

Plugging the Drain with Green Power Supplies

By Sarah Fister Gale

October 15, 2008

Manufacturers of computers, cell phones and other must-have devices have invested a lot of time, money, and effort making their products more environmentally friendly. They are quick to tout the efforts they've made to use recycled plastic, incorporate smaller components, and reduce the amount of packaging their products come in.

But there hasn't been a lot of talk around improving the environmental impact of the power supplies that keep these gadgets charged and operational. On any given desk in any office across the country there may be a dozen power supply cords hanging off power strips to charge phones, run computers, and keep workers operational. While we may be mildly annoyed at the way these cords clutter our desks and overheat our offices, few people think about the energy waste that seeps out of power supplies every day.

"For a long time power supplies have not been on anyone's radar screen," says Andrew Fanara, team leader for the Energy Star product group. Energy Star is a joint program of the U.S. Environmental Protection Agency and the U.S. Department of Energy focused on improving the energy efficiency of products and practices.

Supply

Part of the problem, says Fanara, is that people don't buy power supplies, or even think about them in terms of product choices. "You buy an iPhone, or a desktop computer, not a power supply. That's just the thing you need for the product to work. And in a lot of cases the power supply is built in to the product."

But it's a short-sighted approach for consumers and corporate buyers who want to lower their energy costs and raise their environmental profile. Conventional power supplies are historically and alarmingly inefficient, and billions of them are sold every year. Every time you buy a new piece of equipment, computer, appliance or device you risk adding another inefficient energy-sucking power supply to your workplace or home.

All devices require some form of electrical conversion from high voltage to a lower voltage in order to function safely, and that conversion results in the loss of energy in the form of heat.

"I've seen power supplies with 10 percent efficiency rates," Fanara says. "That means for every unit of energy that goes in, nine-tenths of it is burned off in heat."

Energy Star and other organizations are working to improve the efficiency rates of power supplies and to get manufacturers to incorporate them into their products. Fanara's group has made major strides in the last few years, establishing technical criteria to define efficient power supplies for a variety of products manufactured and distributed globally.

"We like to think we are over the hump, but we've got to be vigilant," Fanara says of the group's progress. "We still have to nudge the industry in the right direction."

That nudge is coming in part from governments in the U.S., China, and the European Union. that have put minimum efficiency requirements in place for power supplies currently being manufactured based on Energy Star requirements. However, many large markets, including India, South America and Russia, have been slower to get on board, and those are often the regions where power supply manufacturers are located.

Energy Star (www.energystar.gov) hopes that as global manufacturers make energy efficiency a requirement of their suppliers, manufacturers in those regions will soon comply.

Demand

The other thing that can drive this change is consumer demand, says Ryan Rasmussen, program manager for 80 Plus in Portland. 80 Plus is an electric utility-funded incentive program to integrate more energy-efficient power supplies into desktop computers and servers. "Educated consumers can make efficient power supplies part of their buying decision."

More than 700 power supplies have already been certified through the 80 Plus program and many local and global computer manufacturers are currently selling 80 Plus qualified computers. But in order for the trend to grow, buyers, particularly those in larger companies, have to make it a requirement of getting their business, he says. Fortunately, the reason for making such demands is obvious.

"The value proposition for buying an energy efficient power supply not only offers an opportunity to green your practices, it translates into \$20 per year in savings, for every computer that uses one," Rasmussen says. For companies that purchase hundreds of computers every year, that savings can be significant.

It also results in less computer downtime because there are fewer heat induced failures, he points out. "That translates into a more productive workforce, and you avoid IT repair costs."

Unfortunately, unlike many energy efficient appliances that proudly display their energy ratings, manufacturers don't always talk about the efficiency of their power supplies, making it more difficult for consumers to choose wisely. While 80 Plus makes its logo available to manufacturers who meet their efficiency criteria, many prefer to leave it off their labels so as not to confuse the buyer or clutter the marketing message.

Going Green Plug

While the push for efficient power supplies rolls across global supply chains, a company called Green Plug (www.greenplug.us) is working the power supply efficiency trend from the other side of the table. The innovative technology company, led by Frank Paniagua, is developing digital technology that enables real-time collaboration between electronic devices and their power sources. The company develops and markets embeddable power supplies to consumer electronics and power supply companies.

"We go to the store we buy a toaster, a blender, a television set. We don't think about it, but every major appliance or device comes with a wall wart," says Paniagua. "Why can't it be more convenient and more efficient for consumers?"

Instead of waiting for the answer to that question, he built his own solution in the form of a multi-port power hub that communicates with devices and the power source to reduce energy waste and eliminate the web of power cords once and for all.

"We want to get rid of the 3.2 billion devices that get designed, manufactured, shipped, and subsequently discarded every time you buy a new device," he says.

The key to his solution is a Green Plug-enabling chip that manufacturers can incorporate, free of charge, into their devices. The chip allows the device to charge via the Green Plug hub, which recognizes and provides that device's unique power needs, then shuts off the port when the device is charged or not in use. That means there would be no-more slow drain of power on devices that are already charged.

"In a typical office, everything plugged into power strip will continue to suck energy unless the power strip is turned off. Green Plug does this for you," he says.

It also would replace the tangle of device chargers with a single hub, which could have dramatic implications for reducing e-waste.

"I have 42 chargers in my home. If could replace those with four or five hubs to charge all those devices, that's 37 chargers that don't go into a landfill," he says, noting that if you multiply that by millions of chargers in millions of homes the impact is obvious.

"From an eco-green standpoint it could be significant."

That information can be found, however. 80 Plus has a link on its website listing all the manufacturers that use 80 Plus certified power supplies, along with the product models

that use them, and the power supply's efficiency ratings. You can also choose Energy Star rated products, which use 80 Plus criteria for their power supply ratings. To find 80 Plus certified power supplies and their ratings, go to www.80plus.org/manu/psu/psu_join.aspx.)

"If you are a procurement officer and you know what equipment you want to buy, you can find that vendor, or a similar product at the web site," Rasmussen says. "Then it's just a matter of adding the procurement language to your contracts."

Setting expectations for power supply efficiency and sending that message to vendors will drive manufacturers to incorporate them into more devices, particularly if those demands come from larger companies, says Jason Boehlke, channel manager of 80 Plus. "If reps are hearing these demands from the buyers and the utilities we will get faster adoption," he says.

See the Light

The biggest challenge for a lot of manufacturers has been finding suppliers who can deliver millions of these power supplies to accommodate their device sales. "They need reliable reasonably priced products and a delivery cycle that won't be disrupted," Boehlke says. "A few years ago that was a problem. But we have seen much more scale in the power industry. Now it's just a matter of getting manufacturers to change their suppliers."

The change shouldn't be hard, he adds. "Three years ago, there was one power supply manufacturer offering three different units. Today, there are more than 70 manufacturers offering 80 different models."

But, like end users, most manufacturers aren't thinking about power supplies as a place for innovation. Fanara notes that he's spoken with many supply chain managers who haven't changed their power supply vendors, or their criteria, in years. And until manufacturers start asking for efficiencies from their vendors, the incentive isn't there. It's a chain reaction that has to come from the consumer and be pushed down to the suppliers.

The more people demand, the more change will come, says Boehlke. "You can't assume the efficiencies are there. You still have to ask."

In the Meantime

If you aren't currently in the market to upgrade all of your computers and their accompanying power supplies, there is still a lot you can do to improve the efficiency of your power usage, particularly by changing the way you use your PCs, says Howard Locker, master inventor and chief technology officer for Lenovo, a maker of personal computers with headquarters in China and the U.S.

"Desktops are the biggest problem when it comes to power supplies," he says.

The average desktop uses 80 watts when it is active and 15-30 watts when it's idle, but less than one watt if it's in suspended mode. The problem, he says, is that people don't take the time to adjust their computer settings to idle when they are not in use.

"You could save so much power," he says of this small step.

Lenovo sits on the board of directors of Climate Savers Computing Initiative (www.climatesaverscomputing.org), a nonprofit group of consumers, businesses and conservation organizations striving to improve the energy efficiency of computers.

As part of that solution, Lenovo offers tools on its PCs that enable companies track the energy use of all the computers on their network, and flag those that require corrective actions, such as setting them to standby mode, and turning them off at night.

"Just making that change to your settings, and turning computers off can add up to \$18 to \$26 in energy savings per year, per computer," says Bill Stevenson, manager of corporate social investments for Lenovo and a member of the marketing workgroup for Climate Savers. "That's not a hard sell if you are a big company."

But more importantly, it can contribute to Climate Savers ultimate goal to reduce computer power usage by 50 percent by 2010. That translates into a reduction of 54 million tons of CO2 being released per year.

"It's such a small sacrifice to adjust the settings on your PC," Stevenson says, "but it's worth doing to have that kind of impact."

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[1] <http://www.energystar.gov>

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