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POWER-SAVING TECHNIQUES

Л. С. Жидкова, З. В. Федоринова
Tomsk Polytechnic University

With the rising costs of gas, electricity, fuel and food we need to look at ways to reduce our energy bills, waste and our carbon footprint. Did you know that 25-35% of the total energy used in a typical family home is wasted? Just think how much that wasted energy is costing you each year. Whether you want to make savings on money or want to do your bit to help the environment, it just makes sense to see how much you can save. If you can save just 20% of the energy you use, you'll make a saving of hundreds of rubles a year and significantly reduce your impact on the natural environment.

As energy costs rise and harmful effects of energy production become more apparent, there is a growing interest in sustainability issues, such as: designing persuasive technologies to motivate people to be more green by using social networking tools [1] or incorporating values of sustainability from the onset of technology design [2]. Improving power management on computers in particular, has estimated savings of over a billion dollars per year [3] and research in this area has mostly concentrated on commercial or office settings. Some have created more energy efficient devices through dynamic power management [4] and others have studied whether users are already using power management effectively in the office [5]. The potential for saving power in residential settings may exist, but little has been said about how people are using *power management at home* while power management features on our computer and monitor can help us save energy.

The *computer power management (CPM) technology* was introduced in order to reduce energy consumption for computers that are not in active use. Power management interacts with every part of the computer including the operating system, software, peripheral devices, etc. This technology is beneficial to the environment in the way that a reduction in power consumption mainly means a reduction in the overall

need for the amount of power harnessed and if non-renewable sources are being used to generate electricity, this implies lesser pollution and also lesser adverse impacts on the environment and climate. Power-management does not reduce the performance of a computer, but simply adds features to reduce their power consumption when not in use[6].

Most power management savings come from reducing power when the machine is not fully active by adding low-power or "sleep" modes that kick in when idle. But there are many more techniques that can be used to save energyconsumption from computers. Some of the common practices adopted today in order to reduce power consumption from computer usage include:

- *using built-in power saving features*

Most operating systems today come with power saving features that turn hardware including hard drives or the computer monitor into sleep mode when inactive for a particular period of time set by the user. Under this mode, power consumption can be reduced by 20 to 50 times [7].

- *think power management.* The use of power management can cut energy consumption and cooling costs, reduce noise, and prolong the battery life of notebook PCs. When enabled, power management places your monitor, hard drives and computer into a low-power "sleep" mode after a period of inactivity. Touch the mouse or keyboard and the computer, hard drive and monitor "wake up" in seconds. Power management features are standard in Windows and Macintosh operating systems. To improve the power efficiency of our PC, the Climate Savers Computing Initiative recommends the following power management settings: monitor/display sleep - turn off after 15 minutes or less; turn off hard drives/hard disk sleep - 15 minutes or less; system standby/sleep - after 30 minutes or less. Instructions for enabling power management vary by operating system.

- *get in the habit.* Ever notice how if you want to shut your television off, you'll spend 10 minutes looking for a misplaced remote instead of simply pressing the "off" button on the TV set? The same concept applies with computers. Save power by manually putting your system to sleep (and locking it) when you leave the desk. For example, on certain notebooks, use (Fn + F4 keys) instead of using the more-complex Ctrl + Alt+ Delete + k function.

- *think twice about that screen saver.* Screen savers are not necessary on modern monitors, and studies show they actually consume more energy than allowing the monitor to dim when it's not in use. This will also extend your battery life, if you're a long way from home with your notebook. Go to Control Panel - Personalization - Screen Saver Under the Screen Saver Settings window, scroll through the Screen Saver menu and select (Blank). Click OK.

- *turn down the brightness setting on your monitor.* The brightest monitor setting consumes twice the power used by the dimmest setting. For example, on certain notebooks you can use the power brightness keys - Fn + Home (for up) or Fn + End (for down). On a desktop unit, the brightness controls can usually be found on the front of the monitor.

- *go on standby.* Switching to standby can also be a major-league power saver: a typical monitor consumes 30 watts to 140 watts while on, but less than 3 watts while on standby. The recommended setting is for your computer to go to standby after no more than 30 minutes of inactivity. Go to Control Panel - Power Options. Under the Power Options window, select the Power plan that best suits your needs or create a new power plan.

- *cut the power when possible.* Turn off peripherals such as printers, scanners and speakers when not in use. Fight "phantom" or invisible power use by plugging all your electronics into one power strip and turning the strip off when you are finished using your computer.

- *change work partners.* Switch to a notebook computer instead of a desktop, as notebooks usually consume less energy.

- *if it's not being used, shut it off.* Keeping multiple applications open slows down your computer and sucks up the battery life. If you no longer need that application, tell it goodbye - for now.

- *establish multiple power schemes to address different usage models.* For example, you can create a power scheme for playing music CDs that shuts off your hard drive and monitor immediately, but never puts your system into standby mode. Note that different operating systems offer various degrees of complexity in terms of how much customization you can perform with the schemes.

- *watch for program compatibility.* Many popular computer games and other third party software packages that run in the background will not allow the computer to go to sleep - even if they are paused or the active window is minimized. Ditto for Web sites or pages with active banners or animated advertisements that will not allow the computer to sleep on its own and must be closed, or the computer put manually into a sleep state.

Though different techniques to reduce power consumption from computer usage are already available today, the big question that arises is that whether computer users are aware of these techniques. Turning off or disabling devices while not in use is still the most common techniques to save power while using computers and a lot of people think that the main barrier to CPM usage is that CPM techniques haven't been much promoted.

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USING LED INFLATABLE WIND TURBINE AS WARNING PROTECTIVE ELEMENTS ON THE ROAD

A. В. Жук, А. В. Баластов
Tomsk Polytechnic University

Introduction

Nowadays the role of alternative energy has significantly increased. This is not only because of the possible depletion of the traditional fuels such as coal, gas and oil, but also the negative impact of emissions and wastes on the environment when it is used. There is also an important civilization' development factor that includes: 1) the desire of countries deprived of carbon resources do not depend on the world's oil and gas suppliers, 2) production safety, 3) low level of man-made disasters. The main sources of alternative energy are used worldwide:

- 1) Wind Energy
- 2) Solar energy
- 3) Biofuels
- 4) Tidal energy
- 5) Geothermal energy
- 6) Nuclear energy
- 7) Chemical electricity- galvanic sources and fuel cells.

Geopolitics has an impact on the development of alternative power (science, the main object of which is the geopolitical structure of the world, represented by a variety of regional models).

The total annual capacity of solar radiation on the southern borders of Russia, located on the 41st parallel and the most northern point - 82 degrees north latitude, is 1300 and 810 kWh / sq. m, respectively. The average rate in the country at the latitude