

## The Complete Range of Wood Gasification Log Boilers



ISO 9001



ISO 14001



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Eco-friendly technologies



## Our product philosophy

**Simple:** Our products are manufactured to a high quality without unnecessary complexity which means our systems are simple to both operate and maintain.

**Cost effective:** The efficient production process means that our products will stay competitively priced.

**Reliable:** Working with manufacturing partners who have demonstrated success in European markets means our products have a proven track record of reliability.

**Environmental: Reduce your carbon footprint as our full boiler range is carbon neutral.**

## Our approach

We are a well respected business that specialises in working with installers across the UK importing and distributing a range of MCS accredited wood burning boilers. We are a small team of dedicated experts, committed to offering a personal and tailored consultation to each new client.

Whilst our product range and list of clients has grown over time, we are still committed to the same goal of simple and reliable environmentally sound heating systems at affordable prices.

## Manufacturing credentials

Quality and safety are priority and our European manufacturers are accredited to the ISO 9001/14001 total quality management standard. All products are engineered according to European PN EN-303-5 manufacturing standards and have achieved CE mark and TUV certification.



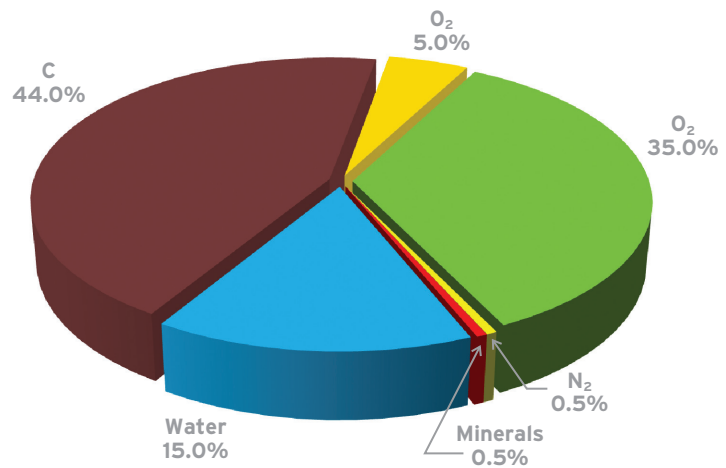
## Wood as fuel

Wood is a renewable fuel, just like the sun, tidal energy or the wind. These are energy sources which cannot be exhausted.

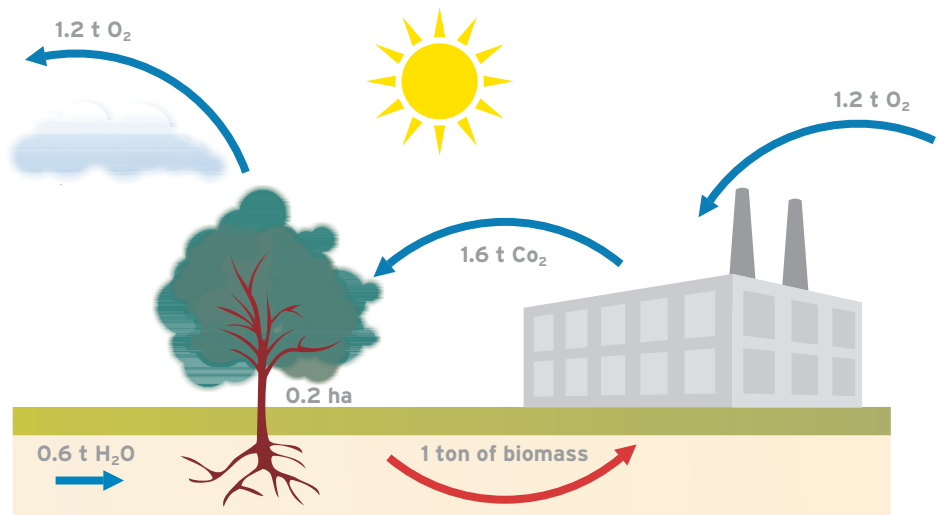
Unlike other energy sources, wood is a fuel which can be accumulated and stored without any energy loss. Storing lowers the humidity of the wood whilst simultaneously raising its fuel value (the amount of energy which can be used during combustion).

Wood is also the only fuel whose carbon dioxide (CO<sub>2</sub>) balance is zero, meaning that while vegetating through the photosynthesis process it absorbs the same amount of carbon dioxide as it emits while combusting.

Chemical content of wood with 15% humidity



CO<sub>2</sub> circulation graph



## Wood gasification as an economic source of heating

Wood gasification is a thermal decomposition of wood with a significant air (oxygen) deficit which results in the creation of combustible gases (wood gases) and ash. Modern wood gasification boilers use the energy from the wood three times more effectively than appliances with a traditional hearth and their emissions are similar to gas boilers.

# Wood as fuel for wood gasification boilers

During the wood combustion (gasification process) the exhaust gases and ash created do not contain substances which are harmful to the natural environment, moreover the amount of ash created constitutes 1% of input material.

Humidity in the wood is a very important factor in the process of combusting it. The less water the wood contains, the higher its fuel value. In the case of wood with 20% humidity, about 30-40% of the general amount of wood needed for one heating season can be saved.

It is recommended to fell the trees during winter period when the sap no longer circulates within them. After felling, the wood needs to be cut into logs between 50 and 100cm dependent on size of boiler and split into halves or quarters as soon as possible. The suitably prepared wood should be stored for a period of 18-24 months in a ventilated room and sheltered place.

Oak is an exception as due to its high density and the content of tannin it requires storing outside and exposure to rain for 12 months and then requires drying under cover for 2-3 years. After 2 years tannin, volatile ingredients of resin, turpentine, etc. will be removed from the wood and the humidity will reach 15-20%. This is the correct level of wood drying.

It is recommended to use wood that has a 20% maximum moisture content. Hardwoods are used to promote longer burns in the winter months whilst softwoods can be used for batch burning or creating an ember layer when starting a fire. The softwood can also be used on their own or mixed with hardwood when the boiler is running constantly but it is important that temperatures of 80°C to 90°C are set on the control panel.

Wood humidity		
The wood moisture content	Humidity	Fuel value
After felling	50-60%	2.0 kWh/kg = 7.2MJ/kg
After a year of seasoning	25-35%	3.4 kWh/kg = 12.2MJ/kg
After 18 months to 2 years of seasoning	15-25%	4.0 kWh/kg = 14.4MJ/kg

Comparison of fuels regarding their fuel value	
Fuel	Fuel value (MJ/kg)
Oil	42.0
LPG	37.0
Coal	31.0
Coke	28.5
Brown coal	15.0
Dry wood	15.0

Comparison of some types of trees regarding their density		
Type of tree	Density	Fuel value
<b>Coniferous</b>		
Pine	700	480
Larch	760	600
Spruce	740	430
Fir	1000	450
<b>Deciduous</b>		
Oak	1080	710
Elm	950	680
Ash	920	750
Beech	990	730
Hornbeam	1080	830
Alder	690	530
Birch	650	650

# Angus Super



## Basic information

### Available types [kW]

18	25	40	60
80	96	130	

### Fuel



Wood



Briquettes

### Use



small/semi detached house



detached house



industrial buildings

## Boiler description

Wood is a widely available fuel and also one of the least expensive resources. In the correct wood combustion process small amounts of harmful substances are produced, such as NO<sub>x</sub>, CO, Hydrocarbons, breathable dust and the amount of ash produced is about 1% of the mass of the fuel load (this depends on the dust content of the wood).

Our wood gasification boilers are adapted to wood of various particle-size distribution: wood logs and briquettes. Sawdust and chips should be burned along with wood logs.

Technical parameters resulting from wood combustion processes meet the most rigorous European norms and provide nearly twice as much heat as traditional boilers or fireplaces. The appliances can work in open as well as pressurized systems in accordance with current regulations.

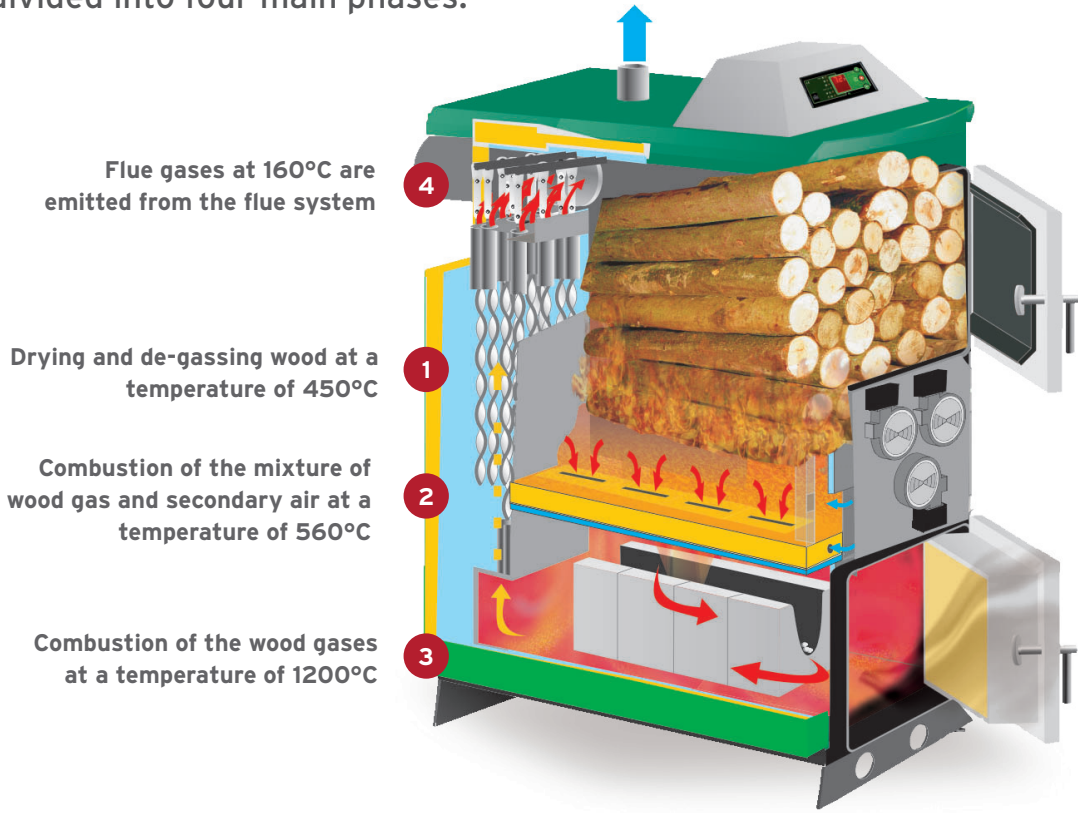
## Boiler use

Angus Super boilers are designed for heating various types of buildings. They are commonly used in detached houses, drying facilities, industrial units and workshops.

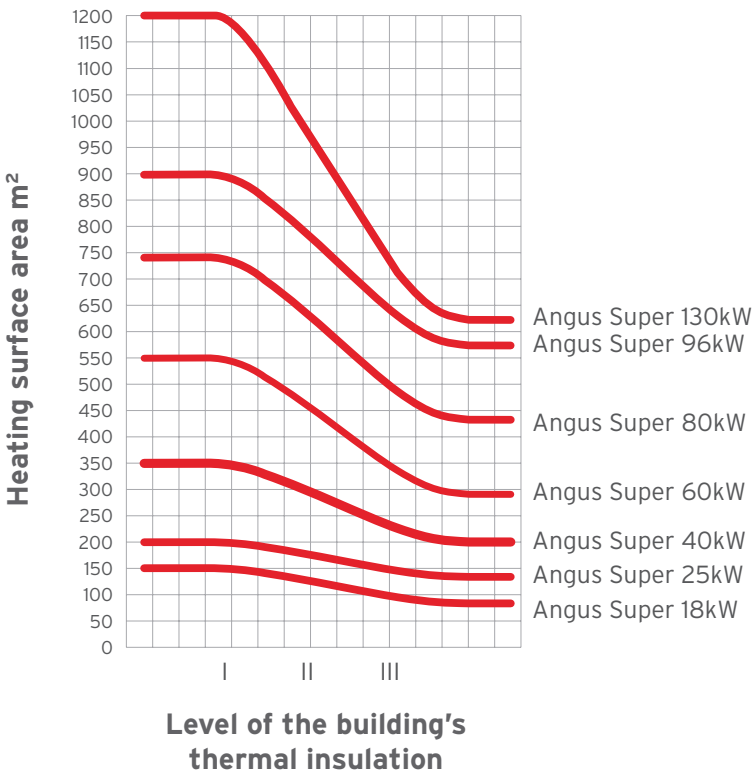
Angus Super 96 and 130kW boilers allow the heating of larger areas such as large industrial buildings or public facilities.

# Stages of the gasification process

The wood gasification process in these boilers can be divided into four main phases:



# Choosing the right output of boiler against the required heating area m<sup>2</sup>



How do I know which boiler is suitable for me?

- An installation designer will estimate how much heat will be needed in the building
- The result need to be increased by 25% (this allows for 20% boiler oversizing and 5% heat losses)

Note: This graph is for information only and Eco Angus cannot be held liable if a boiler with unsuitable power output is selected.

# Boiler construction - Angus Super 18/25/60/60/80kW



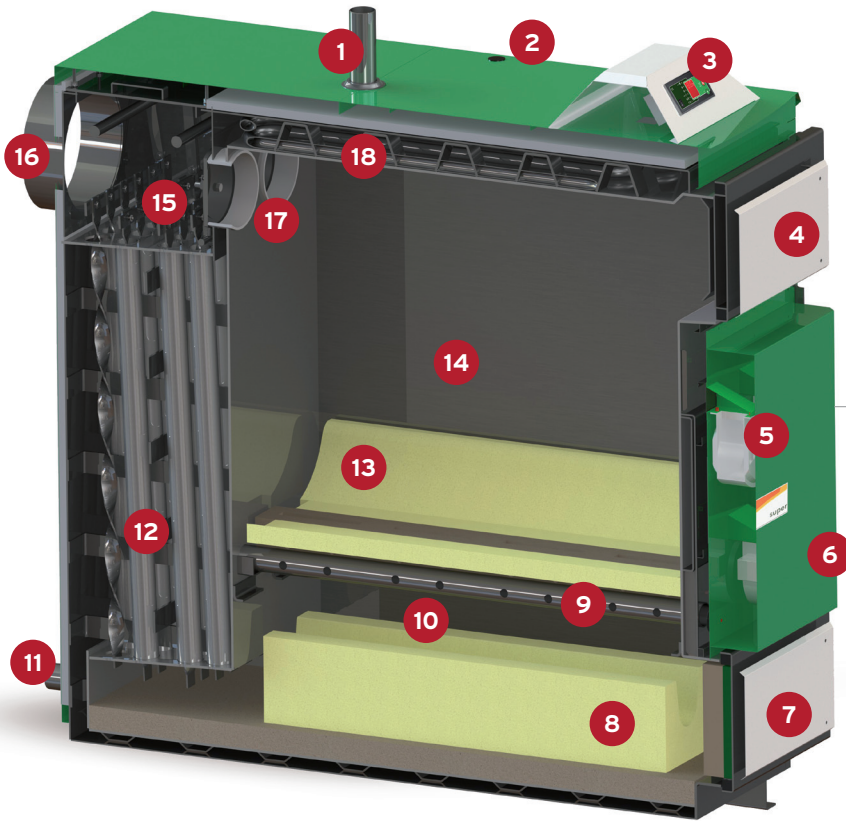
1. Hot water outlet
2. Boiler controller
3. Loading door
4. Fan
5. Fan casings
6. Combustion door
7. Firebricks
8. Combustion chamber
9. Tube heat exchanger
10. Nozzle
11. Ceramic moulders
12. Cooling coil
13. Cleaning mechanism lever

## Boiler features

- 3-year warranty for boiler tightness
- Up to 91% net efficiency
- Range from 18 to 130kW
- All boilers MCS accredited up to and including 40kW
- All boilers comply to emission levels required for the Renewable Heat Incentive
- All boilers are listed on the DEFRA smoke exempt appliances list
- Large loading capacity
- Length of logs:
  - 50cm (18kW, 25kW, 40kW)
  - 75cm (60kW)
  - 100cm (80kW, 96kW, 130kW)
- Small amount of ash residue
- Low maintenance costs
- User-friendly construction
- Up to 12 hours continuous operation
- Modulated fan power 30-100%
- Suitable for open-vented and pressurized systems
- Electronic controller with option to connect a remote control panel with 20m wire
- Made from the highest quality 6mm boiler steel
- Environmentally friendly - almost zero balance of CO<sub>2</sub>
- Half-round firegrate



# Boiler construction - Angus Super 96/130kW



1. Hot water outlet
2. Pocket for cooling valve sensor
3. Boiler controller
4. Loading door
5. Fans
6. Fan casings
7. Combustion door
8. Firebricks
9. Air pipes
10. Combustion chamber
11. Return water outlet
12. Tube heat exchanger
13. Ceramic moulders
14. Loading (gasification) chamber
15. Cleaning mechanism
16. Chimney flue
17. Flue flaps
18. Cooling coil

19. Cleaning mechanism lever
20. Cooling coil tappings



# Technical data

Parameters	Measured in	18kW	25kW	40kW	60kW	80kW	96kW	130kW
Power range	kW	7-18	10-25	16-40	24-60	32-80	38.4-96	52-130
Efficiency	%	91					90.5	91
Boiler class (EN 303-5)		3						
Water capacity	dm <sup>3</sup>	55	75	93	180	205	340	380
	l	55	75	93	180	205	340	380
Volume of loading chamber	dm <sup>3</sup>	85	120	185	310	465	605	605
	l	85	120	185	310	465	605	605
Loading door size width/length	mm	225/380	260/432	260/432	285/580	285/580	285/580	285/580
Flue diameter	mm	180	200	200	210	210	300	300
Burning period	h	7-12						
Length of wooden logs	cm	50	50	50	75	100	100	100
Required wood moisture content	%	15-20						
Average fuel usage for:								
- nominal power	kg/h	6.8	8.2	10.1	15.1	19.8	20.3	24.5
Maximum operating pressure	bar	3						
Minimum temperature of the return water	°C	60						
Temperature setting range	°C	60-97						
Protection level		IP 40						
Voltage/Frequency	V/Hz	230/50						
Flue gases features (at nominal power):								
- Flue gases temperature	°C	150-180	150-180	150-180	150-180	150-180	160-190	160-190
- Flue gases flow	kg/s	0.0066	0.0088	0.0144	0.0216	0.0272	0.0332	0.0332
Required chimney draught	Pa	15-20		15-25	15-20			
Cooling water pressure required at the heat exchanger	bar	2						
Cold water temperature in the heat exchanger	°C	10						
Recommended capacity of accumulation tank	dm <sup>3</sup>	1000-1500	1500-2000	2000-3000	3000-4000	4000-5000	5000-6000	7500-10000
Boiler weight	kg	425	525	595	975	1165	1360	1500



**Angus Super**

	18kW	25kW	40kW	60kW	80kW
H (mm)	1220	1320	1570	1540	1540
W (mm)	660	720	720	860	860
D (mm)	960	1040	1040	1340	1700

**Angus Super**

	96kW	130kW
H (mm)	1848	1845
W (mm)	870	870
D (mm)	1804	1880



For further details please refer to instruction manual: [www.ecoangus.co.uk/manuals.html](http://www.ecoangus.co.uk/manuals.html)

# Angus Orligno 200



## Boiler description

Angus Orligno 200 boilers create a new pathway in wood gasification boiler technology. Unique design to ensure both ease of use, product reliability and performance. Technical data resulting from the wood combustion process meet the most rigorous European norms and provide nearly twice as much heat as traditional boilers or fireplaces. The appliances can work in open as well as pressurized systems in accordance with current regulations.

## Boiler use

Angus Orligno 200 boilers are designed to work in a variety of places. They are most commonly used in detached houses, drying facilities, industrial units and workshops.

Available types are as follows: 18kW, 25kW, 40kW, 60kW and 80kW. The Angus Orligno 200 boiler can combust wood of various granulation from sawdust to blocks. Shavings and other small pieces should be burnt together with logs.

### Basic information

#### Available types [kW]

18

25

40

60

80

#### Fuel



Wood



Briquettes

#### Use



small/semi  
detached  
house



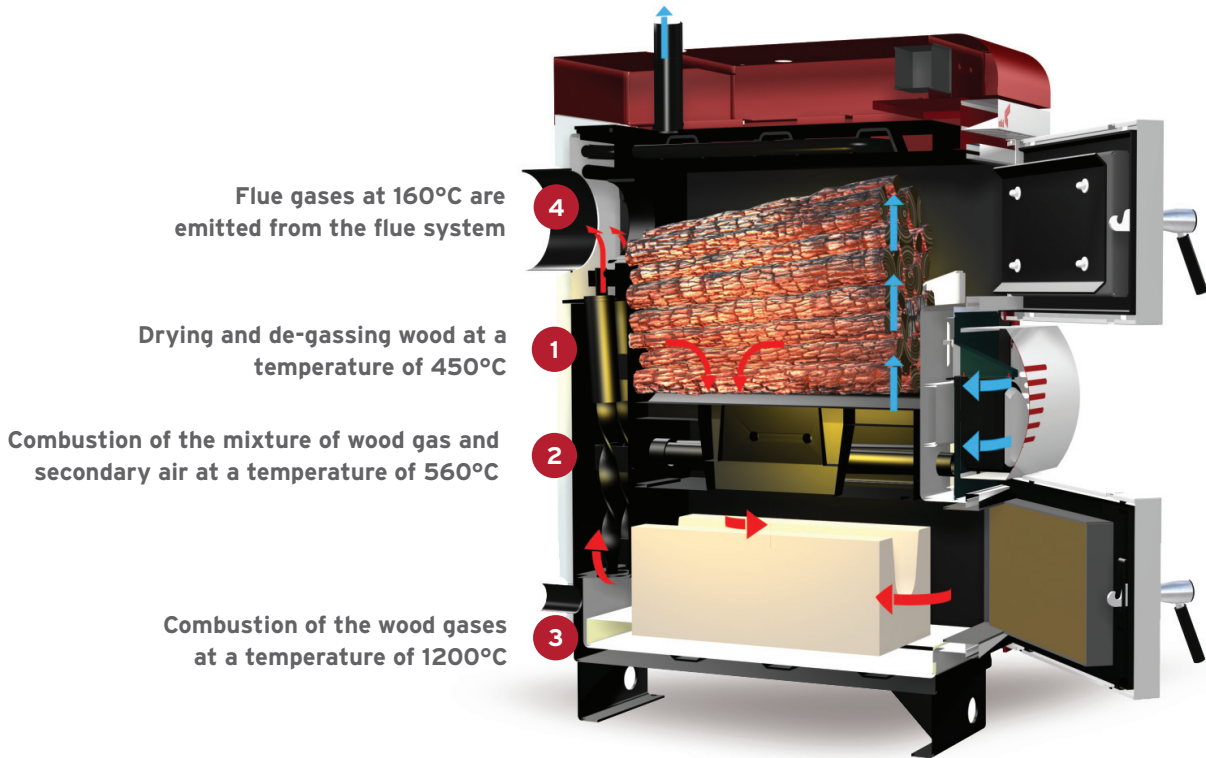
detached  
house



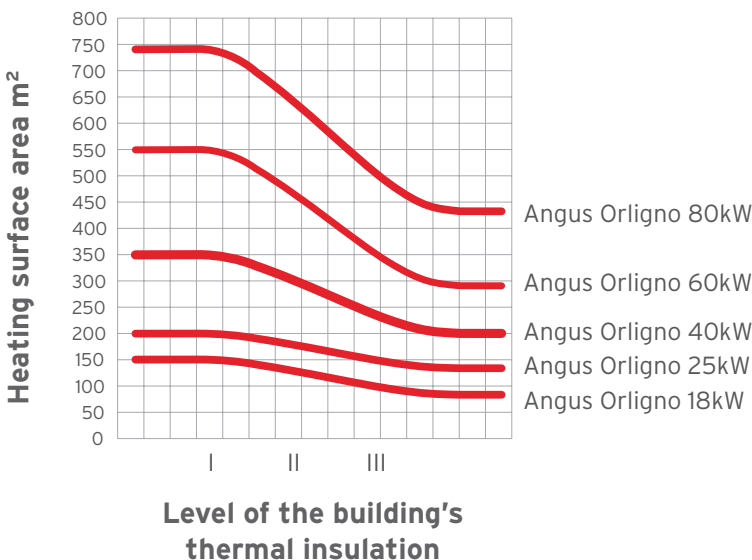
industrial  
buildings

## Stages of the gasification process

The wood gasification process in these boilers can be divided into four main phases:



## Choosing the right output of boiler against the required heating area m<sup>2</sup>

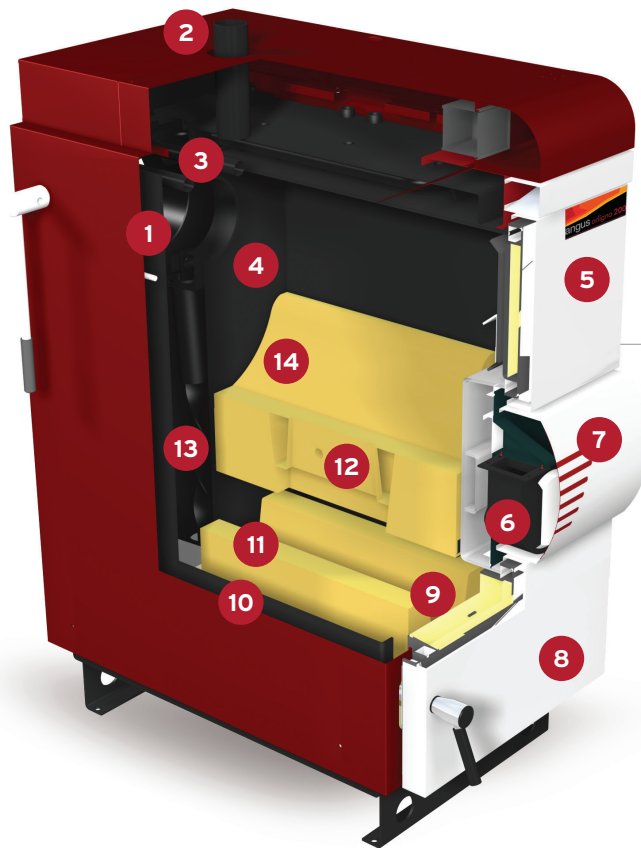


How do I know which boiler is suitable for me?

- An installation designer will estimate how much heat will be needed in the building
- The result need to be increased by 25% (this allows for 20% boiler oversizing and 5% heat losses)

Note: This graph is for information only and Eco Angus cannot be held liable if a boiler with unsuitable power output is selected.

# Boiler construction - Angus Orligno 200



1. Chimney flap
2. Heating water outlet
3. Cooling coil
4. Loading (gasification) chamber
5. Loading door
6. Fan
7. Fan cover
8. Combustion door
9. Firebricks
10. Boiler insulation
11. Combustion chamber
12. Ceramic nozzle
13. Turbulators
14. Ceramic moulders

## Boiler features

- 5-year warranty for boiler tightness
- Up to 91% net efficiency
- Range from 18 to 80kW
- All boilers MCS accredited up to and including 40kW
- All boilers comply to emission levels required for the Renewable Heat Incentive
- All boilers are listed on the DEFRA smoke exempt appliances list
- Large loading capacity
- Length of logs:
  - 50cm (18kW, 25kW, 40kW)
  - 75cm (60kW)
  - 100cm (80kW)
- Small amount of ash residue
- Low maintenance costs
- User-friendly construction
- Up to 12 hours continuous operation
- Modulated fan power 30-100%
- Adjusted to work in closed systems
- Electronic controller with possibility to connect remote EKOSTER control with 10 metre wire
- Made from the highest quality 8mm boiler steel
- Environmentally friendly - almost zero balance of CO<sub>2</sub>
- High temperature-resistant fire bricks
- Back cooling coil tappings

# Technical data

Parameters	Measured in	18kW	25kW	40kW	60kW	80kW
Power range	kW	7-18	10-25	16-40	24-60	32-80
Efficiency	%	91				
Boiler class (EN 303-5)		3				
Water capacity	dm <sup>3</sup>	75	75	93	180	205
	l	75	75	93	180	205
Volume of loading chamber	dm <sup>3</sup>	120	120	185	310	465
	l	120	120	185	310	465
Loading door size width/length	mm	260/432	260/432	260/432	285/580	285/580
Flue diameter	mm	200	200	200	210	210
Burning period	h	7-12				
Length of wooden blocks	cm	50	50	50	75	100
Required wood moisture content	%	15-20				
Fuel usage for:						
- nominal power	kg/h	6.8	8.2	10.1	15.1	19.8
- minimal power	kg/h	3.9	5.7	7.9	11.9	15.8
Maximum operating pressure	bar	3				
Minimum temperature of the return water	°C	60				
Temperature setting range	°C	60-97				
Protection level		IP 40				
Voltage/Frequency	V/Hz	230/50				
Flue gases features (at nominal power):						
- Flue gases temperature	°C	150-180	150-180	150-180	150-180	150-180
- Flue gases flow	kg/s	0.0066	0.0088	0.0144	0.0216	0.0272
Required chimney draught	Pa	15-20		15-25	15-20	
Cooling water pressure required at the heat exchanger	bar	2				
Cold water temperature in the heat exchanger	°C	10				
Recommended capacity of accumulation tank	l	750-1500	1000-2000	2000-3000	3000-4000	4000-5000
Boiler weight	kg	546	546	634	1037	1242



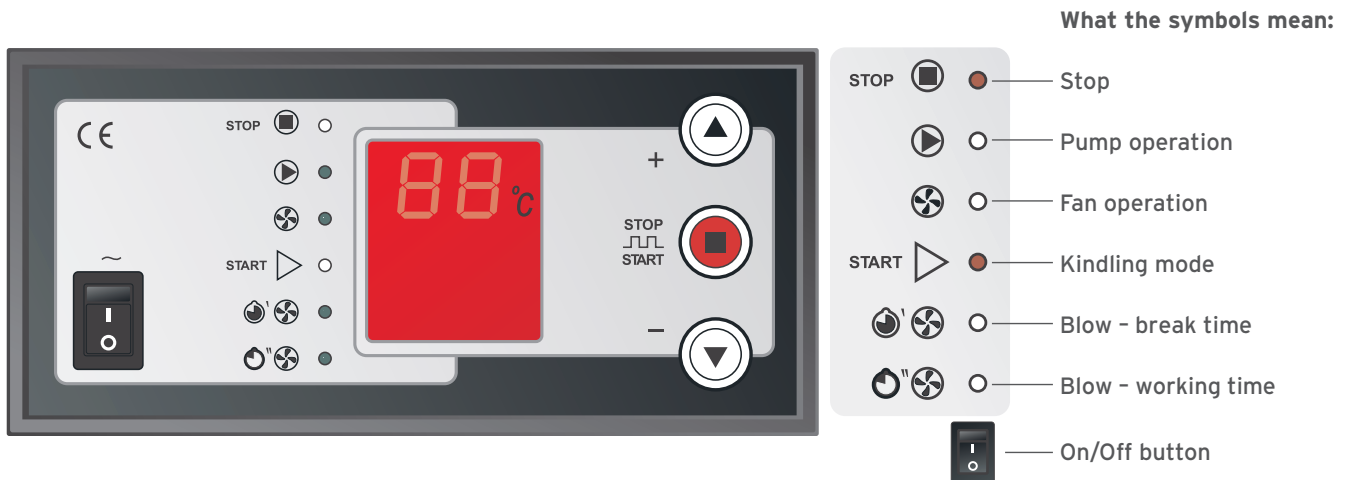
**Angus Orligno 200**

	18kW	25kW	40kW	60kW	80kW
H (mm)	1315	1315	1575	1555	1555
W (mm)	670	670	670	810	810
D (mm)	1060	1060	1040	1360	1720

For further details please refer to instruction manual: [www.ecoangus.co.uk/manuals.html](http://www.ecoangus.co.uk/manuals.html)

# Control panel - Angus Super/Angus Origno 200

The control panel is designed to control the burning process and the activation of circulation pump in the central heating installation.



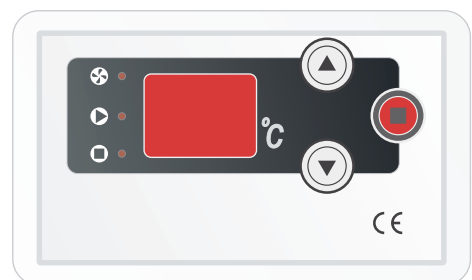
## Controller features

The regulator fulfils the following tasks:

- Maintains the preset boiler temperature through the heating control
- Automatic control turn-off after boiler extinction
- Blocking fan operation when stoking to the boiler
- Central heating circulation pump control
- "COMFORT SYSTEM"- a system that prevents pump blockages when the boiler is not in operation
- Protection from boiler freezing and overheating
- Signalling when the boiler temperature sensor is damaged
- Compatible with EKOSTER control remote control system

## EKOSTER control

The EKOSTER control enables the constant temperature reading of the central heating boiler, adjustment of boiler temperature settings as well as activation and de-activation of control by regular communication with EKOSTER regulator. The innovative built-in alarm system informs the user with a piercing sound if the threshold of 97°C has been reached, if the boiler temperature has dropped below 0°C or if the sensor is damaged please change to The EKOSTER control enables the constant temperature reading of the wood gasification log boiler, adjustment of the required temperature setting as well as the ability to activate the boiler fan as the remote control is linked to the main boiler control panel. The innovative built-in alarm system informs the user with an alarm if the boiler temperature reaches 97°C or if the boiler temperature has dropped below 0°C or if the sensor is damaged.



### Technical data

Range of temperatures displayed	-9°C - +99°C
Range of temperature settings	+60°C - +97°C

Authorised dealer:

## Get in touch

We are happy to provide a free expert consultation over the phone or you can visit our showrooms in Wrington, North Somerset by prior arrangement.

We can also give a demonstration of the Angus Orligno 200 working in situation if required. We can advise on the most suitable heating system for your property and put you in touch with an MCS approved installer as required.



For more information  
please visit our website

[www.ecoangus.co.uk](http://www.ecoangus.co.uk)

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