Turn it down

A Best Buy boiler and simple energy-saving tips could help you fight steep price rises for gas and oil

Buying a new boiler is a big investment and often a begrudging one. It's hard to get excited about spending hundreds of pounds on a cupboard-bound hunk of metal. But with fuel bills rising steeply, choosing the most efficient replacement model with good controls, and making sure it is properly serviced, will save you money.

It can be difficult to know where to start. Few of us understand how our heating or hot water works. And it's easy to feel overwhelmed when the plumber or gas engineer arrives.

The more prepared you are, the better. This month we recommend Best Buy boilers, and give tips on cutting your heating costs, the best-value maintenance contracts and what an annual service should include.

We've tested new models from major manufacturers and included some smaller names. Many models we have tested previously may still be available, and you can find details of these at **www.which.co.uk/boilers**. This also has advice on finding an installer and the questions to ask them, plus other ideas to consider before you buy.

We have found our first Best Buy heat-only boilers. Also, for the first time we have tested oil-fired boilers, following requests from members.

Comparing costs

These estimated running costs[a] give an idea of how much a more efficient gas boiler can save you in heating bills. New or replacement boilers in England, Scotland and Wales must, almost always, be more than 86% efficient (Sedbuk bands A-B below)

Sedbuk band	 Flat	 Terraced	 Semi-detached	 Detached
A (90.0%)	£201	£262	£293	£400
B (86.0%)	£209	£273	£305	£417
D (80.0%)	£222	£291	£325	£446
E (75.0%)	£235	£308	£345	£474
G (70.0%)	£249	£327	£367	£505
(65%)	£266	£350	£392	£542
(55%)	£308	£407	£458	£634

Source: www.sedbuk.com

a These are the most recent figures from the Sedbuk (seasonal efficiency of domestic boilers in the UK) database, a measure of the annual average efficiency of a boiler in a typical home and in typical use. Boilers are rated in different bands, depending on how efficient they are. These figures were calculated when gas cost 1.63 pence a kWh. Prices are now two to five times higher, so the most efficient boiler will save you even more

Reduce your heating bills

Our tips can help cut costs

- Ensuring your thermostat is set at the right temperature can save on your bills. Bedrooms should be 18°C and living rooms 21°C, unless you have babies, elderly or sick people in the house.

- Rooms get warmed by the sun, so close curtains at sunset to keep heat in.
- Open windows to air rooms when the sun is on them and keep doors and windows closed when the heating is on.
- Turn the radiator down/off in rooms used infrequently, but check regularly for condensation.
- Cold air enters the bottom of a radiator and is drawn through, so hot air leaves at the top. Blocking air flow reduces how well radiators work. Pull furniture away from them, don't use radiator cabinets and don't cover them with curtains.
- Programmable and room thermostats and thermostatic radiator valves need free air flow to sense temperature accurately, so don't block them with curtains or furniture. Nearby electric fires, TVs or lamps can also affect them.
- Set the hot water cylinder to 60°C to avoid overheating water.
- Fit heat-reflective foil behind radiators on outside walls with the shiny side facing into the room. This reflects heat from the surface of the radiator into the room.

PHOTOGRAPHY ALAMY, CONSTRUCTION IMAGES, GETTY IMAGES, JUPITER IMAGES, PHOTOLIBRARY, REX FEATURES, SUPERSTOCK

1 GAS: COMBI

70% Ariston Genus HE 24 £754

The Ariston is efficient, emits little of the polluting nitrogen oxide (NOx) gases and gives plenty of flexibility in setting up how it will work. The controls may seem overwhelming, but they give you plenty of choice. A digital control panel helps you get the most out of your central heating, while the seven-day programmer lets you set the heating round your family's needs. You can override it for holidays. The Ariston is easy to install and service.

WORTH KNOWING Higher-output 30 and 38kW versions are available for bigger houses.

Warranty 2 years **Measured Sedbuk efficiency** 89.3% **LPG convertible** Yes **Timer** Yes

7 GAS: HEAT-ONLY

78% Glow-worm Ultracom 24 hxi £788

This heat-only model meets all the requirements for a good boiler. It's easy to install, service and use, is efficient, and gives off low emissions. Little heat gets lost through its casing, and power use is low. The control panel has a reset button, central heating temperature control mode/program button and a digital display showing mode and output level.

WE LIKE The controls are simple to use with +/- buttons.

Warranty 2 years parts, 1 year labour **Measured Sedbuk efficiency** 90.3% **LPG convertible** Yes **Timer** Yes

8 GAS: HEAT-ONLY

72% Ferroli Optimax 25 OV £626

The no-frills Ferroli may lack features but it's the most efficient heat-only Best Buy and the first boiler we've tested that is exactly as efficient as the manufacturer claims. It has low NOx emissions and is easy to install and service. It could be better built, though. The circuit board mounted on the fan would be better protected by a plastic cover. There's a digital display, a reset button and central heating temperature control.

WE FOUND It's easy to use, despite the lack of instructions on the drop-down cover.

Warranty 1 year labour **Measured Sedbuk efficiency** 90.4% **LPG convertible** Yes **Timer** Opt

12 OIL-FIRED

74% Grant Vortex Pro Combi 26 £2,118

Our first oil-fired Best Buy is way ahead of the competition. It consistently gave a strong hot water flow with only minor temperature changes. It's efficient, loses little heat from its casing and emits low NOx. Controls are hidden in the casing, but otherwise it's simple to use. The 26kW size tested is the most popular for combi oil-fired models, and there's a 36kW size for bigger homes.

WE FOUND The Pro Combi 26 is designed to be installed indoors in a kitchen or utility room.

Warranty Not stated **Measured Sedbuk efficiency** 91.8% **Timer** No

HOW TO BUY A NEW BOILER

Advice on how to work out the type and size of boiler that you need

Combi vs heat-only boiler

Combis give heat for radiators and hot water on demand. Water is heated as it's used, so there's no separate hot water storage cylinder or cold water feed cistern. There's a small delay between turning the tap on and getting hot water, and you'll be limited in how much you can use at a time (no filling the sink while running a bath).

A heat-only model takes up more space, as it must be connected to a storage system, including a hot water cylinder, cold water cistern and, in some cases, an extra expansion cistern. It heats radiators directly and is good for larger homes. The cylinder can supply hot water to several sources at once,

but its capacity limits how much hot water you get and it must be well insulated to prevent heat being lost.

Who will install it?

Get an installer to come and discuss your needs. Some manufacturers have agreements with gas-supply firms to provide boilers for their customers. If you

want a Best Buy, most manufacturers have a list of local installers. Choose a boiler, then ring an installer with experience of that make.

Heating output

Most boilers come in a range of sizes (typically 12-40kW) suitable for different homes. The smaller your home, the

fewer kW you need. Factors such as the number of bathrooms and radiators, insulation and ceiling height are also important. A combi boiler less than 38kW or a heat-only boiler of about 18kW is fine for most homes. The website www.sedbuk.com has a calculator to help determine what you need.

Get the best from your boiler

We answer questions from members about efficiency and durability

Q Why is a condensing boiler better?

A Condensing boilers are more efficient than conventional models.

Some can be up to 92% efficient, while new non-condensing ones are about 78% efficient and older boilers 55-65% efficient. Burning fuel creates hot gases that in a conventional boiler are lost up the flue. A condensing boiler takes back some of the heat from these gases.

Q Can I ensure the boiler works efficiently?

A The boiler is most efficient when condensing. You can help create conditions for the water returning to the boiler to be at the right temperature to encourage condensing – around mid 50°C. You can do this by making sure a heat-only boiler is not too big for your central heating needs and having good heating controls.

Q What are good heating controls?

A A basic room thermostat and a fixed boiler temperature aren't flexible enough, because the set temperature doesn't take account of how much heat is needed.

An outdoor weather sensor (known as 'weather compensation') lets the boiler run the central heating only as hot as is necessary and to be in condensing mode for most of the time it's operating.

You get a similar effect by turning your thermostatic radiator valves down as the weather gets warmer and up as it gets colder.

Q Are there concerns about the durability of condensing boilers ?

A Early condensing boilers had durability problems caused by the acidic liquid that was produced in the condensation process, but modern heat exchangers use non-ferrous metal to reduce rusting.

OIL-FIRED BOILERS

Many homes can't have a gas boiler, so what are the options for oil?

How does cost compare?

More than 1.5 million UK homes use oil for heating. This is growing as more homes are built in the countryside, away from mains gas. It's more expensive to heat a home with oil. Heating a three-bedroomed home in 2007-08 would, on average, cost £1,044 with oil, £568 with mains gas, and £1,310 with liquid petroleum gas, the other fuel of choice in the country.

How efficient are they?

Since April 2007, oil-fired boilers must be at least 86% efficient. In practice, only condensing models can achieve this. Typically a new condensing oil boiler would be 92-93% efficient compared with 85% for a new non-condensing boiler and 60-70% for older systems.

What types can you get?

There are external, cabin and internal models. Most are floor standing. You can get an extended flue so the water vapour produced won't annoy neighbours. The boiler also must be plumbed in to allow acidic liquid to drain away.

You can buy a heat-only or combination condensing model. Most oil-fired combis store hot water rather than producing it as it is needed, like gas models do. Oil boilers generally limit how quickly hot water flows, to make sure the

temperature increases to what you require. The flow is usually less than with a gas combi or hot water cylinder system. The temperature often falls as you use more water. Installing or upgrading an oil system is notifiable work under building regulations. It's probably easiest to have a 'competent person' do the work. They can self-certify the work and tell the council it's been done. See www. communities.gov.uk/planningandbuilding.

Contacts

Ariston 01494 755600 www.ariston.co.uk
Biasi 0121 506 1340 www.biasi.co.uk
Buderus 01905 752936 www.buderus.co.uk
Ferroli 0870 728 2882 www.ferroli.co.uk
Firebird 01752 691177 www.firebirduk.co.uk
Glow-worm 01773 824141 www.glow-worm.co.uk
Grant 01380 736920 www.grantuk.com
Ideal 01482 498660 www.idealboilers.com
Keston 020 8462 0262 www.keston.co.uk
Main 0844 871 1570 www.mainheating.co.uk
Trianco 0114 257 2300 www.trianco.co.uk
Turco 028 8676 3372 www.turco.co.uk
Vokera 0844 391 0999 www.vokera.co.uk
Warmflow 0161 205 4202 www.warmflow.co.uk
Worcester 0845 256206 www.worcester-bosch.co.uk

MODEL	
GAS COMBI	
1	**ARISTON** Genus HE 24
2	**MAIN** Combi 25 Eco
3	**VOKERA** Unica 28HE
4	**BIASI** Riva Advance M110B.24SM/C
5	**GLOW-WORM** Ultracom 24cx
6	**IDEAL** Esprit 24HE
GAS HEAT-ONLY	
7	**GLOW-WORM** Ultracom 24 hxi
8	**FERROLI** Optimax 25 OV
9	**IDEAL** Elise H24
10	**BUDERUS** Reg 600/24R
11	**KESTON** Qudos 28h

MODEL	
OIL-FIRED COMBIS	
12	**GRANT** Vortex Pro Combi 26
13	**WARMFLOW** Utility UC90HE
14	**FIREBIRD** Enviromax C26
15	**TURCO** Eurocal Senator 21/27
16	**WORCESTER** Greenstar Heatslave 18/25-OSO
17	**TRIANCO** HE Contractor Internal 32kW

USING THE TABLE
We tested gas and oil-fired boilers. The more stars the better.

Specification

Price What we paid (including VAT) from a local plumbing supplier. Prices may be cheaper online. You also have to pay for installation, parts and labour (plus VAT). **Output min/max** The claimed minimum and maximum energy a boiler can produce while in condensing mode. The bigger your home, the more energy you need. **Claimed/measured hot water flow rate** How many litres of hot water a minute the boiler is capable of producing. This would affect how quickly your bath would run, for example. We include the measured hot water flow rate in the table for oil-fired boilers as this is a more important test for them than it is for gas-fired boilers. **Size** Excludes space for ventilation or cables. **Warranty** Number of years for parts and labour, or individually for parts (P) or labour (L). **LPG convertible** Whether the boiler can be converted to burn liquid petroleum gas. **Timer** Whether a timer or clock is supplied (✓) or available as an option (opt). Otherwise, you can use a generic digital timer.

Test performance

Efficiency We measure heat output vs energy input with the boiler working at full and partial capacity. **Power use** How much electricity the boiler uses and what heat is lost from its casing. **NOx emissions** How much polluting nitrogen oxide (NOx) gases were produced by the boiler working at a steady state. The more stars shown, the lower the emissions. **Features** Whether the boiler includes features such as a timer (or space to install one), status display or temperature controls. **Ease of installing/ease of use** How easy the boiler was to install, service and to diagnose faults, plus how easy it is for a householder to use.

Score

This excludes prices and is based on:

Performance	**60%**
Ease of use	**20%**
Features	**15%**
Safety	**5%**

SPECIFICATION							WHICH? TEST PERFORMANCE						SCORE %
PRICE (£)	OUTPUT MIN/MAX (kW)	CLAIMED HOT WATER FLOW RATE (litres/min)	SIZE (cm) (hxwxd)	WARRANTY (years)	LPG CONVERTIBLE	TIMER/CLOCK SUPPLIED	EFFICIENCY	POWER USE	NOx EMISSIONS	FEATURES	EASE OF INSTALLING	EASE OF USE	
754	6.0-23.0	10.3	77x40x32	2	✓	✓	★★★★	★★★	★★★★★	★★★★	★★★★	★★★★★	70
685	8.4-27.0	10.2	78x45x35	1		opt	★★★★★	★★	★★★★★	★★★★★	★★★★★	★★★★	68
957	6.4-21.0	11.5	78x40x36	2	✓	opt	★★★★	★★★	★★★★★	★★★★	★★★★	★★★★	67
649	6.0-25.7	10.7	80x40x35	1	✓	opt	★★★★	★★★	★★★★	★★★★★	★★★	★★★	64
817	5.0-20.0	9.8	73x45x33	P2, L1	✓	opt	★★★★	★★★	★★★★★	★★★★	★★★★	★★★★	64
680	9.6-25.4	9.6	75x45x33	2		opt	★★★★	★★★	★★★★	★★★★	★★★★	★★★★	64
788	5.3-25.0	n/a	61x38x33	P2, L1	✓	✓	★★★★★	★★★★★	★★★★★	★★★★	★★★★★	★★★★★	78
626	8.0-26.4	n/a	58x40x29	L1	✓	opt	★★★★★	★★★★	★★★★★	★★★	★★★★	★★★★	72
726	9.6-25.1	n/a	58x39x28	not stated			★★★★	★★★★★	★★★★★	★★	★★★★	★★★★	67
848	9.7-24.0	n/a	70x46x29	not stated			★★★★	★★★★★	★★★★★	★★★	★★★★	★★★★	65
764	7.8-28.4	n/a	68x39x28	1	✓		★★★★	★★★★	★★★★★	★★	★★★★★	★★★	63

SPECIFICATION						WHICH? TEST PERFORMANCE						SCORE %
PRICE (£)	OUTPUT MIN/MAX (kW)	MEASURED HOT WATER FLOW RATE (litres/min)	SIZE (cm) (hxwxd)	WARRANTY (years)	TIMER/CLOCK SUPPLIED	EFFICIENCY	POWER USE	NOx EMISSIONS	FEATURES	EASE OF INSTALLING	EASE OF USE	
2,118	25.0-26.4	20.5	86x59x60	not stated		★★★★★	★★★★	★★★★	★★★	★★★★★	★★★★	74
1,737	21.0-23.5	12.0	87x60x60	P1		★★★★	★★★	★★★★	★★★	★★★★	★★★★	65
1,882	20.0-26.0	12.6	85x67x60	2	opt	★★★★★	★★★★★	★★★★	★★	★★★★	★★★★	64
1,984	21.0-27.0	9.7	85x64x59	P1	✓	★★★★★	★★★★★	★★★	★★★	★★★	★★★	61
2,397	18.0-21.5	13.0	84x52x60	1	opt	★★★★	★★★	★★★	★★	★★★★	★★★★	59
1,724	32.8	12.6	87x60x62	not stated		★★★	★★★★	★★★★	★★	★★★★★	★★★★	56