

# An energetic assortment

range of loads. In other words, if you ask a 90 watt Li-Ion battery for 120 watts of power, it won't be able to do it.

Li-Ion batteries were originally developed for laptop computers, a sector where a constant power supply built into a small package is top priority. Because laptop users rarely mount camera lights on their computers, Li-Ion batteries aren't designed to handle such extra loads on demand.

"The primary advantage of lithium ion is its power-to-weight ratio," said Barry Rubin, general manager of IDX. "To get 90 watt-hours, you can use a 1.5-pound Li-Ion battery, or a 4 to 5-pound NiCad/NiMH battery." Anton/Bauer's DeSorbo agreed: "If weight is your top priority, then you should choose lithium ion."

It's worth noting that IDX has developed a product called "PowerLink," which lets users connect two Li-Ion batteries in parallel. The result is a 130-watt power supply that has a 160 watt-hour rating, said Rubin.

## Situational Awareness

If you're going to be shooting outdoors in a range of temperatures and power requirements, then NiMH and its long operating life is your best choice. But if cash is tight, use NiCad instead, bearing in mind that you'll need to carry a few more spares in the truck.

Li-Ion can be used in cold temperatures, too. Rubin said they'll show a power drop at initial startup, but will regain about 80 percent of their rated capacity. In contrast, he said, nickel batteries can lose up to 40 percent of their generating capacity in cold weather.



The IDX PowerLink lets users connect two Li-Ion batteries in parallel for a 130-watt power supply.

If temperature isn't a big issue and your power requirements will be relatively steady — and you're using a DV camcorder or other lightweight unit — then Li-Ion batteries are fine. Sure, they can take 3.5 hours to reach a full charge, compared to the hour or so need by today's NiCads and NiMH batteries, but "they will reach an 80 percent charge in around 60 minutes," said Rubin. If you've left enough head room on your power requirements by buying high-capacity Li-Ion batteries, then you could be OK with an 80 percent charge in most situations.

If long-term battery life is an issue — you don't have the budget to buy new batteries every year — then you would be safer with NiCads and NiMHs. "A NiCad or NiMH

battery is like a V-8 engine that runs at low revs, while a Li-Ion is akin to a four cylinder running at high revs all the time," said DeSorbo. "Clearly, a V-8 will last longer than a four cylinder."

If you want the ability to charge your batteries in the car, then purchase a DC-to-AC power inverter. These units plug into a car lighter socket (more powerful inverters must be connected directly to the battery); just plug your charger into the inverter's three-pronged outlet, and you can top off your batteries while you drive.

## Something Completely Different

If you're tired of the whole battery charging game, then you could break out of the mold and switch to hydrogen fuel cells. Jadoo Power Systems' NAB<sup>II</sup> fuel cells come in a brick-style unit that fits on most camcorder battery plates. Simply connect the 4.7-pound power converter to the plate and slip in a 2-pound, soup can-sized hydrogen fuel. You now have a 60-watt (peakable to 75 watts) source that can run up to 145 watt/hours of power, according to Larry Bawden, Jadoo president and CEO.

When one canister is depleted, you just pop in another. As for recharging, the Jadoo Power System comes with a four slot Refill Station that uses hydrogen drawn from a standard commercial cylinder. Bawden estimated the cost of hydrogen for a year's use of the NAB<sup>II</sup> system is less than \$50.

Unfortunately, the word "hydrogen" tends to conjure up images of the ill-fated Hindenburg; the hydrogen-filled zeppelin that exploded spectacularly before U.S.

## Battery Basics

**NICAD:** The oldest form of rechargeable battery for video, NiCads provide a lot of power and can handle a lot of different power loads. They recharge relatively quickly and are inexpensive. However, NiCads are heavy, use toxic materials (cadmium), and some older versions can suffer battery memory — the inability to achieve total recharging if used after being partially recharged.

**NIMH:** "New and improved" nickel batteries, they can deliver up to 40 percent more power than NiCads and have no toxic chemicals. However, NiMH batteries are prone to self-discharge (they lose their ability to generate power if left off the charger), are heavy, and expensive.

**LI-ION:** Developed originally for laptop computers, Li-Ion batteries are lightweight and powerful. They find it difficult to cope with frequent high loads, which can shorten their lifespans. Li-Ion batteries are also not suited to widely-varying wattage demands, such as powering a camera light.

**HYDROGEN FUEL CELLS:** The wild card of the battery bunch, hydrogen fuel cells electrochemically combine hydrogen and oxygen in the air to generate electricity. Being gas-powered, they aren't reliant on chargers, and are ideal for situations where charging is not an option.