

CONSUMER GUIDE ON STANDBY LOSSES OF APPLIANCES

YOUR ELECTRICITY IS DRIPPING AWAY... Stop It!





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DISCLAIMER:

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Standby power is electricity used by appliances and equipment while they are switched off or not performing their primary function. That power is consumed by power supplies (the black cubes—sometimes called "vampires"—converting AC into DC), the circuits and sensors needed to receive a remote signal, soft keypads and displays including miscellaneous LED status lights. Standby power use is also caused by circuits that continue to be energized even when the device is "off".

Because power is used by appliances while they are not performing their primary function, this standby power is considered as an electricity loss. However for certain appliances such as networked equipment and devices such as an alarm system, a certain standby power is inevitable.

WHY ARE STANDBY LOSSES IMPORTANT?

According to recent measurements in some 1.300 homes across the EU, the average standby electricity consumption is 169 kWh per household per year, which is about 6.3% of the total annual electricity consumption per household.

The standby energy for all households in the EU-27 countries amounts to about 43 TWh in total, and it is responsible for about 19 million tonnes of Co2 per year. The standby of all the office equipment used in EU-27 countries is estimated to be about 9 TWh.

Altogether, standby power use is roughly responsible for 1% of global CO2 emissions.

According to the International Energy Agency, by 2030, 15% of the total appliance electricity consumption in Europe could be due to standby functions

HOW CAN I IDENTIFY PRODUCTS THAT DRAW STANDBY POWER?

Almost any product with an external power supply, remote control, continuous display (including an LED), or which charges batteries will draw power continuously. Sometimes there is no obvious sign of continuous power consumption and you need a meter to be certain.

HOW CAN I REDUCE STANDBY POWER USE IN MY HOME?

- If you aren't frequently using a device, unplug it.
- Use a switchable power strip for clusters of computer or video products. That way you can switch everything to zero with one action. Or even better, install an automatic power-off switch such as the "Auto-Power Off Plug" of which over 1 million have been installed already in Denmark (manufacturer: www.save-power.eu)
- When shopping, search for low standby products (ask a salesperson !) Energy Star products have lower standby.
- Many new A/V (Audio -Visual) products are interconnected using HDMI (High Definition Multi-media Interface) digital connec-







tion cables that carry audio and vision data in digital format. In the latest equipment these cables also provide control of the standby mode of the interconnected products using sophisticated CEC (Consumer Electronic Control) protocols. This type of interconnected equipment, with HDMI CEC provides the lowest standby for connected equipment automatically. Nothing can be left in on-mode by mistake! So, for example, when the TV is put into standby HDMI-CEC connected DVD player, DVD recorder Set Top Box and Surround Sound Amplifier will automatically go into standby unless the user has programmed otherwise

• Rent or buy a low-cost watt-meter, measure the devices in your home when they are in standby mode and take targeted action to switch off those with the highest power consumption. You will certainly be surprised by what you discover and this exercise might even pay back the cost of the meter in savings.

GENERAL RECOMMENDATIONS ON PURCHASE OF APPLIANCES:

This brochure focuses only on the electricity consumption of household appliances in their so-called "low-power energy modes" (off, passive standby, active standby, ...). However, for most appliances, the energy consumption during active mode is much more important.

For the best and permanently updated information on purchasing new appliances, we refer to the Topten websites which provide a selection of best appliances from the energy point of view, www.topten.eu.

The information targets consumers (pictures, functions, price, no complex calculation, availability in their country), is neutral (no influence from manufacturers), rigorous and transparent (the selection methodology is explained online). In May 2009, 12 websites are on-line presenting more than 100 product categories.

WHAT IS THE EUROPEAN COMMISSION DOING?

Under the Energy-Using Product (EuP) Directive, the Commission did set maximum limits to (passive) standby power. The objective of the eco-design requirements for standby and off-mode is to ensure the lowest possible energy use for household appliances and electronic products in passive standby and off modes. The main requirement is:

	2010 limit	2013 limit
Off-mode (W)	1	0.5
Standby – Appliance with no display (W)	1	0.5
Standby – Appliance with information display (W)	2	1

Furthermore, from 2013 the equipment will be required to offer a power management function, which switches the equipment to off mode or standby mode after the shortest possible period of time (appropriate for the intended use of the equipment).

TV AND ENTERTAINMENT

Main Recommendation:

Switch off games consoles, audio equipment, VCR's and DVD recorders when not in use. Even on standby, they can use a lot of energy (older audio equipment and VCR's alone up to 100 kWh a year = 15 to 20 EUR per year). Games consoles consume almost as much electricity when left in standby as when you play.

According to our measurements, there are important differences between the average and the best measured standby power losses of appliances (see figure):



Other recommendations:

- If you are buying a new TV consider an LED model, because when in use these typically use less power than similar-sized plasma and LCD versions.
- If you are buying a new TV think carefully about the size of TV you need, because a larger TV will use more energy than a smaller one.
- If you buy a TV with a built-in digital receiver you'll save the power...etc
- Make sure you set up your TV to take advantage of any low power features such as ambient light sensors and screen blanking, because these may not be automatically set up when you buy a TV. Check the handbook for full details on how to set up your TV to use less energy.

IT EQUIPMENT

Main Recommendation:

Switch off network equipment when you're not using it. Many people think that it takes a long time to connect to the Internet again, and that IT equipment will be damaged if it is switched on and off, but this is just a myth. Around EUR 1 billion can be saved in the EU simply by disconnecting from the Internet when it's no longer in use. This is equivalent to 7.000 million kWh and 3,5 million tons of CO2.

According to our measurements, there are important differences between the average and the best measured standby power losses of appliances (see figure):



Other recommendations:

- Use your finger switch off the monitor. Switch off the monitor if you have not used it for some time. Switching the monitor on and off several times per day will not damage it.
- Add using switch socket power boards or more sophisticated "standby killers", which can turn of all peripherals. In case of standby killers, no consumer comfort is lost
- Install power management features. You can set the monitor's power management features to switch from active to sleep when you are not using it. Set the computer to sleep (hibernate) by saving all open programs on the computer's hard disk. Using this option, a computer typically uses almost as little power as it takes to shut down the system using the on/off button.
- Older versions of Windows (98 and 2000) have some problems restarting from sleep or standby mode. To avoid this, users should always make sure that they save all open documents before activating the sleep or standby modes

- When you buy a new personal computer, choose a laptop and save 80 % of energy. Disadvantages : When you buy a notebook you get less processing power for your money ; if used for many hours, you'll need a docking station with external keyboard, mouse, flat screen monitor to be comfortable for your eyes and fingers.
- Choose computers with the Energy Star Label. You can reduce your electricity bill by up to EUR 135 over a computer's lifetime by choosing a product displaying the Energy Star Label.
- Choose a flat screen. You can save up to 50% energy by replacing your old CRT monitor with a new flat screen model and the picture quality is better. Some flat screens do not have sufficiently fast refresh rates for gaming but it is possible to find suitable flat screens with fast refresh rates if you need one.

HOUSEHOLD APPLIANCES

Main Recommendation:

Coffee-espresso machines cause huge standby losses, typically about 60 kWh or 9 EUR per year. Ensure that your espresso machine is really "off" when you do not use it (good espresso machines have an "Auto-Off function).

According to our measurements, the biggest attention regarding standby losses must go to the following appliances (see figure):



Other recommendations:

• Always ensure that your washing machine, dishwasher and drier are in their off- mode after use with the loading door closed – modes reached automatically at the end of a duty cycle, especially with a loading door left open, can often consume several watts of power more than the selected off mode (typically up to 5 Watt or more).

SOURCES

The authors are grateful for the information they have used from the Energy Saving Trust in Denmark, the L. Berkeley National Lab's website on standby power and the Swiss Energy Agency (S.A.F.E.). Frontpage © STEN / Greenpeace Belgium 1997

BACKGROUND

The SELINA project stands for Standby and Off-Mode Energy Losses In New Appliances Measured in Shops. It did run from October 2008 to September 2010, and was supported by the European Commission's Agency for Competitiveness and Innovation (EACI) under the Intelligent Energy for Europe (IEE) programme.

The project partners in SELINA were ISR-University of Coimbra (Portugal) (coordinator), Fraunhofer-Gesellschaft– ISI (Germany), Ekodoma (Latvia), ARMINES (France), IT Energy (Denmark), Romanian Agency for Energy Conservation (ARCE) (Romania), SEVEn – The Energy Efficiency Center (Czech Republic), e-ster (Belgium), Intertek Testing & Certification Ltd (UK), Technische Universität Graz – IFEA (Austria), Centre for Renewable Energy Sources & Saving – CRES (Greece) and Politecnico di Milano – Dipartimento di Energetica (eERG) (Italy).

More information on the SELINA project can be obtained through *www.selina-project.eu*

MORE INFORMATION ON ENERGY-EFFICIENT HOUSEHOLD INFORMATION :

Equipment selection : *www.topten.eu*

The Topten websites provide a selection of best appliances from the energy point of view. The information targets consumers (pictures, functions, price, no complex calculation, availability in their country), is neutral (no influence from manufacturers), rigorous and transparent (the selection methodology is explained online). From May 2009, 12 websites are on-line presenting more than 100 product categories.

On standby and other low power modes :

www.selina-project.eu www.energyrating.gov.au/standby.html standby.lbl.gov/standby.html www.ecostandby.org/

ASSUMPTIONS USED IN THIS BROCHURE :

- 1 kWh of electricity cost 0,16 EUR
- 1 kWh of electricity = 443 g of CO2 (source : The 2006 "Well-to-Tank" report of the Joint Research Centre (JRC) of the European Commission quotes a EU WTT figure of 430 g CO2/kWh see http://ies.jrc.ec.europa.eu/uploads/media/WTT_Report_010307.pdf page 51). Assuming a medium to low voltage loss of 3%, EU electricity's CO2 emissions are 443 g CO2/kWh.

