



Biomass boiler systems 12-600kW

Quality, safety, simplicity, economy

  
**P&H** ENERGY

P&H Energy produce a **range of high quality biomass boilers** which are specifically designed to be used with a wide range of biomass fuels (such as wood pellets, wood chips, wood shavings, sawdust, straw pellets and cereals etc.). Our boilers are manufactured in our Danish factory to exacting standards and have been extensively tested by the Danish Technological Institute for efficiency, emissions and build quality.

Our boilers all exceed the requirements of the **European Standard EN303-5 and are certified as Class 3 boilers** – the highest level.

We believe that, for most customers, all they really want is **a reliable & cost effective heat source**. P&H boilers are designed to be just that. We don't believe in over-complicating things. Our boilers are straightforward to operate with the boiler programming undertaken at the factory providing you with a boiler to control with the minimum of fuss whether heating a single building or a whole estate.

### The P&H product range summary

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**Agricultural – Commercial -PH-47-850: 47kW boiler** available with an **integrated 850 litre fuel store** or with an external fuel store and auger feed system. Fuel supply options:- wood pellets, wood chip, wood shavings, sawdust, straw pellets or cereals.

**Agricultural – Industrial – Small District Heating Schemes -PH-97: 97kW boiler** for use with an external fuel store and auger feed system. Fuel supply options:- wood pellets, wood chip, wood shavings, sawdust, straw pellets or cereals.

**Commercial boilers: 150-600kW boilers** designed specifically for commercial use. Our commercial range will burn wood pellets, wood chip, wood shavings, sawdust, straw pellets or cereals.

**Large Domestic -PH-23/600: 23kW boiler** available with an integrated 600 litre fuel store or with an external fuel store and auger feed system. Fuel supply options:- wood pellets, wood chip, wood shavings, sawdust, straw pellets or cereals.

**Compact Domestic - PH-12/300: 12kW boiler** available with an integrated 300 litre fuel store or with an external fuel store and auger feed system. Fuel Supply:- wood pellets only.

Please note: all heat outputs quoted assume the use of wood pellets. Using other fuels will affect the maximum output of your boiler (depending on the quality and moisture content of the fuel).

Please contact us to discuss your fuel choice and how it will affect the sizing of your system.

### Characteristics of P&H boilers:

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All P&H boilers are designed to provide:

- Top quality **performance at an affordable price**
- **High efficiency, low emissions** & noise levels – minimising your environmental impact
- Minimum supervision and maintenance – most maintenance can be carried out by the owner
- **Maximum efficiency** with Lambda oxygen-controller – making the most of your fuel
- Ease of installation – lower initial costs
- Ease of use and **flexibility in fuel options** – quick and easy changeover (no engineer required)
- Strong return on investment – **R.H.I. scheme** will apply to models that exceed 45kW output.



### Safety features

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All P&H boilers feature the following **safety systems** for your peace of mind:

- Automatic extinguishing equipment, lid-switch, motor overload protection, etc
- Protection against over-filling, back-burning and boiler blockage
- Integrated monitoring of temperature on boiler flow and flue
- Continuous monitoring of boiler performance
- Digital control with nine standard programmes
- Lambda control for automatic adjustment of system output

### Ease of installation and use

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***P&H boilers are straightforward to install, operate and maintain.***

This means that you don't need to be an engineer to own and use one! We have put time and effort into designing a boiler to work efficiently and economically and provide many years of reliable service with some care and attention on the part of the owner.

Biomass boilers have been successfully used throughout Northern Europe for many years – and in the UK for the past 10 years and will provide as many years of service, if not more, as any other kind of boiler.

In order to get the best out of them they require a little routine attention to ensure that they continue to provide reliable service for many years.

Some biomass boiler installers can have a tendency to overcomplicate installations – ***P&H boilers*** are designed to take the complexity out of installing biomass. We will seek to understand how you wish to operate your heating system to ensure that the installation is kept as simple as possible – reducing time, operating issues and costs.

### National installation – local service

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***P&H boilers are installed using a network of accredited local installer partners.*** We believe, wherever possible, it is important that installation and maintenance work is carried out by a local company. This has the benefit of providing faster response times and a better level of service than can typically be provided by a national company. However, in the event of any problem ***P&H*** will provide the necessary support and resources in order to keep you warm



A **multi-fuel boiler** designed for a range of agricultural and commercial premises plus larger domestic properties (400-700m<sup>2</sup> approx). As this boiler can modulate very efficiently it can provide a **heat output of between 9-48kW** with a minimal drop in efficiency between full and part load.

It can be supplied with an integral 850 litre capacity **pellet hopper**, or with **an auger** linking it to an external fuel store.

The PH47 is **capable of burning a range of different biomass fuels**, which include: wood pellets, wood chip, wood shavings, sawdust, straw pellets and cereals. There is nothing complicated about changing over the fuel type – just fill your fuel store with the new fuel and press the appropriate buttons on the control panel to enable the boiler to identify the new fuel.



## Technical details – PH47

Heat output using pellets:	9-48kW
Heat output using other fuels:	dependent on quality and moisture content of fuel
Boiler efficiency using pellets:	91% (at 48.4kW output), 88% (at 12.1kW output)
Boiler efficiency using other fuels:	dependent on quality and moisture content of fuel
Dimensions:	800mm deep x 2420mm wide x 1500mm high
Flue connection:	155mm diameter
Draught required:	20-35Pa – use a fan or draught stabiliser if necessary
Flow/return connections:	1½" BSP
Boiler weight:	800-850kg depending on variant
Tested to:	EN 303-5 (Class 3 boiler)



**The PH97** is the largest model in our standard boiler range. It is ideally suited to very large properties, **industrial** and **agricultural** environments and small **district heating schemes**. Its ability to modulate very efficiently means it can provide a **heat output of between 18-97kW** with a minimal drop in efficiency between full and part load.

As with the smaller multi-fuel boilers, the PH97 is also capable of **burning a range of different biomass fuels**, including: wood pellets, wood chip, wood shavings, sawdust, straw pellets and cereals. Changing over the fuel type simply requires that you press a few buttons on the control panel to let the boiler know what you want it to burn.



## Technical details – PH97

Heat output using pellets:	18-97kW
Heat output using other fuels:	dependent on quality and moisture content of fuel
Boiler efficiency using pellets:	93.1% (at 97.5kW output), 94% (at 22.1kW output)
Boiler efficiency using other fuels:	dependent on quality and moisture content of fuel
Dimensions:	1000mm deep x 1350mm wide x 1650mm high
Flue connection:	180mm diameter
Draught required:	15-35Pa – use a fan or draught stabiliser if necessary
Flow/return connections:	1¼" BSP
Boiler weight:	1200kg depending on variant
Tested to:	EN 303-5 (Class 3 boiler)





P&H manufacture a range of commercial boilers from 150-600kW output. These boilers are designed for commercial, agricultural and industrial applications and are *ideal for district heating schemes*.

PH Commercial boilers are all *capable of burning a range of different biomass fuels*, including: wood pellets, wood chip, wood shavings, sawdust, straw pellets and cereals. As with all of our boilers, there is nothing complicated about changing over the fuel type – just fill your fuel store with the new fuel and press a few buttons on the boiler control panel. All P&H boilers are straightforward to install, operate and maintain. We have put time and effort into designing a commercial boiler range that heats efficiently and will many years of reliable service.

Our boilers are designed and manufactured to achieve the best possible performance. Standard features include:

- All metal parts in the burner are manufactured in 10-15mm thick boiler-grade steel (depending on the boiler model)
- Metal parts which come into direct contact with the flame are water-cooled to minimise clinker formation.
- A ceramic lining ensures a consistently high temperature in the combustion chamber thereby minimising polluting emissions.
- Ash removal augers to extend de-ashing intervals.
- Photo-electric ignitions systems – ensuring correct combustion of the fuel.
- Compressed-air boiler cleaning system to maintain optimum performance



## Technical details

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<b>Model</b>	<b>PH150 (150kW)</b>
Dimensions:	1510mm deep x 3400mm wide x 1950mm high
Flue connection:	215mm diameter
Boiler weight:	2025kg

<b>Model</b>	<b>PH200 (200kW)</b>
Dimensions:	1510mm deep x 3400mm wide x 2060mm high
Flue connection:	215mm diameter
Boiler weight:	2200kg

<b>Model</b>	<b>PH300 (300kW)</b>
Dimensions:	1510mm deep x 3460mm wide x 2250mm high
Flue connection:	215mm diameter
Boiler weight:	2650kg

<b>Model</b>	<b>PH400 (400kW)</b>
Dimensions:	1690mm deep x 3740mm wide x 2140mm high
Flue connection:	250mm diameter
Boiler weight:	3600kg

<b>Model</b>	<b>PH500 (500kW)</b>
Dimensions:	2040mm deep x 4570mm wide x 2200mm high
Flue connection:	250mm diameter
Boiler weight:	4025kg

<b>Model</b>	<b>PH600 (600kW)</b>
Dimensions:	2040mm deep x 4570mm wide x 2435mm high
Flue connection:	250mm diameter
Boiler weight:	4550kg



Sometimes it makes more sense to have your boiler and fuel store located outside of the building. This offers a simpler and often much quicker installation, and greater flexibility for customers who, for example, may not want to commit to a building long-term, but in the meantime still need to provide heating for it.

A containerised boiler can be fitted to virtually any building and linked to the existing distribution system using a single flow and return connection, minimising downtime and disruption.

Where buildings may have an uncertain future, a containerised system provides the potential to relocate the boiler as and when the site is no longer required.

As standard specification, we use sea containers which provide excellent protection against theft and vandalism, but where aesthetics are an issue, containerised systems can be clad with a range of materials to enable them to blend into their surroundings.



A single container installation – the fuel store is in the back of the container....

.. the same system – installed and timber clad



A dual container installation for a larger boiler – the lower container houses the boiler, the upper container is the fuel store.





P&H manufacture a **range of fuel feed systems** to suit your individual site requirements – here are some examples of the various options:

A straightforward woodchip auger feed system – shown here without the agitator.

Bulk fuel stores can start from about 3m x 3m.



A similar system illustrated during installation. When the store is filled, the blades rotate slowly, pushing fuel into the open auger casing from where it is carried to the boiler. Multiple augers can be used to deal with complex installations.

A typical 'walking floor' feed system – sometimes used for larger commercial installations. A loader/telehandler is used to move fuel into the store via the open end. Reciprocating blades mounted at floor level move the fuel to a trench at the base of the wall – where it drops into an auger and is transported to the boiler.



Bulk fuel stores are generally constructed on-site by the customer or a local building contractor. We are happy to help design a suitable system for you, and assist you to source appropriate build contractors.



## Fuel mix buffer tank

Many of the potential issues customers may experience with biomass boilers have nothing to do with the boiler itself as they are often fuel feed issues. If you are burning pellets or good quality, dry woodchip this shouldn't be an issue. However, where a range of different fuels are going to be burnt – especially sawdust or fine grains – or where the quality or moisture content of woodchip is an issue, we recommend a 'fuel mix buffer tank'. This simply takes the fuel brought from the fuel store and mixes it up before it is fed into the boiler – eradicating most of the common fuel feed issues. A simple solution, yet one that can eliminate potential problems.

EXAMPLE: The fuel feed mix buffer is the black box next to the boiler. The feed auger (blue) discharges into the buffer tank, in which the fuel is mixed up again prior to entering the boiler via the stoker auger (black square section).

Standard fitting on our commercial boiler range.

Optional feature with our PH23, 47 & 97 boilers.



## Automatic de-ashing system



Whilst our boilers produce only a very small amount of ash when burning good quality pellets or woodchip, ash does need to be removed from the boiler on a regular basis. This cleaning interval can be substantially extended by using an **automatic de-ashing system**. This simply helps to collect ash from the boiler and deposit it into a small adjacent container.

This system is an option on PH23, 47 & 97 boilers.

It is fitted as standard on the commercial range.

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P&H boilers are designed and manufactured in Denmark and distributed in the UK through:

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