

In the Highlands NOW

– a fuel that's safe, economical & non-polluting!

WELL OF COURSE we've been burning wood in the Highlands for as long as anyone can remember. But now the case for doing so is stronger than ever.

The price of coal, oil and gas has become increasingly erratic as a result of declining reserves, wrangles amongst suppliers and government policies aimed at conservation, fuel efficiency and pollution control.

This has led to the imposition of the Climate Change Levy, which will apply to electricity, oil, LPG and coal as a way of reducing carbon dioxide emissions which are affecting the global climate.

In stark comparison, fuel wood, along with solar, wind, hydro and wave power is a renewable energy resource, which offers a solution to the fuel energy requirement.

Forest managers at last recognise that a buoyant market for fuelwood right on their doorstep can boost cashflow and lead to a sustainable market locally for their produce.

This local market will be increasingly important as the high cost of fuel means that transport costs squeeze the viability of harvesting timber and sending it across the country.

Although prices are low, the conifer crop will still be harvested and this harvest is set to increase as the crops planted in the 60's and 70's mature. At the same time there is a huge potential resource of native hardwood fuel which is relatively untouched, but which could provide a huge amount of fuel wood. It seems ridiculous to be importing coal from Colombia or Poland when there is a better fuel standing untouched "outside the back door."

TECHNOLOGY

Finally, there are the remarkable changes that have taken place in stove technology.

Twenty five years ago the Scandinavians sparked a revolution in this country when they began to import wood-burning stoves which demonstrated an efficiency far beyond anything we had experienced using our traditional open fires. Yet, these stoves are now outdated by the present generation of "clean-burn" stoves. Indeed several of these new types of stove are approved for use in smoke-control zones. The tars and creosotes are burned before they reach the



Tim McIntyre keeps the family house warm with a high efficiency Woodwarm Fireview stove. Logs are cut in a Woodwarm vice & stored under cover in an ingenious frame. A polythene tunnel traps the sun's heat and is open at both ends for maximum ventilation.

HEATING WATER WITH WOOD

Many larger woodstoves are now available with a central-heating boiler option. This can be extremely worthwhile, but it is essential to control the circulating temperature with a "stat." Otherwise cold water will be pumped round the stove

– with a risk of high levels of condensation being produced and boiler life being shortened.

As a further precaution you should always treat the circulating water with a rust inhibitor. "Fernox" is a well-known brand available from most building centres.

Burning Wood is Good?

This may seem an odd statement because burning wood obviously creates carbon dioxide (CO₂) but there is a big difference when compared to fossil fuels, such as coal, oil and gas.

As trees grow they absorb CO₂ from the air and along with energy from the sun they create wood. If the tree is then burned (or even if it decays naturally) it only releases the same amount of carbon which had been absorbed during its growth.

This means that there is no net gain of carbon to the atmosphere. As the next crop of trees grow, they in turn absorb the carbon again, leading to a carbon-neutral cycle. This is in marked contrast to fossil fuels, which permanently increase CO₂ levels whenever they are burned.

Well managed forests are a renewable, sustainable source of energy that can help reduce greenhouse gas emissions by displacing the use of fossil fuels.

flue, so the chimney remains cleaner, the glass doors stay clear and you can again see the fire.

Now read on and discover all you need to know to transform the heating in your home

anatomy of a modern woodstove

Good stove design is a rare blend of art and science. Look for weight – a stove must be robust if it is to withstand constant heat without burning out or becoming distorted.

A thick steel body is every bit as durable as cast-iron but the door should be cast and have heavy hinges. Above all it must be a tight fit to the body of the stove and lock securely.

“Clean burn” technology means the fire has been designed to burn at higher temperatures than earlier models. Some of the features shown at right contribute to this.

The benefits of “clean burn” are extremely worthwhile; you will enjoy a bright self-cleaning “window” on the fire, together with enhanced fuel economy and a much cleaner chimney.

“large firebox capacity”

Watching exactly how wood burns throughout a complete combustion cycle is an education. You’ll quickly become expert at judging how different fuels behave – and what air-settings are needed to produce best results. By comparison, operating a stove with solid doors is like driving blind!

MULTIFUEL

Treat the term “multifuel” with caution – most stoves are noticeably biased

pre-heated air-inlet channels

self-cleaning ceramic glass (double glazed)

fire-box lined with insulating fire-bricks to maintain high combustion temperature

optional raised grate and ashpan for ‘multifuel’. (For efficient woodburning you would normally burn straight onto a bed of ash.)

precision air-inlet control



Jøtul No 3 Cleanburn

towards one fuel or another.

It is a big mistake to ignore this and buy a stove primarily intended for solid fuel when you intend to burn mainly wood – or vice-versa.

Wood burning stoves need a large firebox capacity to accommodate bulky logs, and they need to trap and retain a thick bed of embers so that fragments of charcoal are retained until they burn away to a fine ash. They also need to be airtight and to have precise, accessible air-controls.

None of this applies for solid fuel stoves which operate to different criteria.

As a rule of thumb “multifuel” can be successful in stoves with an output of up to 4 kW. Higher than that, the compromises become more evident and can result in poor control and poor fuel economy.

If in doubt, consult your woodstove agent – or call the stove manufacturer and explain which fuel you expect to use most.

You should also seek help in determining the size of stove you need. Measure the room(s) you are heating carefully and ask your woodstove agent to make his recommendations in writing.

Don't risk problems – line your chimney

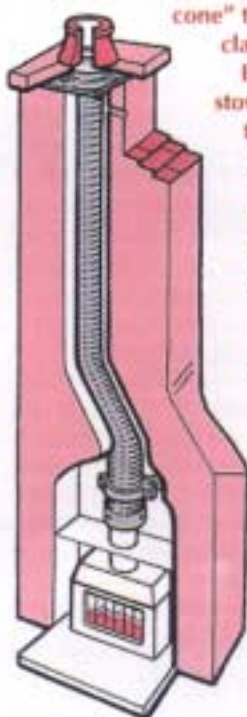
A chimney is more or less self-drying when it serves an open wood fire – because there is enough air around to dilute moisture in the smoke and dry up damp patches. Open fires also warm up a chimney rapidly because so much heat is carried up with the smoke.

Unfortunately, none of this applies when you install a woodstove. The smoke from a closed appliance is more concentrated and far more humid. If you could inspect the inside of your chimney halfway up you would find it's like a Chinese laundry – relatively cool and laden with moisture.

In a cold flue this is a sure recipe for galloping condensation and for laying up thick deposits of tar and creosote. This can be a pretty lethal cocktail, particularly in old porous masonry chimneys. It can also produce unpleasant problems if some of the goo runs back down to the stove and leaks out onto the hearth.

Fortunately there is a simple answer. Lightweight flexible liners have been developed to deal with this situation and they are highly effective.

The method of installation is to pull them down the chimney using the cord and “nose-



cone” that comes with the kit. The liner hangs from a plate and clamp at the top and the bottom plugs onto the stove.

Because a liner is light, it heats up rapidly when the stove is lit and will generally operate at a high enough surface temperature to “shrug off” the problems of condensation. It will do this all the better if you back-fill it with an insulating material like vermiculite (trade name “Micalfil” available from builders’ merchants) or rockwool.

Important

- + Check the size of liner required with your stove supplier. (Do not assume it should be the same diameter as the flue-collar on the stove – it may need to be bigger.)
- + Take special care to seal the liner at the top. The last thing you want is rain getting into the void between the liner and the old chimney.
- + Order the correct brush with the liner and make sure it is the only one used. An ordinary chimney-sweep’s brush is not suitable.

A lined chimney is unlikely ever to give you any trouble at all if you look after it sensibly. Burn the stove up brightly for a few minutes each day to drive off tar patches, steer clear of chemical flue cleaners and don’t burn plastic (or indeed any other junk.) Stainless steel is highly resistant to ordinary smoke but you can damage it quite quickly by subjecting it to the chlorine gas released by many man-made materials.

Gathering Winter Fuel

Actually, getting enough fuel to last you through a winter season needn't be all that difficult – the important thing is to start early.

To get the best out of your fuel wood it must be dry. This “seasoning” can take several months or as long as a year. It is safest to assume that all the fuel wood you purchase is unseasoned and will therefore require to be stored under cover prior to use.

The important thing to remember is that you must keep the rain off by covering the wood. Ideally you should also raise the stack off the ground (for example on pallets) and ventilate it by criss-crossing the wood to allow air to circulate across all surfaces.

“It is safest to assume that all fuelwood you buy will be unseasoned ...”

When buying your wood be aware that the fresher it is the more water it will contain so paying by weight is perhaps not the most cost-effective method!

Hardwoods such as oak, birch and ash are denser so they will give out more heat for the same volume.

However don't eschew softwoods such as pine, spruce and larch; on a weight for weight basis they have as much potential heat as hardwoods.

You should seek assurance from your supplier that the fuelwood comes from a forest which is being managed sustainably under a Woodland Grant Scheme felling license.

It is often said that different varieties of wood burn “better” or “worse” than others. This harks back to an era when logs were burned more or less green in an open hearth. Some, like ash, were “fit for a queen with a crown of gold.”

However these differences all but vanish when the fuel is properly seasoned and burned in a closed stove. As well as giving out a lot more heat, dry fuelwood keeps your chimney running sweet and clean.

Comparisons between different fuels are difficult due to fluctuating prices, but fuelwood is favourable to all the other major fuels. It is certainly the most environmentally friendly fuel as it does not contribute to CO₂ emissions. This is of major importance when one considers the increasing instability of the weather patterns.

TIP - to clean the glass in your stove, wipe it gently with plain steel wool dipped in water



Bob Black at Fearnoch (near Taynuilt, Argyll) seasons woodfuel continuously for use in his Charnwood stove. This photograph illustrates a healthy stock of oak dried out under a tarpaulin. Notice how Bob builds the stack – alternating the direction of the logs to allow maximum air to pass through.

Brush up on your burning technique

Many people get through far too much fuel because they let too much air into their stove. This cools the stove down while allowing much of the heat produced to disappear straight up the chimney.

The correct technique is to set the stove up specifically for wood burning, stoke it carefully and allow in just sufficient air to agitate the flames.

In most stoves the best starting point is to cover the grate bars with around one inch (25mm) of sand or ash before you light the fire. Surplus ash only needs to be removed occasionally (typically at two week intervals.)

Once the fire is properly established, add as much fuel as the stove can safely hold.

Cut the air back until this wood blackens and starts to shrink (you are trying to convert it to charcoal rather than burn it.)

Add further fresh fuel whenever there is space for it.

When the main bulk of the fuel in the centre is blacked you can adjust the airflow so that the charcoal begins to glow – and the stove will then deliver a sustained high output as well as being controllable across its full output range.

The technique involves patience. If you admit too much air the stove will rapidly burn off the charcoal and you'll have to start over again.

Needless to say the process is effortless with dry seasoned wood, and almost impossible when your wood is wet.

WET WOOD?

Yes, we all have to burn wood damper than we would like on occasion, but the wrong technique makes things worse.

Instead of running with the throttle wide open, chop your wood finer and criss-cross it in the stove to expose the maximum surface area. Then control the air carefully so that the wood has time to dry out thoroughly and convert partially to charcoal before it burns. And keep adding more fine wood whenever there is space.

There's more effort involved in this approach – but you'll also get a lot more heat out of your wet wood.

Use a similar technique to dry up your woodpile. Get as much air as possible to circulate through the fuel by splitting it and stacking it loosely under cover but in a site well exposed to the prevailing wind.

Frequently Asked Questions

How much more efficient is a wood-burning stove than an open fire?

A simplistic answer puts the efficiency of an open fire at around 15% – 20% and a stove at up to four times that – say 80%. But this is a bit of an "apples and oranges" conundrum; the two appliances differ considerably in their output characteristics.

In practice, many people find that they heat their homes to a higher more even temperature with a stove and get more warmth into the rest of the house – all on the same amount of fuel or less than they previously used in their open fire.

How does wood compare with other solid fuels in terms of heat output?

It has roughly half the calorific value of coal and its derivatives, but is far more reactive. This is demonstrated when dry kindling is burned; the fuel ignites at a low temperature.

You can turn a woodstove up or down according to need and get an immediate response. And wood needs little air to burn completely to a fine ash which gives it the edge in combustion efficiency; the less air you have flowing through the stove the less heat you lose up the chimney.

By comparison, coal is not particularly well suited to domestic use. It is burned most efficiently in the "pulverised fuel" process used in power-stations, by which it is ground to a fine powder and sprayed into a combustion chamber and burns rapidly at a very high temperature. Even this technique merely boosts efficiencies to those easily achievable with wood in a well-designed domestic stove.

I have been told to avoid steel stoves and stick to cast iron. Is this sound advice?

No. Steel and cast iron are virtually identical in terms of heat transmission and resistance to 'burnout' – the important thing is the thickness and quality of material used. You may want to consider other pros and cons though. Cast iron stoves are offered in a range of embellished and coloured enamel finishes.

Steel stoves are of necessity plainer in appearance but don't ever fracture (cast-iron can develop hairline fractures, particularly if a stove is heated up too rapidly from cold.)

Another material used in stove construction is soapstone – popular in the United States but less often seen in Europe.

If you buy from a manufacturer with a sound pedigree or take the advice of your woodstove agent you shouldn't have to worry what materials your stove is made from. Most "cheap & cheerful" products disappeared years ago!

I burn a mixture of coal and wood in an open fire. If I buy a stove can I continue to burn these two fuels together?

Many people do, and seem to be happy with the results. There are one or two points to consider though.

The most important is that mixing fuels can significantly shorten the life of the boiler if your stove is equipped with one. Much of the coal now imported into the country has a high sulphur content. Burning wood inevitably produces water vapour. Mix these two things together and you get sulphurous acid which will condense onto the nearest cold object it reaches – typically the boiler.

Secondly, a stove that has been optimised to burn wood will not burn coal at the same efficiency. "Multifuel" stoves attempt to get round this problem by allowing you to operate the grate and air controls in different ways to suit the fuel you are burning. This compromise works well enough for many people but can never be as efficient as a "pure" woodburner, or a "pure" solid fuel stove run on the appropriate fuel.



I want a central heating stove that will do hot water and heat a kitchen, bathroom and three bedrooms. Can you suggest something?

No! Before that question can be answered you need to measure the length, breadth and height of each room, and jot down other details. Whether windows are single or double glazed. Number of outside walls for each room (a room on a corner with two outside walls will lose more heat than its neighbour with one outside wall.) Finally, note down the type of outer wall construction – timber-frame, 24" (60cm) stone, or 11" (275cm) cavity brick.

Take this information to your local stove agent and ask him to 'short-list' the stoves he recommends in writing, bearing in mind the fuels you intend to burn.

If you want to do this bit yourself, borrow a book on domestic heating from the local library and work through the simple arithmetical formulas. It's then just a matter of checking your figures against stove brochures to find what "fits."

Whatever you do though, don't buy a central-heating stove "blind" even if the price seems tempting. A wrong choice could result in your sitting room being swamped with excess heat from the stove whenever you try to get the bedroom radiators hot – or else the opposite happens and the rest of the house overheats before your sitting-room is warm.

Getting the sums right is the most important part of buying a stove so don't take unnecessary chances!

I have a problem with poor chimney draught and smoke coming back into the room. Should I fit a cow?

Chimney cowl is best suited to curing "blow-down" of the type that occurs in certain wind conditions. They may also help temper excessive draught in an exposed site (the Aerocowl has a good track record.) However, if you have problems in "still-air" conditions the chimney itself needs to be looked at closely. Is it correctly matched to the appliance? Is it of adequate height? Is there a blockage?

The other thing to consider is that if the chimney has been out of use for some time it may have become cold and damp, in which case simply bringing it back into service may clear up the problem quite quickly.

You can often speed things up by "priming" the flue. This involves lighting a modest fire at its base with newspaper and dry kindlings in a manner that leaks as much heat up as possible. But before you do this check that there is no heavy build-up of soot or you could start a chimney-fire.

If the problem persists call in your local stove agent or chimney specialist.

The chimney-sweep has been and he says his brushes are having no impact at all on the heavy deposits of soot in my chimney. What's the answer?

Assuming you have a brick or stone chimney, your best hope is to free things up with some chemical flue powder – available from your local stove agent or hardware store.

Use the chemical in accordance with the manufacturer's instructions and only with dry fuel (moisture neutralises the chemical, rendering it ineffective.) Continue the regime for as long as is necessary and you should find the carbon deposits convert to a loose dry powder that is easily removed.

The problem is more serious if you have a stainless steel chimney or liner since chemical flue powders should not be used with these systems – they can damage the metal. Make sure your sweep uses the special polypropylene brush but if this fails to do the trick you may have to replace the affected components.

Take the experience as a warning that you are doing something seriously wrong which needs to be changed. In particular you should avoid long slow burns (ie, overnight) with damp or unseasoned wood.

Woodburning stoves are available in the North of Scotland from:-

Dingwall Highland Stoves, Tel: 01381 610344

Inverness Bank & Co, Tel: 01463 237968

Grampian Donside Heating Tel: 019755 63663

Perth Burning Question Tel: 01738 633113

Oban Backwoodman, Tel: 01631 720328

Quality products to look out for include:-

Jetul, Morze, Ferrom Castings, Coalbrookdale,

Charnwood, Woodworm, Dover, Clearview,

Yeoman. (This list is not exhaustive.)

Coille Beithe na Gàidhealtachd
**HIGHLAND
BIRCHWOODS**



*Demonstrating best practice in the management
and use of Scotland's land based resources.*



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