

Professional practical guide

Logs burning boilers & accumulator tanks



A FRENCH MANUFACTURER...



Since 1971, independent and “innovator” manufacturer PERGE, design and produce a full range of **oil and biomass (log and pellets) fired boilers**.

Our “mission statement” is to protect the environment and of course save energy.

We endeavor to manufacture as much of our products in France, and preferably in house.

We have a dedicated training centre, where trade professionals are shown new technologies and are taught how to install and service our appliances.



... PASSIONATE ABOUT WOOD BURNING

Why choose wood energy?

This energy helps in the fight against climate warming : Wood burning is carbon neutral in respect of the emission of CO₂ (a greenhouse gas), as this process only releases the CO₂ that was absorbed by the wood, when the tree was growing.

Wood was the first fuel used by man, and is a truly ecological and renewable energy.

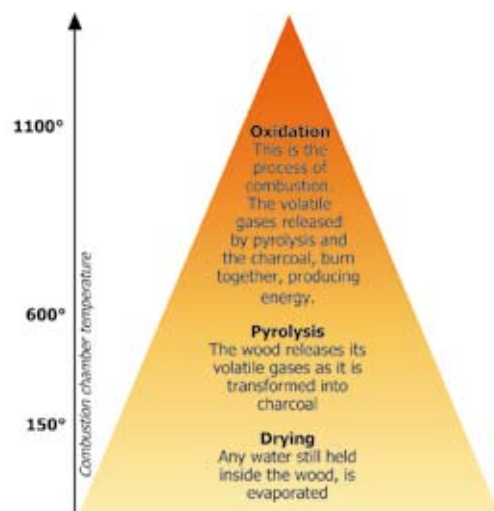
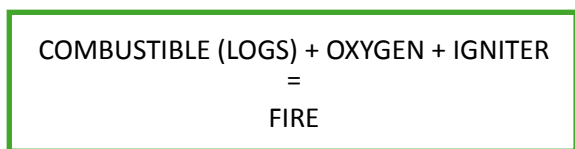
With intelligent forest management, this is an endless source of energy, also offering energy independence and limits green-house gas emissions.

Technical progress in combustion technologies in recent years, have brought about dramatic reductions in fuel consumption and emissions.



SOME FACTS TO REMEMBER :

Wood combustion



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Wood combustion

Combustion will be as complete as possible, if the supply of oxygen is optimum.

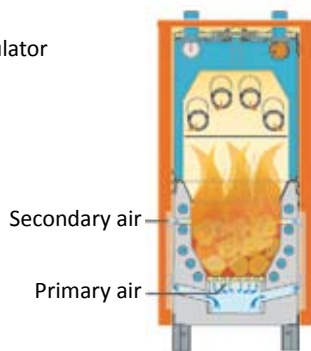
A good combustion will allow flame temperatures of 1100°C, giving the boiler its maximum power.

Air for combustion (20% oxygen), is drawn into the boiler by the draught created by the chimney.

The control and management of the draught is essential for good combustion. The use of a draught regulator, if not mandatory, is strongly recommended. PERGE indicate, for each model in their boiler range, the values (mini. and max.) of the flue draught needed for the proper working of its boilers.



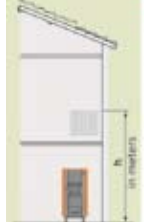
Draught regulator



Flow water thermometer, to be positioned no more than 1 metre from the boiler, tapping 1/2 " male.

Sizing the expansion vessel on sealed systems

To pressurise the expansion vessel (Pv)

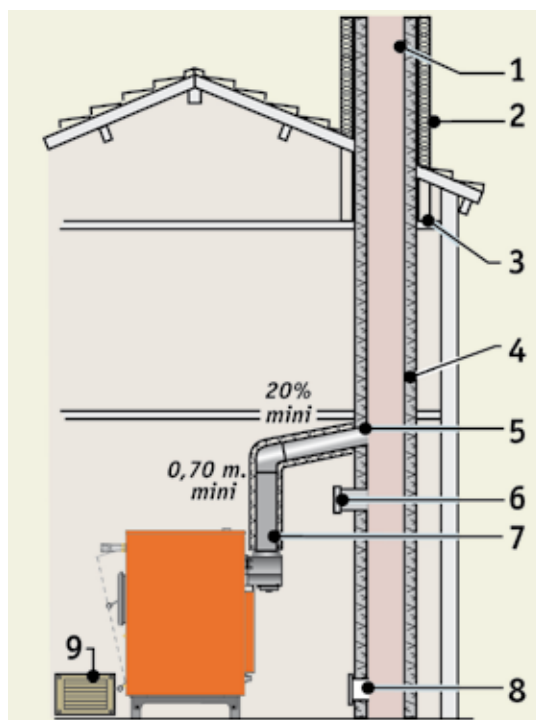


Height h to top radiator	Pv
5	1,5
6	1,6
7	1,7
8	1,8
9	1,9
10	2

Capacity of the expansion vessel, in litres (Vv)

	Pv	1,5	1,6	1,7	1,8	1,9	2.0
Total volume of primary water in the installation	300	19	20	21	22	23	24
	400	26	27	28	29	30	32
	500	32	33	35	36	38	40
	1000	64	67	70	73	76	80
	1500	96	100	104	109	114	120
	2000	128	133	139	145	152	160
	3000	192	200	209	218	229	240

A good chimney will give good performances



Flue connections and installation must comply with existing building regulations and also follow our instructions:

- 1 - Chimney stack, to comply with building regulations.
- 2 - Exterior cladding.
- 3 - Insulation.
- 4 - Smooth internal surfaces, preferably straight.
 - Square or rectangular sections; minimum 200mm x 200mm, maximum 250mm x 250mm.
 - Circular section: minimum 180mm diameter, maximum 200 mm diameter.
 - Minimum height of the flue, from the top of the boiler to the top of the chimney stack, must be 6 meters.
- 5 - No more than two 45° bends, the first one at a minimum height of 750mm. from the top of the boiler. Maximum distance between the two 45° bends is 700 mm.
- 6 - The draught regulator must be fitted below the boiler/chimney connection.
- 7 - Twin wall flue should be used in an open location (lean-to).
- 8 - Chimney sweeping door; must be air tight.
- 9 - Boiler room ventilation: 0.04m², minimum.

PERGE BOILER KNOW-HOW AND TECHNOLOGIES

Refractory cement combustion chamber

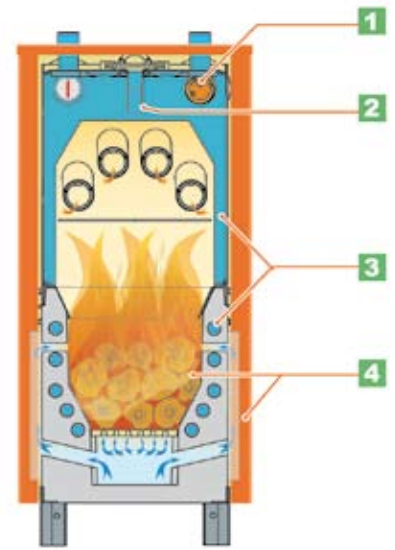
PERGE patented, combustion chamber lay-out.

In a cast-iron or steel boiler, the metallic combustion chamber sides never get hotter than about 90°C.

In the PERGE MC CI boilers; the heating loop return water, first goes through a tubular steel lower heat exchanger, which is encased in refractory cement, forming the combustion chamber and forbidding any direct fire to metal contact: The water does not “rob” heat from the combustion process.

The temperature inside the combustion chamber on the refractory cement sides, rapidly rises through 500°C, giving a clean and complete combustion, with very little soot and no tar.

Thanks to this design, the PERGE MC CI boilers are not affected by condensation forming on the heat exchanger due to the “dew point” phenomenon.



1 Safety features

The boiler water temperature control (aquastat), allows accurate setting of the temperature of the water produced by the boiler. Once the required temperature is reached, the “aquastat” closes the air supply vent.

Every Perge boiler is factory fitted with a quench coil, built into the top heat exchanger. Connecting this coil via a thermostatic valve is mandatory on sealed systems.



aquastat

2 Thermo siphon

The design of the Perge MC CI boiler, allows it to work perfectly well on open-vented, gravity fed systems (Thermo siphon). This also allows the boiler to be factory fitted with a 150L, stainless steel DHW tank (optional).

3 Long working life

Thanks to its “twin heat exchanger” design, the return primary water cannot enter the top heat exchanger at a temperature below 40°C, preventing any risk of condensation.



quench coil

4 High efficiencies

With efficiencies of around 80%, the Perge MC CI boilers give a very good return on the cost of your fuel. There are high levels of insulation on all sides of the boiler.



Lower heat exchanger with “blind” water tubes. This pre-heats the return primary water, before allowing it to enter the top heat exchanger.

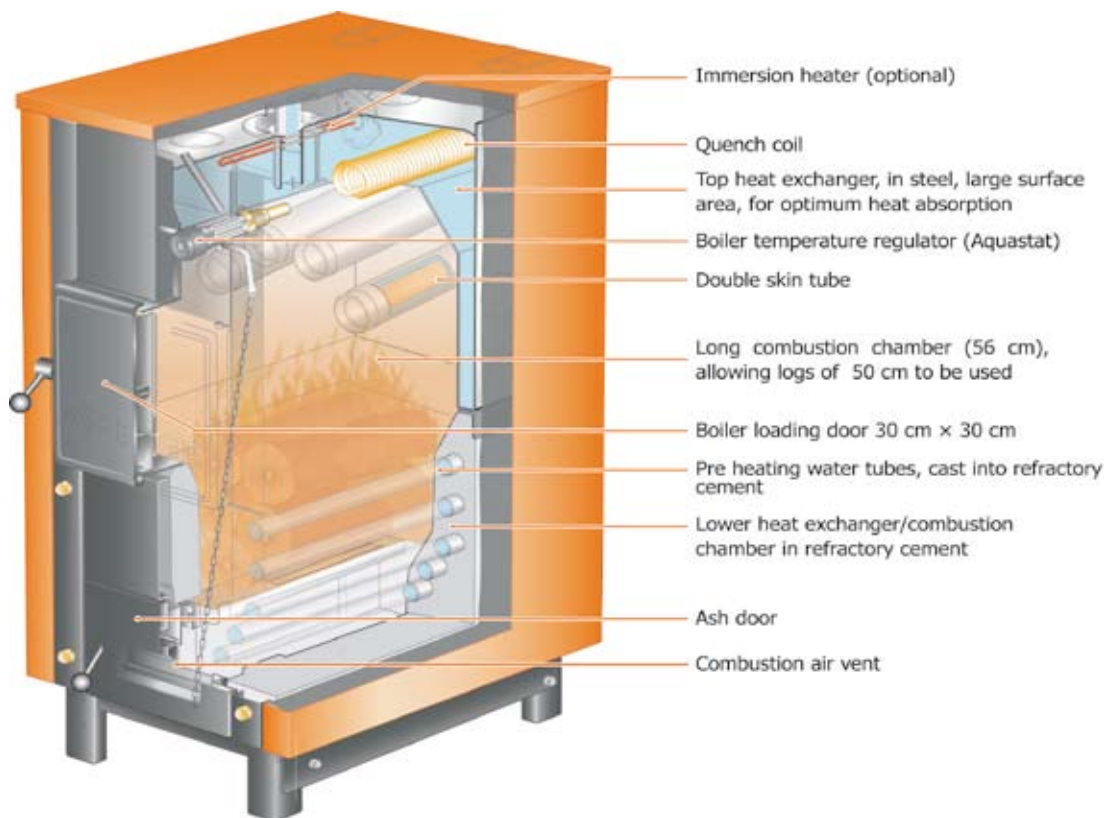


Lower heat exchanger, being cast into the refractory cement.

Lower heat exchanger, after casting.



PERGE BOILER KNOW-HOW AND TECHNOLOGIES



Optimum efficiency

The high temperatures reached inside the combustion chamber, thanks to the refractory cement, guarantee a clean and complete combustion.

Low maintenance

The high combustion temperatures, produce a minimum amount of ash and the combustion chamber remains clean.

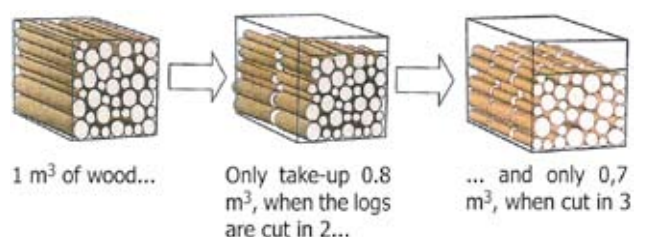
SOME USEFUL FACTS

WOOD IN NUMBERS

Density of wood

By definition, the density of wood, is the weight in kilograms of wood, by units of volume (m^3), at a temperature of $15^\circ C$. The weight of a cubic metre of wood, at 20 to 25% humidity, depends on what type of tree it came from; for example:

	Essences	Weight of a cubic metre (kg)
Broad-leaf	Birch (silver)	320 to 380
	Beech - Ash	360 to 420
	Oak	380 to 450
	Hornbeam	420 to 480
Resinous	Fir - Spruce	260 to 320
	Pine	300 to 360



MC CI BOILERS RANGE



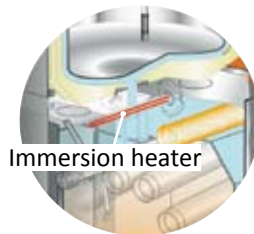
- ✓ Heating only models and heating + DHW tank models
- ✓ Outputs from 5 to 30 kW
- ✓ High efficiencies (around 80%)
- ✓ Refractory cement combustion chamber, for a clean and high temperature combustion
- ✓ Steel top heat exchanger and refractory cement coated, lower heat exchanger
- ✓ Anti-boiling quench coil, allowing installation into a sealed (pressurised) heating system
- ✓ Boilers can be connected to open vented, gravity fed heating systems
- ✓ Minimum flue draft: 13 to 18 Pa
- ✓ Flue diameter 180 mm

M.C. CI with 150L stainless steel DHW tank

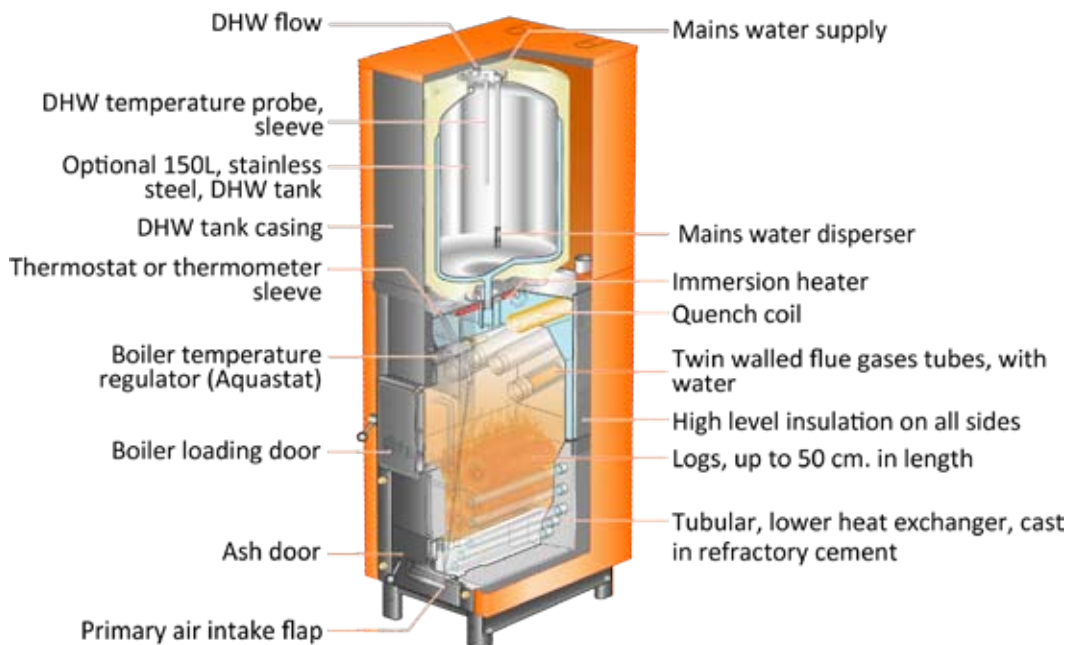
A twin energy option (can be retro-fitted) : Electricity + Wood

A 3.5 kW, immersion heater, allows DHW preparation during the summer, without firing the boiler.

Installation of the DHW tank

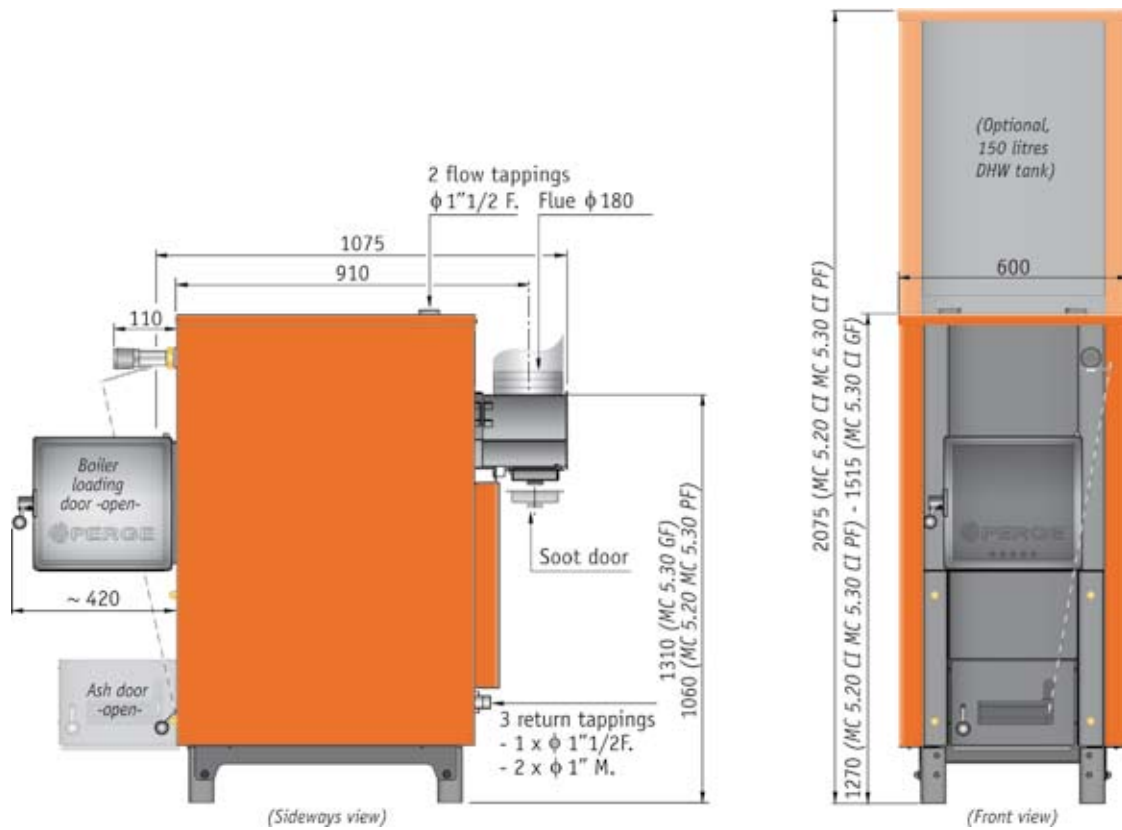


Immersion heater



MC CI BOILERS RANGE

Dimensions



Model	Output kW	Volume DHW tank l	Dimension of loading door mm	Dimensions of the combustion chambr			Flue diameter mm	Weight kg	Reference
				width mm	lenght mm	Hight mm			
Heating only									
MC 5.20 CI	20	-	308 x 308	340	560	495	180	425	902007
MC 5.30 CI PF	30	-	308 x 308	340	560	495	180	445	902011
MC 5.30 CI GF	30	-	308 x 308	340	560	735	180	527	902020
Heating + DHW tank									
MC 5.20 CI B150	20	150	308 x 308	340	560	495	180	477	902012
MC 5.30 CI PF B150	30	150	308 x 308	340	560	495	180	497	902021

Optional equipment

Description	Reference
Thermostat THF	900016
Thermostatic safety release valve	900285
3.5 KW immersion heater	900289



900016



900285



900289

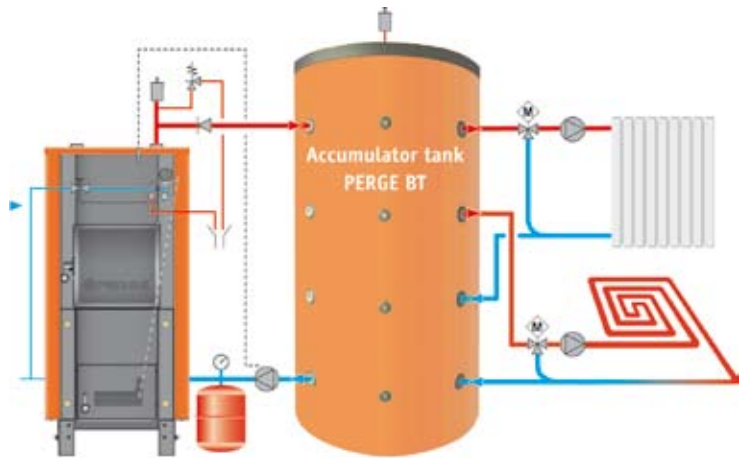
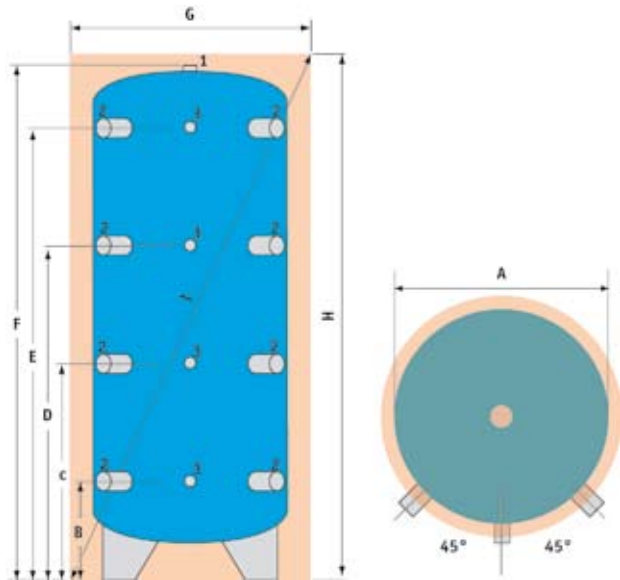
ACCUMULATOR TANKS



- ✓ Insulation, in CFC free polyurethane, protected by a hard wearing outer skin

Description	Capacity	Weight	Reference
	l	kg	
BT accumulator tanks			
BT 1000	855	180	900294
BT 1500	1449	240	900296
BT 2500	2346	350	900298

Tapings	Models 1000 / 2500
1. Vent	1" 1/4
2. Flow and return tapings to boiler and heating loops	1" 1/2
3. Thermometer sleeves	1/2"



N.B: The above diagram shows a typical Perge log burning boiler connected to an accumulator tank. Indeed, because of the ingenious design of the Perge «Twin Heat Exchangers»; the need for a thermostatically controlled loading valve is removed; this is why: because the return, cool water from the bottom of the accumulator tank is «Pre-heated» to over 40 degrees centigrade, in the refractory ceramic coated, lower heat exchanger; this prevents the occurrence of the «Dew point» condensation in the top heat exchanger.

Modèle	A	B	C	D	E	F	G	H	I
1000	790	340	800	1260	1720	1970	990	2050	2275
1500	1000	390	850	1310	1770	2085	1200	2165	2474
2500	1250	395	855	1315	1775	2140	1450	2220	2649



+44 (0) 1332 989786

www.perge.co.uk