

Guide to Energy Efficiency with Solid Fuel

Energy Efficiency is important, not just because energy costs are rising. All fossil fuels (gas, oil and solid fuel) release greenhouse gases into the atmosphere, which contribute to global warming.

This document gives you general energy savings tips, many of which cost nothing. We also outline improvements you can make to your heating system that will make a significant difference to the amount of fuel you burn. Finally, we give you some advice on choosing an energy efficient solid fuel system and list at the end a selection of organizations that can offer further advice and help.



First:

Simple tips to save energy around the home:

- Never leave lights on if you are not using a room and use low energy light bulbs.
- Don't leave appliances on standby unnecessarily.
- Don't put hot or warm food in the fridge.
- Draw your curtains at dusk to save energy loss through windows.
- Don't overfill kettles and saucepans with water.
- Always wash a full load in the washing machine and dishwasher and use economy settings.

Further tips can be found on the Energy Savings Trust Website (see below).

Improving the thermal efficiency of your dwelling

1. The most effective way to increase the thermal efficiency of your dwelling is to have cavity wall insulation installed. If you do not have cavity walls, there are methods of internal and external cladding, but this has a longer payback period.
2. Loft insulation should ideally be at least 250mm thick.
3. Insulate the hot water cylinder and larger circulation pipes.
4. Fit double glazing – this is quite expensive, but there will also be improvements in reduction of external noise. You must remember however, that if you have a solid fuel appliance, you do need to have sufficient ventilation. The chimney will not work without it. If you fit double glazing you may need to compensate for the reduction in ventilation by adding extra air bricks. Ventilation requirements for solid fuel appliances are found in Building Regulations Part J (Part F in Scotland). YOU MAY BE ABLE TO GET A GRANT TO COVER ALL OR SOME OF THE COSTS OF THIS WORK. CONTACT YOUR LOCAL ENERGY ADVICE CENTRE.

General tips for solid fuel users:

- Always use the type of fuel that is recommended for your appliance. Certain fuels are manufactured for open fires and others for closed appliances. The right type of fuel will perform better on the appliance that it was designed to burn on. (Ask for a copy of our fuels leaflet or download it from our website ([literature](#) page).
- Always use the best quality fuel that you can afford. There will be less ash and the calorific value (heat content) of the fuel will be higher.
- Ash and clinker - Use the riddling device and a poker to clear ash and clinker that collects above the firebars. The appliance will not function to capacity if the grate is clogged. Don't allow the ash to build up in the grate. This can lead to damaged firebars.
- Only burn well seasoned wood which is as dry as possible. If you are not in a Smoke Control Area or have an exempt appliance* you can burn wood. This is an environmentally friendly fuel being carbon neutral because it removes as much carbon dioxide from the environment whilst it grows as is emitted when it is burnt. If your wood is wet, you will waste heat that could have gone to heat your room by turning the moisture into steam.
 - * An exempt appliance can burn wood or wood and coal smokelessly. It must have an exemption certificate from Defra.



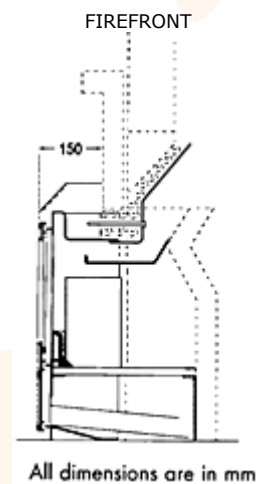
- Get your chimney swept regularly (at least once a year and twice if burning wood or housecoal).
- Follow the manufacturer's instructions on maintenance. On closed appliances clean the throat plate and check all door seals to ensure that they are airtight. Any boiler surfaces should be scraped clean every heating season. Although some appliances can be used with the door open, they will be more efficient with the door closed.
- Download or order our practical guides: How to Get the Best out of your Roomheater or Stove, How to Get the Best out of Your Open Fire, How to Get the Best out of Your Boiler.

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IMPROVING YOUR HEATING SYSTEM

Open Fires

- Fit an adjustable throat restrictor – By reducing the airflow the efficiency of the fire is improved. Energy is also saved by closing the throat once the fire is out, retaining heat in the room. Reopen the throat restrictor before relighting the fire.
- Fit glass fire doors - Although this is not a cheap option, it will save fuel, reduce dust and can assist in curing smoky fireplaces. This is suitable for both inset and inglenook style fireplaces.
- Fit a firefront - Convert your open fire to a closed appliance by putting on a firefront – typical cost around £480 plus labour.



This gives your home all the advantages of a roomheater a) Thermostatic control to provide the required degree of heating. b) A sealed glass door which reduces the airflow c) A convection current that circulates warm air throughout the whole of the room. d) Increased efficiency which reduces your running costs (up to 3 times more efficient than an ordinary open fire).

Householders on certain benefits may be eligible for grants under the Government Warm Front Scheme (HEES in Wales and the Central Heating Programme for over 60s in Scotland) to fit firefronts and in Scotland and Wales they are eligible for the installation of roomheaters and boilers.

Central Heating Systems

- Fit a solid fuel central heating control system if you do not presently have one. This has a water temperature sensing thermostat and gives fully automatic timed control of the heating system with subsequent fuel savings and built in safety features.
- Fit a programmable room thermostat. This provides control over time and temperature to ensure comfortable heating levels. A reduction in the temperature of the property even by one degree can result in effective energy savings.
- Go for 'Link Up' - An open fire or room heater fitted with a back boiler can be linked to an open-vented existing (non-condensing) heating system. The real advantage of link up is its flexibility. Whilst you are enjoying the comfort of your solid fuel fire, it can take over automatically, all or part of the heating load at no extra cost. It can be installed to link either the hot water only or the hot water and radiators. (Ask for our separate leaflet on Link-Up or [download](#) it from our website).

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CHOOSING YOUR NEW SOLID FUEL HEATING SYSTEM

The route you will use to choose your system will probably depend upon whether it is going to be your primary heat source or a secondary heat source.

Central heating systems

Installation and choice of heating systems providing space and hot water are subject to the requirements of the Building Regulations. The main parts are J (F in Scotland) Combustion Appliances and Fuel Storage Systems and LI (J in Scotland) Conservation of Heat and Power. This latter Part covers systems that deliver both space and water heating and is amended regularly in order to increase the efficiency of systems. The current Regulations came into force in 2006. The next amendment will be in force in 2010 and are expected to deliver a 25% improvement in efficiency of new dwellings over the 2006 Regulations. You will therefore need to be aware of the up to date Regulations before choosing and installing your solid fuel central heating system. You can download or order a copy of our "Customers Guide to Current Building Regulations" from the [literature](#) page.



Our "Complete Guide to Solid Fuel Heating" and the more in depth "Designing Solid Fuel into Homes" will give you basic information about what kind of solid fuel system are available. All these publications can be [downloaded](#) from our website.

If you are an installer you should also consult the second and third tier documents published with the amended Building Regulations and available at www.planningportal.gov.uk

A word about HETAS - HETAS (Heating Equipment Testing and Approvals Scheme) is the approvals body for solid fuel and wood fuel appliances in the UK. HETAS has also been designated by the Government as the certifying body for competency in installing solid fuel appliances and systems under Building Regulations. By utilizing a HETAS registered installer, you will not have to seek Building Control Consent for the installation. However, you may find it helpful to consult the various publications mentioned above prior to choosing your system, together with seeking advice from your chosen engineer.



The Government is rolling out a programme of energy efficiency training for installers, but this will take time. Your engineer may not have completed this training and you should draw his attention to installers' guide.

A Note about SAP ratings

SAP is the standard assessment procedure for measuring the energy efficiency of buildings. The final SAP rating of a building is the result of complex calculations of heat loss through the fabric of the building, the efficiency of the heating system and the emissions of carbon dioxide from the building. An installer should compensate for a lower efficiency boiler by providing greater insulation to the building to minimise heat loss.

The efficiency of the oil and gas boilers is calculated on a seasonally adjusted basis and each boiler has a rating published in the SEDBUK tables (Seasonal Efficiency of Domestic Boilers United Kingdom). At the moment there is no equivalent SEDBUK table for solid fuel systems. Solid Fuel boilers operate in a different way to oil and gas boilers so their seasonal efficiency has to be calculated differently. Manufacturers of solid fuel appliances are working towards the publication of a solid fuel table, but in the meantime, it is difficult for installers to make any comparative calculation on efficiency of solid fuel or wood fuel boilers. The Building Research Establishment has published default figures for the different types of solid fuel appliances. HETAS publishes efficiency figures for solid fuel appliances that it has tested in its annual list "Approved Solid Fuel Appliances and Services", but this figure will not be comparable to the SEDBUK figure for other boilers. Appliance manufacturers will have their own figures. Some efficiencies quoted by manufacturers in their literature may not be seasonally adjusted figures, although as time progresses more will be able to provide these.

All appliances appearing in the HETAS Guide to Approved Solid Fuel Appliances and Services must have reached the minimum efficiency required by HETAS for that type of appliance. These

minimum efficiencies are published on the HETAS Ltd website (see below).

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What about wood

There is at present no means of adjusting the SAP rating of a building by reference to whether the fuel burnt is mineral solid fuel (coal or smokeless fuel) or wood. Wood is a carbon neutral fuel, so your choice of appliance should include a decision on whether you want to burn wood. Even burning half coal and half wood will make a significant difference to the amount of carbon emissions that your heating system produces. Most solid fuel appliances are multifuel and that includes cookers. However, if you are in a smoke control area, you can only burn wood on an exempt appliance. Some of these are listed on our website and are available on www.uksmokecontrolareas.co.uk.



Mixed fuel briquettes are now available. These briquettes will emit less carbon dioxide than a standard anthracite or coal briquette. Check the rated output of the appliances with the different fuels. If you intend to use mostly wood, you need to ensure that the boiler you choose will be able to heat all the radiators you require.

You could also consider the very efficient wood pellet boilers. These are fully automatic and some can keep running even if the power goes off. The fuel is special pelletised wood typically made from waste from sawmills. The larger domestic boiler models are hopper fed and low maintenance. There may be grants available towards the installation of this type of boiler.

Solar water heating

If you will need to rely on an electric immersion heater for your water in summer, you could consider installing a solar water heating system for your summer requirements. Although the systems are expensive, there may be grants available to help with the installation cost. Once installed, it is quite possible that you will be able to get most of your hot water in summer from this system.

Space Heating

If your solid fuel appliance is only going to be used for space heating, its efficiency will be of less importance to you. However, it is worth considering the following:

- **Log basket or inset open fire** - Although a log or coal basket in an inglenook makes a magnificent feature – if you want to keep warm you would be better off with an inset fire. The dog or Spanish grates are the least efficient.

A cassette fire or a firebox will be the most efficient type of open fire. Some cassette fires with convectors can be up to 50% efficient (Jetmaster – see contacts at the end).



- **Stoves and roomheaters** - These closed appliances are much more efficient and controllable than an open fire. Some are very carefully designed to give a good view of the fire without you having to open the doors. If you choose a boiler model, you can go for link-up (see preceding section).

Power Cuts and Fuel Shortages

Power cuts are not a popular way to save energy – but if you have a solid fuel or wood burning appliance without an electric pump, you will always have a source of heating in an emergency. Some stoves even come with a hotplate. Coal and smokeless fuel is supplied by coal merchants and available from various other outlets. You can keep an “instant” fire or heat log handy just in case the lights go out.

Further Information and contacts

Visit our other web pages – [benefits](#) of solid fuel, heating [appliances](#), [fuels guide](#), [literature](#) and [wood fuel](#).

Comprehensive listings of exempt appliances and authorised smokeless fuels www.uksmokecontrolareas.co.uk. Also look in the HETAS Guide to Approved Products and Services which includes listings for exempt appliances approved by HETAS.

Building Regulations can be viewed at www.planningportal.gov.uk

Grants for renewable energy in domestic dwellings go to the Energy Savings Trust (see below).

Energy Savings Trust www.est.org.uk Tel: 0207 222 0101 - Gives advice on energy savings and produce a variety of publications for individuals and communities.

Your local authority will offer energy advice and may have special programmes promoting energy efficient appliances and insulation in conjunction with gas and electricity suppliers.

National Energy Foundation – Advice on renewable energy, wood suppliers and wood pellet stoves www.greenenergy.org.uk telephone 01908 66 5555. The NEF also hosts logpile, a list of wood suppliers – visit www.logpile.co.uk or telephone 01908 665555.

HETAS LTD for a full list of engineers and approved fuels, appliances and services, and some appliance efficiencies www.hetas.co.uk.

Firefront Supplier

Ouzeldale Foundry Co. Ltd, www.ouzledale.co.uk Tel: 01282 813235.

Controls and Link Up Systems

A.J. Wells & Sons, www.charnwood.com Tel: 01983 537777
Dunsley Heating www.dunsleyheat.co.uk Tel: 01484 682635.

Fireplace doors

Thermo-Rite distributors A. & M. Energy fires, Tel: 01452 830662 www.energyfires.co.uk

Throat Restrictors

Hanson Red Bank Telephone 01530 270 333

Open fire cassette convector fires

Jetmaster Fires Ltd www.jetmaster.co.uk Tel: 0870 727 0105

Approved Coal Merchants Scheme - Find a local approved merchant on our [merchant](#) webpage Approved Coal Merchants or telephone us on 0845 6014406