



## Wood-boilers

- 3 WOOD
- PIROWOOD

# BIASI Comfort Generation



**K**nowing the market, predicting needs, offering the very best in terms of quality and safety: this is the generation of comfort, the universe of Biasi.

A universe where a calling for comfort means well-being for everyone, all over the world.

The leading players of this new generation are right here in front of your eyes. We hope you enjoy taking a look at them.

# Summary

## Traditional combustion wood-burning boilers

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CE marking of boilers in compliance with:

PED directive 97/23/CEE

Standard EN303.5

## Pyrolytic combustion wood-burning boilers

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CE marking of boilers in compliance with:

PED directive 97/23/CEE

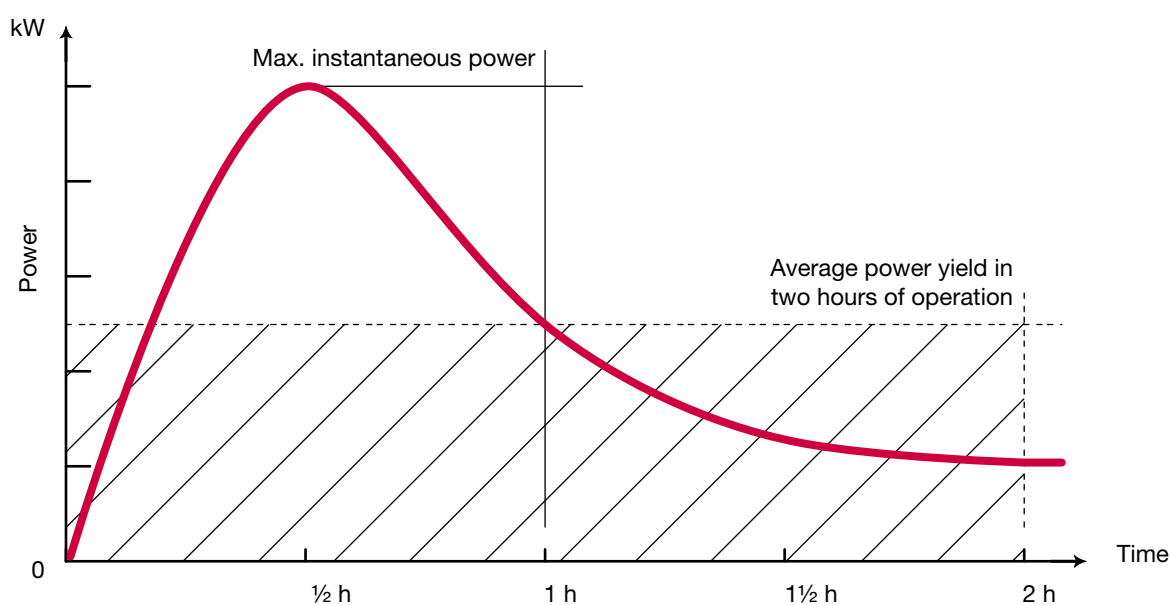
Low Voltage Directive 73/23/CEE

Standard EN303.5

## Information on applicable standards for manually-fed wood-burning boilers

Standard EN303.5 defines the test criteria for this type of unit.

In consideration of the type of fuel, tests aimed at determining performance (efficiency, emissions and power) refer to average functioning for two hours of operation without adding any more fuel to the initial load. As a result, the power of the unit is greatly influenced by the load capacity (see graph). For these reasons, in designing and developing 3Wood and Pirowood, Biasi has rewarded the spacious dimensions of the combustion chamber, to allow long-lasting operating time, so that user's comfort is increased by having the need to add fuel reduced to a minimum.





## 3 WOOD

### TRADITIONAL COMBUSTION WOOD-BURNING BOILERS.

Wood is a precious alternative energy source. Therefore, it is essential to use it in the best way possible, making use of suitable technologies for its combustion. 3Wood boilers are equipped with EN GJL 200 cast iron bodies designed to ensure maximum thermal yield and excellent draught.

#### MAIN CHARACTERISTICS

- High combustion performance
- Excellent resistance to corrosive agents
- Fire box with regular shape to ensure maximum fuel load

#### CONTROLS

- Thermostatic draught control that governs insertion of air under the grille.
- Secondary air control
- Flue draught control
- Boiler temperature thermometer

#### PRINCIPLE OF OPERATION:

Technology with 3 smoke sections

##### 1st section

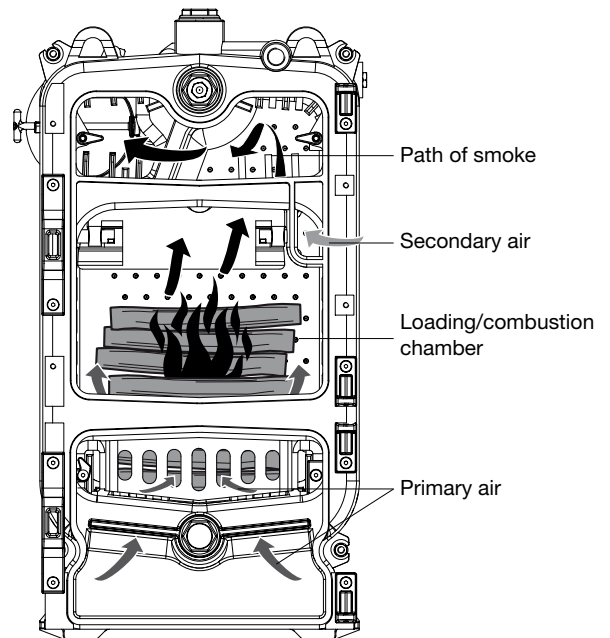
The combustion by-products are carried by a special passage obtained in the rear element. In the same area, very hot secondary air is inserted which favours complete oxidation of the gases.

##### 2nd section

The gases from the rear element are sent to a wide-finned, self-cleaning zone, made to favour entry into the third section.

##### 3rd section

The third section directs the smoke towards the flue with adjustment shutter and door for cleaning.



Model	Number of elements	Nominal average thermal power (Q <sub>n</sub> ) kW	Dimensions of door W x H cm	Dimensions of chamber W x H x D cm	Volume of loading / combustion chamber l	Ideal length of firewood cm	Dimensions (mm)			Weight Kg
							Height H	Width W	Depth D	
3WOOD 21	4	21,2	38 x 30	38 x 43 x 34	55	33	955	600	525	270
3WOOD 26	5	26,2	38 x 30	38 x 43 x 45	73	33	955	600	635	315
3WOOD 31	6	30,5	38 x 30	38 x 43 x 56	91	33	955	600	745	365
3WOOD 36	7	35,2	38 x 30	38 x 43 x 67	109	33	955	600	855	410

## Main advantages

### EASE OF LOADING AND AUTONOMOUS OPERATING TIME

- Spacious fire box to increase autonomous operating time
- Spacious loading door
- Lever for opening loading door with anti-burn protection in soft rubber

### OPTIMIZED COMBUSTION

- Designed to ensure uniform thermal load
- Distribution of secondary air with pre-heating
- Bathed and finned grille
- Fire box with spacers between load and walls
- Rear element with rungs on fire side and intermediate elements with self-cleaning fins.

### SMOKE PATH IN THREE SECTIONS

- Uniform air entry under combustion grille
- Less thermal stress
- Even distribution of unburned residues.

### ACCESSORIES

- Special safety hose attachment standard
- Heat exchange valve (optional)
- Heat exchange coil (optional)



### TECHNICAL DATA

Description	Unit of measure	3WOOD 21	3WOOD 26	3WOOD 31	3WOOD 36
<b>Fuel</b>		Wood (in pieces with relative humidity of 12÷20%)			
<b>Negative pressure at flue (Min / Max)</b>	mbar		0,1 / 0,3		
<b>Maximum permissible temperature</b>	° C		95		
<b>Operating temperature (range)</b>	° C		40 ÷ 90		
<b>Minimum permissible return temperature</b>	° C		50		
<b>“PMS” maximum operating pressure</b>	bar		4		
<b>Duration of one load</b>	h		>2		
<b>Diameter of flue fitting</b>	mm		180		
<b>Unit class*</b>	no.		1		
<b>Water side pressure drop (Δt = 15° C)</b>	mbar	12	15	18	20
<b>Water side pressure drop (Δt = 20° C)</b>	mbar	10	12	14	17
<b>Contents of water in boiler</b>	l	35	41	47	53

\* Compliant with yield and emissions.



# PIROWOOD

## PYROLYTIC COMBUSTION WOOD-BURNING BOILERS.

Wood is a precious alternative energy source. Therefore, it is essential to use it in the best way possible, making use of suitable technologies for its combustion.

The PiroWood boiler makes use of the principle of pyrolysis. The fuel placed in the loading chamber (upper) is dried and gassed. The volatile substances which are released in the process generate the combustion gas which burns with a reverse flame in the lower chamber.

### MAIN CHARACTERISTICS

- Reduced emission of pollutants and high combustion yield
- Excellent resistance to corrosive agents
- Fire box with regular shape to ensure maximum fuel load

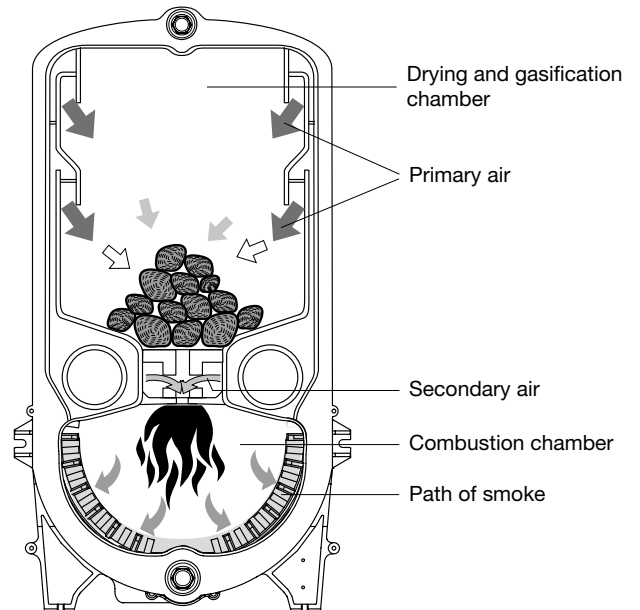
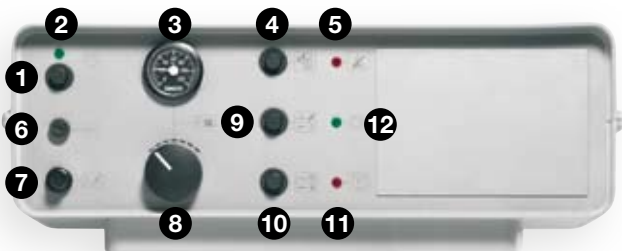
### PRINCIPLE OF OPERATION:

The primary air flows into the loading chamber through the side openings that are distributed along the length and height of the compartment. The primary air mixes with the gases produced in the gasification of the fuel (pyrolysis) and then flows through the opening on the bottom directly into the combustion chamber, where the mixture feeds the flame.

The injection of secondary air at the base of the flame completes oxidation (from CO to CO<sub>2</sub>). This minimizes the amount of non-burned material.

### CONTROL PANEL

1. Main switch
2. Signal of electrical power supply
3. Boiler thermometer
4. Activation of loading procedure
5. Smoke minimum temperature indicator light
6. Fuse
7. Thermal safety thermostat with manual reset
8. Thermostat for control of boiler temperature
9. Forced shutdown of fan
10. Summer / winter selector
11. No fuel indicator light
12. Fan indicator light



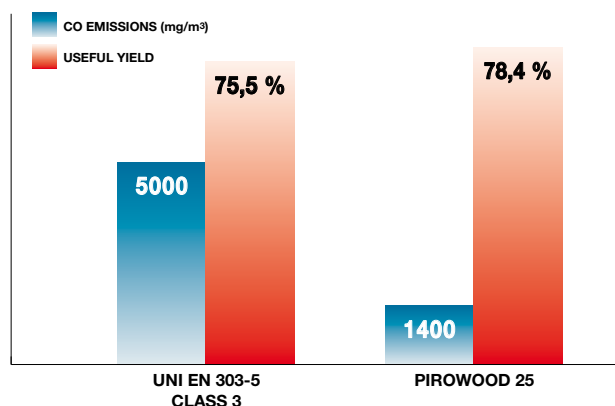
Model	Number of elements	Nominal average usable power kW	Dimensions of door W x H cm	Dimensions of chamber W x H x D cm	Volume of loading / combustion chamber l	Ideal length of firewood cm	Dimensions (mm)			Weight kg
							Height H	Width W	Depth D	
PIROWOOD 25	5	24,1	43 x 25	43 x 45 x 40	78	33	1200	700	900	410
PIROWOOD 35	7	32,9	43 x 25	43 x 45 x 60	116	50	1200	700	1100	520

## Main advantages

### EMISSIONS AND YIELD

The gasification of wood and combustion with reverse flame allow an especially low level of emissions. The high exchange surface located in the lower part of the generator optimizes the transmission of heat to the water of the system.

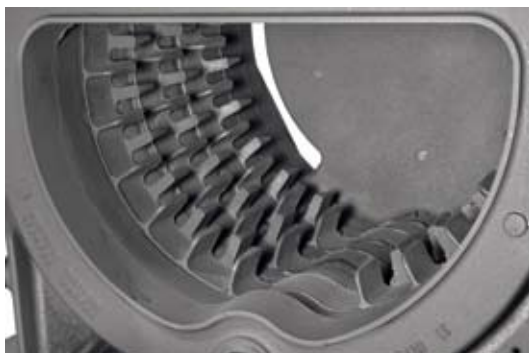
The graph shows the yield and emission values of Pirowood 25 with reference to technical standard UNI-EN 303.5 according to which Pirowood has Class 3.



### THE ADVANTAGES OF CAST IRON

The advantages of cast iron are:

- Structure with monobloc elements
- No internal mechanical stress
- Resistance to corrosion
- Self-cleaning finned exchange surfaces.



### POWER CONTROL

Mechanical adjustment along with fan control make it possible to regulate the power of the unit to the thermal loads of the system. This leads to improved use of the load and hence increased autonomous operation.

Air adjusters



Fan group



### TECHNICAL DATA

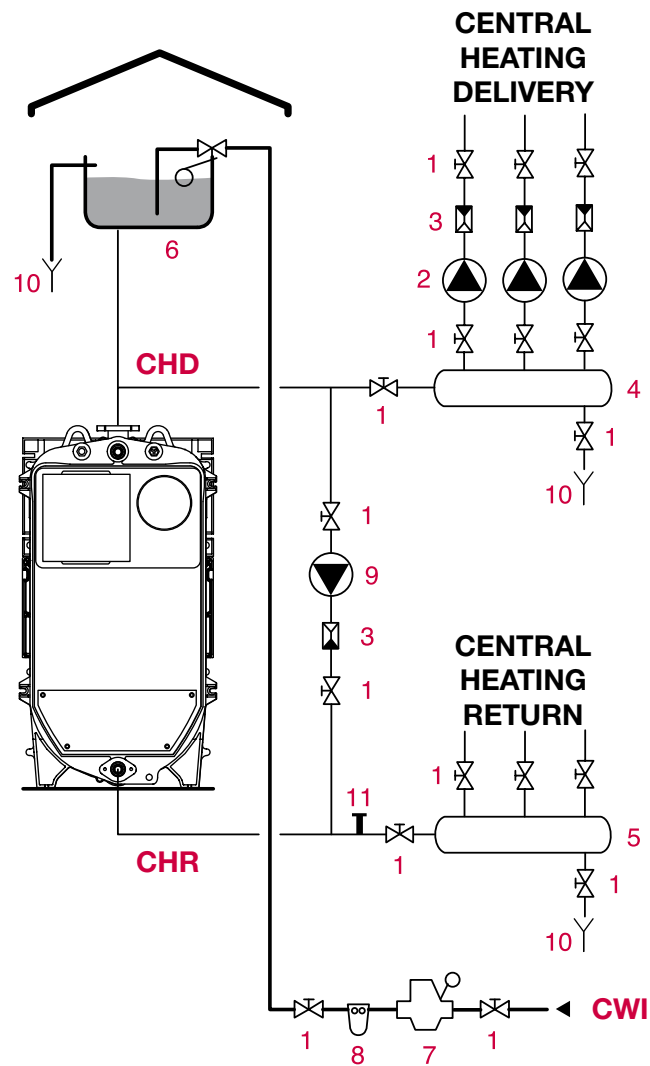
Description	Unit of measure	PIROWOOD 25	PIROWOOD 35
Fuel		Wood (in pieces with relative humidity of 12=20%)	
Negative pressure at flue (Min / Max)	mbar	0,25 / 0,35	
Maximum permissible temperature	° C	110	
Operating temperature (range)	° C	70 - 85	
Minimum permissible return temperature	° C	50	
"PMS" maximum operating pressure	bar	4	
Electrical power supply	V ~ Hz	230 ~ 50	
Max. absorbed electrical power	W	120	
Unit class*	n°	3	
Duration of one load	h	≥ 2	
Diameter of flue fitting	mm	150	
Water side pressure drop (Δt = 15° C)	mbar	30	50
Water side pressure drop (Δt = 20° C)	mbar	18	30
Contents of water in boiler	l	70	88

\* Compliant with performance and emissions.

# 3WOOD and PIROWOOD

## DIRECT CONNECTION TO CENTRAL HEATING PLANTS

Traditional system where the generator in use directly supplies the heating circuit and is the only source of thermal energy.



### KEY

- |                        |   |
|------------------------|---|
| 1. Cut-off valves      | 8. Filter / softener                          |
| 2. Circulator pumps    | 9. Possible anti-condensation pump            |
| 3. Non-return valves   | 10. Discharges                                |
| 4. Delivery manifold   | 11. Probe for possible anti-condensation pump |
| 5. Return manifold     | 12. CHD = central heating delivery            |
| 6. Open expansion tank | 13. CHR = central heating return              |
| 7. Pressure reducer    | 14. CWI = cold water inlet                    |

Note: Please check the country regulation before installing cut-off devices on the safety pipe.

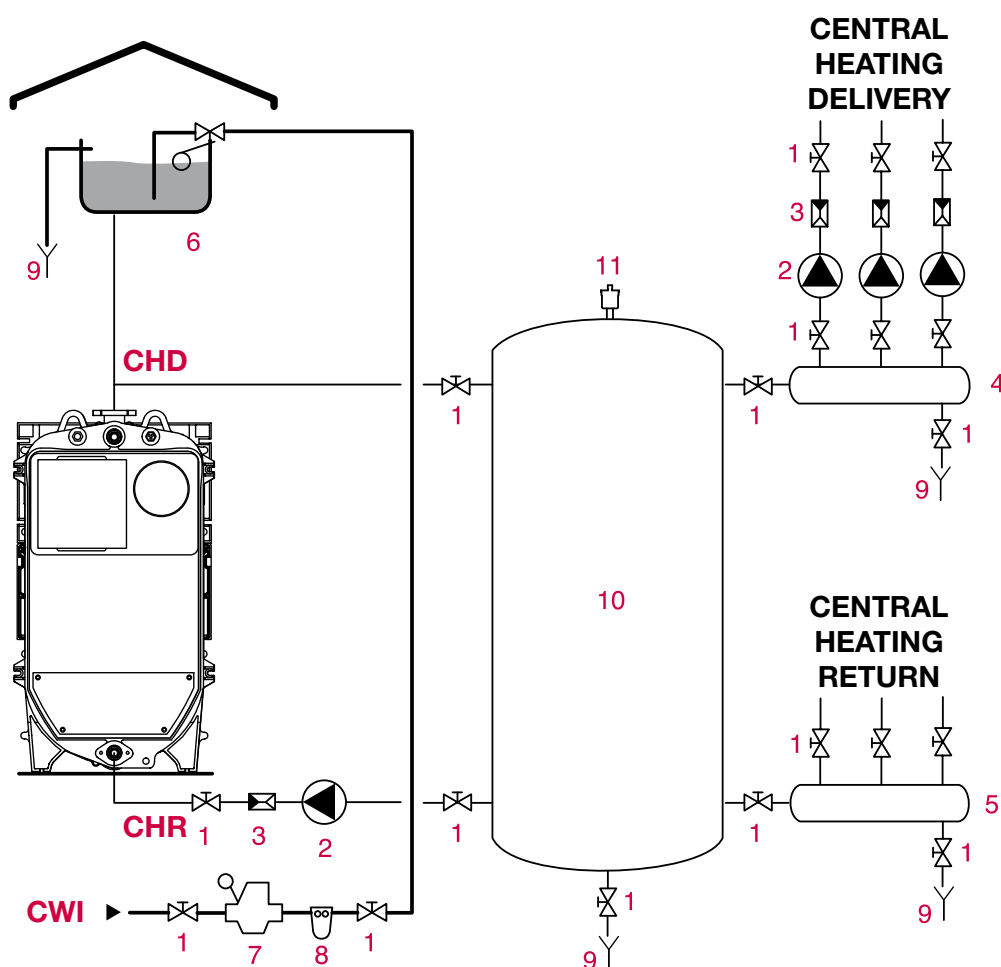


## Diagrams of principle

The selection and installation of components of the system are under the responsibility of the installer

### WITH ENERGY ACCUMULATOR TO SUPPLY THE CENTRAL HEATING PLANTS

System where the generator, even if it is the only source of thermal energy, supplies an accumulator which the plants draw from. The use of the energy accumulator makes it possible to run the generator at full power regardless of absorption at the moment.



#### KEY

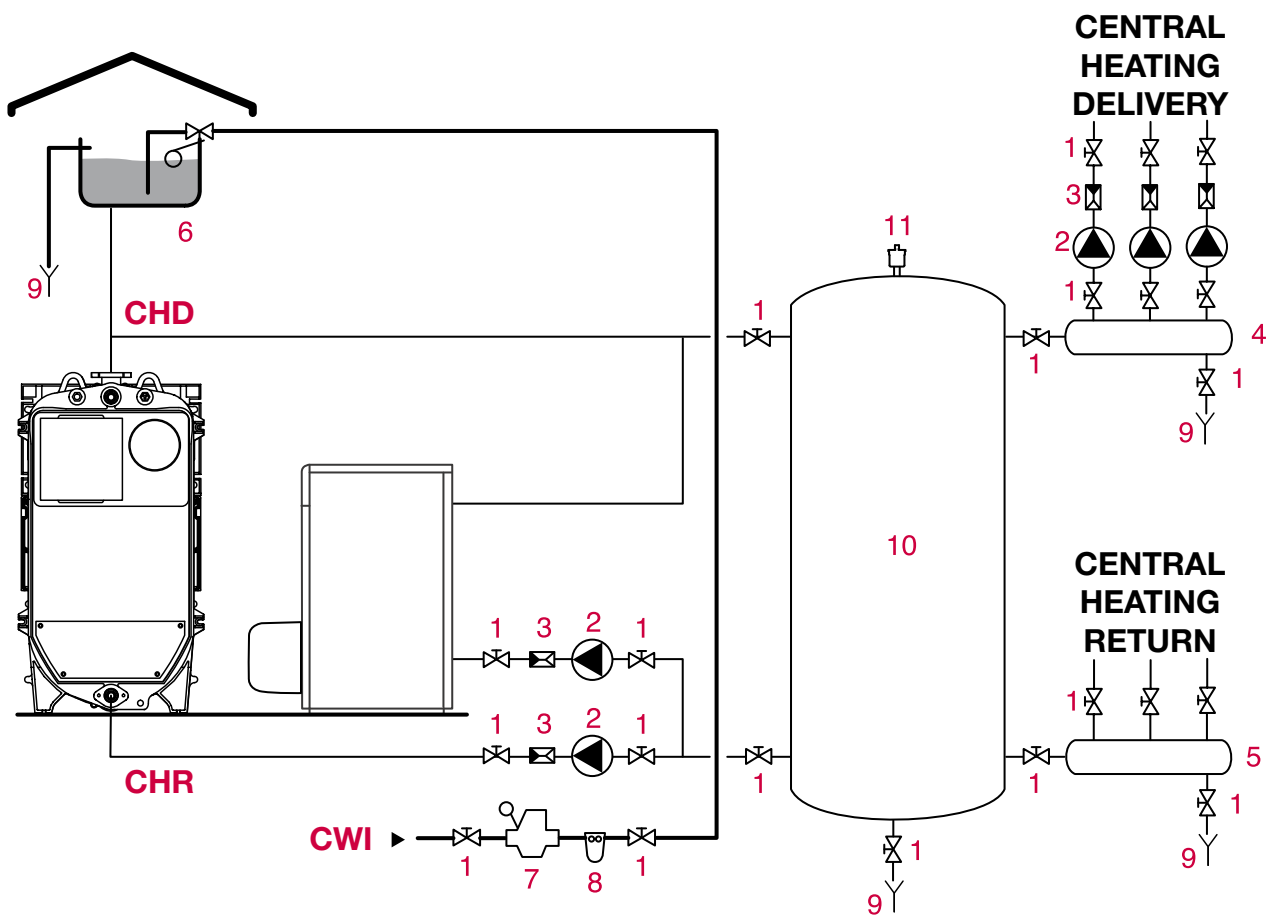
- |                        |                                    |
|------------------------|------------------------------------|
| 1. Cut-off valves      | 8. Filter / softener               |
| 2. Circulator pumps    | 9. Discharges                      |
| 3. Non-return valves   | 10. Energy accumulator             |
| 4. Delivery manifold   | 11. Air valve                      |
| 5. Return manifold     | 12. CHD = central heating delivery |
| 6. Open expansion tank | 13. CHR = central heating return   |
| 7. Pressure reducer    | 14. CWI = cold water inlet         |

Note: Please check the country regulation before installing cut-off devices on the safety pipe.

# 3WOOD and PIROWOOD

IN CONJUNCTION WITH ANOTHER BOILER, WITH ENERGY ACCUMULATOR

System with double generation of thermal energy. Based on needs, availability and user habits, one or the other can be used. Also in this case, an energy accumulator is to be used.



## KEY

- |                        |                                    |
|------------------------|------------------------------------|
| 1. Cut-off valves      | 9. Discharges                      |
| 2. Circulator pumps    | 10. Energy accumulator             |
| 3. Non-return valves   | 11. Air valve                      |
| 4. Delivery manifold   | 12. CHD = central heating delivery |
| 5. Return manifold     | 13. CHR = central heating return   |
| 6. Open expansion tank | 14. CWI = cold water inlet         |
| 7. Pressure reducer    |                                    |
| 8. Filter / softener   |                                    |

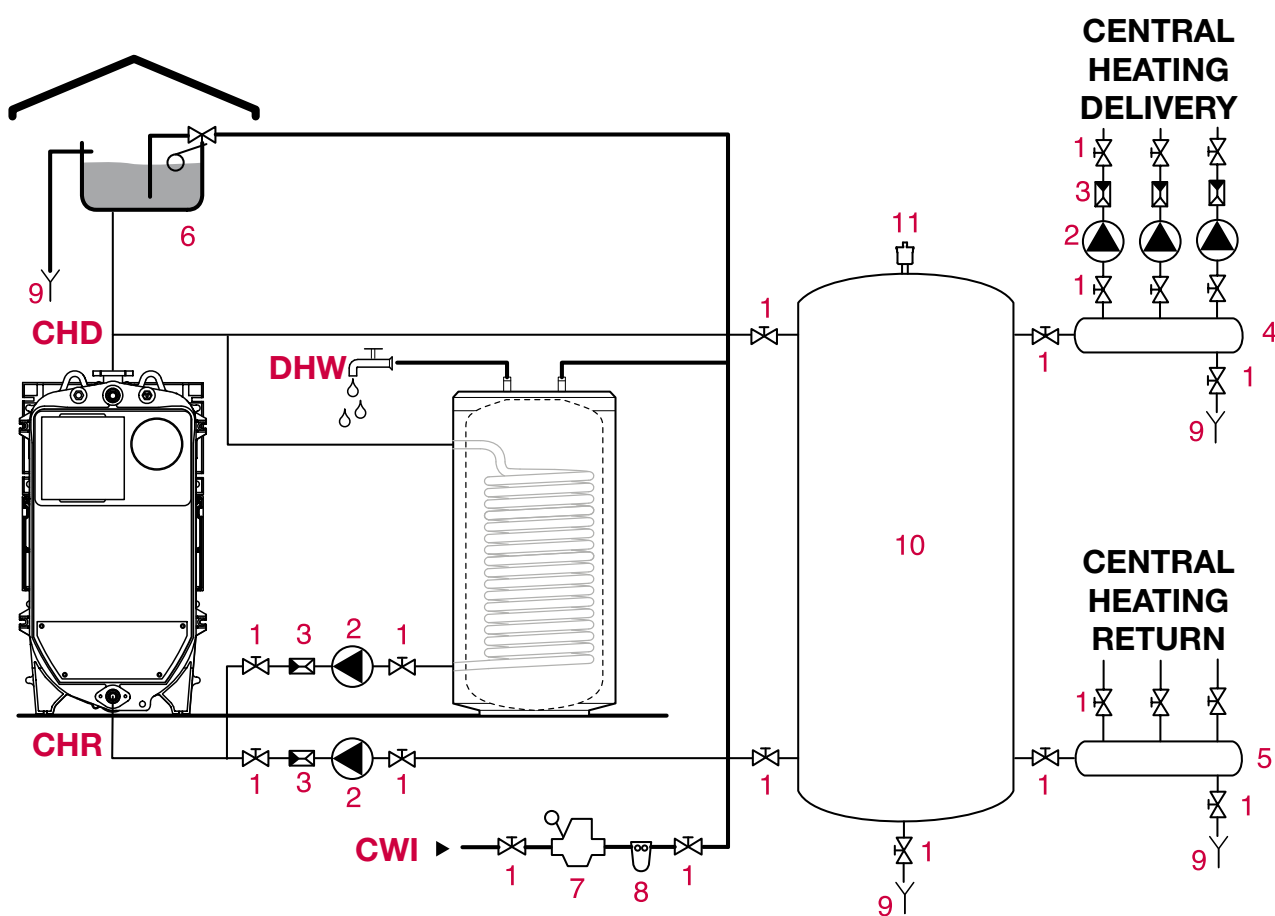
Note: Please check the country regulation before installing cut-off devices on the safety pipe.

## Diagrams of principle

The selection and installation of components of the system are under the responsibility of the installer

### IN CONJUNCTION WITH AN DHW BOILER, WITH ENERGY ACCUMULATOR

System where the generator, even if it is the only source of thermal energy, supplies an accumulator which the plants draw from and a boiler for the production of domestic hot water.



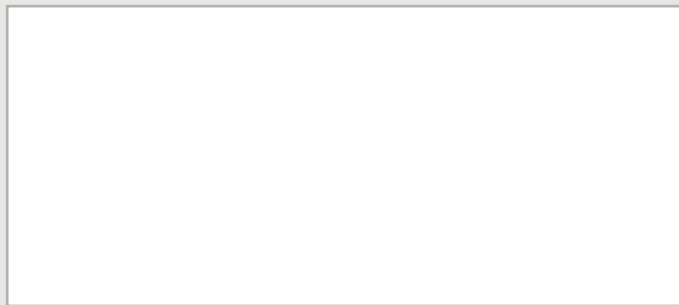
#### KEY

- |                        |                                    |
|------------------------|------------------------------------|
| 1. Cut-off valves      | 9. Discharges                      |
| 2. Circulator pumps    | 10. Energy accumulator             |
| 3. Non-return valves   | 11. Air valve                      |
| 4. Delivery manifold   | 12. CHD = central heating delivery |
| 5. Return manifold     | 13. CHR = central heating return   |
| 6. Open expansion tank | 14. CWI = cold water inlet         |
| 7. Pressure reducer    | 15. DHW = domestic hot water       |
| 8. Filter / softener   |                                    |

Note: Please check the country regulation before installing cut-off devices on the safety pipe.



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**This catalogue replaces the previous one.**

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