





# How green is your home?

We look at products that help you fight global warming by saving energy

More than a quarter of all the greenhouse gas CO<sub>2</sub> produced in the UK comes from the energy we use to heat, light and power our homes.

We've taken a room-by-room tour of a typical home to find out where the biggest offenders are and how we can reduce our energy use, and we've also come up with some green Best Buys.

## Saving energy

First, you might want to know how much electricity your home consumes. This is the idea of two power-use meters we've tested. A

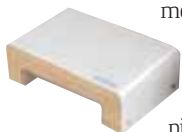
sensor clips to a lead on your electricity meter and a wireless display shows how much energy you've used.

The **Watson** (£150), pictured left, displays power

use in £s or watts, and glows with a pulsing coloured light that changes from blue to red as you use energy.

It's easy to install, and the display panel is sturdy and stylish. Annoyingly, though, its rechargeable batteries last only a few hours, and it needs to be plugged into the mains, consuming 4 watts – more than many devices use in standby. It can link to a computer to download energy use data.

Cheaper, simpler and easy to install is the **Efergy** (£44.95), shown left. Unlike the Watson, the display runs off batteries and draws no mains power, showing use in kW, £s or kg of CO<sub>2</sub>. The plastic look lacks the Watson's style, but it's a lot cheaper. Both are useful for finding out how much electricity you use, but it's still up to you to change your behaviour.



## HEATING AND INSULATION

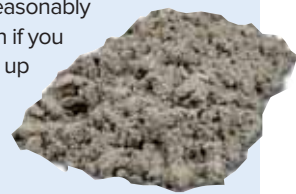
### Building fabric – loft insulation

This is an area where some of the biggest energy and cost savings can be made.

Heat lost from the walls, loft and floor of your home can account for up to 35, 25 and 15 per cent of your heating bill, respectively. Of these, lofts are the easiest to insulate without major upheaval, and you can save up to £100 a year on bills by doing this. We reckon you'll need only basic DIY skills and to be reasonably agile to do the job yourself. Even if you have some insulation, topping it up

can make further savings – 250mm

is the current recommended thickness. The top-scoring insulation on test in our October 2006 report was the Excel Warmcel 100. Made from recycled newspaper, it was also the easiest to install – you pour it into the available space, breaking up any large bits with your hands. One £10 bag fills a square metre of roof space. It'll cost about £540 to insulate a three-bedroom house.

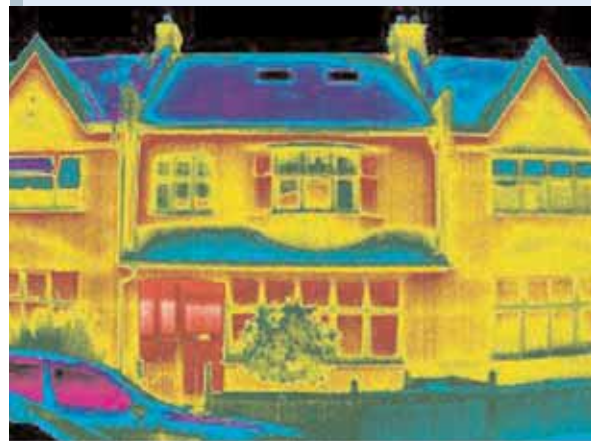


### Heating – boilers

The owner of a typical semi-detached home will save about £150 a year switching from a conventional boiler to one of the best new condensing models. The change would also be good for the environment.

Older boilers lose heat through the flue, wasting up to 40 per cent of energy. This means higher fuel bills and more greenhouse gases. Condensing

boilers reuse some of this heat, making them much more efficient. The best use around 90 per cent of the energy in gas to heat a home. Our most efficient Best Buys are the Baxi Duo-tec C28 HE (£800) and the Vaillant ecoTEC Plus 824 (£950) and ecoTEC Plus 831 (£1,230).



**LIVING ROOM**

The living room is likely to have a TV, DVD player and hi-fi – products often left in standby round the clock. We've looked at devices that tackle this

**Remote control plug kits**

These come with a remote control and socket 'receivers' that switch off devices at inaccessible sockets (for example, behind a TV cabinet), saving on standby power.

We tested the **Bye Bye Standby Energy Saving Kit** (£34.99), above right, which comes with three 1,000 watt sockets (expandable to eight). The **SMJ Electrical Remote Control Transmitter and Receiver** (£6.99) has a single 1,000 watt socket (expandable to three). The **Ivy Standby Buster** (£14.99) has a single 3,680 watt socket (expandable to four).

**VERDICT** All three were easy to

install and use. They rely on people using them to switch off devices normally left in standby – we have reservations about how often this would actually happen.

**Intelligent sockets**

These monitor use and automatically switch off devices left in standby when they're no longer required.

The **Oneclick Intelliplug** (£16.99), below left, is designed for PCs and peripherals. It's a plug-in mains adaptor with three socket outlets. The master socket powers the PC, whereas peripherals, such as a monitor and printer, are plugged into the other two. When the PC is switched off, the plug senses this and turns off the other two sockets. The reverse

happens when you switch on.

**VERDICT** It's easy to set up and and, once installed, can be forgotten about, so you can make real savings on standby energy.

The **Powersafer – Goodbye Standby PSX unit** (£29.99), right, is an extension lead and box that sits between the mains supply and the equipment (up to five items) that connects to it. It monitors energy use and, if all the devices are in standby, switches them off.

**VERDICT** It's potentially useful, as it acts automatically. However, it

was tricky to set up and use, and wasn't always reliable when used with more than one device (eg a TV and DVD recorder). Also, some devices must be in standby to work – for example, a DVD recorder set to record.

**Energy-saving light bulbs**

Doing your bit for the planet can cost as little as £3. If each UK home used one energy-efficient light bulb, we could close a power station. Switching a 100-watt incandescent bulb for a Best Buy low-energy equivalent could save up to £30 over five years. Our 'Best on Test' in November 2007, was the General Electric Elegance T3 (£3), shown left.

**Green Best Buys**

Saving energy in your living room means finding the most efficient products and those with low standby consumption – though switching them off completely is better. Here are some energy-efficient Best Buys

**1. TV**

**Sony Bravia KDL-32D3000**

This 32-inch LCD TV was a Best Buy in November 2007. On average, we found plasma TVs use 50 per cent more energy than similar-size LCD models.

**2. FREEVIEW SET-TOP BOX**

**TVonics MDR-200**

The most energy-efficient set-top box in our May 2007 test was also our top

Best Buy. It used 1.5 watts in standby, 4 watts in use.

**3. MICRO HI-FI**

**Denon D-F103HRDAB**

We had three Denon Best Buys in our August 2007 article. All three used less than 0.5 watts in standby. This was the highest-scoring model of the three.

**4. DVD PLAYER**

**Philips DVP5980/05**

This was energy efficient

and the picture quality also impressed our expert viewing panel and the child-lock system could be popular with parents.

**5. DVD RECORDER/HD COMBINATION**

**Philips DVDR3450H**

This is our top-scoring DVD/HD combination. Great pictures with clear sound and it uses only 2.9 watts in standby, we found in December 2007.





## KITCHEN

### Green Best Buys

The kitchen is full of appliances that can use a great deal of energy. Dishwashers and washing machines can use a lot of water, too. Here are some energy-efficient Best Buys



Fridges and freezers are in use all the time, so ways to cut their electricity use are welcome. We found the

**Sava plug** (left) can reduce the power a freezer

uses by around 25 per cent and a fridge-freezer by about 7 per cent – a saving of about £16 and £2 a year, respectively.

**VERDICT** The Sava plug is good for reducing energy use but it costs

£24.99 and is not a big money saver. It's unsuitable for appliances with digital displays and motorised drinks and ice dispensers. See [www.savaplug.com](http://www.savaplug.com) for a full list of such appliances.



#### FREEZER

The worktop-height **Whirlpool AFB 6650** (pictured) is A+ rated for energy efficiency. The built-in **John Lewis JLBUCF01**, the **Zanussi-Electrolux ZUD9100FA**, and the tall **Whirlpool AFG 8030** are all A-rated.



#### FRIDGE

Our most energy-efficient Best Buys are the A+ rated freestanding tall **AEG-Electrolux S72348KA** (pictured) and the worktop-height **AEG-Electrolux S70170TK**.



#### TUMBLE DRYER

The **AEG T59800** is an A-rated dryer, using 2.52kWh. This is roughly half as much as the Gorenje D50210.



#### DISHWASHER

Our greenest full-size Best Buy for electricity and water use is the **Bosch SGS45C02GB**. Full results for this model appear in the March 2008 *Which?*



#### WASHING MACHINE

Best for the environment is the **Miele W1714**. Its water and energy use are low, and rinsing isn't compromised.



## How we test

### Measuring how well solar panels will perform in the UK

We measure how much electricity each solar panel produces in a range of typical light so we can see how it will perform under the kind of conditions that we get in the UK. We do this by artificially creating the

light levels at different times of day and different weather in controlled laboratory conditions.

The intensity of light is measured in units called 'lux'. Sunrise on a clear day is 400 lux, an overcast autumn day is 20,000 lux and a bright sunny summer day in the UK is 100,000 lux.



## BATHROOM

## Saving water

We've all become more aware of the need to conserve water, and as more homes get water meters there will be an added incentive to be careful about using it. Saving water also saves energy, as less power is required to pump it through the mains network.



five litres a minute compared with up to 15 – something to think about if you have a water meter.

However, the flow rate can be low, especially in winter, when the water is colder, meaning the spray isn't as forceful as a mixer or power shower.

Power showers use stored water supplies in your home. They're invigorating but, because they use so much more water, are a poor choice for those who are environmentally aware. The best conventional shower we tested was the **Mira Sport 9.8kW** (£210), left.

## Water-saving cistern devices

We tested two devices that save water by reducing the available volume in a toilet cistern. The **Hippo Water Saver** (£6.99), right, is a tough, water-filled polythene bag. The **Save-a-Flush** (£1.41) is a perforated polythene bag containing water-absorbent granules that swell in size over time. Both are easy to install and require no plumbing skills – the Hippo saves around 2.5 litres a flush, whereas the Save-a-Flush saves only about 0.5 litres (less than the one litre claimed).

**VERDICT** Both products save water, the Hippo saving more.

But any submerged object, such as a few handfuls of marbles, would have the same effect.

The **Interflush** (£17.95) and **Mecon Water Saver** (£12.50) take the idea further by modifying the flush so it can be stopped when you wish rather than always producing a 'full' flush. Both need a little 'plumbing' but nothing too serious. The Interflush fits only cisterns with front-facing handles. Once it's installed, the



flushing action stops when the handle is released. The Mecon can be fitted only to a cistern with a spare hole – a button is mounted here that interrupts the flush when pushed.

**VERDICT** These both save water, but how much you save depends on you using them



effectively. The Interflush is the better of the two, as just releasing the handle will cut the flow, whereas the Mecon requires an extra button push to achieve the same thing.

## Water-saving shower heads

We tested three devices designed to save water in the shower. The **Aqualogic Air 8 Hand Held Shower Head** (£32.90), above, the **Flowpoint HH336** (£19.99) and **Flowpoint HH513** (£19.99) variable shower heads restrict the flow of water through a shower head to save on the amount of water used. Fitting one of these three is easy: unscrew the old shower head and screw on the new one. All three reduced the water flow significantly, but force and spray spread were also reduced.

**VERDICT** We can't see the point of these. You could get a similar result just by spending less time in the shower.

You may find it takes longer to shower properly with these replacement heads, thus negating any water saving.

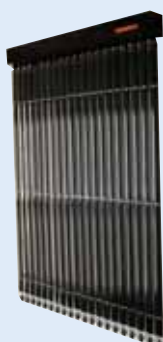
## Solar panels

Installing solar panels could cut your hot water bills by about 50 per cent. We highlighted these three in our last test



■ **BEST FOR SOLAR WATER HEATING CONSTRUCTION**  
**RESOURCES AZUR 6**

(£2,000-£3,000) If you want basic solar water-heating panels, where water flows through the panel to be heated for showering and washing dishes, this is the best we've tested. A typical family home needs two.



■ **BEST EVACUATED TUBE PANEL**  
**THERMOMAX MS20**

(£3,500-£4,000) These evacuated tubes – a type of solar water-heating panel – perform well when the sun is shining and still produce some hot water even when the sky is overcast.



■ **BEST FOR GENERATING ELECTRICITY**  
**SANYO HIP-200NHE1**

(from £6,000)

The best photovoltaic panel we've tested. It excelled when the sun was out but, like other photovoltaic panels, it struggled when the sky was cloudy.

## OUTSIDE

### Solar battery chargers

We tested three solar battery chargers that use solar energy (or another power source) to charge an internal battery. They plug into an external device to charge or power it directly.

The **Solio Universal Hybrid Charger** (£59.95), with 1600mAh battery, charges via a solar panel, plug-in mains converter or USB (although no lead is supplied). It's compatible with many mobile phones, iPods, digital cameras and other devices. Solar performance wasn't as good as some. The **Scotty Pro Solar Charger** (£49.99), left, charges from the sun or USB. Output adaptors are compatible with some mobiles (not Nokia), iPods and PDAs, or you can remove the two 600mAh AA batteries and use them directly in other devices. Solar performance was pretty good. The



**Power Monkey Explorer** (£65), right, fits in a pocket and can charge from the sun's rays, USB or mains adaptor.

Its solar performance was by far the best of the three, it had the largest capacity battery (2,200mAh) and fits almost anything.

**VERDICT** The **Power Monkey Explorer** wins because of its performance, size, capacity and versatility.



### Solar-powered lights

We tested two solar-powered shed lights and a security light. The **Smart Solar Duo Security Light** (£49.95) has two battery-powered spotlights linked to a motion detector. It switches on for 30 seconds when movement is detected. However, the light isn't bright (about 12 watts), compared with 150 watts for a normal security light. When permanently on, batteries last about 12 hours before the light dims. Sixteen hours of bright sunlight recharges them fully, which is considered to be adequate.

**VERDICT** It's easy to install and does the job.

The **Smart Solar Shed Light** (£24.99), below, and **Gardman Solar-Powered Shed Light** (£19.95) are powered by batteries charged from the sun. They're easy to install – a solar panel sits on the shed roof connected by cable to a light inside. Neither was very bright (about 1 watt), so they're useful for finding things at night but not bright enough to work in. When fully charged, the Smart Solar runs for 4.5 hours, the Gardman just 1.5. In practice, they'll be used for a few minutes at a time, so they're unlikely to need a complete recharge, which takes 12 or 25 hours of bright sunlight.

**VERDICT** The Smart Solar shed light performed better and had greater capacity. It can be angled to suit the sun's position through the year. It also turns off after 20 minutes to save the battery.



### Water butts

Installing a water butt is a great way to use rainwater. For a standard plastic water butt that doesn't need to be childproof, opt for the **Sankey Economy Water Butt** (£20 + £9 for the stand). If child safety is a concern, choose the **Harcostar Child Safe 227l** (£45 + £20 for the stand), although it won't keep out a youngster if they're strong. If space is tight and it doesn't need to be childproof, go for the **Harcostar Space Saver** (£27 + £11 for the stand). The **Sankey Slim** (£20) has a more child-resistant lid. If looks matter, we recommend the wooden Suffolk Barrel SBP 11 (£99 + £20), although it's heavy. Or the **Sankey Beehive Water Butt** (£55 + £20).



### Composting

For a small garden, choose the **Rotol Composter** (£35). For quick compost, the rotating **Blackwall Compost Tumbler** (£55) is good. For a medium garden, try the **Garden Gourmet Mk2** (£60), and for a large garden, we liked the **Modular Composter** (£110) and the **Willow Weave Composter** (£55).

Also bear in mind that many councils offer free or discounted compost bins.



READY FOR THE SPRING?

## Gardening Which?

*Gardening Which?* is completely independent, offering impartial, jargon-free advice, product reviews and the latest hot tips.

## Checklist

- **Washing sense** If you're not filling up the washing machine, tumble dryer or dishwasher, use a half-load or economy program.
- **Water too hot?** Your cylinder thermostat shouldn't need to be set higher than 60°C/140°F.
- **Turn it down** Reducing room temperature by 1°C could cut heating bills by up to 10 per cent.
- **Dripping tap** A dripping hot water tap wastes enough hot water in a week to fill half a bath.

## Contacts

**Aqualogic** 0870 850 3757  
www.aqualogic-wc.com  
**Blackwall Compost Tumbler**  
0845 130 6090  
www.evengreener.com  
**Bye Bye Standby** 0845 833 3803  
www.byebyestandby.co.uk  
**Efery** 020 7924 4754; www.efery.com  
**Flowpoint** 01462 672424  
www.flowpoint.co.uk  
**Garden Gourmet**  
01932 253666  
www.gardenorganic.org.uk  
**Gardman** 01406 372222  
www.gardman.co.uk  
**Harcostar** 0121 504 2700  
www.harcostar.co.uk  
**Hippo** 01989 766667  
www.hippo-the-watersaver.co.uk  
**Interflush** 0845 045 0276  
www.interflush.co.uk  
**Ivy Energy Saving** 0845 855 3553  
www.ivyenergysaving.com  
**Mecon** 020 8397 5844  
www.meconwml.com  
**Modular Composter**  
0845 130 6090  
www.evengreener.com  
**OneClick** 01623 751414  
www.oneclickpower.com  
**Power Monkey** 01452 621888  
www.tangogroup.net  
**Powersafer** 020 8275 3314  
www.powersafer.net  
**Rotol Composter**  
01884 841515  
www.originalorganics.co.uk  
**Sankey Water Butts**  
0115 927 7335  
www.rsankey.com  
**Save-a-Flush** 0161 610 8642  
www.save-a-flush.co.uk  
**Savaplug** 024 7699 8569  
www.savaplug.com  
**Solio** 01452 621888; www.tangogroup.net  
**Scotty Pro** 01684 774000  
www.solartechnology.co.uk  
**SMJ Electrical** 01933 677668  
www.smjuk.com  
**Smart Solar** 0845 644 1833  
www.smartsolar.co.uk  
**Watson** 020 7729 7500  
www.diykyoto.com  
**Willow Weave Composter**  
01395 233699; www.windrushwillow.com