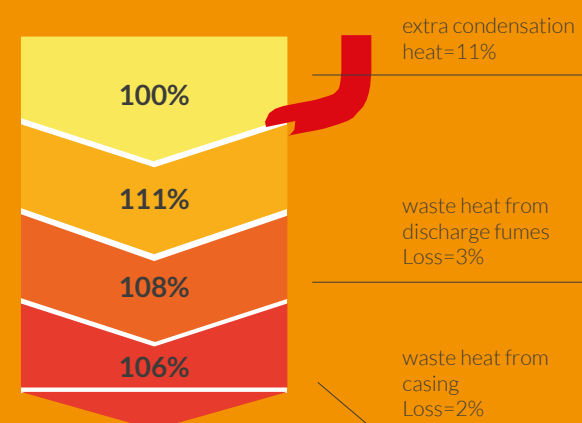


DELIVERED ENERGY



EFFICIENCY
TRADITIONAL BOILER
85%

DELIVERED ENERGY



EFFICIENCY
CONDENSATION BOILER
106%

CONDENSATION BOILER, WATCHWORD: RECOVER HEAT.

A condensation boiler, unlike a traditional boiler, can recover most of the heat contained in the fumes discharged through the chimney.

The special condensation technology allows to cool fumes below the dew point, with a considerable heat recovery, in order to pre-heat water returned from the system.

In this way the temperature of outgoing fumes (up to 40°C) tends to have the same value as water return temperature of the system.

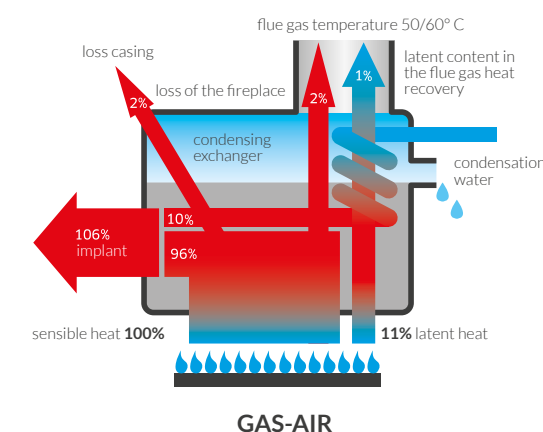
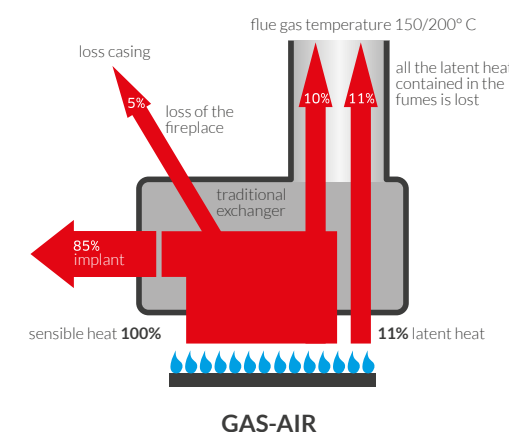
Condensation boilers use plastic drain pipes: this element allows to understand the intense use of the heat that would otherwise be lost.

Condensation boilers allow to obtain high savings and reduced consumption, thus reaching a high system efficiency. They offer the best performance when used with

systems working at low temperature (30-50°C), such as systems with floor or ceiling radiating panels.

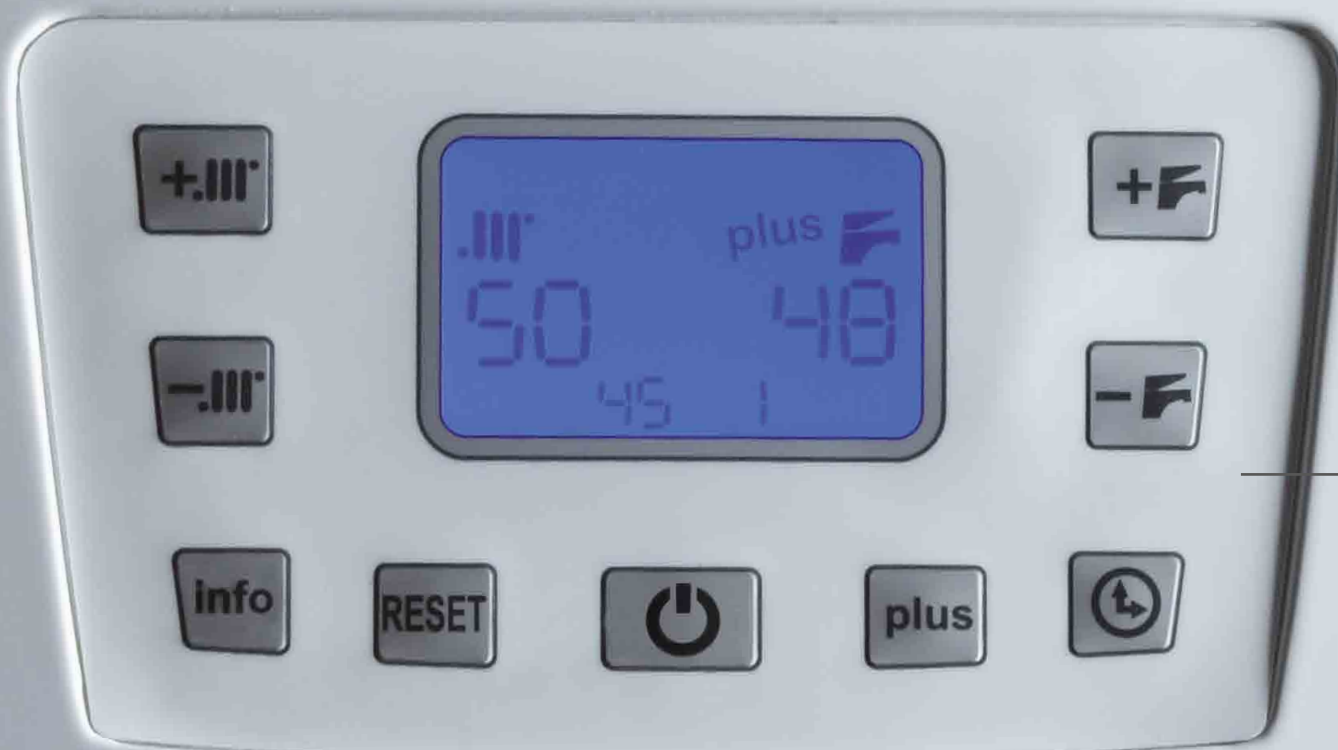
Condensation technology was born in the early 1960s and, in 1990s, BALTUR was one of the first Italian companies to produce and offer condensation wall-mounted boilers.

Thanks to the proven experience gained in this field, we have realised the Smile Energy MK series, made up of a range of condensation wall-mounted boilers with high power and high performance.





All the benefits of Smile Energy MK.



A COMPACT HEATING PLANT, STAND-ALONE OR MODULES

Smile Energy MK is the most flexible and efficient boiler for heating plant on the market.

Perfect for mixed systems (high / low temperature), integrated in hybrid systems (combined with a PdC) or with thermal solar systems.

Modular development

(max 6 or 8 modules according to the selected boiler models) allows to realize a heating plant in small areas, increasing the building value for new constructions and making the offer competitive for existing plant retrofitting.

In a small area we can compose a generator sized for the maximum power of the system that, thanks to its technology, allows to:

- increase comfort and reduce energy consumption thanks to a high modulation ratio (up to 1:10 per every single module)
- supply simultaneously the heating system and a possible remote DHW heater
- fully eliminate energy losses that occur in a traditional generator with burner off
- continued system operation also during maintenance

- have maximum acoustic comfort
- have an INAIL-approved system

Simple management

Each boiler is provided with advanced electronics, with many functions to optimize combustion and performance, but also for control and integration in heating systems.

Thanks to functions available with accessories, it is possible to:

- manage solar heating integration;
- manage heat distribution through the control of mixed zones;
- enable power control through a 0-10 V signal.

Thanks to the simplified user interface, it is possible to change the main user settings (only for single boiler installation) in a simple and intuitive way.

For example, press the button near the function to be changed to adjust the heating temperature (DHW only if it is combined with a remote storage): simply press +/- button to increase or decrease the desired value.

Just press INFO button to check the boiler status at any time.



Heating temperature adjustment



On/off button

info

Button to check operation data

RESET

Reset for boiler restart



Temperature setting of Domestic Hot Water temperature



Timer to reduce consumption for temperature preservation of Domestic Hot Water

plus

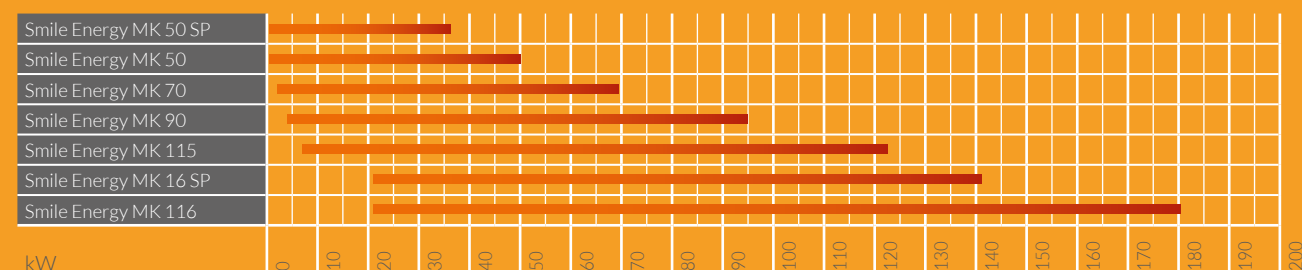
"Immediate heat" Plus button



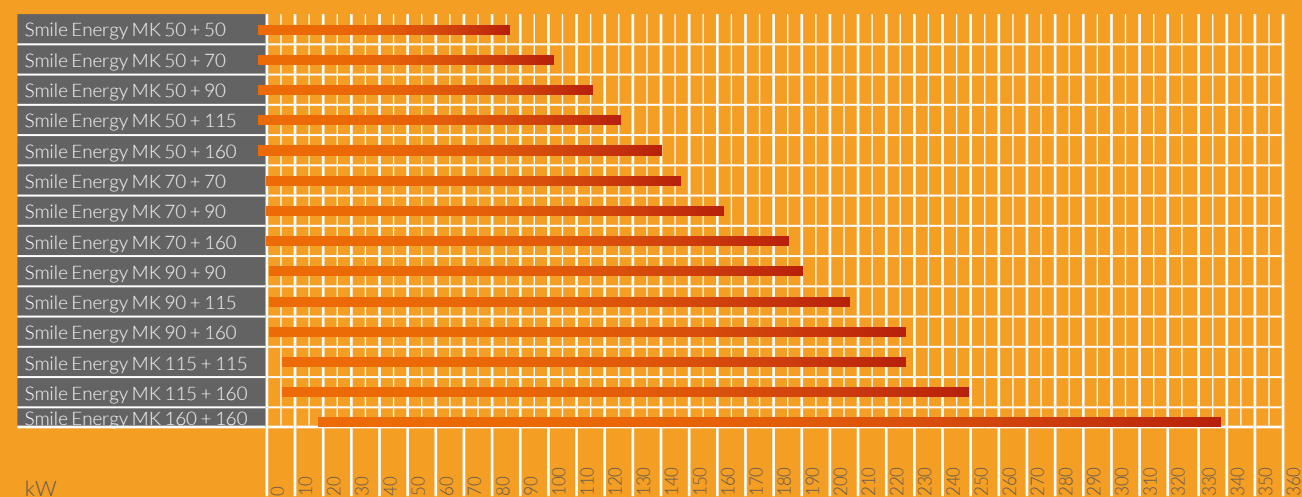
Smile Energy MK range

Today the heart of the new Smile Energy MK expresses the most important evolution of thermal-hydraulic technology and combustion realized with pre-mixed system. Module combination allows to reach high system powers with an optimal cascade management. (Up to a maximum of 8 Modules for 920 kW or 6 Modules of 160 kW for 952 kW)

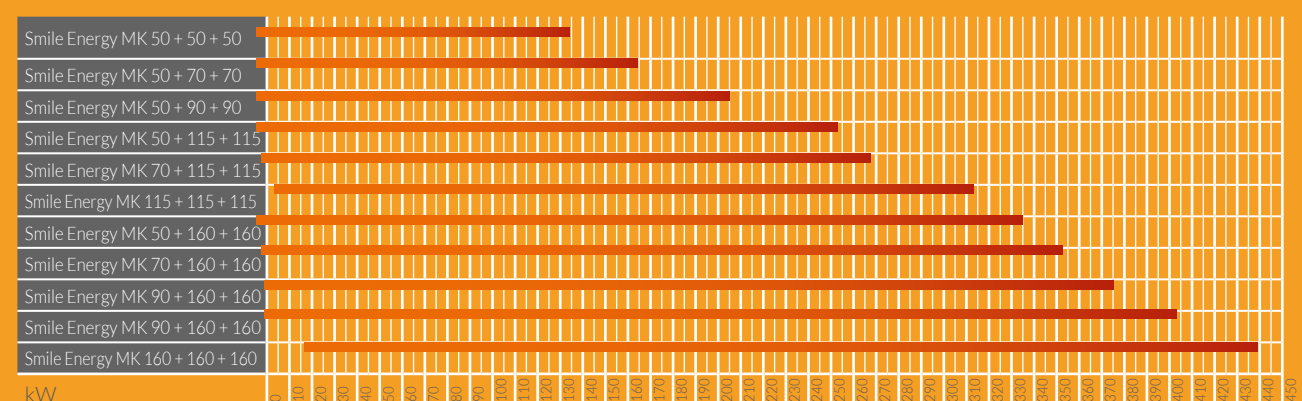
SINGLE BOILER



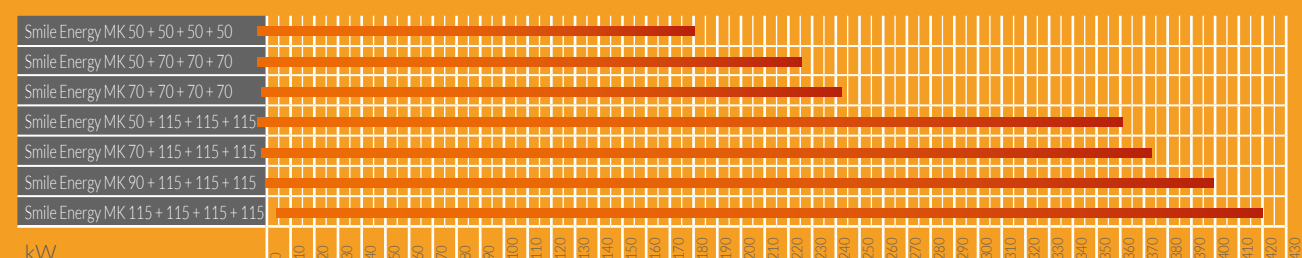
TWO MODULE BOILER



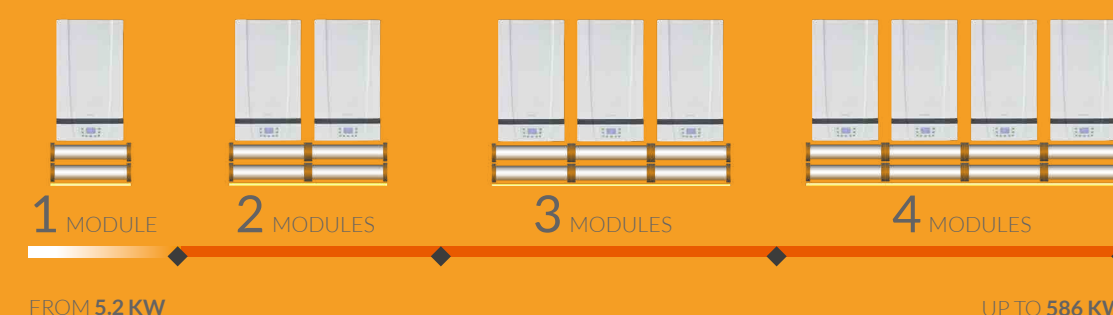
THREE MODULE BOILER



FOUR MODULE BOILER



A MODULE FOR EVERY NEED





TECHNICAL DATA

Condensation thermal unit for heating with electrical wire for connection of a remote boiler. RANGE RATED certificate. Type C thermal unit (hermetically sealed condensation heat generator).

- Stainless steel boiler body.
- Electrical protection IPX5D: can be installed indoor and outdoor in a partially protected place.
- Forced air burner with total premixing with NOx emissions in class 6.
- Reduction of activations and deactivations, thanks to a flame modulation from 10% to 100% of maximum power (from 15% to 100% MK 160 SP-160 - 50SP).
- Scrolling temperature operation (with optional added climate probe).
- Single electronic board with control microprocessor and backlit LCD display.
- NTC sensors for delivery and return temperature detection.
- High head electronic modulation circulation pump (ErP).
- Anti-freeze, cut-out prevention with post-circulation functions.
- Chimneysweeper and anti-legionella functions.
- Complete diagnostics of functions, signalling shut-downs.
- Preset for module operation and INAIL safety system.
- Hydraulic safety valve with CE/TUV approval on board the boiler.
- Preset for optional three-way by-pass valve, for Heating/Hot Water switching, with probe for remote heater temperature

control, MK 50 and MK 70 versions only (preset for circulating pump control on system side and DHW side, for the whole range).

- Heater preparation hourly programming.
- Siphon for draining condensation.
- Connections for air intake and fume discharge ducts with combustion control ports as standard.
- Mixed zone management with additional board (optional) (3-point control) and/or solar system control.
- Control preset (0-10 Volt).
- Acoustic pressure level (60 dB).



FUNCTIONAL CHARACTERISTICS

Operating mode OFF - STAND-BY

- Heating circuit anti-freeze .
- Hot water circuit anti-freeze (only for models with remote heater).
- Pump anti shut-down.

SUMMER operating mode

- Operation request in DHW phase (only for models with remote heater).
- Anti-legionella function.
- Heating circuit anti-freeze.
- Hot water circuit anti-freeze (only for models with remote heater).
- Electric by-pass valve (if any) anti shut-down.
- Pump anti shut-down.

Heating-only OPERATING MODE

- Operation request in Heating phase
- Heating circuit anti-freeze.
- Hot water circuit anti-freeze (only for models with remote heater).
- Electric by-pass valve (if any) anti shut-down.
- Pump anti shut-down.

WINTER operating mode

- Operation request in DHW phase (only for models with remote heater).
- Operation request in Heating phase.
- Anti-legionella function (only for models with remote heater).
- Heating circuit anti-freeze.
- Hot water circuit anti-freeze (only for models with remote heater).
- Electric by-pass valve (if any) anti shut-down.
- Pump anti shut-down.

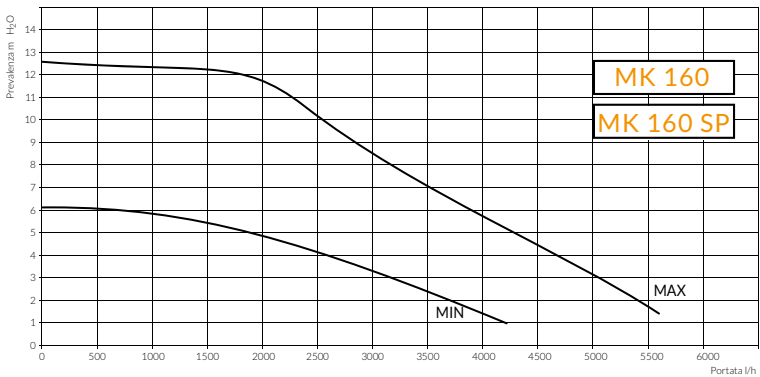
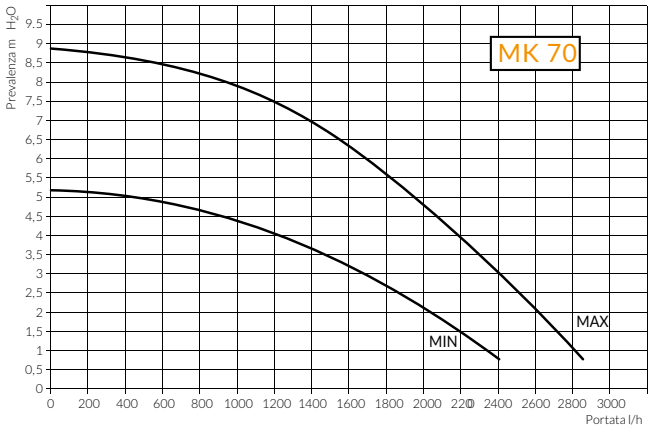
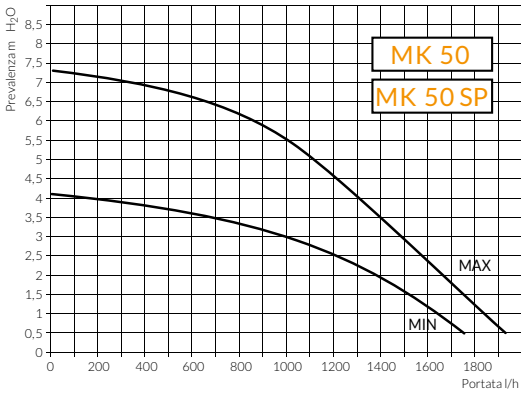


Technical data

MODEL	UM	MK 50 SP	MK 50	MK 70	MK 90	MK 115	MK 160 SP	MK 160
NATURAL GAS code		82000380	82000390	82000330	82000340	82000350	82000360	82000370
Heating Energy Class		A	A	A	/	/	0476CM3400	
EC Certificate		0694 CM 3400					0476CM3400	
Type of fume discharge		$B_{23P} \cdot C_{13} \cdot C_{33} \cdot C_{43} \cdot C_{53} \cdot C_{63} \cdot C_{83} \cdot C_{93}$						
Min. - max. operating ambient temp.	°C	0 ÷ +60	0 ÷ +60	0 ÷ +60	0 ÷ +60	0 ÷ +60	0 ÷ +60	0 ÷ +60
Category		II _{2H3P}	II _{2H3P}	II _{2H3P}	II _{2H3P}	II _{2H3P}	II _{2H3P}	II _{2H3P}
Reference gas		G20	G20	G20	G20	G20	G20	G20
Max rated thermal flow	kW	34.8	47.5	63.0	85.0	108.0	108.0	150
Min. rated thermal flow	kW	5.0	5.0	7.0	9.5	11.0	25	25
Max. thermal power 60°/80°C	kW	33.5	46.0	61.1	82.4	104.9	105.3	144.6
Min. thermal power 60°/80°C	kW	4.7	4.7	6.6	9.0	10.5	23.8	23.8
Max. thermal power 30°/50°C	kW	36.6	49.2	65.6	89.30	113.5	115.4	157.5
Min. thermal power 30°/50°C	kW	5.2	5.2	7.3	9.8	11.4	27.0	27.0
Rated efficiency at 60°/80°C (NCV)	%	96.4	96.8	97.0	96.9	97.1	97.52	96.40
Rated efficiency at 30°/50°C (NCV)	%	105.3	103.5	104.1	105.0	105.1	106.88	105.00
Efficiency at 30% Pn at 30°/50°C	%	106.5	106.7	107.2	109.1	109.1	108.32	109.29
Fume temperature (at Qn)	°C	63	83.0	82.0	71.9	75	72.3	79.7
Fume mass flow (at 60°/80°C * at Qn)	kg/h	56.22	75.95	101.78	137.57	170.48	173.25	240.63
Class NOx.6	mg/kWh	17.11	22.51	28.82	44.12	29.72	42	45
CO ₂ (at Qn)	%	9.2	9.3	9.2	9.2	9.3	9.3	9.3
Correct CO 0% O ₂ (at Qn)	ppm	89.0	157.3	146.0	152.6	176.1	127.1	176.1
Delivery temperature range (min÷max)	°C	20÷78	20÷78	20÷78	20÷78	20÷78	20÷78	20÷78
Maximum working pressure	bar	3	3	3	4.5	4.5	4.5	4.5
Max temperature	°C	95	95	95	95	95	95	95
Electrical power supply	Vac/Hz	220÷240 / 50 (230 V)						
Power (max)	W	100	145	190	255	315	326	480
Protection rating		IPX5D						
Separated intake and discharge pipe diameter	mm	80	80	80	100	100	100	100
Fan residual head min.÷max (for type C ₆₃)	Pa	25÷180	25÷180	50÷280	10÷150	15÷165	25÷190	25÷190
L x H x D overall dimensions	mm	450x837x475	450x837x475	450x837x475	600x837x620	600x837x620	600x837x770	600x837x770
Dry weight	kg	38.8	38.8	45.8	86.5	92	105	105
Rated pressure	mbar	20	20	20	20	20	20	20
Pressure at input (min ÷ max)	mbar	17÷25	17÷25	17÷25	17÷25	17÷25	17÷25	17÷25
Qmax	m³/h	3.68	5.02	6.66	8.99	11.42	11.42	15.86
Qmin	m³/h	0.53	0.53	0.74	1.00	1.16	2.64	2.64
Acoustic pressure level	dB	60	60	60	60	60	60	60



RATE OF FLOW-HEAD DIAGRAM
AVAILABLE TO SYSTEM





SYSTEM CONTROL

ALPHA CONTROL UNIT



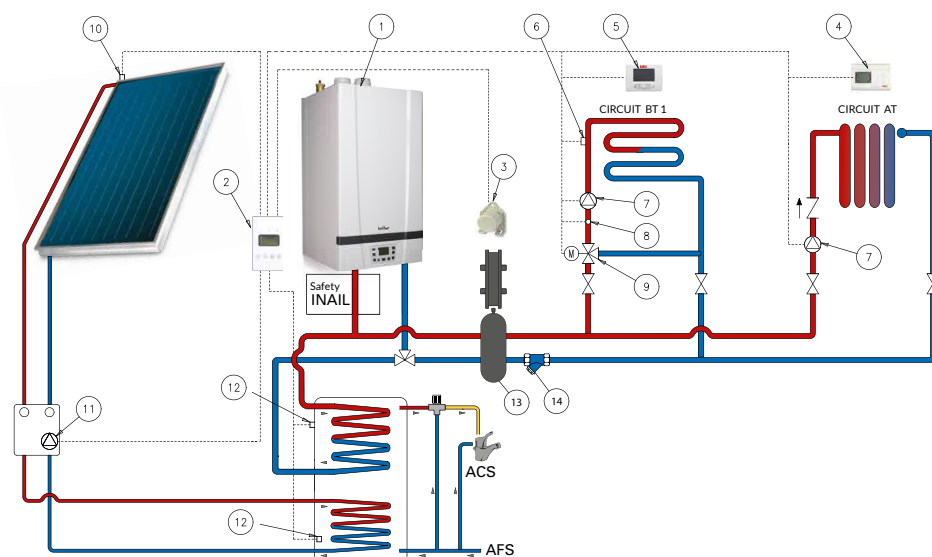
ALPHA system control

The digital control allows to manage comfort by remotely controlling boiler and combined heating circuits, adjusting their operation to ambient conditions and user settings.

MAIN functions:

- single generator or cascade management.
- high temperature direct zone;
- medium or low temperature mixed zones;
- domestic hot water storage;
- solar hydraulic unit.

HYDRAULIC DIAGRAM



- 1 Smile Energy MK.
- 2 Zone control unit.
- 3 External probe.
- 4 Ambient thermostat, direct zone.
- 5 Ambient remote control, MIX zone.
- 6 Zone temperature probe.
- 7 Zone circulating pump.
- 8 Low temperature zone safety thermostat.
- 9 Mixing valve.
- 10 Solar panel probe.
- 11 Solar system circulating pump.
- 12 Solar heater control probes.
- 13 Flow balancer/plate exchanger.
- 14 System return filter.



SYSTEM CONTROL

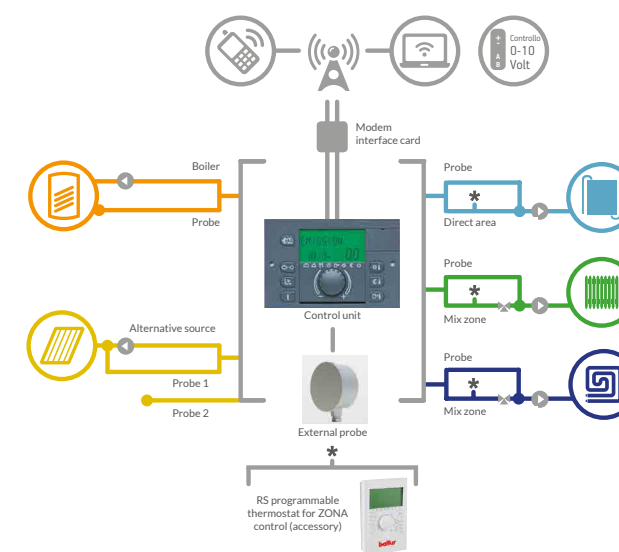
THETA CONTROL UNIT



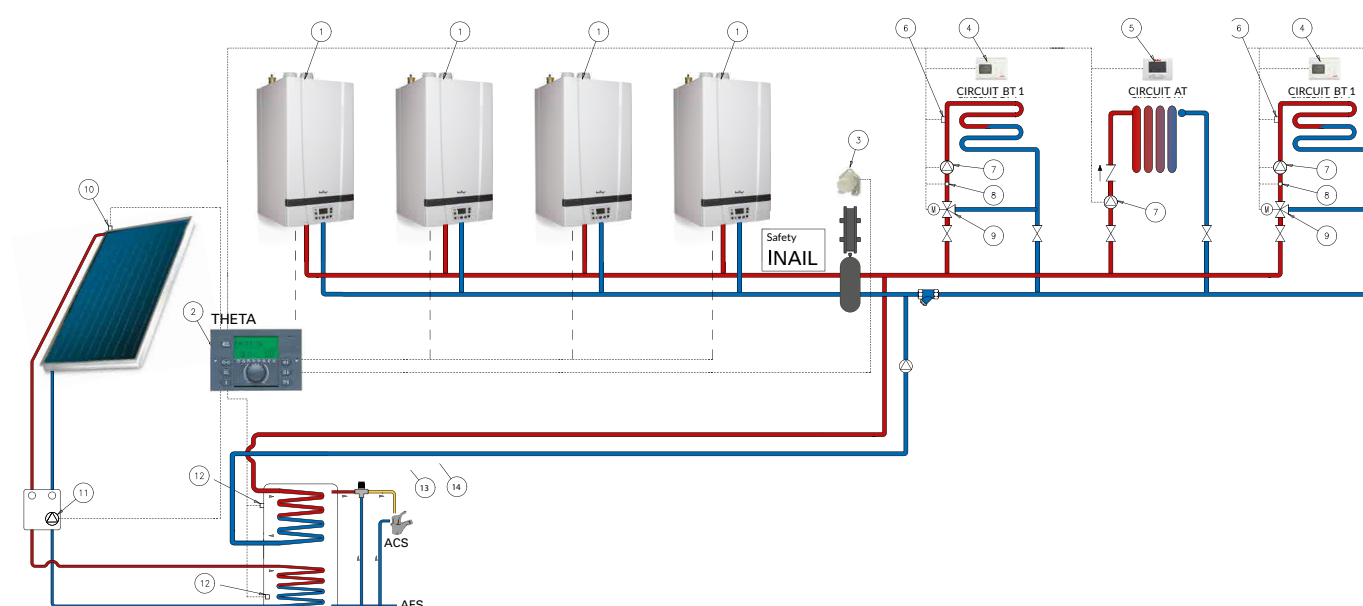
MAIN functions:

- All level hourly programming (general, heating circuits, DHW load)
- Simultaneous management of three circuits in heating mode (2 mixed + 1 direct) and domestic water heater load
- System protection functions
- Domestic hot water management functions
- Heating circuit management functions
- Cascade control functions
- Solar Circuit control functions
- Climate compensation curves
- Probe balancing functions

- Output system test functions
- Alarm log (last 5 shut-down codes detected)



HYDRAULIC DIAGRAM





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