

Biomass Boilers

Edition 2.4





Biomass Boilers

Biomass Heating systems offer an economical and enviro-friendly option for heating generation.

Biomass Heating systems burn wood pellets or wood logs to provide warmth to power central heating for domestic or commercial applications. They provide low carbon heat due to the fact the carbon dioxide emitted when wood is burned is the same amount that has been absorbed over the months and years that the plant was growing. The process is sustainable as long as new plants continue to grow in place of those used for fuel.



Fokolus Wood Boilers

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Pellexia Pellet Boilers

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Airex Wood Boilers

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Fokolus Wood Boilers 20 – 42kW

The force of steel, the heating energy of stone

Obtaining energy for heating in different ways is essential, not only for the whole country, but also for each individual who has the opportunity.

As part of Unical's programme for exploiting biomass in order to attain a major harmony with the environment, we are pleased to present three new wood log boilers, ideal for those consumers who, aware of the energy problems they are facing, desire products easy to use, with high performances and reduced fuel consumption, without having to resort to onerous investments.

Simplicity and perfection

The range of FOKOLUS boilers sums up the most primitive features which wood evokes. On one hand nature and on the other the technology which Unical has been able to develop. With the combustion process, the whole cycle which characterizes renewable energies comes to a close.

The results are: comfort, economics, friendly environmental, all offered "naturally" by FOKOLUS.





Features

Controlled combustion, long boiler operation and reduced emissions

The optimization of combustion is guaranteed by the thermostatic primary air inlet regulator and by the micrometric secondary air regulator.

However, it is the use of a special **refractory catalyst**, positioned in the combustion chamber's upper vault, which favours the pyrolysis process of the cellulose and the reduction of CO emissions.

Once this real and proper "stone catalyst" has reached the working temperature, it contributes determinedly to the wood's complete combustion.

The organic molecules are thus transformed in primary gaseous elements and solid residual products. The first are burnt, the latter, in the intensive heat, burn thanks to the secondary air, with the so called "slow flame", which enables the boiler to operate for longer, and so reduces the need of refuelling.

At the end of the process, the noncombustible ashes will fall into a large ash pan placed underneath the grate.

The passage of the flue gasses takes place vertically, from the bottom to the topmost direction, then they enter the "tunnel" in the vault, built in a special refractory catalyst material, and enter head-on into the hollow space between the latter and the arched vault, soaked by the system's water, then they flow out through the rear outlet.

Product Quick Check

Туре	Wood Log Boile
Range	20-42kW
Efficiency	89%
Fuel Type	Wood Logs

Max Pressure Building J Code

300kPa Yes





Dimensional and Technical Data



Key 1

- Upper loading door
- 2 3
- Lower cleaning door Thermostatic air inlet regulator Secondary air inlet aperture 4
- 5 Primary air inlet aperture
- 6 7 Air inlet regulator chain By-pass opening handle with
- counterweight
- Rear smoke chamber Smoke chamber cleaning door 8 9
- T1 CH flow
- T2 CH return
- T3 Thermostatic air inlet regulator connection
- T4 Chimney connection
 T5 Safety heat exchanger connections
 T6 Bulb holder for thermometer
- T7 Bulb holder for thermal safety drain valve sensor

Model		FKH20	FKH30	FKH30
Nominal Output*	kW	20	33	42
Nominal Input	kW	31	50	61
Pressure Losses Water Side**	m w.c.	0,3	0,3	0,4
Chimney Draught Required	Pa	15	16	20
Boiler Water Content	l	35	53	67
Max. Working Pressure	bar	3	3	3
Wood Storage Capacity	l	70	125	165
Wood Logs Length	cm	33	50	70
A	mm	510	590	590
В	mm	776	946	1146
F	mm	416	586	786
Ν	mm	488	658	858
0	mm	490	570	570
T1 - T2	UNI ISO 7/1	Rp 2	Rp 2	Rp 2
Т3	UNI ISO 7/1	Rp 3/4	Rp 3/4	Rp 3/4
Τ4	Øe mm	200	200	200
Т5	UNI ISO 7/1	R 1/2	R 1/2	R 1/2
T6 - T7	UNI ISO 7/1	Rp 1/2	Rp 1/2	Rp 1/2
Weight	kg	250	340	402

* Output obtained with good quality wood with a maximum of 15% moisture content. ** Pressure losses with a water flow rate corresponding to a ∆t of 15K.

Firex

Wood Boilers 28 – 45kW

AHG introduces the Firex Wood Boiler as a solution to the increasing call for heating boilers that use renewable resources.

With excellent thermal performance, the Firex is suitable for heating only, or heating and Domestic Hot Water production. Firex boilers are an efficient means of heating buildings in rural areas, particularly where no natural gas is available and where LPG is considered too expensive.

Built for quality, durability, safety and ease of use, Firex wood fired hydronic boilers are available in 28, 35 and 45 kW models .





Features

- Reverse flame combustion
- Overheat protection
- Control panel with thermostatic control
- Anti-smoke internal door with complete rotation
- High efficiency combustion fan
- 50mm thick insulation
- Internal installation

Product Quick Check								
Туре	Wood Log Boiler	Outdoor option	Yes, if installed inside a shed					
Range	28-45kW	Max Pressure	300kpa					
Efficiency	81.5%	Low Nox	Yes					
Fuel Type	Wood Logs	Building J Code 2019 compliant	Yes					



Performance Data

Product Code		FIREX34	FIREX45	FIREX55
Nominal Output	kW	28.23	35.1	45.2
Nominal Input	kW	34.65	43.04	55.45
Efficiency	%	81.5	81.6	81.5
Boiler Class		3	3	3
Max. Working Pressure	bar	3	3	3
Wood Logs Storage Volume	l	108	160	218
Wood Logs Length	cm	50	50	70
Smoke Temp. at Nom. Output	°C	284	279	283
Boiler Water Content	l	59	71	93
Max. Electrical Absorbed	W	163	163	163
CO at 13% 02	mg/Nm3	369	402	423
NOx at 13% 02	mg/Nm3	162	157	168
OGC at 13% 02	mg/Nm3	11	8	12
DUST at 13% 02	mg/Nm3	31	31	32
Dry Weight	kg	363	475	623

Dimensional Data





Key

- 1 Panel board
- 2 Primary air adjustment 3 Secondary air adjustment
- 4 Flame sight glass
- 5 Cleaning doors 6 Rear smoke chamber
- 7 Loading door 8 Sucking fan
- 9 Lower cleaning and inspection door
- T1 C.H. flow
- T2 C.H. return T3 Bulb holder for safety thermostat, working
 - thermostat, high limit
- thermostat, minimum thermostat, thermometer
- T4 Bulb holder connection for
- thermal discharge valve
- T5 Chimney connection
- **T6** Safety heat exchanger connections
- T7 Boiler drain

									Connections			
Model	A	В	с	D	E	F	G	н	T1 - T2 UNI ISO 228/1	T5 Ø mm	T6 UNI ISO 228/1	T3 - T4 - T7 UNI ISO 228/1
FIREX34	510	680	1230	190	78	1025	628	65	G 1 ¼	150	G ½	G ½
FIREX45	610	680	1380	190	81	1150	628	65	G 1 ½	200	G ½	G ½
FIREX55	610	880	1380	190	81	1150	828	65	G 1 ½	200	G ½	G ½

All measurements in mm unless specified.

Case Study



Rural Residence Trentham VIC

1 x Firex Wood Boiler

This Firex Wood Fired Boiler was installed at a rural property in Trentham VIC to provide hydronic heating to the house.



Airex Wood Boilers 65 – 200kW





AHG introduces the Airex Wood Boiler as a solution to the increasing call for higher capacity boilers that use renewable resources.

With excellent thermal performance, the Airex is suitable for heating only, or heating and Domestic Hot Water production and can be used in industrial process applications. Airex boilers are an efficient means of heating buildings & industrial process applications in rural areas, particularly where no natural gas is available and where LPG is considered too expensive.

Built for quality, durability, safety and ease of use, Airex Wood Fired Boilers are available in 65, 80, 150 & 200 kW models.

Features

- Reverse flame combustion
- Overheat protection
- Control panel with thermostatic control
- Anti-smoke internal door with complete rotation
- High efficiency combustion fan
- 60mm thick insulation
- Internal installation

Produ	ict Qi	uick	Chec	:k

Туре	Wood Log Boile
Range	65-200kW
Efficiency	89%
Fuel Type	Wood Logs

/e
BC
/e
/e

′es, if installed inside a shed 800kpa ′es ′es



Performance Data

(**) Pressure losses for a flow rate corresponding to a Δt of 15 K.

Product Code		AIREX65	AIREX80	ARX150	ARX200
Nominal Output*	kW	65	80	149.3	199.7
Max. Input	kW	78.2	96	166.8	223.4
Waterside Pressure Drop	kPa**	0.6	1.0	3.9	3.9
Combustion Side Pressure Drop	mbar	0.03	0.05		
Boiler Max working pressure	bar	3	3	3	3
Total Water Volume	Litres	170	220	430	493
Wood Log Storage	I	235	325	495	580
Wood Loading Opening	mm	340x520	340x520	514x594	514x594
Wood Logs Length	cm	70	100	100	120
CO 10% O2	mg/Nm3			687	690
N0x 10% 02	mg/Nm3			232	249
Dust 10% 02	mg/Nm3			25	43
Electrical Supply	V/W			240/250	240/250
Dry Weight	kg	760	927	1475	1626
(*) Output obtained with good q	uality wood	l, having an l	humidity of 1	5%.	



Key

- 1 Burner in refractory stone, with cast iron fire bars and
- stainless steel grate 2 Fan with acoustic
- protection 3 Primary air adjustment 4 Secondary air adjustment
- 5 Combustion chamber 6 Firewood store
- 7 Catalyst in strengthened refractory concrete
- M C.H. Flow V Thermostatic Valves
- P Primary Air
- F Smokes R C.H. Return

Dimensional and Connection Data

Product Code	A mm	B mm	C mm	D mm	E mm	F mm	G mm	H mm	T1 Rp	T2 Rp	T3 Rp	T4 Rp	T5 Rp	T6 Ø mm	T7 Rp	T8 Rp	T9 Rp	T10 Rp	T11 Rp	T12 Rp
AIREX65	755	955	1405	190	160	315	1180	245	2	2	1/2	-	-	220	-	3/4	1/2	-	1⁄2	1/2
AIREX80	755	1255	1405	190	160	315	1180	245	2	2	1/2	-	-	220	-	3/4	1/2	-	1/2	1/2

Т8

т9

9

10

т2

Airex 65-80





Key

- 1 Panel board 2 Door of firewood store
- 3 Central door
- Airex 150-200







		7 Combustion chamber door
_	T11	
/		Y Fan
5-	- 18 - T12	10 Cleaning doors
-//		11 Rear smoke chamber
٦l	Те	12 Auxiliary boiler door
		13 Smoke chamber cleaning door
		14 Burner protection
-		T1 Central heating flow
		T2 Main central heating return
	11	

- tral heating return T3 Boiler drain
- T4 Secondary C.H. return
- T5 Air venting & expansion vessel connexion
- T6 Chimney connection of wood fired boiler
- T7 Chimney connection of auxiliary boiler
- **T8** Safety heat exchanger connections
- **T9** Bulb holder connection for probes
- T10 Auxiliary boiler burner connection
- T11 Bulb holder for working, max., min.
- thermostats and thermometer
- T12 Bulb holder for safety thermostat

Key

968

- 1 Panel board
- 2 Wood storage door
- 3 Primary air adjuster 4 Secondary air adjuster
- 5 Flame sight glass
- 6 Combustion chamber door
- 7 Fan with inverter
- 8 Lever for cleaning system activation
- T1 C.H. flow EN 1092-1 DN 65 PN 16 R3/4"
- T2 C.H. return EN 1092-1 DN 65 PN 16
- T3 Expansion vessel connection ISO 7/1 Rp1/2"
- T4 Chimney connection Øe 300 mm
- T5 Safety heat exchanger connections ISO 7/1
- T6 Boiler drain ISO 7/1 R3/4"

Pellexia

Pellet Boilers 34 – 80kW

AHG introduces the Pellexia Pellet Boiler as a solution to the increasing call for biomass boilers that use renewable resources.

With excellent thermal performance, the Pellexia is suitable for heating only, or heating and Domestic Hot Water production. Pellexia Pellet Boilers are an efficient means of heating buildings in rural areas, particularly where no natural gas is available and where LPG is considered too expensive.

Built for quality, durability, safety and ease of use, Pellexia Hydronic Pellet Boilers are available in 34, 45 and 80 kW models

Features

- · Automatic Pellet feeding
- Reverse flame combustion
- Overheat protection
- · Control panel with thermostatic control
- · Anti-smoke internal door with complete rotation
- High efficiency combustion fan
- 100mm thick insulation
- Internal installation







Kev

- 1 Tools panel
- 2 Flue connection 3 Fan
- 4 Smoking room
- 5 Smoke chamber inspection door
- 6 Upper boiler door
- 7 Lower boiler door (combustion chamber)
- 8 Burner
- 9 Ash collection basin
- 10 Photosensor
- M Heating system delivery R Heating system return smoke path

Product Quick Check

Pellet
34-80
90%
Pellet

Outdoor option
Max Pressure
Low Nox
Building J Code

Yes, if installed inside a shed



Performance Data

Product Code		UP34	UP45	UP80
Nominal Input min/max	kW	10.7 / 34.9	13.2 / 44.1	23.9 / 80.1
Output min/max	kW	9.6 / 31.4	11.9 / 39.8	21.5 / 72.4
Efficiency 80/60°C	%	90.1	90.1	90.2
Maximum Pellet Reservoir Capacity	Kg/l	230/360	230/360	630/1000
Autonomy (burner at min/max capacity)	h	109/32	82/25	133/40
Smoke Temperature min/max	°C	97/158	102/166	93/170
CO Value at 10% of O2 at Min. Power	mg/Nm3	116	182	102.6
CO Value at 10% of O2 at Max. Power	mg/Nm3	459	476	217.1
Pellet Consumption min/max	Kg/h	2.1/7.1	2.8/9	4.78/16
Dust at 10% of O2	mg/Nm3	18	19	14
Dust at 13% of O2	mg/Nm3	13	14	10.1
Electric Absorbtion at starting	W	227	227	410
Electric Absorbtion at steady state	W	207	207	310
Water Content	l	67	82	110
Max working pressure	bar	3	3	3
Min. Draught at the chimney base	Pa	15	18	15

(1) Pressure losses for a flow rate corresponding to a Δt of 15k.

Dimensional Data

Pellexia 34-45 kW



Pellexia 80 kW



Key

- T1 2" delivery sleeve T2 2" return sleeve
- T3 Smoke outlet (model 34-45) Øe 130 mm / (model 80) Øe 200 mm T4 Heat exchanger connection 3/4 "security
- T5 Sensor sheath 1/2 "thermal discharge valve
 T6 1/2" probe sheath
 T7 3/4" expansion vessel connection
 T8 1/2" safety valve connection

Accessories - Biomass Boilers

Options & Accessories

Refer to main catalogue for details.



Biomass Boiler Valves



Steel Buffer Tanks

:

Stainless Steel 2205 Tanks

s Steel 2205 Tanks





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