

Unical®

PIREN 2S.

HIGH TECHNOLOGY FIREWOOD COMBUSTION



*Economic and
energetic saving*



PIREN 2S

the range

The evolution of the central heating systems is rediscovering its origins. The demand of comfort in the individual houses, by limiting the running costs, is bringing the market to reconsider the importance of the firewood as fuel.

Unical, leader of sector in this segment since 30 years, proposes the new range PIREN 2S, with high efficiencies and low polluting emissions, that introduces interesting improvements in the convenience of utilisation.

PIREN 2S

5 models from 25 to 60 kW

PIREN 2S HR

2 models from 27 to 32 kW

With constant flow rate fan.

PIREN 2S	Nominal output kW	Firewood store volume l	Firewood logs length cm	Constant flow rate fan
25	24,6	100	33	☺
30	29,7	145	50	☺
35	34,9	145	50	☺
45	45,4	200	70	☺
60	60,0	280	100	☺
27 HR	27,0	145	50	☺
32 HR	32,0	200	70	☺

PIREN 2S MODUL	Nominal output kW	Firewood store volume l	Firewood logs length cm	Modulating fan
25 MODUL	24,6	100	33	☺
30 MODUL	29,7	145	50	☺
35 MODUL	34,9	145	50	☺
45 MODUL	45,4	200	70	☺
60 MODUL	60,0	280	100	☺

Energy's recovery due to the preheating of the combustion air through the upper door (the primary air) and the lower door (the secondary air), brings to:

- a better combustion efficiency.

PIREN 2S BICOMB MODUL	Nominal output kW	Firewood store volume l	Firewood logs length cm	Modulating fan	Auxiliary gas/oil boiler supplied
25 BICOMB MODUL	24,6	100	33	☺	☺
30 BICOMB MODUL	29,7	145	50	☺	☺
35 BICOMB MODUL	34,9	145	50	☺	☺

PIREN 2S MODUL

5 models from 25 to 60 kW

With modulating fan and modulating panel board.

The modulating panel board is able to control the modulating fan in order to guarantee:

- longer autonomy
- reduced consumptions
- minimum polluting emissions.

PIREN 2S BICOMB MODUL

3 models from 25 to 35 kW

Panel board for control of a modulating fan and an auxiliary gas/oil boiler, supplied as standard.

It assures the continuity of the operation also when the firewood is finished.



High technology and low polluting emissions

The careful study of the flows of the combustion air and the smokes ways, combined with the use of particular steels, allow combustions always controlled in every working condition. This is translated in the optimization of the fuel utilisation with the result of a high efficiency.



Respect of the environment

The design process of PIREN 2S has, so, taken in great evidence the reduction of the polluting emissions in order to become a boiler that respects the most stringent norms foreseen for the environment protection.



Energy

The firewood, renewable and eco-compatible fuel, is already, by itself, a good reason to be preferred to other fuels. To this, the notable economic advantage in the running cost has to be added.



Energetic and economic saving

Thanks to the characteristics of efficiency and emissions, PIREN 2S allows to access the contributions, foreseen in different countries, by the new environmental politics.

High technology high efficiency

"EGG" shaped wood store: large capacity, optimized combustion and efficiencies

The firewood store, in high thickness steel and with capacity *up to 280 litres volume*, has a monolithic lining particularly resistant to thermal and mechanical stresses in order to keep dry the bypass zone in every working condition, so favouring its duration, thanks to the absence of condensate formation.



Pyrolytic combustion with total gasification

Synonymous of high efficiency, with *reversed flame*, direct from top down, it is the result of the perfect regulation of the primary and secondary air that is obtained through precise screw type adjustments, placed in correspondence of the air suction openings.

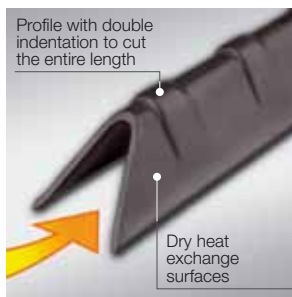
Protection anti condensate

Thermostatic valves, Unical patent

Placed on the flow manifold, they allow only the circulation of the water when the boiler has reached a good thermal stability (temperature > 80°C) nearly excluding the phenomena of condensation.

Heat exchange on "dry" smoke ways

Special channels in the lower part of the boiler, between the water and the smoke circuit, allow to exploit the maximum temperature, with increase of the efficiency and reduction of the condensate.



Useful output > 91% and high thermo-mechanical resistance

Thanks to the adoption of special channels composed by a characteristic *profile with double indentation to cut the entire length*, that, together with the elevated exchange surface, allows to overcome the 91% of efficiency to the water and to control the thermo-mechanic dilatations.

Self-cooling doors with pre-heating system of primary air and secondary air: higher efficiency

On the lower door the air is sucked through two special openings and crosses the interspace, cooling down the upper door (primary air), the lower door (secondary air) and the external surface, thus obtaining a heating of the combustion air, that raises the combustion efficiency.



Modulating fan: optimisation of the combustion

Placed on the smoke suction side it guarantees always the combustion air flow, adjusted according to the water desired temperature, extending the autonomy of the firewood charge.

Safety heat exchanger preventing overheating

Thanks to its automatic intervention, plunged directly in the boiler water, provides, in case of overheating, to cool down the boiler itself, with fresh water coming from mains.



Panel board: simplicity and functionality

Complete and rational, in 2 versions: standard and electronic modulating. Both equipped with a rich series of predispositions in line with the more refined and modern demands on the installation solutions.

Burner with catalyst in refractory stone, burner grate in stainless steel AISI 310S: low polluting emissions

Positioned between the firewood store and the dry underplaced combustion chamber. Self-cleaning and particularly resistant, it is designed to favour the best possible combustion with the minimum emissions, thanks to the new design of the pre-combustion chamber.



Automatic smokes bypass

Activated when opening of the loading door, allows easy loadings of firewood without annoying refluxes of the smokes.

Central heating flow manifold

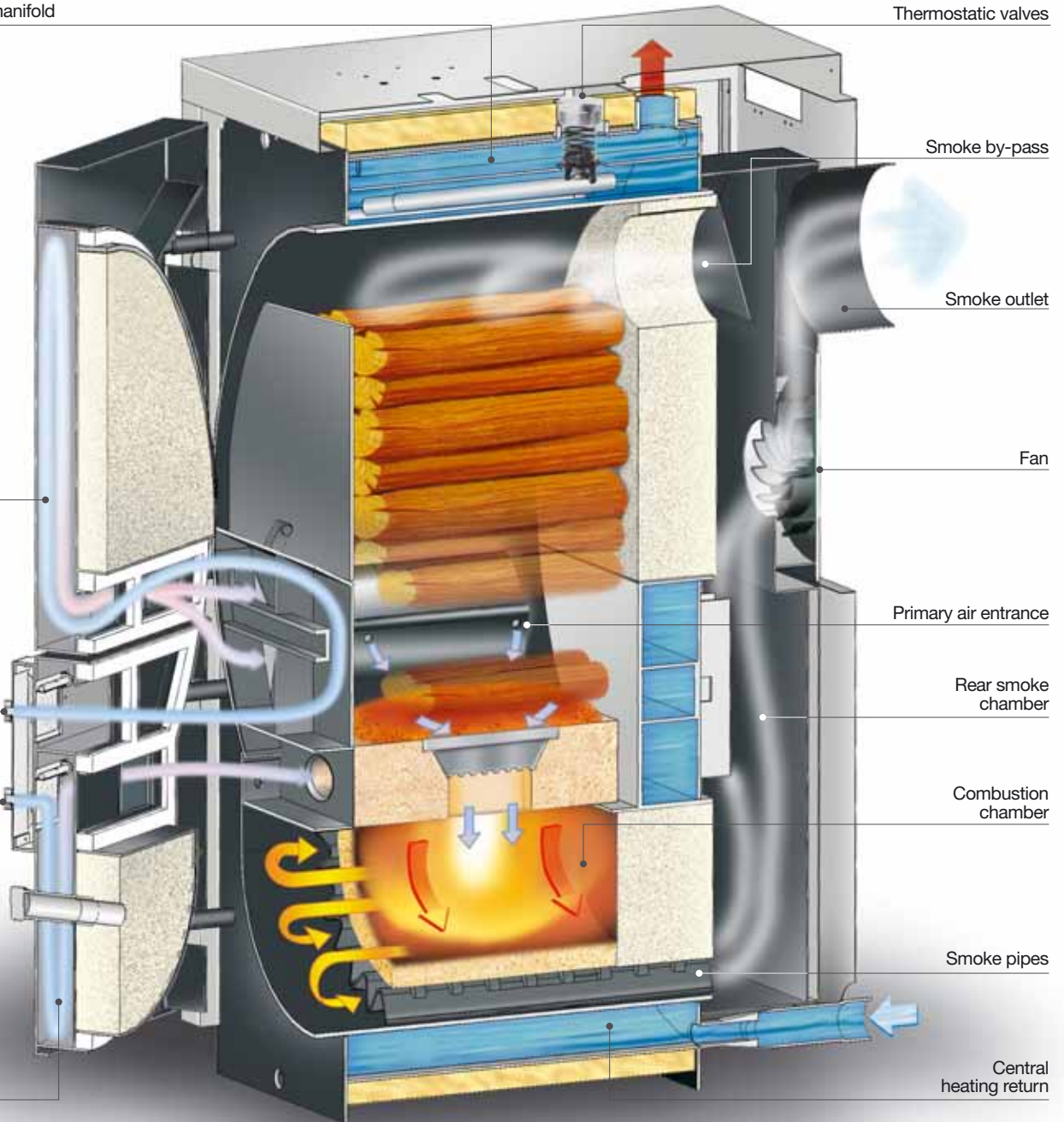
Thermostatic valves

Pre-heating circuit for primary air

Primary air entrance

Secondary air entrance

Pre-heating circuit for secondary air



To get the firewood **“gasification”** is exploited a particular technology, named **“reversed flame”**, which, contrarily to the norm, reverses downward the direction of the flame from upward. To this purpose it is necessary the aid of a sucking fan, placed downstream the combustion chamber, because the natural draught of a normal chimney doesn't allow to firmly control the process. Thanks, therefore, to the fan and the possibility to regulate the combustion air, through precise adjustment screws placed in correspondence of the air suction openings, the firewood develops a particular form of combustion, said

“pyrolysis” that, due to the high temperature, transforms the cellulose in more simple components (hydrocarbons and carbon monoxide) that burn in the underplaced combustion chamber (thanks to the injection of “secondary” air), with a flame entirely similar to that of the natural gas, producing very high efficiencies.

Advantages:

- **burner always clean**, thanks to the re-burning of the resinous residues that accumulate in the highest part of the firewood store and to the easy removal of the dry ashes that are collected in the lowest zone of the

combustion chamber.

Advantages of the fan:

- **elimination of ignition problems with cold chimney**
- **reduction of the sections of the smoke ways**
- **sensible efficiency increase**
- **polluting emission reduction, thanks to the perfect electronic adjustment of the combustion air**
- **automatic restarting of the firewood in presence of also a minimum quantity of embers.**

MODUL series

the modulation

Once the ideal temperature in the room has been setup, PIREN 2S MODUL through the onboard microprocessor, controls automatically the fan speed, in order to adjust the output to the water, assuring, at the same time, the desired room temperature.

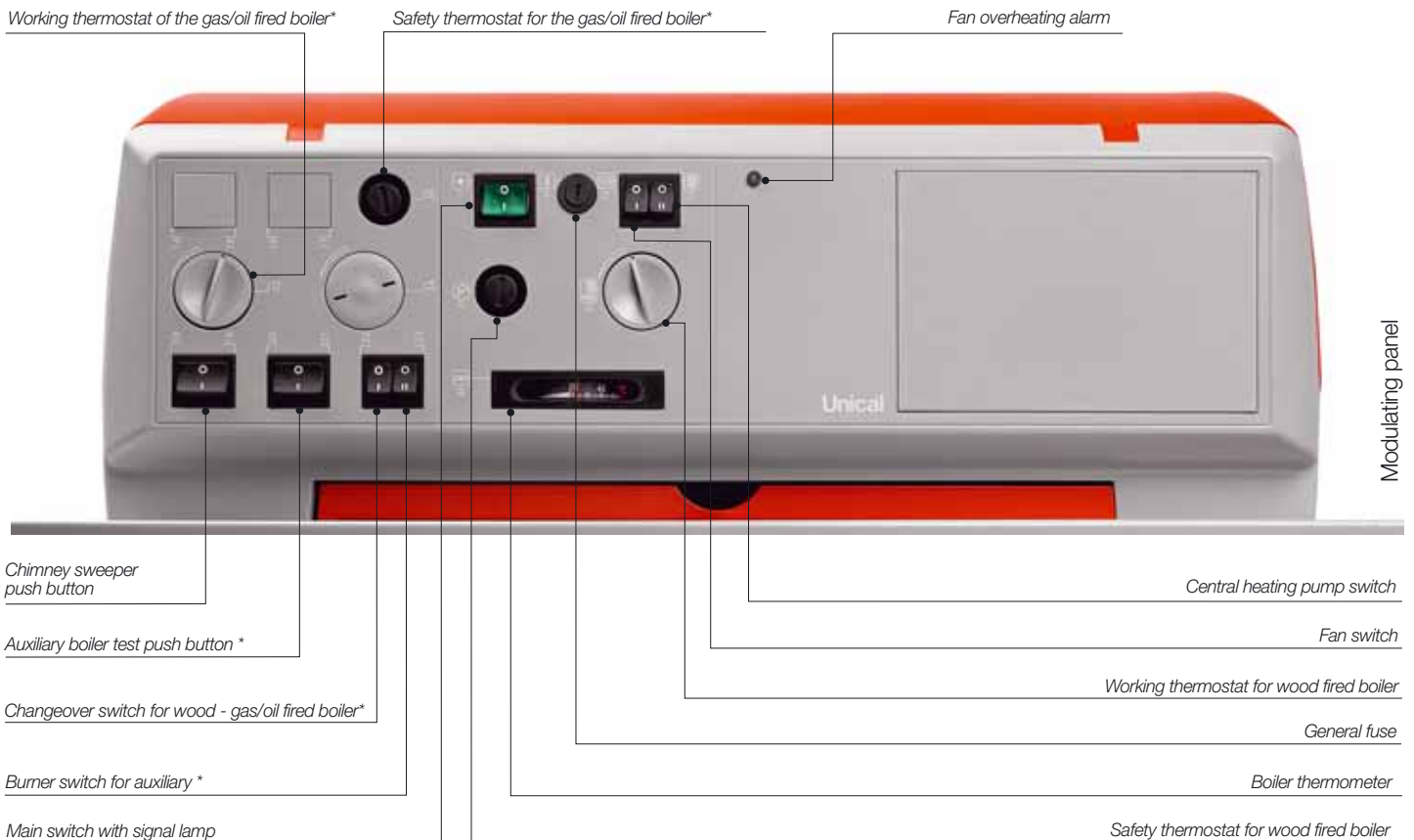
Advantages:

- **Optimization of firewood consumption:**
saving up to the 30% of fuel, with the same time of heat release.
- **Longer duration of the firewood load.**
- **Rapid steady state of the installation.**
- **Reduction of the running costs.**
- **Reductions of the polluting emissions.**

The longer duration of the firewood charge can avoid the undesirable surprise to get back home and find the boiler not in operation and the house cold, or to have to provide more loadings during the day.

A great convenience, in comparison with not modulating boilers, where, contrarily, being the flame less controlled, creates a sensitive increase of the consumptions and the polluting emissions. Besides, the increased capacity of the firewood store in comparison with the most traditional boilers, subsequently improves the operation autonomy to reach 8 hours, and more, of use without the necessity to reload.

The standard panel board automatically manages the water temperature and the fan operation, by checking its speed in relationship to the planned temperature and the measured one. This contributes to increase the operation autonomy by reducing the on-offs.

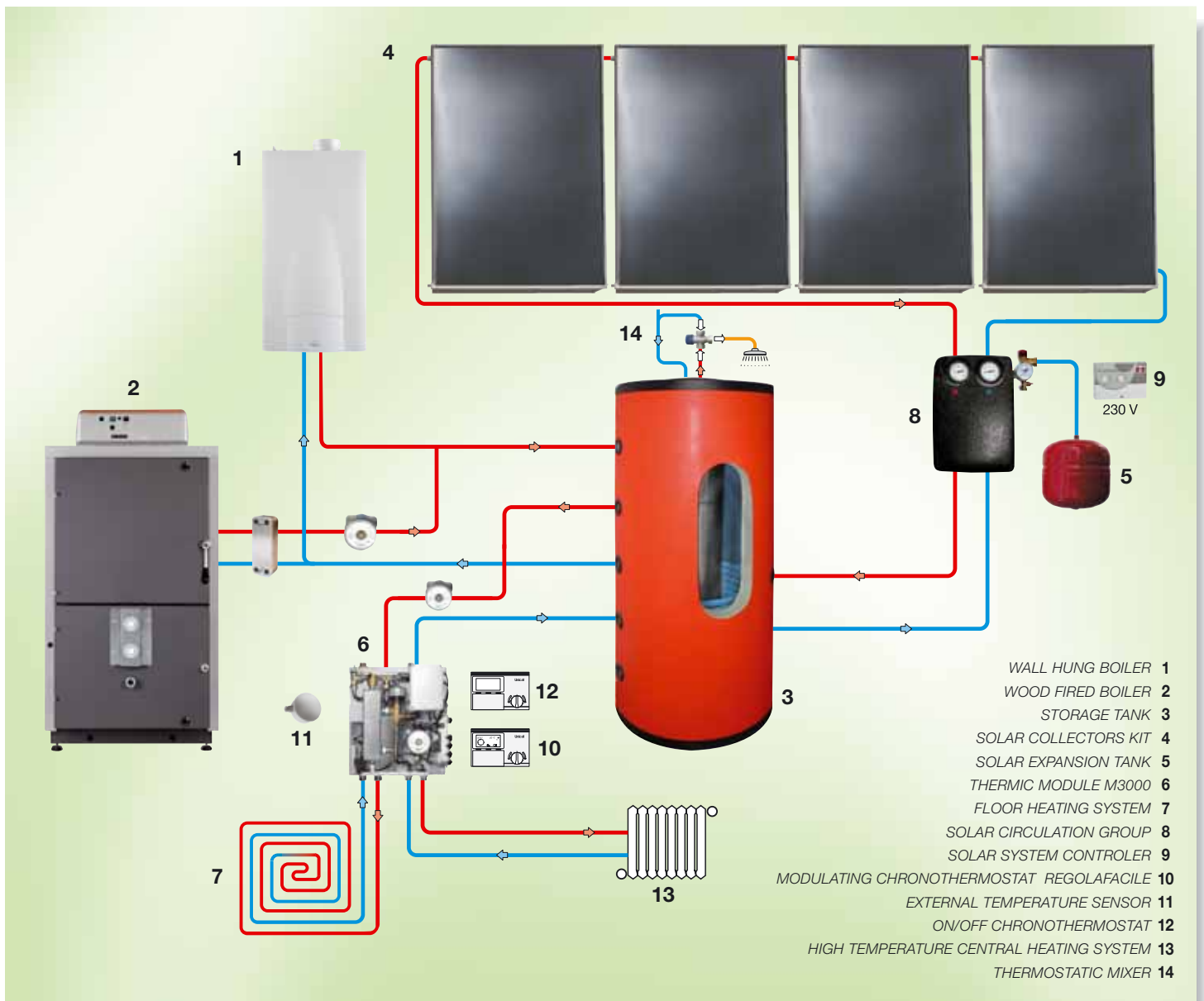


* only for BICOMB model

Maximum saving with the integral systems

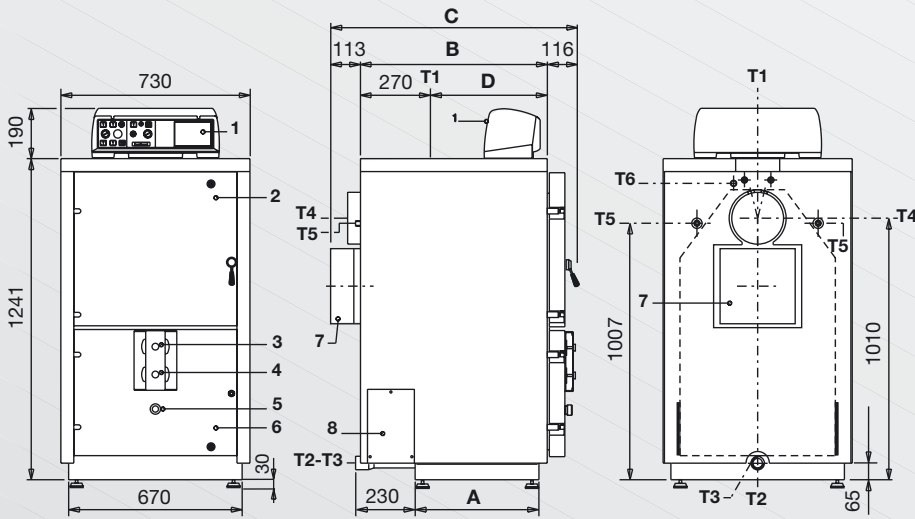
A true breakthrough for the exploitation of the renewable resources is constituted by the integration of different energetic systems as, for instance, the solar energy combined to the firewood and the natural gas. The "Alternative Energies" division of Unical is able to supply consultation and planning to study the best solutions. From the most simple to the most complex, to get the maximum benefit. In this way, boilers, heat storage tanks, control systems and solar panels are connected for getting the best result. In the example here below, PIREN 2S (2), through a plate heat exchanger, transfers its thermal energy to a special heat storage tank (3) for the production

of domestic hot water. On the same storage tank, managed by the solar plant controller (9), the solar panels (4) furnish all the captured energy. Through the thermal module M3000 (6) it is possible to exploit the energy accumulated in the storage tank to heat, contemporarily, at low temperature, a floor heating plant (7) and one radiators plant (13). The condensing boiler ALKON (1) supplies additional thermal energy if the natural resources are insufficient, always granting the maximum comfort at the minimum cost. Electronic chronothermostats (12 and 10) and external temperature sensor (11) constantly check the level of comfort in every condition.



Dimensions

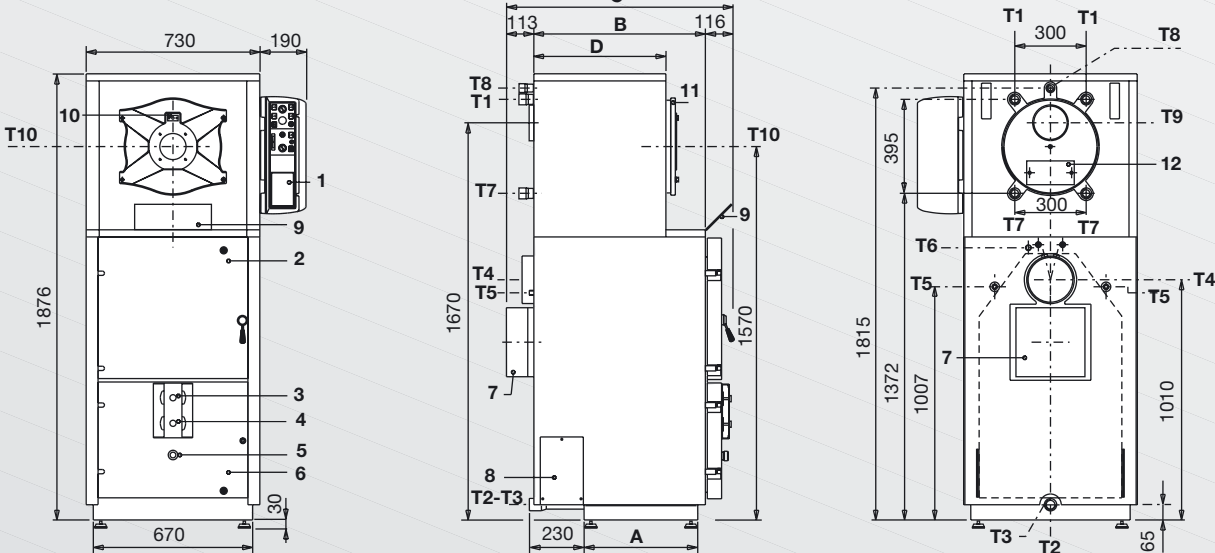
PIREN 2S / PIREN 2S HR / PIREN 2S MODUL



Key:

- 1 - Panel board
- 2 - Firewood loading door
- 3 - Primary air regulation
- 4 - Secondary air regulation
- 5 - Flame sight view
- 6 - Combustion chamber door
- 7 - Fan (2 off for the models 45 and 60)
- 8 - Cleaning doors for smoke chamber
- 9 - Burner protection shield
- 10 - Flame sight for gas/oil boiler
- 11 - Boiler door for gas/oil boiler
- 12 - Cleaning door for smoke chamber for gas/oil boiler
- T1 - C.H. flow
- T2 - C.H. return
- T3 - Boiler drain
- T4 - Chimney connection for woodfired boiler
- T5 - Safety heat exchanger connections
- T6 - Connection for sensor of thermal discharge valve
- T7 - Additional C.H. return connections
- T8 - Purging and expansion tank connection
- T9 - Chimney connection for gas/oil boiler
- T10 - Burner plate drilling for gas/oil boiler

PIREN 2S BICOMB MODUL



Technical data

PIREN 2S model	Nominal output wood fired boiler* kW	Maximum output wood fired boiler kW	Nominal output oil fired boiler kW	Nominal input oil fired boiler kW	Boiler water content l	Water side pressure losses** m w.c.	Boiler maximum water pressure bar	Firewood store volume l	Loading opening mm	Firewood logs length cm	Weight kg	Dimensions													
												A mm	B mm	C mm	D mm	T1 Rp	T2 Rp	T3 Rp	T4 Ømm	T5 R	T6 Rp	T7 Rp	T8 Rp	T9 Ømm	T10 Ømm
25 / 25 MODUL	24,6	28,9	-	-	73	0,20	3	100	520x340	33	425	478	721	950	451	1 1/2	1 1/2	1/2	200	1/2	1/2	-	-	-	-
30 / 30 MODUL	29,7	34,8	-	-	99	0,20	3	145	520x340	50	480	648	891	1120	621	1 1/2	1 1/2	1/2	200	1/2	1/2	-	-	-	-
35 / 35 MODUL	34,9	40,8	-	-	99	0,20	3	145	520x340	50	480	648	891	1120	621	1 1/2	1 1/2	1/2	200	1/2	1/2	-	-	-	-
45 / 45 MODUL	45,4	52,9	-	-	130	0,15	3	200	520x340	70	580	848	1091	1320	821	2	2	1/2	200	1/2	1/2	-	-	-	-
60 / 60 MODUL	60	69,4	-	-	176	0,18	3	280	520x340	100	700	1148	1391	1620	1121	2	2	1/2	200	1/2	1/2	-	-	-	-
27 HR	27	29,6	-	-	99	0,20	3	145	520x340	50	480	648	891	1120	621	1 1/2	1 1/2	1/2	200	1/2	1/2	-	-	-	-
32 HR	32	35,0	-	-	130	0,15	3	200	520x340	70	580	848	1091	1320	821	2	2	1/2	200	1/2	1/2	-	-	-	-
25 BICOMB MODUL	24,6	28,9	24,1	25,9	112	0,19	3	100	520x340	33	497	478	721	950	555	1 1/4	1 1/2	1/2	200	1/2	1/2	1 1/4	1	150	110
30 BICOMB MODUL	29,7	34,8	31	33,3	155	0,20	3	145	520x340	50	560	648	891	1120	745	1 1/4	1 1/2	1/2	200	1/2	1/2	1 1/4	1	150	110
35 BICOMB MODUL	34,9	40,8	31	33,3	155	0,20	3	145	520x340	50	560	648	891	1120	745	1 1/4	1 1/2	1/2	200	1/2	1/2	1 1/4	1	150	110

(* Output obtained with wood of good quality containing 15% of humidity. (**) Pressure losses with a flow rate corresponding to a ΔT of 15K.