ARCA caldaie
TECNOLOGIE PER L'AMBIENTE

Logicalenergy
Renewable Energy Products

Pixelfast SUN

Solar Thermal Heating Systems

Gas fired wall hung boilers with solar integrated control system
A wide range of boilers with integrated controls to manage
hot primary water tank pre-heated by solar panels or
biomasses / heat pump


PATENTED

A
SEDBUK
BAND A

CE
EFFICIENCY
(92/42/CE)
★★★–★★★★

Logical Energy Ltd 0845 505 2012

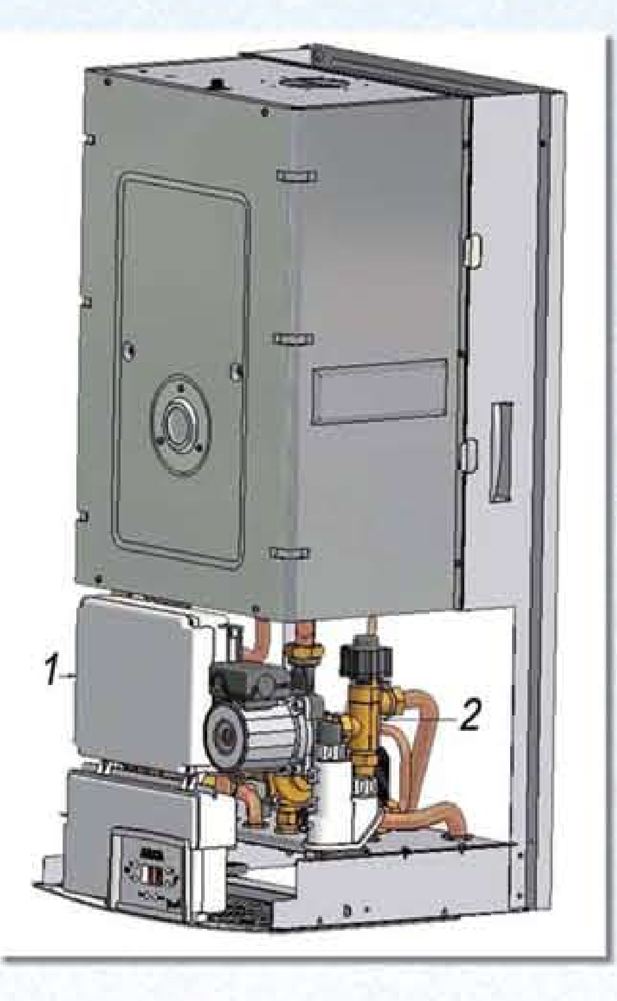
The PixelFast SUN advantages and its integrated system

1) Automatic function on both Heating and Domestic hot water system
2) Cylinder contains primary hot water. System doesn't not store domestic hot water, so the cylinder doesn't need to be glass lined/stainless steel, etc giving significant cost savings
3) It doesn't need supplementary pump because it uses only the boiler pump (it saves a pump and its electric connexion).
4) No risks of boiler commutation: two electronic panel boards (boiler & solar) are together inside the boiler, interacting with each other.
5) Maximal system efficiency: the solar injection is on the boiler return on heating system, that is the colder part of installation. It's a serial circuit and not a parallel circuit. Is enough that solar temperature is 2 degrees higher than return system to take the heat power from the buffer tank.
6) It doesn't need external hydraulic connexions only the two solar pipes flow and return to the cylinder.
7) It doesn't need exist external electric connections, except for the sensor on solar tank.
8) The boiler still works with priority on sun system. Solar installation accumulates energy and boilers works if solar system doesn't supply enough energy.
9) Maximal temperature on primary system fixed at 72°C to limit the lime-scale production.
10) With Floor Kit accessory, cod. ECMIX01P, it's possible supply both low and high temperature circuits.
11) No legionella possible

PixelFast Sun is different for its innovative hydraulic group with an integrated mixing motorized three ways valve and for its additional electronic board managing the external heating source.

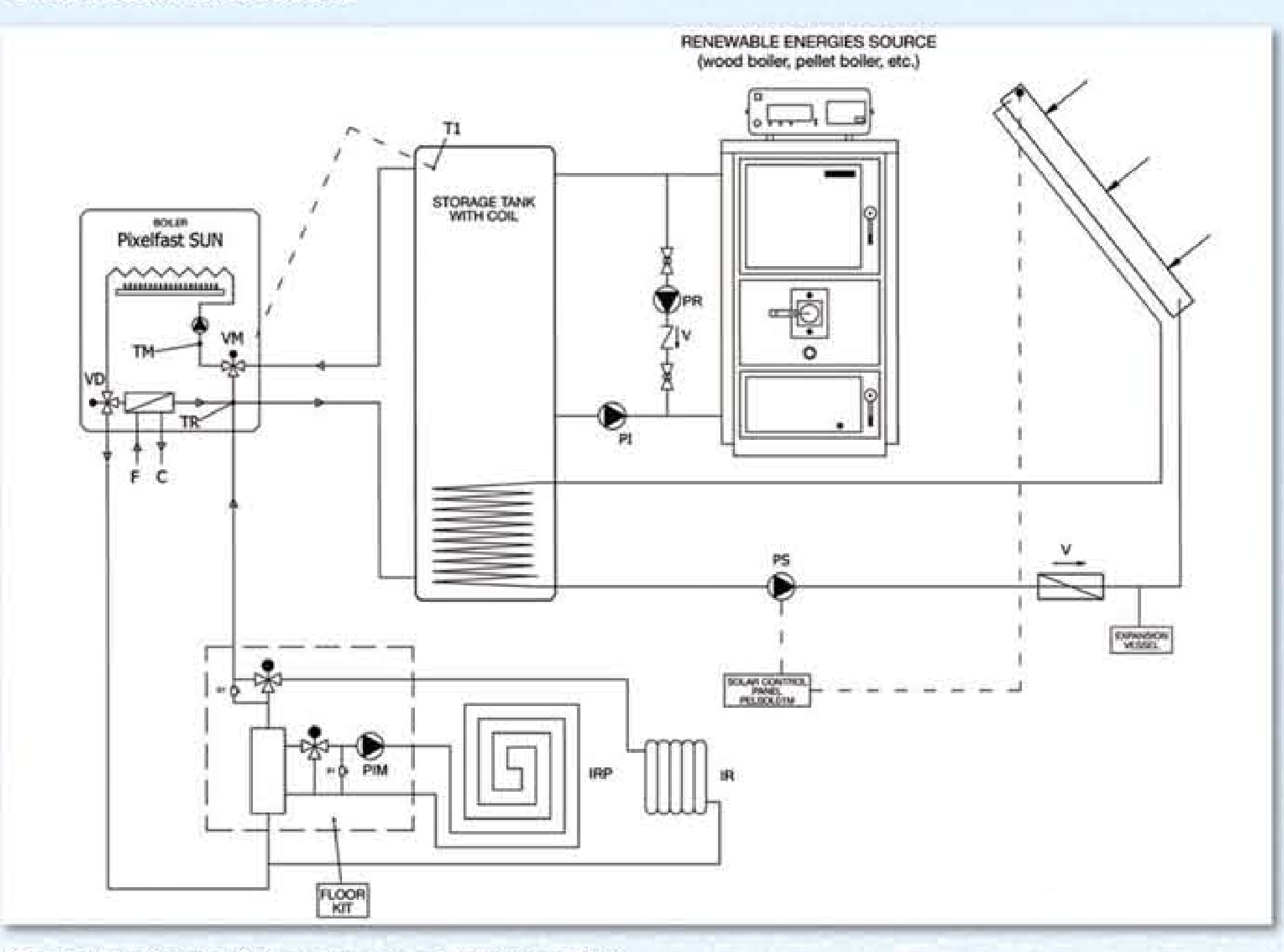
① Supplementary electronic board managing the external heating source on external buffer tank and managing the motorized three way valve.

② The integration of three ways valve on the hydraulic group.



Significantly using solar gain for radiators circuit/under-floor heating in addition to domestic hot water, ensuring greatly running costs not only confined to domestic hot water production.

General scheme



(See the functioning film on www.youtube/arcacaldaie)

Three models:

PIXELfast 26 FCX SUN	Methane cod: ECOSUNCX101P
PIXELfast 25 FC SUN	Methane cod: ECOSUNCD101P
PIXELfast 31 FC SUN	Methane cod: ECOSUNCD105P

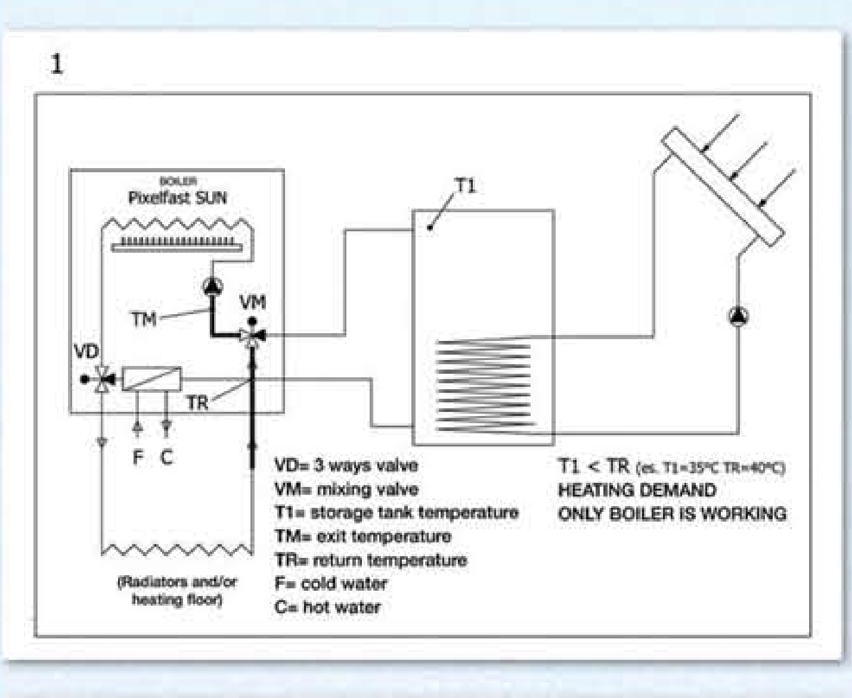
The KITCTRSUN1P connects all PixelFast Sun models to the Floor Kit.
The ACCMIX01P connects the Floor Kit with its taps to the wall.
The ACCSUN01P connects the SUN boiler to the wall without the Floor Kit

All models are equipped with an increased dimension flat plate heat exchanger for DHW.

Boilers dimensions: 880 x 450 x 360 mm

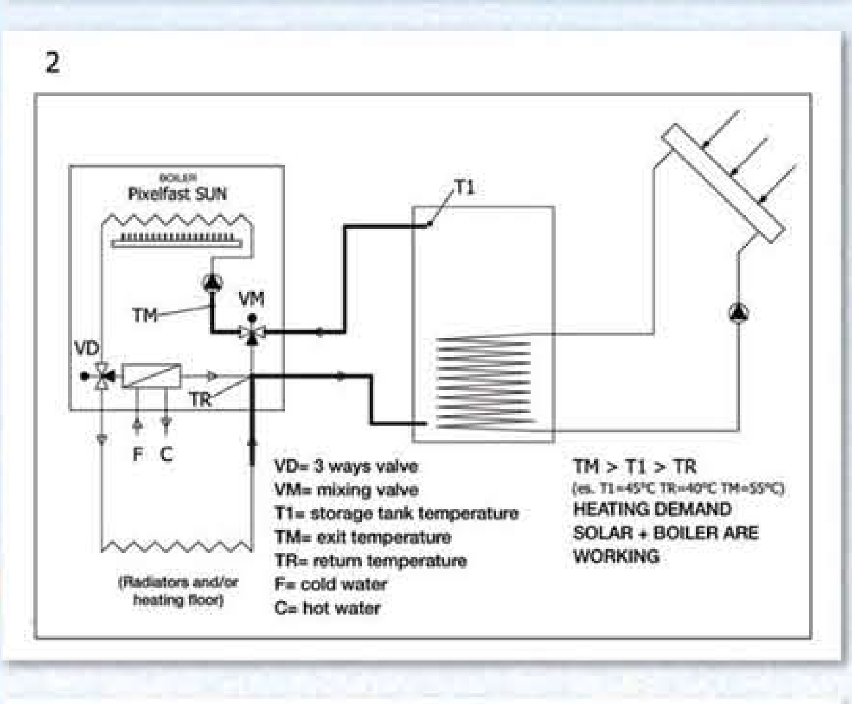
5 different schemes

1



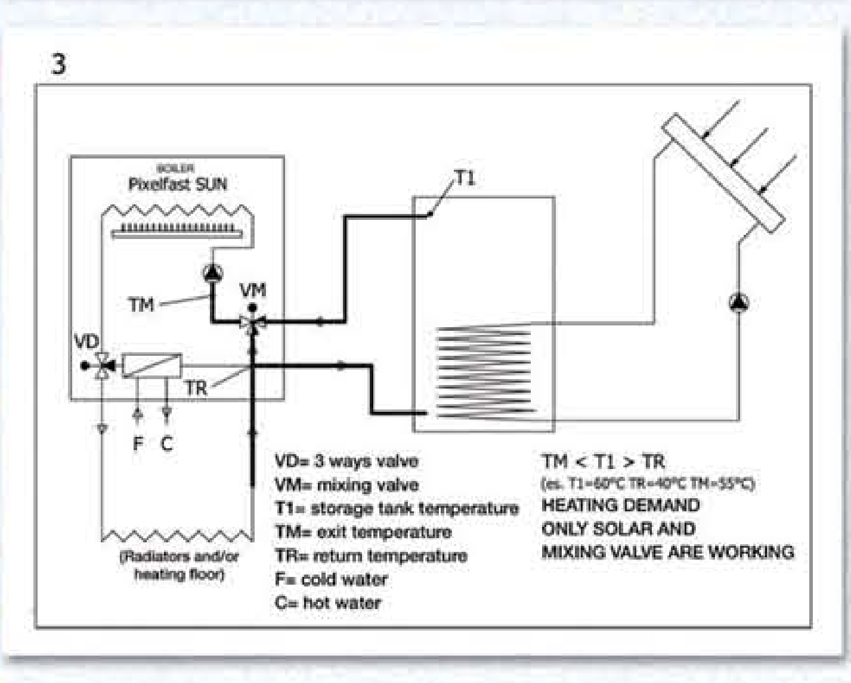
Scheme 1
Function: heating by only boiler. The return temperature is higher than tank temperature on T1 point. In that case the VM excludes solar system and boiler normally works.

2



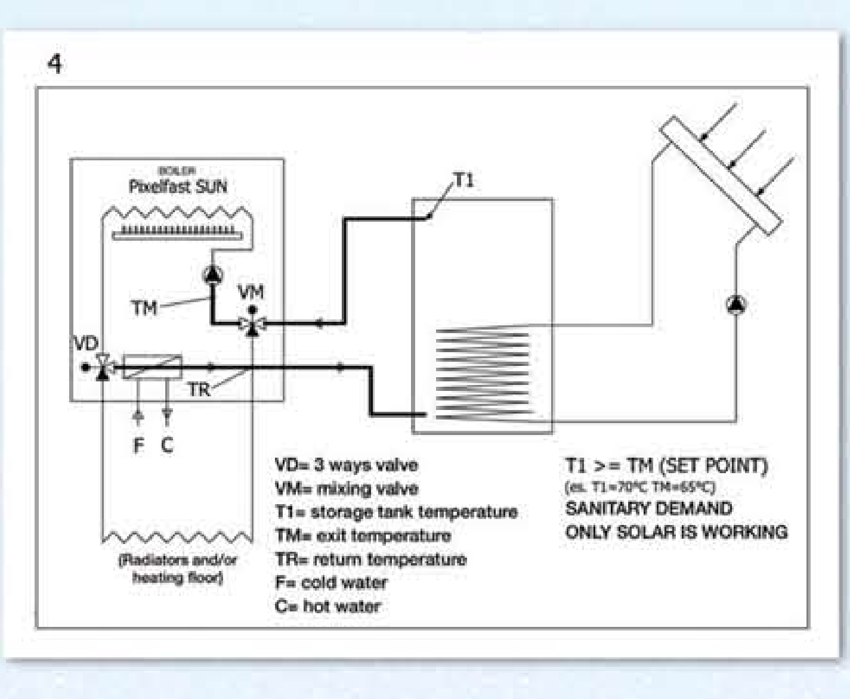
Scheme 2
Function: heating by solar system and boiler. The return temperature of installation is lower than tank temperature. In that case the VM opens the water sample from the solar tank and the boiler will work only if the asked temperature on the flow system is higher than tank temperature on T1 point.

3



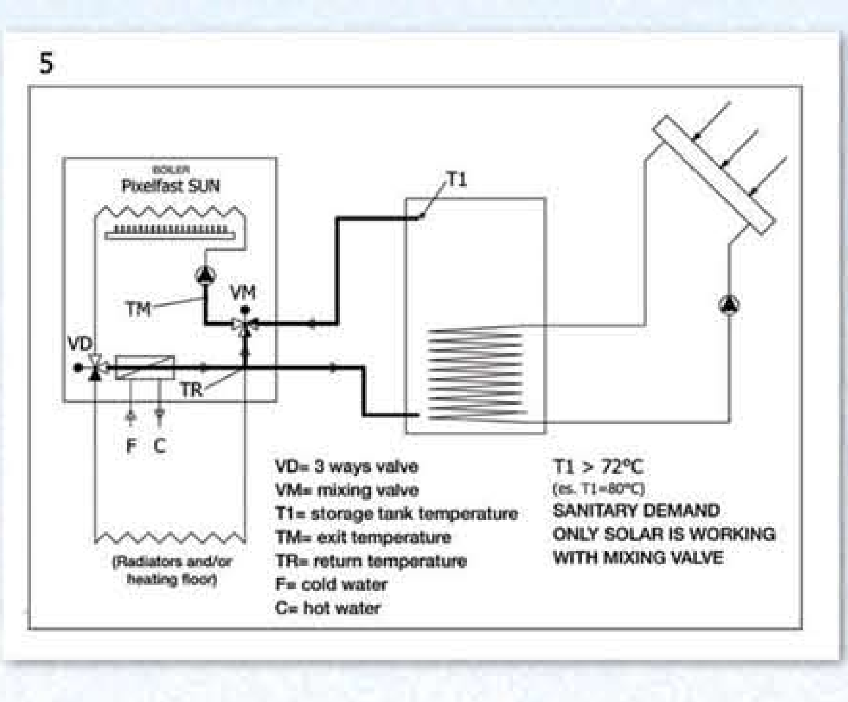
Scheme 3
Function: heating only by solar system. The tank temperature is much higher than return installation and higher than asked temperature on TM flow system. In that case the VM mixes the return water with tank water. Obviously boilers rests turned off.

4



Scheme 4
Function: hot sanitary water production by solar system and boiler. The VM will open the water sample from tank only if the T1 tank temperature is higher than 56°C. Below 56°C the boiler works waiting the water tank temperature increase.

5



Scheme 5
Functioning: hot sanitary water production by mixing. The VM will open the tank sample if T1 temperature is higher than 56°C and lower than 72°C.
If T1 is higher than 72°C the VM will mixes the return water with the tank water.

On heating function, the sample from tank and the contemporary ignition of boiler to achieve the required temperature, are possible.

On sanitary hot water production, when boiler is working the sample from tank is not possible to avoid temperature commutations. If the asked power from boiler is very limited it would have frequent injection and standby (short cycling) with an alternation of boiling and cold water.
To avoid these problems the solar system to produce hot sanitary water is used only with tank temperature higher than 56°C.

All products on these schemes are presents on Arca catalogue.

Floor Kit Code ECMIX01P

Floor Kit is an additional frame to support the boiler. Floor Kit is equipped with an expansion vessel, an hydraulic compensator, a control board, a mixing valve to supply a low temperature zone (under floor system) and a valve to manage the high temperature zone.

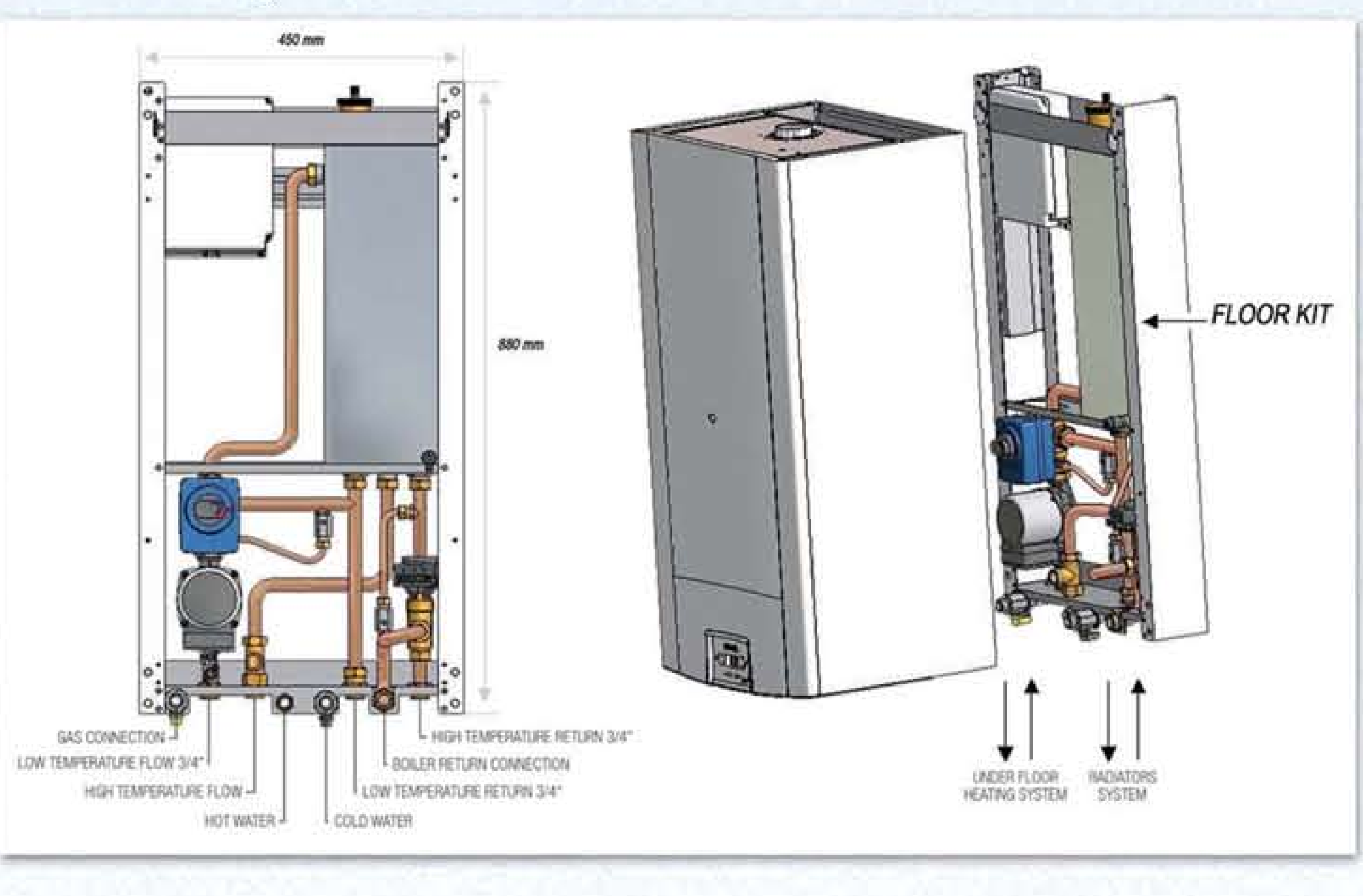
Floor Kit can be installed with Pixelfast Arca models to manage all controls functions on heating system both high & low temperature circuits.

Advantages: boilers standby when all zones are satisfied; priority on hot sanitary water production; opportunity to equip the system with an external sensor; opportunity to install SUN model to manage an external energy source (biomass, wood pellet boiler, etc.)

Floor Kit is the most preferred system for up to 200 square metres houses with under floor heating system or mixed system. On springtime/autumn, when system ask for only 2-5 kW, the solar system is frequently used, saving in this way the gas consumption. In this case solar system could be used even for heating system.

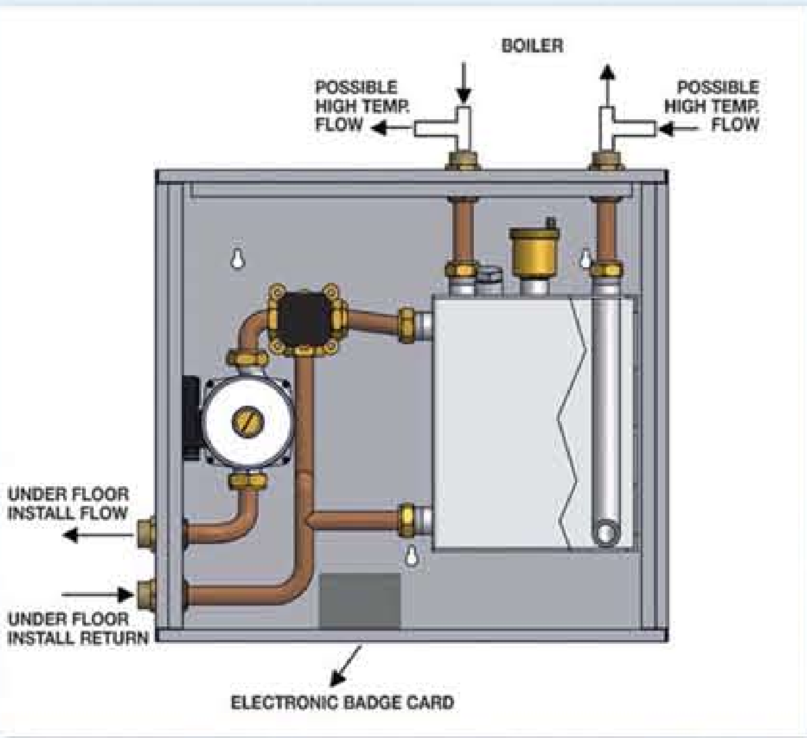
A complete plan with 3 board panel interacting with each other.
A boiler board panel, a SUN boiler board panel, and the Floor Kit control to manage the complete installation.

Floor Kit hydraulic scheme



CAS MOT

As an alternative to Floor Kit system, CAS MOT can be used with storage cylinder boilers (PixelFast B).
CAS MOT is a box equipped with an hydraulic compensator, a mixing valve, a pump, a panel board with climatic managing function, a security thermostat.
CAS MOT can heat very extend surfaces, even over 200 square metres, using an 8 prevalence metres pump.



Condensing SUN boilers (with solar integrated function) and FLOOR KIT-CAS MOT

As is known the minimal power of FC and FCX condensing boilers functioning is 9 kW.
The boiler control can set a pump post circulation up to 10 minutes with the boiler off.
In this phase the boiler circuit temperature can come down until 25-28°C as the return temperature of under floor system.
That allows to get the maximal efficiency from the system, taking water form solar tank at 30°C: this water can be used for under floor system in springtime/autumn.

Remote Control
Easy RC03.102
Code CTR0601P2

The new remote Easy control can be used for all Arca boilers. More functions: possibility to program the preparation of sanitary tank in definite hours without night work for the boiler; possibility to program the anti-legionnaire's disease function.

TECHNICAL DATA

Type	Unit	SUN 25 FC C12-C32-C42-C52-C82	SUN 31 FC C12-C32-C42-C52-C82	SUN 26 FCX C12-C32-C42-C52-C82
Nominal thermal power rif. PCI (80°C/60°C)	KW	25	31	26
Nominal power rif. PCI (80°C/60°C)	KW	24,4	30,2	25,4
Nominal condensing power rif. PCI (50°C/30°C)	KW	26,9	33,3	27,3
Useful Efficiency at nominal therm. Power rif. PCI (80°C/60°C)	%	97,6	97,5	97,6
Minimal thermal power Rif. PCI (80°C/60°C)	KW	10,5	12,4	10,5
Minimal power rif. PCI (80°C/60°C)	KW	10,1	11,9	10,1
Minimal condensing thermal power rif. PCI (50°C/30°C)	KW	10,7	12,6	11,4
Efficiency reduced load (30% of Pn)	%	-	-	-
Efficiency to reduced load	%	108,7	107,9	109,4
Gas capacity at P methane G20 (2E+)	m³/h	2,643	3,278	2,749
Methane G25 (2ELL)	m³/h	3,074	3,812	3,197
GPL G30 (3+)	Kg/h	1,97	2,443	2,049
GPL G31 (3P)	Kg/h	1,941	2,406	2,018
Gas capacity on methane network G20 (2E+)	mbar	20	20	20
Methane G25 (2ELL)	mbar	20	20	20
GPL G30 (3+)	mbar	30	30	29
GPL G31 (3P)	mbar	37	37	37
Smoke temperature at Pn (80°C/60°C)	°C	70	74	68
Smoke temperature at Pn (50°C/30°C)	°C	47	51	41
NOx pondered (according to UNI EN 483 par 6.2.2)	mg/kWh	186 (classe 2)	186 (classe 2)	24 (classe 5)
CO2 (G20)	%	8	8	8
Warmth loss with burner working	%	2,8	3	2,7
Warmth loss with burner out	%	0,2	0,1	0,2
Warmth loss to the shell (ΔT=50 °C)	%	0,5	0,5	0,5
Steam capacity	Nm³/h	42,09	53,03	43,8
HEATING				
Minimum heating set point	°C	45	45	35
Maximum heating set point	°C	85	85	90
Water quantity in the expansion vessel	l	7	7	7,5
Pressure of the expansion vessel	bar	0,7	0,7	0,7
Minimal pressure in the primary circuit	bar	0,5	0,5	0,4
Maximal pressure in the primary circuit	bar	3	3	3
Maximum water capacity in the installation	l	150	150	150
Heating installation pump prevalence at capacity of Q=1000	mbar	200	200	330
SANITARY				
Minimum sanitary set point	°C	30	30	30
Maximum sanitary set point	°C	60	60	60
Continuous hot water production ΔT= 25°C	l/min	14	17,4	14,5
Tension	V/Hz	230/50	230/50	230/50
Electric power	W	150	150	150
CONNECTIONS				
Heating connections	Inch	3/4"	3/4"	3/4"
Sanitary connections	Inch	1/2"	1/2"	1/2"
Gas connections	Inch	1/2"	1/2"	1/2"
Height	mm	880	880	880
Depth	mm	360	360	360
Width	mm	450	450	450
WAST PIPE LENGHT				
Coaxial Ø 60/100 mm	m	4	4	4
Twin flue Ø 80 mm	m	30	30	30
Weight	m	47	47	47
Protection level	Kg	X4D	X4D	4XD
CE homologation	IP	0068 ★★★★	0068 ★★★★	0068 ★★★★

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