

REDUCE YOUR HEATING COSTS

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INTRODUCTION

What a state of affairs! In 1989 28 second (kerosene) and 35 second (diesel) was 9 pence per litre; it is now (07-06-08) touching 70 pence per litre.

It's impossible to cope with this sort of price increase and as usual, when a crisis occurs invariably you will be left to sort it all out, by yourself.

The total world production of oil is reaching the total world consumption and it is highly likely that in the not too distant future and whatever price oil eventually reaches, shortages will hit us all.

Take care, if you only have oil, gas or electricity as a source of heating, or heating and cooking you could be vulnerable.

One side effect of the rapidly increasing cost of energy is that the pay back period for installing a secondary heating system has reduced dramatically and this increase is forcing us all to address the oil price problem.

There are several ways to reduce your heating costs, each one has a varying degree of cost and complexity, and below we try to give guidance on what is available.

The key to heating cost reduction is comparing the price in kW hours of whatever fuel you chose to use against the fuel you are currently using.

1. APPLIANCE TYPES

WOOD / MULTI-FUEL BURNING STOVES NONE WATER HEATING.

WOOD / MULTI-FUEL BURNING STOVES WATER HEATING.

WOOD / MULTI-FUEL BURNING KITCHEN BOILERS.

WOOD / MULTI FUEL COOKERS.

WOOD / MULTI FUEL COOKERS PLUS HOT WATER HEATING.

PELLET BURNING STOVES AND BOILERS.

LINKED SOLAR SYSTEMS.

TWIN COIL CYLINDERS AND THERMAL STORES

2. WOOD / MULTI-FUEL BURNING STOVES (NONE WATER HEATING)

The lowest cost or least expensive is to open up a fire place and fit a Wood burning or Multi- Fuel Burning, Stove.

There are plenty of stoves from 3 to 15kW

The smaller ones can be used to heat a small room and the larger ones can be used to heat a whole house.

Wood stoves need to be large enough to hold a good quantity of wood, otherwise constant re fuelling and chopping of wood is required.

STOVES FOR SMOKE CONTROL ZONES.



**CLEAN AIR ACT
APPROVED FOR WOOD**

If you live in a smoke control zone you will need to look at stoves, which are, approved for use in these zones.



Wood stoves provide two heating opportunities.

APPLIANCES FOR ROOM OR SPACE HEATING via radiation and convection.

These appliances are space heaters and can be fitted wherever a chimney can be located, minimum flue height is 4.5 metres and generally flu diameters are 150mm. In addition to the fitting of a stove, thermostatic radiator valves can be fitted to radiators.

These valves will sense when the wood stove is providing additional heat and automatically lower the demand on the other heat source and generate useful cost savings.

APPLIANCES FOR DUCTED HOT AIR CENTRAL HEATING.

These appliances produce hot air, which can be ducted throughout a house.

Appliances have integrated low noise fan units, which can be run at different speed levels.

These heaters are suited to installation in new builds or refurbishments

ADDITIONAL INFO.

http://www.oilstoves.co.uk/webdocs/articles/Morso_6100.pdf

http://www.thermorossi.com/inglese/O1_home.html

3. WOOD / MULTI-FUEL BURNING STOVES PLUS (WATER HEATING)

The next step is a stove which can not only heat the room space, but also heat hot water for washing and central heating, unfortunately as soon as you start thinking of

bringing water heating into the equation, costs suddenly start to increase quite dramatically, say approx 4 to 5 times the cost of just fitting a dry stove. To fit even a small boiler to a stove necessitates the fitting of many other system components, to allow the stove to function correctly, this can involve removing carpets, lifting floorboards, fitting tanks in the loft area and in some cases an additional radiator and then piping the whole lot up.

Lowest installation costs are achieved on new builds or major renovations.

ADDITIONAL INFO.

http://www.oilstoves.co.uk/webdocs/technical/Charnwood/Country_15B.pdf

4. WOOD / MULTI-FUEL BURNING, KITCHEN BOILERS

Next step is a Boiler, which is designed solely as a dedicated hot water heater. Wood stoves are designed to look good and provide a heat output as well; boilers are different, they are generally designed to focus purely on heating hot water, for central heating, and domestic hot water.

Boilers provide a much more serious approach to central heating and in general have -:

2. Better riddling.
3. Automatic water temperature control.
4. More efficient heat exchangers.
5. Larger firebox capacities to hold greater quantities of wood or solid fuel.
6. Ashpans with larger ash carrying capacity.
7. Cast iron or steel cook tops.

Wood boilers for average sized homes (Up to 30kW) in general are approximately the same size as a standard white fridge.

Larger versions can go up to 50 kW but these need to be located in a purpose made boiler house.

ADDITIONAL INFO

http://www.oilstoves.co.uk/webdocs/articles/Grillon_History.pdf

http://www.oilstoves.co.uk/webdocs/brochures/Franco_Belge_Grillon_Brochure_Page_One.pdf

http://www.oilstoves.co.uk/webdocs/brochures/Franco_Belge_Grillon_Brochure_Page_Two.pdf

5. WOOD / MULTI FUEL COOKERS

Cooking on a wood fired cooker requires skill, patience and effort.

Wood will produce long flames and wood cookers are generally designed to take advantage of this fact.

Some cookers have flue passages around five sides of the oven and controlling the oven temperature can be a bit of a challenge.

Cooks who used to use the cast iron side ovens always cooked on a falling oven and this is still the best way.

Get the oven up to a bread making temperature and cook the bread first and pastry later.

In home heating terms the cookers are excellent with efficiency levels as good as stoves and the additional fun of being able to cook on the hot plate and in the oven. Controls are generally good but experience is required.

6. WOOD / MULTI FUEL COOKERS PLUS HOT WATER HEATING

In addition to the mysteries of cooking, a boiler is added, giving these appliances a multi tasking potential.

The boiler versions are very good at central heating with cooking thrown in as an added bonus and this is the best way to understand how they work.

Generally it is not possible to separate cooking from heating and this is the most common problem users have to become familiar with.

Manufacturers have different means of dealing with this problem and some users run cookers all through the year.

The water heating side of cookers is very similar to that described in STEP 3 with the exception of the 50kW version.

1. INSTALLATION FOR 1,2,3,4&5.

There are several issues, which would need to be covered, and normally the appliance manufacturer and the installer would provide adequate information.

2. CHIMNEYS.

The chimney must be suitable for solid fuel, generally known as a class one chimney.

The chimney can be existing or constructed from pre fabricated materials such as twin wall stainless steel.

Old chimneys would need to be lined with a suitable liner.

The height and termination of the chimney is of critical importance if it is not at the correct height or position there may be times where it will not work correctly, in general, for domestic use, the minimum height would be 4.5 metres but this would depend upon the size and type of appliance and the location of surrounding buildings, trees, mountains or hills.

Distance from Combustibles.

Hearths.

Ventilation.

FUEL FOR 1,2,3,4&5.

Manufacturers generally provide adequate information on fuel suitable for burning on their appliances.

Wood has to be seasoned and dry with a moisture content of less than 20%; low cost moisture meters are available from a variety of manufacturers.

ACCESSORIES FOR 1,2,3,4&5.

To make the wood burning experience even better, there are a variety of very useful accessories available from your local wood stove shop.

ADDITIONAL INFO

http://www.thermorossi.com/inglese/01_home.html

http://www.oilstoves.co.uk/webdocs/brochures/FRANCO_BELGE_Diva_Cooker_Brochure_Front_Page_&_Back.pdf

http://www.oilstoves.co.uk/webdocs/brochures/FRANCO_BELGE_Diva_Cooker_Inside_Pages.pdf

7. WOOD PELLET BURNING STOVES AND BOILERS

Wood pellets are a new phenomena in this country and here is a little information about them.

1. WHY PELLETS?

Pellets can be made from the waste materials, which are produced when wood is processed.

Ideally an existing wood processor would bolt on to the end of his factory a pellet making plant, the pellet plant could then process the waste and convert a costly and troublesome by product into a profitable and useful commodity! **Wood Pellets.**

Pellets comprise of sawdust and wood bark, which formed through high pressure in to a specific sized pellet, manufactured in either 6 or 10mm dia.

Because the pellets are manufactured under workshop control conditions, the size, moisture content, and energy content can be precisely controlled, this precision control means that the pellets can be looked upon in the same way as gas or oil in as much as they can be ignited and extinguished automatically.

2. ADVANTAGES OF A PELLET STOVE

This degree of automation available means that the pellet boiler or stove can be run in a similar way to an oil or gas boiler, i.e. **TIMED ON OR OFF**. Unlike the gas or oil flame the pellet flame can take up to 20 minutes to get going and 20 minutes to go out and so during the timed on periods pellet boilers go from hi fire to low fire as opposed to oil or gas boilers which turn the flame on or off, the pellet boiler function is known as a "**modulation regime**", the gas or oil boiler operates on a "**on - off regime**".

And so even with the modulation regime of the pellet boiler a much higher degree of control and economy is available with a pellet boiler as opposed to the wood stove or wood boiler, which obviously does not have the benefit of being able to be automatically controlled.

3. PELLET SPECIFICATIONS

As in all walks of life there are good and bad; pellets are no exception and so as would be expected, to protect the general public, European Standards have been applied to there manufacture, here is the standard reference number **CEN / TS 14961**.

If you want to purchase or price up wood pellets, always ensure that they are produced to the CEN standards; make sure that the manufacturer can supply a certificate to guarantee manufacturing standards.

4. COST COMPARISONS

It is claimed that wood pellets can produce 4.5kW hour per Kilo and some manufacturers claim 5kW hour per Kilo.

Oil can produce 10 kW per hour per litre, therefore it is easy to do your sums and make some comparisons, find out how much you would have to pay for pellets delivered to your door as opposed to oil delivered to your tank but remember, there is more work involved with your handling of the pellets as opposed to your handling of the oil; this also applies to wood or solid fuel.

5. HEATING OPPORTUNITIES.

Pellet stoves provide three heating opportunities.

Automatic Room Heating via radiation and convection.

These appliances are space heaters and can be fitted wherever a chimney can be located, minimum flue height is 4.5 metres and generally flu diameters are 100mm.

5-1 AUTOMATIC CENTRAL HEATING via radiation, convection and ducted hot air.

These appliances produce hot air, which can be ducted throughout a house providing hot air heating.

Just like a conventional heating system they can be controlled via a time clock and temperature-sensing thermostat.

They are less expensive to install, technically quite simple and they have good longevity and can be easily replaced when the need arises.

They can be fitted wherever a chimney can be located, minimum flue height is 4.5 metres and generally flu diameters are 100mm.

5-2 AUTOMATIC CENTRAL HEATING AND HOT WATER via conventional radiators and a hot water cylinder.

These appliances can be used as a direct replacement for an oil or gas fired system boiler.

They are unvented and can be installed in a variety of different ways.

They can be fitted wherever a chimney can be located, minimum flue height is 4.5 metres and generally flu diameters are 100mm.

ADDITIONAL INFO

[http://www.oilstoves.co.uk/webdocs/brochures/THERMOROSSI Ecotherm H20 Compact New Italian & English Brochure.pdf](http://www.oilstoves.co.uk/webdocs/brochures/THERMOROSSI_Ecotherm_H20_Compact_New_Italian_&_English_Brochure.pdf)

http://www.thermorossi.com/inglese/01_home.html

8. LINKED SOLAR SYSTEMS.

This option makes much more economic sense on new builds where replacement costs would not be an issue and labour costs would be greatly reduced.

Obviously on new builds, layouts and equipment can be correctly planned and positioned to maximum effect.

The same criteria would also apply on renovations where old heating systems are in need of complete refurbishment and again complete new systems and circuits can be installed.

There are a variety of associated technical issues surrounding solar systems the main one being excessive temperatures and pressures within the system when the hot water heat store is filled to it's capacity.

Consideration should be given to the electrical consumption required to operate the solar system and again, ongoing maintenance costs, system longevity and system replacement costs.

Solar systems can be integrated into both Hot Water Production and Central Heating.

For hot water integration a twin coil cylinder is required.

For integration into both hot water and central heating a thermal store is required.

9. SCHEMATIC PLUMBING LAYOUTS

1. WOOD STOVE OR COOKER - BOILER LAYOUT.

The following plumbing layout shows how a wood or solid fuel boiler would be plumbed in.

The key feature of this layout is the injector tee, which allows primary gravity circulation to occur when the pump is not running and induced gravity flow to occur when the pump is running.

To reduce the necessity of running four pipes from the boiler, it is possible to fit the injector tee at first floor level and then to fit a flow and return only to the boiler connected diagonally as shown.

In case of electrical failure it is essential to allow at least 25% - 30% of the boiler output, to be available as a form of gravity heat leak. This can be achieved by fitting radiators teed off the primary circuit, as illustrated in the diagram.

All components shown in the following diagram can be purchased from Harworth Heating Ltd.

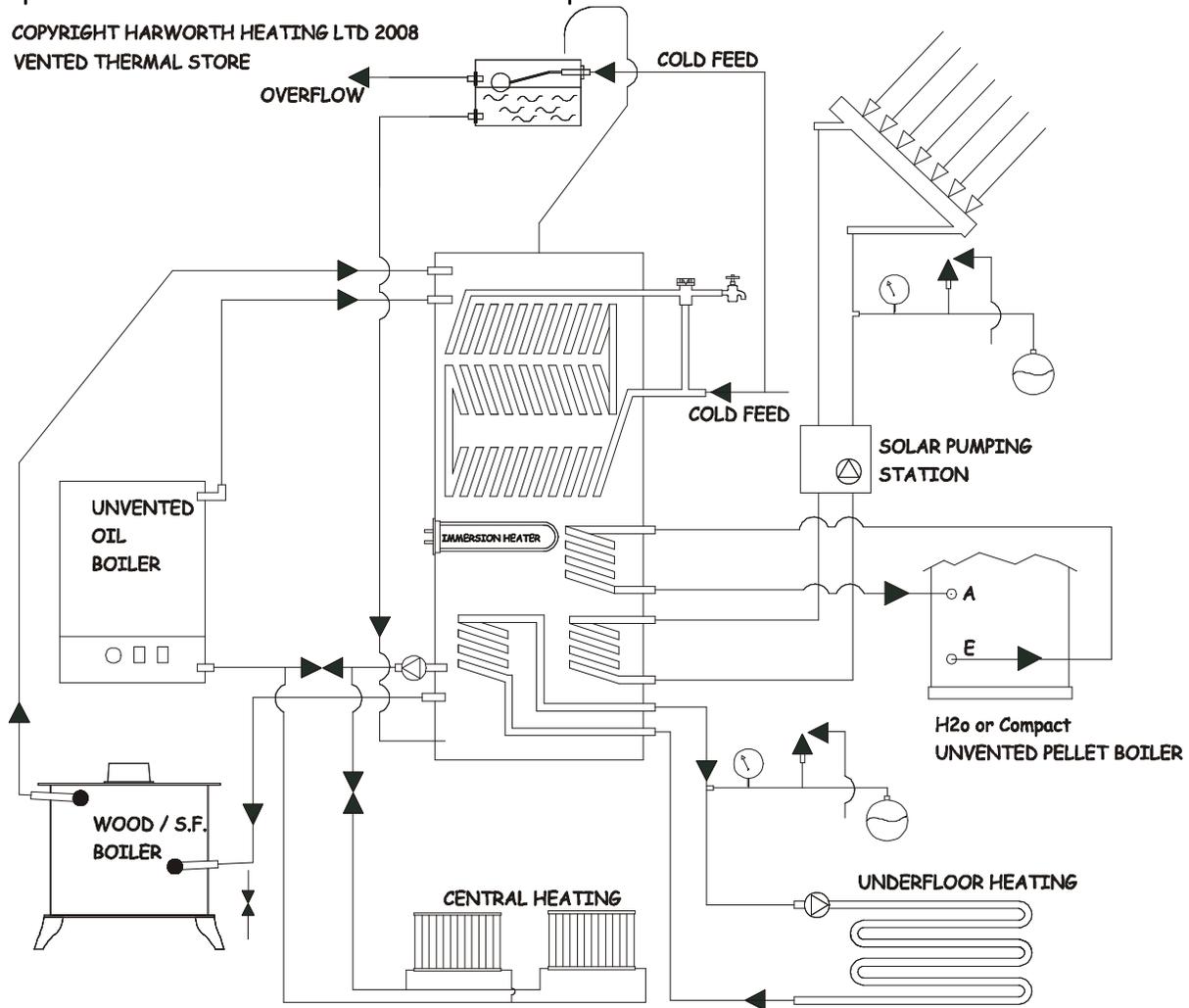
THERMAL STORE PLUMBING DETAILS.

A Thermal store is simply large metal vessel for gathering energy, in the form of heat, from all the heat sources, having gathered the heat it can then act as a distribution point from which all the heating demands are made.

Thermal stores, although more expensive, provide an opportunity to link more heat sources and achieve greater gains.

With a thermal store, heat from a solar system can be used to heat both hot water and central heating, domestic hot water can be supplied via an unvented supply and an open vented wood stove and an unvented pellet boiler can be used.

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VENTED THERMAL STORE



Thermal stores can be designed to integrate a variety of different heat sources and allow both hot water and central heating to be carried out at maximum economy. The size of the store is determined by the heat load of the property and hot water flow rates required.

In the illustration, the solar coil is used to provide heat into the thermal store, which can be used for hot water production and as a contribution to central heating.

The wood stove, open vented oil or gas boiler, and immersion heater are all optional. If unvented appliances are used a different version of the Thermal store can be used but this would preclude the optional wood stove, if a wood stove option is required then the vented Thermal Store must be used and it would require fitting on the floor above the wood stove as heat from the stove must reach the store via natural gravity flow.

Depending upon the output of the wood stove boiler and the capacity of the store, it may also be necessary to fit a heat leak radiator on the hot flow to the store. Hot water for domestic use is provided via heat exchange from the large coil, with the correct size heat sources, flow rates of up to 25 litres per minute can be achieved.

Note that the under floor option uses a sealed system as opposed to a vented system to stop cross contamination from the other heat sources.

ADDITIONAL INFO.

[http://www.oilstoves.co.uk/webdocs/brochures/THERMOROSSI Ecotherm H20 Compact New Italian & English Brochure.pdf](http://www.oilstoves.co.uk/webdocs/brochures/THERMOROSSI_Ecotherm_H20_Compact_New_Italian_&_English_Brochure.pdf)

http://www.thermorossi.com/inglese/01_home.html

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<http://www.oilstoves.co.uk/>

THERMOROSSI WOOD STOVES
EASY 800





THERMOROSI PELLET STOVES AND BOILERS.



H2o18



H2o 18 Easy



Compact 18 and 32