

Unical®

GASOGEN 3^{2S}

PYROLITIC WOOD FIRED BOILER
WITH PUSHING FAN



The evolution of a "must"

GASOGEN 3 2S is the evolution of the wood logs fired range of boilers:

- *total gasification*
- *reversed flame*
- *blown air fan*

There are 8, high efficiency, available models, with maximum outputs ranging from 29 to 93 kW, made by two elliptical elements, one into the other.

In the inter-space between the two elements there is the water which is the thermal carrier fluid. The wood logs are stored in the room placed above a special grate which separates it from the underlying combustion chamber, equipped with refractory catalyst, which improves the combustion. The lower part of this one is made by a steel cradle, on whose reverse

side there are special channels through which the combustion products complete their run to the smoke chamber, from which they are sent to the chimney.

Reversed flame combustion and gasification

In order to obtain the log wood gasification, we exploited a particular technology, so called "*at reversed flame*" which, on the contrary of what normally happens, reverses the flame direction *up-down*.

For this purpose the help of a blowing fan, placed upstream the combustion chamber, is necessary, because the natural draught of a normal chimney doesn't allow to firmly check the phenomenon.

Thanks, therefore, to the fan and to the possibility to regulate the combustive air, the wood logs develop a particular form of combustion, called "Pyrolysis" that, through the elevated temperature, transforms the cellulose in simpler compounds that burn in the underlying combustion chamber, with a flame entirely similar to that of the natural gas, with particularly elevated efficiencies.

The fan allows, besides, to eliminate the problems of cold starts, to reduce the smoke ways, subsequently increasing the efficiency.

GASOGEN GLG3 2S an extra safety

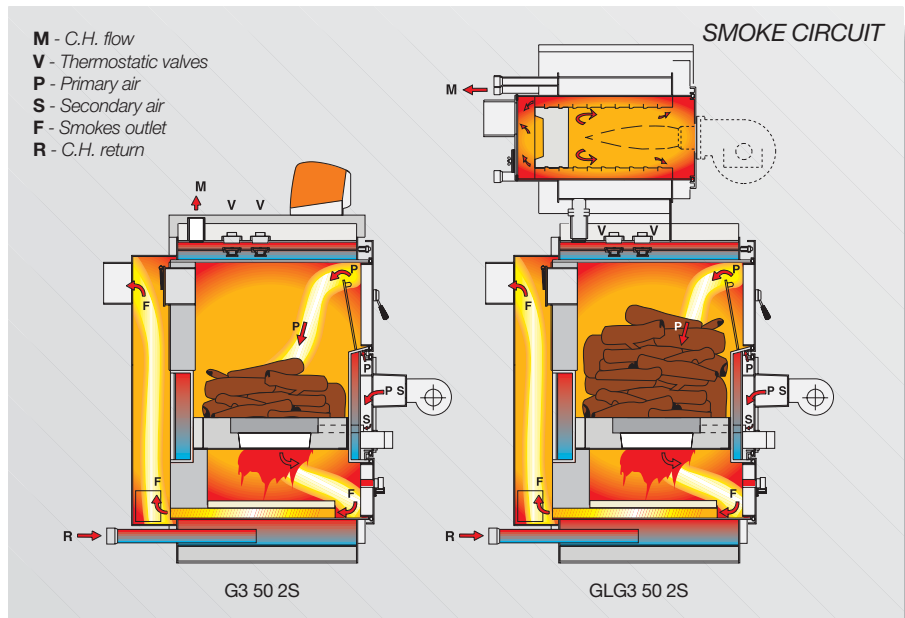
In the range are available also three models of the version "LG3", endowed with an auxiliary overlying boiler.

The peculiarities are the same of the basic version, but, in addition, there is the safety of an auxiliary pressurized boiler, for oil or gas pressure jet burner, ready to enter in operation when the wood is finished (if programmed) or on request of the user, if managed with manual program.



GASOGEN 3 2S

Ancient resources for new energies



Protection from corrosion

By foreseeing the use of woody fuels not always of first quality, therefore richer in humidity, GASOGEN 3 2S needs to defend itself from the corrosion phenomena that could derive from them. Therefore Unical has adopted, on all the models,

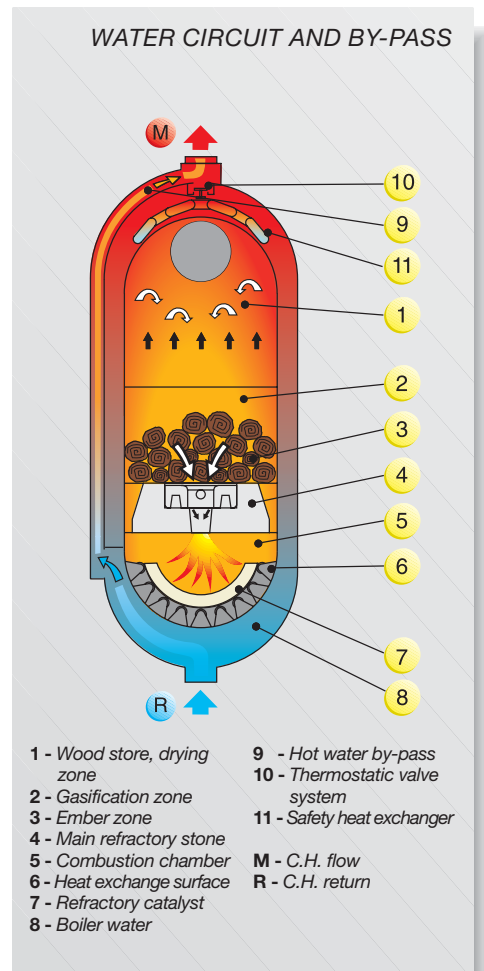
- carbon steel sheets with 8 mm thickness
- special **anti-condensing thermostatic valves** (one for models 25 and 40, and 2 for models 50 to 80), positioned in the upper part of the inter-space between the two elliptical elements.

These allow to maintain constantly high the temperature around the log wood store. Placed on the C.H. flow of the boiler, they intercept the water circuit in the starting phase of the boiler until the water temperature is not stabilized around the 70 °C, i.e. out of the smoke dew temperature. In this case the stoppage phenomena in the smoke circuits and in the combustion chamber and, with the gradual opening of the valves, also the thermal shocks between boiler and C.H. installation are reduced. Besides, not to delay the steady state of the C.H. system, a special bypass has been introduced, in order

to guarantee, also during the starting phase, warm water in the flow connection. Placed between the exit of the thermostatic valves and the external element of the boiler inter-space, it allows the water, coming from the lower part, and heated first thanks to the reversed flame, to be directly introduced in C.H. system flow, while the boiler is reaching the optimal temperature.

To reduce the heat losses through the casing, a rock wool insulation of 60 mm, protected by an anti-tear textile covering, is used.

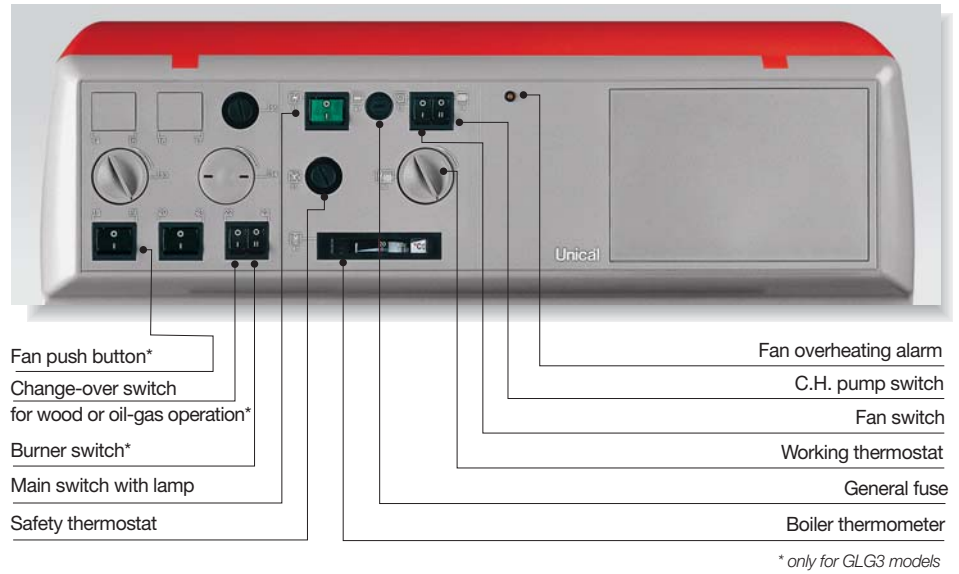
Thermostatic valves
Unical patent



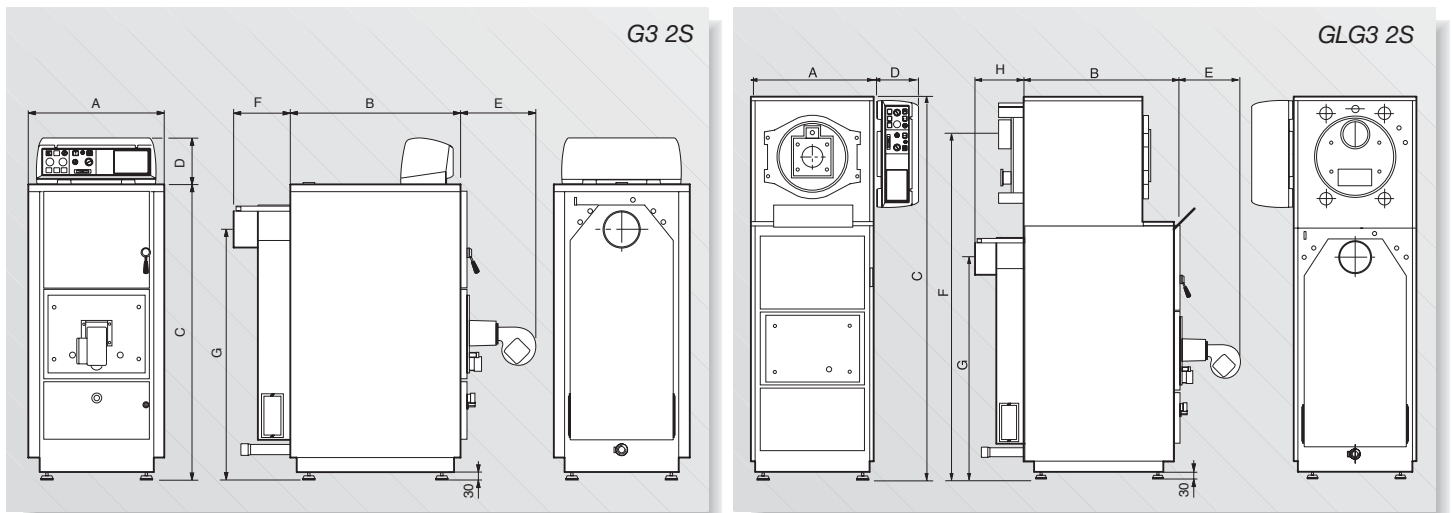
The panel board

The **electromechanical panel board** is supplied as standard on the models G3 2S and it allows to automatically manage the pushing fan that, starting and stopping according to the working temperature set on the boiler thermostat, controls the combustion, reducing therefore the consumption of the wood.

The GLG3 2S version is endowed with an **electronic panel board** that manages, both, in automatic and manual mode, the lighting of an auxiliary (oil or gas fired) boiler.



Dimensions and technical data



| GASOGEN | Min. Output for wood operation | Nominal Output for wood operation* | Max. Output for wood operation | Nominal Output for oil/gas operation | Nominal Input for oil/gas operation | Max. Input for wood operation | Boiler water content | Pressure drop water side** | Pressure drop smoke side for oil/gas operation mm w.c. | Pressure drop smoke side for wood operation mm w.c. | Boiler Max. work. pressure | Wood log store volume | Wood loading opening | Wood logs lenght | Weight | Dimensions | | | | | | | |
|------------|--------------------------------|------------------------------------|--------------------------------|--------------------------------------|-------------------------------------|-------------------------------|----------------------|----------------------------|--|---|----------------------------|-----------------------|----------------------|------------------|--------|------------|------|------|-----|-----|------|------|-----|
| | | | | | | | | | | | | | | | | A | B | C | D | E | F | G | H |
| model | kW | kW | kW | kW | kW | kW | l | m w.c. | mm w.c. | mm w.c. | bar | l | mm | cm | kg | mm | mm | mm | mm | mm | mm | mm | mm |
| G3 25 2S | 15 | 26 | 29 | - | - | 34 | 90 | 0,10 | 0,3 | - | 3 | 95 | 290 x 340 | 50 | 350 | 560 | 700 | 1225 | 190 | 315 | 245 | 1030 | -- |
| G3 40 2S | 23 | 37 | 47 | - | - | 55 | 110 | 0,08 | 0,4 | - | 3 | 135 | 350 x 440 | 50 | 430 | 655 | 700 | 1355 | 190 | 315 | 245 | 1140 | - |
| G3 50 2S | 29 | 47 | 58 | - | - | 69 | 140 | 0,12 | 0,6 | - | 3 | 185 | 350 x 440 | 70 | 520 | 655 | 900 | 1355 | 190 | 315 | 245 | 1140 | - |
| G3 65 2S | 41 | 64 | 76 | - | - | 88 | 170 | 0,06 | 0,3 | - | 3 | 235 | 340 x 520 | 70 | 630 | 755 | 955 | 1405 | 190 | 315 | 245 | 1180 | - |
| G3 80 2S | 52 | 76 | 93 | - | - | 109 | 220 | 0,10 | 0,5 | - | 3 | 325 | 340 x 520 | 100 | 850 | 755 | 1255 | 1405 | 190 | 315 | 245 | 1180 | - |
| GLG3 25 2S | 15 | 26 | 29 | 26 | 28 | 34 | 120 | 0,19 | 0,3 | 1,6 | 3 | 95 | 290 x 340 | 50 | 470 | 560 | 700 | 1775 | 190 | 520 | 1575 | 1030 | 245 |
| GLG3 40 2S | 23 | 37 | 47 | 35 | 38 | 55 | 155 | 0,20 | 0,4 | 2,0 | 3 | 135 | 350 x 440 | 50 | 570 | 655 | 700 | 1955 | 190 | 520 | 1720 | 1140 | 245 |
| GLG3 50 2S | 29 | 47 | 58 | 52 | 57 | 69 | 195 | 0,27 | 0,6 | 2,2 | 3 | 185 | 350 x 440 | 70 | 730 | 655 | 900 | 2005 | 190 | 570 | 1775 | 1140 | 245 |

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