Batteries

PowerGenix Aims For Hybrid Car Batteries

Kerry A. Dolan, 04.23.09, 1:20 PM ET

BURLINGAME, Calif. -- PowerGenix has made its mark by commercializing nickel-zinc batteries for cameras, electric scooters and power tools, many of which will be shipped this fall. But its long-term goal is to tackle the battery market for hybrid electric vehicles as well.

As of now, San Diego's PowerGenix doesn't have its battery technology developed for the vehicle market. It's looking to raise money to fund that activity. The company put some of its powerful nickel-zinc batteries in a Toyota Prius last May. The car has been driven more than 10,000 miles.

"For cars you need a high rate of discharge. That's where our batteries have strength," says Jeff Phillips, chief technology officer at PowerGenix. (See "Building A Better Battery.")

PowerGenix Chief Executive Dan Squiller says the cost of his nickel-zinc batteries for hybrid cars could be half that of lithium-ion. The reason: Lithium-ion batteries are potentially flammable, and producers have to engineer around that, increasing production costs. (Nickel-zinc batteries don't catch on fire.) The capital equipment for making lithium ion batteries is also more expensive, Phillips says. PowerGenix intentionally designed its nickel-zinc batteries so they could be manufactured on existing nickel-cadmium and nickel-metal-hydride production lines.

For power tools, PowerGenix's nickel-zinc batteries cost about 40 cents per watt-hour. By comparison, lithium-ion batteries, such as those from A123 Batteries (also used in power tools), cost about 70 to 80 cents per watt-hour. For vehicle batteries, the cost will go up a bit because the systems are more complicated, says Ying Wu, senior analyst at Lux Research. But Wu still expects lithium ion to be more expensive than nickel-zinc for vehicles.

The challenge: Billions of dollars are being spent by large automakers such as Toyota, Nissan and Honda in joint ventures with battery makers to roll out lithium-ion batteries for electric and hybrid electric autos. If it can get federal loans, A123 Systems of Watertown, Mass., is planning to spend $2.3 billion to build factories in Michigan to make its lithium-ion batteries for Chrysler and others. PowerGenix has raised just $61 million, and the U.S. Department of Energy no longer spends money researching nickel-zinc batteries.

Lithium-ion batteries do have a higher power density than nickel-zincs, and a longer run time. That means they're better suited to electric-only vehicles--a market that PowerGenix's Squiller says he won't be pursuing.

If history is any guide, PowerGenix may be able to overcome some steep challenges.

The company traces its roots to a meeting in the 1990s at Apple Computer. Morris Eisenberg, a charismatic chemist who had escaped from a Nazi concentration camp, tried to convince Apple's then-power group technology manager, Jeff Phillips, to use his nickel-zinc batteries in Apple laptops.

Phillips passed because the batteries didn't have the energy density of lithium- ion cells, but he saw other opportunities for them. He eventually left Apple to join Eisenberg at a company he

started called Next Century Power. That company folded in the late 1990s; its assets were bought by investors who started PowerGenix. Phillips has served as chief technology officer at PowerGenix since it was founded in 2000. Eisenberg has since passed away.

Squiller is hoping to get some money from the federal stimulus package, in which up to $4 billion is allocated for energy storage. But he'll have to wait a bit. "No one knows how that money will be given out," he says.