Batteries

The Bane of Being Wireless

Linda Knapp
— How many portable gadgets do you own? A cell phone, perhaps? Digital camera, music player, radio, or other wireless device? And don’t forget the TV remote, flashlights, pencil sharpener, and so on.

Point is, we’re using more and more of these wireless devices and maybe you, too, are bothered by having to change so many batteries. When I complained about it to my editor over lunch, he laughed and said I should write an article about batteries.

So I did the research. Battery basics, I figured, would be as boring as a dead Duracell, but it turned out to be kind of interesting, relevant to my life and probably yours too. Here’s what I found out:

Basically, battery technology isn’t progressing at quite the speed of digital technology. The last major advance for consumers was in the early 1990s, when lithium cells came on the market.

Since then, there have been improvements on existing types, but nothing radically different for small devices except, perhaps, zinc-air fuel cells. They’re not rechargeable, and most attach to the device by a cord. So they’re usually used as emergency backup for when the cell phone or digital camera goes dead and you really need it.

**Battery Basics**

Alkaline batteries are the familiar cells you stuff in flashlights, portable radios, and other low-power devices. They’re cheap and store well, and the rechargeable ones can be used many times over.

Nickel-cadmium (NiCad) batteries are more powerful and used to be popular for cordless phones and other moderate-power devices. Rechargeable NiCads have “memory effect,” which means they “remember” the level of discharge before recharging and may play dead when they reach that point again. Consequently, NiCads are supposed to be totally discharged before recharging. They’re also quite toxic and can be harmful for the environment.

Nickel-metal hydride (NiMH) batteries replaced NiCads a few years ago as the battery of choice for phones, digital cameras, and other mid-power devices. Both battery types discharge on the shelf at about 3 percent per day at room temperature, but NiMH types contain twice the power and can be recharged many more times.

NiMH cells are also less likely to have “memory effect,” so they don’t need to be completely discharged before recharging. Even when a battery’s capacity does diminish from continual recharging at midlevels, you can bring it back to the original capacity by totally discharging and charging it for two to three cycles, according to Stephen Dougherty, president of Greenbatteries.com.

NiMH batteries come in standard AA and AAA sizes and can be used in many devices originally designed for alkaline batteries, Dougherty notes, but don’t mix the types together.

Lithium disposable and lithium-ion (Li-ion) rechargeable batteries are now the favored choice for laptops, as well as the newer digital cameras and cell phones. Rechargeable Li-ions have no memory effect, they’re nontoxic, and they store about twice as much power as NiMH cells by weight. They also discharge on the shelf more slowly, at a rate of 5 to 10 percent per month, according to Dougherty.

**New Batteries**

There have been some improvements to existing battery types, and one example is the Panasonic CR-3V lithium battery ($10), which works in many digital cameras and personal digital assistants designed for AA-size cells. One CR-3V fits into the slots designed for two AAs. According to Panasonic, these disposables provide about 20 times the life of AA alkaline cells. For more information, go to www.panasonic.com/industrial/battery/oem/images/pdf/lith3v-6v.pdf. Purchase them at a local camera store or online.

I put two CR-3V cells into my Olympus C-3040Z digital camera last fall, and they recently died after four months and a few hundred photos.

Wireless-phone batteries have also improved. A few of the newest models come with rechargeable Li-ion batteries that can last four to five hours of talk time and a week of standby. Examples include: The Kyocera QCP-6035 ($400), Motorola Timeport P8767 ($200), and Sanyo SCP-4700 ($150).

As for new energy sources, zinc-air fuel-cell technology combines high energy density with small size and weight. Disposable batteries that attach to cell phones ($10) reportedly last up to 16 hours of talk time or 25 days of standby. Disposable battery/charger packs for cell phones ($15) and PDAs ($20) can slip into a pocket and be used to charge the device or power it while in use. Cartridges provide three to four full charges.

Larger battery packs for digital cameras ($20) clip onto a belt or purse and reportedly last for 10 to 12 hours of continuous use.

Zinc-air cells can sit on a shelf (unopened) for three years and, once opened, they should last six to eight months if stored in the foil pouch provided. For

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more information or to purchase, go to www.instant-power.com.

There are other new batteries, including rechargeable Li-ion cells that plug into a mobile device and add up to 10 times the internal battery power.

But the ones I’ve seen (such as the PowerLink 572 at www.alegna.com) currently work on just a few devices. This may change as consumers continue to accumulate wireless gadgets.

Battery-saving technologies
While waiting for longer-life batteries to arrive, wireless-device manufacturers have been developing power-saving technologies to prolong battery life.

Olympus, for example, has developed new internal camera circuitry that uses power more efficiently to extend battery life. That may be another reason my camera’s battery lasted so long.

Microsoft has come up with other innovations. Its new optical Wireless IntelliMouse is touch-sensitive, so it becomes active when a hand touches it. When the hand is removed, the mouse goes to sleep. If the hand rests on it for a while, the mouse slips back to snoozing.

IntelliMouse is also light-sensitive; it uses more power on dark surfaces and less on light ones. Plus, when it’s lifted off a surface, it switches to low-power mode.

I loaded two ordinary AA alkaline batteries into my IntelliMouse in January. For many hours a day I keep the mouse busy, and these batteries lasted almost exactly a month.

Traditional devices are also getting smarter. Take flashlights. At www.batterysavers.com you can get a $14.50 flashlight that turns itself off after two to 20 minutes (adjustable) of inactivity. You can also get one that turns on when you pick it up and off after you set it down.

Conclusions?
So, are you ready to go out and buy more wireless devices, confident that you won’t have to constantly change, recharge, recycle, and buy new batteries?

I’m not. I want my cell phone to go a month without recharging. I want my camera’s batteries to live for a year. I don’t ever want to be stranded with a dead device, and I should never have to replace rechargeable batteries.

How to keep going and going ...
- Use rechargeable batteries in devices you use regularly, allowing you to save money and help preserve the environment. Exceptions include clocks and other devices that draw very little power, as well as infrequently used devices that benefit by a longer shelf life such as pencil sharpeners.
- Use a good-quality battery charger that can determine when a battery is fully charged and then turn off or, for those batteries that lose their juice quickly, keep charging as they sit in the charger. Overcharging is the most common cause of early battery failure, according to Greenbatteries (www.greenbatteries.com), which also sells high-quality batteries and fast chargers.
- Don’t leave the battery charger, or any power adapters, plugged in when not in use. Many continue draining almost as much power as when they’re active, according to Stephen Dougherty, president of Greenbatteries.
- Don’t mix battery types. Keep the cells in each device together in sets; let them discharge together, recharge together, and throw them out together. Battery “wallets” are good for organizing and storing such sets.
- Don’t throw out—do recycle—old batteries at drop-off sites, such as Home Depot, Best Buy, and Wal-Mart. For more information, go to Rechargeable Battery Recycling at www.rbrc.com.

Right, I’m dreaming.
There is progress, but many of us are already living in a wireless world, and we’d like new battery technology to catch up with us.

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