

Domestic wood burning boilers: A Consumer Guide

In Ireland, there is a wide choice of wood fuels available. Many people have their own supply of wood which they can use for inexpensive, efficient heating. Others like an environmentally friendly fuel whilst at the same time enjoying the convenience they were accustomed to with oil or gas heating but at a lower running cost, and therefore choose wood pellets or wood chip. This buyers' guide is aimed at providing you, the consumer, with some useful information and pointers which will assist you in making the correct decision.

Wood heating systems are commonly made up of the following main components :

- *The wood boiler*
- *Fuel store (either very dry fuel store for wood pellets, or drying area for wood logs)*
- *Buffer cylinder (large heating water storage tank which is needed with a wood log boiler)*

Choosing a wood boiler: when and why, what type?

Wood pellet / chip boilers

Wood chip boilers are not commonly used in dwellings, whereas wood pellet boilers are widely used in both dwellings and large scale installations. Wood pellet and chip boilers offer convenience by way of automatic fuel feeding and in most cases automatic ignition. It is important that you source a quality supply of wood pellets for a reasonable price. Getting bulk delivery of pellets (> three tonnes at a time) is paramount to improving the economics of a wood pellet system.

- Look for the wood fuel quality mark (WFQA) or equivalent, for peace of mind regarding fuel quality.
- When storing wood pellets it is very important to keep them as dry as possible (approx. 10% moisture content).
- Readymade effective wood pellet storage tanks are available for this purpose if it is not feasible to construct a store on-site.
- Three tonnes is the minimum storage space which is recommended for wood pellets.

Wood log boilers

If you have a steady source of wood logs available, then it makes sense to investigate wood log boilers. The wood log gasification boiler is the most efficient type of wood log boiler available on the market. This type of boiler first turns the wood into "wood gas" and this gas is then burned as a jet to produce very efficient heat. It is important to bear in mind that gasification boilers are somewhat sensitive to moisture content, and it is recommended that wood has less than twenty five percent moisture content (approximately one year drying in shelter) for use in this type of boiler.

Wood log boilers are more hands-on than their pellet and chip counterparts. The firebox will need to be filled and manually ignited once per day during the heating season. A buffer cylinder is required with a wood log boiler because the wood is burned in a single continuous period, and the heat must be stored for use later on. The cylinder size depends on the heating power of the boiler.

Wood pellet boilers can generally be automatically ignited on demand, and therefore a buffer cylinder is not always required.

The comparison below outlines some of the decisions to be considered and some of the advantages / disadvantages of both types :

Wood log boiler

- *Very useful for dwellings with a ready supply of wood logs.*
- *Manual aspect: cutting, storing, filling, cleaning.*
- *Extra space required to accommodate large buffer cylinder.*
- *Wood gasification boilers are highly efficient (85 - 90%)*
- *Initial cost higher than conventional fossil heating*

Wood pellet boiler

- *Fuel will need to be sourced externally, need bulk supply for economics.*
- *Automatic ignition and fuel feed systems available: convenient.*
- *Highly efficient (85-90%).*
- *Wood pellets very sensitive to storage conditions (store must be kept dry).*
- *Initial investment cost high compared with conventional fossil heating*

Remember : All wood boilers need to be cleaned and maintained to ensure continued efficiency of operation.



Boilers are available with varying levels of automatic cleaning and ash removal, from fully automatic to fully manual and many levels in between. Whatever wood boiler you choose, it is important that the recommended cleaning and ash removal schedules are strictly adhered to. If not, then over time the operational efficiency of the boiler will be significantly compromised.

Sizing and Design

- Is my house suitable for a wood boiler? *Any house that has space for the boiler and the associated items, has accessibility for fuel delivery, a fuel store and boiler cleaning/maintenance is suitable for wood heating. In some cases, however, a wood stove might be more practical when space or accessibility is an issue (see our buyer's guide for wood stoves to find out if this is a more suitable option for your needs).*
- Will the proposed installation comply with building regulations?
 - *The boiler installation, the flue installation and the air supply for the boiler must comply with the requirements of building regulations part J (www.environ.ie/TGD/en).*
 - *For newer, airtight dwellings, ask your supplier if there is an option to install a dedicated air supply to the boiler from outside.*
 - *Also, remember that if the boiler can burn fuels other than wood, then it will not qualify as a renewable heating product which can be used to meet the renewable requirement of Part L 2008 of the building regulations, nor can it be used to claim a renewable grant.*
- What size boiler do I require for my dwelling? *The boiler size is related to your dwelling's individual heating requirement. Every house is different, and therefore it is recommended that you contact a BER assessor to accurately calculate the heat requirement of your dwelling. You will then have an indication of the boiler size required.*
- What size buffer cylinder do I need with my wood log boiler? *The size of the buffer cylinder depends on the capacity of the boiler. It is recommended that for every kiloWatt (kW) of boiler power output you should have 55 litres of buffer cylinder storage.*
 - *e.g. for a 15kW wood log gasification boiler, the recommended buffer tank size would be approximately : 15 kW x 55 = 825 litres. Manufacturers / suppliers may recommend larger or smaller cylinders than this, as each system is different.*

Equipment Specifications

- Is the boiler registered for the Greener Homes Scheme/Building Regulations Part L 2008? Go to www.seai.ie/greenerhomes
 - Is it listed on the HARP database (Home Heating Appliance Register of Performance – for BER ratings)? Go to www.seai.ie/harp
- Is a buffer cylinder required with all wood heating systems? *A buffer cylinder is required with wood log boilers and manufacturers / suppliers might also recommend one in certain cases for wood pellet / chip boilers.*
- How manually intensive will the system be? *Does the boiler have an automatic cleaning and ash gathering function? If not or if partially automatic, then how often should it be cleaned? What should be cleaned and what is the correct method of cleaning (heat exchanger and combustion chamber are usually the main concerns)? How often should ash pan be emptied?*

Installation / Commissioning / Operation / After-sales and Service

- What qualifications and experience do the supplier/ installer have? *Important considerations: Are there references available for both the supplier and installer, is the installer registered with SEAI to install wood heating systems: check www.seai.ie/greenerhomes*
- Has the supplier / installer set up the system to operate optimally and have they provided you with all the necessary instructions to understand the system and monitor it? *User instruction manual in English and a full run-through the operation of the system is necessary.*
- What is the warranty on parts / labour, and who do I contact for service / maintenance / troubleshooting / emergencies? *Boilers should have a minimum warranty of 2 years. Ask your supplier about the recommended maintenance (servicing) if required.*

Costs / Payment / Payback

What will the system cost, fully supplied and fully installed: *Wood boilers typically cost between €8,000 and €16,000 supplied and installed. The payback time for such an investment depends on the initial cost and also on the cost of the wood fuel, compared with the savings per year you would expect against the heat source you had installed previously, or against conventional oil or gas heating.*

The fuel cost calculator on the SEAI website can be used to investigate the cost benefits of wood heating : www.seai.ie/publications

Visit www.seai.ie for information on energy saving, renewable technologies and available funding programmes.

For technical information on wood heating systems, email : renewables@reio.ie or call 023-8842193

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