

Wood fired heating - overview

Why burn wood?

Wood is a renewable resource for timber structures, high grade insulation and as a fuel. It is one of the most important locally-produced and renewable energy sources. It can be obtained in quantity from sustainably managed woods and forests without needing to transport it a great distance. Wood is a natural fuel that grows by converting solar energy. Leaving wood to rot releases as much carbon dioxide (CO₂) as when it is incinerated. Heating with wood is therefore CO₂-neutral. Wood as a fuel can be obtained in different forms, in billets, wood chip and wood pellets, the last as a by-product of wood machining.

Wood can be burned cleanly and efficiently by well designed modern systems. There are two ways in the way that it can be used for heating. The first is to produce radiant heat, the second is for heating water.



Radiant ceramic wood-fired stoves

Ceramic stoves produce radiant heat that allows comfort at lower air temperatures than found in normal radiator based heating systems. Ceramic stoves are available in a variety of styles and heat outputs to suit the room.

The key factors in good stoves are that they are made of refractory material and have a long internal flame path. The refractory material allows the wood to burn rapidly and fully at temperatures in excess of 1200t .

A long flame path allows the maximum heat transfer to the refractory heat store which then reradiates the heat into the room slowly.

These features allow around 70% of the heat to be used in the room instead of being lost up the chimney, typical of a draughty open fireplace. By being so effective less timber is required to heat a space. Effective combustion, a clean chimney and low pollution go hand in hand.

For heating water a wood-fired boiler should be used.



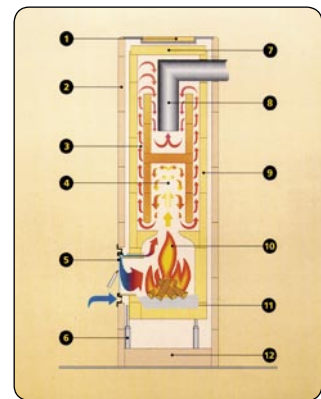
Modular components allowing speedy assembly

Wood-fired boilers

Sophisticated boilers are available to heat water for both domestic and commercial installations. They are available in heat outputs from 15kW to 550kW.

They feature low pollution using computer control and lambda probes to optimise combustion and have efficiencies up to 90%. They are capable of burning logs, wood-chip and pellets. Wood-chip and pellets are automatically fed. Pellet fed systems are as convenient as gas or oil boilers. Contact Construction Resources for further details.

To maintain low emissions and high efficiencies the heat produced is fed into a heat store such as the Sandler heat management system. The system provides domestic hot water and space heating. Visit Construction Resources to see one in action.



Cross-section of one of the modern stoves available from Construction Resources with refractory store and long flame path.

Installation

Modern wood-fired ceramic stoves are easy to install. They are accurately made and easy to assemble or even reassemble in a different location.

And finally...

For your safety, permanent ventilation is required for wood-fired systems and flues should be designed and installed in compliance with the Building Regulations. Where very high levels of air tightness of the building are required by Building Regulation or by specification, we suggest the use of direct air supply options as available for these stoves. In order to enjoy the best of your wood-fired stove we recommend that you use dry timber with a moisture content below 20%. Unseasoned timber takes a minimum of two years to dry sufficiently in a dry store. The timber should be free of preservatives, paint or galvanised nails. Little ash is produced by these wood-fired stoves, the little that is should be disposed of safely.

Radiant ceramic wood-fired stoves

Topolino

The Topolino has been developed in Switzerland as an advanced heat store. Versatile in use as additional heating in an ordinary house or sole source in a low energy home. It features an elegant clasp style with gently curved front. The front heat storage element is made of white polished alumina that provides a high heat capacity and conductivity. The solid outer shell is made of reformed porcelain in light grey.

A direct air connection to the base of the stove makes it suitable for low energy houses. Its modular components allow it to be easily assembled without the need for wet mortar. Two hours and it's ready to be fired.

Heating capacity	3 - 8 kW nominal	Fuel efficiency	86 %
Heated space	0.5 kW after 12hrs (single firing)	Overall efficiency	83 %
	200 m ³ (new house) (0°C ext)	Storage capacity	75 %
Dimensions	300 m ³ (low energy)	Burning time	60 - 90 mins
	W 515 mm, D 580 mm, H 1400 mm	Fuel load	4.5 - 6 kg, 33 cm max
Weight	415 kg		



T-One

The T-One is designed for the modern home.

Its novel design allows the logs to burn from top to bottom ensuring low pollution from a long lasting flame. The ceramic stove has a large frameless glass door that shows off the fire to its best advantage. A modern design from a Swiss company established 125 years ago.

Heating capacity	3 - 6 kW nominal	Fuel efficiency	85 %
Heating space	0.5kW after 6hrs (single firing)	Overall efficiency	80 %
	Up to 140 m ³	Storage capacity	60 %
Dimensions	W 410mm, D 425 mm, H 1395mm	Burning time	60 - 90 mins
Weight	215 kg	Fuel load	3.5 kg



Osier

The Osier draws upon design features from all over Europe & Scandinavia with the latest ideas on firebox design using modern refractory materials. It is amongst the most efficient heating systems and is very quick to install. There is much scope for interior designers as the exterior surface can be painted in matt, non-vinyl paint finishes to match any décor. The stove becomes an interesting talking point in a room.

Compact and sophisticated in design, it incorporates focal planes, preheated primary and secondary air ducts and second and third combustion chambers. The system takes logs up to 400mm. Custom versions are available to suit coppiced fuels. Total height can be from 1.7m to 3.5m by altering the number of rings so as to increase the heat output.

Heat output per ring (205mm tall)	0.35kWh	
Room size per ring	10 to 15m ³ *	
Weight per ring	99kg	*Affected by ceiling height and insulation
External temperature	90°C max	and frequency of firing. A nine ring unit shown.
Flue gas exit temperature	160°C ave	



Custom built ceramic stoves by the leading exponents Naber and Tolkstoff are also available; visit Construction Resources to view an example of their work. We will be happy to demonstrate a working example of a Topolino stove so that you can experience the comfort of radiant heat.