



## GUIDE TO **WOOD PELLE**T BOILERS



**EFFICIENT HEATING SOLUTIONS**

Consumer, Specifier, Installer  
and Merchant guide to  
Wood Pellet Boilers

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# The most commonly asked questions about **Wood Pellet Boilers**

## **What are wood pellets?**

Wood pellets are cylindrical in shape and made from compressed sawdust, which is often the waste product from the timber industry (e.g. sawmills) They are fused together by the natural lignum present in dry wood. It strengthens the wood as well as having water proofing properties.

Pellets have a very low moisture content (less than 10%), which helps maintain combustion efficiency, as during the burning of fuel, any water content must be evaporated before combustion can occur. This process requires energy, and therefore reduces overall system efficiency. Pellets are additionally very dense. Both these qualities make them a good source of energy.

## **Are these wood pellets from a sustainable source?**

As the sawdust used to make wood pellets is a by-product e.g. from sawmill industries, or has been sourced from a managed forest where trees are planted to replace the ones cut down, they are classed a sustainable 'carbon neutral' source of fuel.



## Are wood pellets readily available in Northern Ireland?

Yes. Wood pellets are available from a number of manufacturers and specialist suppliers. Also, some of the larger Plumbing and Heating merchants are now stocking wood pellets.

## How are wood pellets supplied?

Pellets are available in both bagged quantities – usually in 10kg bags – or in bulk. The minimum bulk pellet delivery is typically 3 tonnes but this needs to be checked with the supplier concerned, as smaller deliveries may be possible.

## Do Grant recommend which type of wood pellet to use?

There are a wide range of wood pellets, of differing qualities, available on the market. Only 6mm diameter pellets should be used in Grant wood pellet boilers. These pellets must first conform to EN plus standard EN14961-2.

Currently, Grant have tested and approved Balcas 'Brites' and Verdo pellets for use with the Grant Spira wood pellet boilers. The use of pellets not conforming to the foregoing EN standard, may cause operating problems with the boiler and would invalidate the product warranty.



## Will I need to manually fill the boiler with wood pellets?

If the indoor pellet hopper (supplied with the boiler) is the only form of storage used then this will need to be filled manually with pellets supplied in bags. The hopper has a maximum capacity of 110kg or, eleven 10 kg bags of pellets.

If a bulk pellet store is used to feed the pellet hopper, the hopper will be filled automatically from the bulk store. Of course, it is important to regularly check the bulk store and to order a bulk delivery before it is empty.

## How will I know that the hopper requires refilling and how often will it need to be done?

If the indoor hopper only is used, then the boiler will automatically stop when the pellet level in the hopper reaches minimum. There is a facility to have a warning light to indicate when this minimum level of pellets is reached. Topping up the hopper with pellets will automatically re-start the boiler. However, to avoid this happening, the pellet level in the hopper should be regularly checked and topped up as required –usually once to twice a week.

If a bulk pellet store is used, then this will automatically top up the indoor pellet hopper. However, the pellet level in the bulk pellet store must be regularly checked and a delivery of pellets ordered before it becomes empty. The time between deliveries will depend on the size of the bulk store, the size of the boiler and how it is used. Typically, for a 26kW boiler around 3 tonne of pellets should last for about a year, based on a heating demand of 14,400kW input.

## How are wood pellets stored?

Wood pellets should always be stored in a damp free environment. Care must be taken to ensure that stored wood pellets never come into contact with water. Any external stores must be sealed and protected against rainwater entry. Grant market a range of internal and external pellet storage solutions, but advice on the type and location of bulk pellet storage is also available from the pellet suppliers.



## How does a wood pellet boiler work?

On start up the auger feeds the wood pellets from the hopper into the burner where it is lit by an ignition element. The burner output is adjusted automatically (modulates) to achieve the set temperature by controlling the feed rate of pellets. The fan in the burner propels hot gas generated from the fuel into the Spira's primary heat exchanger. The heat energy is then transferred to water from the central heating system, before being circulated around the house to either radiators and/or underfloor heating.

## Is the Grant Spira wood pellet boiler noisy in operation?

The noise from Grant wood pellet boiler comes from the following main sources; the flue fan, burner fan, self-cleaning process and the pellets themselves dropping into the burner. Whilst the combination of these is not excessively noisy, the Spira would be unsuitable for installation within 'habitable' rooms of a house, e.g. kitchen, utility room etc. which are more commonly used for locating conventional oil and gas boilers.

## How much space is required to install the boiler and hopper?

Suitable space must be allowed around the boiler for servicing and maintenance. Full details of the precise minimum clearances are to be found in the Installation and Servicing instructions provided with the boiler.

Typically, an overall floor area of 1700mm wide x 1500mm deep will be required to locate the boiler/hopper and provide the clearances required.

## Can the Grant Spira wood pellet boiler be installed outside?

No. Grant Spira wood pellet boilers must be installed in a damp free environment along with the accompanying pellet hopper. The boiler can be located in an outbuilding, etc. but must not, under any circumstances be exposed to the elements (e.g. located under a car port or lean to canopy).

## **Are there any special requirements for the base on which the boiler and hopper are installed?**

Yes. The base must conform to the requirements of Building Regulations. Full details are given in the Installation and servicing instructions supplied with the boilers.

## **What type of heating system can a Grant Spira wood pellet boiler be used with?**

Grant Spira wood pellet boilers can be used with 2-pipe, fully pumped hot water heating systems - either open-vented or sealed system - using radiators and/or underfloor heating.

Sealed heating systems must incorporate a suitably sized expansion vessel, a pressure gauge and approved filling loop. The 2.5 bar pressure relief valve required is supplied with the boiler.

## **What type of heating system controls can be used with a Grant Spira wood pellet boiler?**

Grant Spira wood pellet boilers can be used with most commonly installed domestic heating control systems, e.g. Y-plan and S-plan type control systems, where a programmer and room thermostat will control the operation of the boiler to the requirements of the householder.



## **What size of heating system is the Grant Spira wood pellet boiler suitable for?**

Grant Spira wood pellet boilers are fully modulating and their output will automatically be adjusted to meet the changing demand of the heating system to which it is fitted, however the boiler must be capable of operating at its full output, as this is a requirement for commissioning the appliance.

The smaller 6 – 26kW models can be used for systems with a maximum heat load of 26kW, whereas the 9-36kW model can be used for larger heating systems of up to 36kW heat load.

It is also possible to combine two units with a unique central hopper to achieve a maximum output of 72kW, which can prove to be a very cost effective solution for larger domestic and smaller commercial installations.

## **Can a Grant Spira wood pellet boiler be fitted as a replacement boiler on an existing heating system?**

Yes, provided that the existing system is chemically cleaned and flushed, and complies with current Building Regulations. The existing control system may also be used providing that it also complies with these regulations. If not the system and/or controls will need to be brought in line with these requirements.

## **How should a Grant Spira wood pellet boiler be sized?**

As with all boilers, a full heat loss calculation for the property should be made to determine the heat load that the boiler will be required to meet, under design conditions. If the heating system includes a circuit to a hot water cylinder then an allowance for water heating should normally be included in determining the final heat load to be met by the boiler.

## Is a buffer tank required?

No, while many other makes of pellet boilers require a buffer tank the Grant Spira Condensing Wood Pellet boiler does not, this is an additional saving for the householder.

## What does condensing mean?

During combustion a proportion of the heat produced is locked up in the flue gas. A conventional boiler cannot recover any of this heat and this energy is lost to the atmosphere through the flue.

The Grant SPIRA Condensing wood pellet boiler contains an extra heat exchanger which is designed to recover this heat normally lost by a conventional boiler. It does this by cooling the flue gases to below 90°C (Typically conventional boiler flue gases are 200°C plus) thus extracting more heat. This is achieved by cooling the flue gases to their dew point.

## What heating flow temperature will the Grant Spira wood pellet boiler produce?

Grant Spira wood pellet boilers are condensing wood pellet boilers and as such are intended to operate at lower flow and return water temperatures than conventional boilers. The water temperature from the boiler can be adjusted on the burner control panel, but should not exceed 75°C.

## How efficient are the Grant Spira wood pellet boilers?

The Grant Spira is a condensing wood pellet boiler with a modulating burner and has exceptionally high efficiency levels. The 6-26kW model has a tested and approved full load efficiency of 97.4% and the 9-36kW model 93.1%.

This is comparable with high efficiency condensing domestic oil fired boilers (and better than many high efficiency gas-fired boilers), making the Grant Spira both an energy efficient and 'Green' alternative to fossil fuel burning boilers.



## What is unique about the Grant Spira wood pellet boiler?

Grant Spira wood pellet boilers benefit from the use of award winning condensing technology, originally developed for Grant's market leading Vortex oil-fired boiler range. This, in conjunction with the all-new fully modulating pellet burner, has resulted in an extremely efficient range of renewable home heating appliances. Higher efficiencies, coupled with lower and more stable fuel costs, creates a very environmentally and consumer friendly heating solution.

## What type of flue system is required for a Grant Spira wood pellet boiler?

Grant Spira wood pellet boilers must be installed with a Grant 'Black' flue system. This is an insulated twin wall stainless steel flue system with a semi gloss black finish specifically designed for use with Grant's Spira condensing technology. It is available in one size – 125mm (5”) internal diameter, suitable for both sizes of Spira boiler. The Black flue system also includes a 125mm flexible flue liner for use with an existing chimney.

## Who can install, commission and service a Grant Spira wood pellet boiler?

**Only Grant trained and accredited wood pellet boiler installers (registered on the G-One Scheme) can install the Grant Spira wood pellet boiler.** Courses are available via the Grant Training Academy and can be booked by calling 0800 2794796.

## How often should a Grant Spira wood pellet boiler be serviced?

In order to ensure efficient and safe operation, Grant Spira wood pellet boilers must be serviced annually when amongst other things, the primary and condensing heat exchangers, combustion chamber, flue fan box and burner, must all be cleaned of any ash deposits and the burner re-set for a further year's operation. The boiler will indicate when this is due, by displaying a 'SERVICE' message on the burner control panel. This service interval is based on the actual running time of the burner and thus may vary in length depending on the degree of use of the boiler.

## How often does a Grant Spira wood pellet boiler require cleaning out?

The efficient combustion of the Grant Spira burner, coupled with the consistently high quality of the wood pellets approved for use with the appliance, results in a relatively small amount of fine ash being produced within the boiler. The majority of this will be collected within the easily accessible ash pan located inside the combustion chamber.

Furthermore, as the Spira incorporates automatic cleaning of both the primary and condensing heat exchangers, and the burner brazier, at pre-set intervals to remove any ash deposits, they generally only require manually cleaning out around once per year i.e. the ash pan requires emptying, or after about 3 tonnes of pellets have been burnt.

## Is a wood pellet boiler eligible for any Grant funding towards the cost?

Grant funding may be available when the proposed Renewable Heat Incentive is announced by the Northern Ireland Executive.

**IMPORTANT:** To access any possible RHI payments, installers must be on the MCS Register for biomass. Being part of the Grant G-One Accredited Installer Scheme alone will not allow access to RHI funding.

## Is the Grant Spira MCS approved?

Yes, all boilers within the Grant Spira Wood Pellet Range are MCS approved.



## What is the cost saving of using wood pellets compared to oil?

The cost of the amount of wood pellets used to heat a property depends on many factors, including the size of the property, how often the occupants are at home, the temperatures required within the rooms, etc. In reality, every home is different and as such, it is difficult to predict the precise cost of the amount of fuel that may be used in a year.

However, a comparison can be made between the cost of wood pellets and, for example, heating oil, based on the heat they provide. Any saving from comparing the two fuels, obviously depends on their initial purchase cost. The price of wood pellets is very stable, whilst that of heating oil is the opposite.

The chart below shows the percentage fuel cost savings for wood pellet against oil. For example, based on an average market price for pellets of £200 per tonne, and heating oil (kerosene) at 60p/litre, the saving per kilowatt hour (kWh) of heat output using wood pellets, is approximately 34%. This assumes that the efficiencies of the wood pellet boiler and oil boiler are the same. If the oil boiler concerned was 10-15 years old (or older), the lower efficiency would result in a much greater saving.

Oil Cost (p/litre)	Wood Pellet Cost (£/tonne) Including delivery charge							
	180	190	200	210	220	230	240	250
80	55.5%	53.0%	50.5%	48.0%	45.6%	43.1%	40.6%	38.1%
75	52.5%	49.9%	47.2%	44.6%	41.9%	39.3%	36.7%	34.0%
70	49.1%	46.3%	43.4%	40.6%	37.8%	35.0%	32.1%	29.3%
65	45.2%	42.1%	39.1%	36.0%	33.0%	30.0%	26.9%	23.9%
60	40.6%	37.3%	34.0%	30.7%	27.4%	24.1%	20.8%	17.5%
55	35.2%	31.6%	28.0%	24.4%	20.8%	17.2%	13.6%	10.0%
50	28.7%	24.8%	20.8%	16.9%	12.9%	8.9%	5.0%	1.0%
45	20.8%	16.4%	12.0%	7.6%	3.2%	-1.2%	-5.6%	-10.0%
40	10.9%	6.0%	1.0%	-3.9%	-8.9%	-13.8%	-18.8%	-23.7%

**Net CV Wood Pellets:** 4.8 kWh/kg

**Net CV Kerosene:** 43.3 MJ/kg

**Sp Density Kerosene:** 0.79 kg/litre



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