

INNOVATION ECONOMY

The power to overcome a bad economy?

By Scott Kirsner | November 23, 2008

In a brick building in Watertown where men's suits were once made, Eric Giler is running a company that seems to be defying the gravity of the current economic morass.

Investors call to ask whether they can give him money. Customers request demos and suggest they're ready to commit to partnerships as quickly as possible. At January's Consumer Electronics Show in Las Vegas, Giler plans to rent a hotel suite in the Venetian (not a highly trafficked booth at the convention center) and schedule meetings selectively.

His company, WiTricity Corp., is commercializing a breakthrough unveiled last year by MIT researchers: the ability to safely transmit power through thin air. Imagine electricity beamed around rooms the way Wi-Fi provides an Internet link. WiTricity could provide the power to keep a mobile phone's battery perpetually charged or operate a wall-hung flat-screen TV without cords.

Giler joined the 12-person company in August as chief executive; WiTricity had already raised \$4.5 million in initial funding from Stata Venture Partners and Argonaut Ventures. Marin Soljacic, the professor who led the MIT team, is a board member and founder, and he and two other MIT researchers are helping to get the venture off the ground. (Soljacic was awarded a \$500,000 MacArthur "genius" grant in September.)

The company's current demo is pretty "wow"-inducing. In an otherwise empty room in WiTricity's bare-bones headquarters, there's a flat-screen TV on the sort of simple folding table you'd use for a church bake sale. On the ground, connected to a power source, is what looks like an empty black photo frame, about 16 inches across. On the tabletop is a matching frame, this one connected to the TV.

Giler flips some switches, and suddenly the TV's built-in DVD player fires up and starts playing. Electricity is being beamed up from the frame on the floor to the one on the table-top, and running the TV. Then, Giler plugs his [Toshiba](#) laptop into the tabletop frame, still receiving power from the frame on the floor. Like a magician, he pulls out the laptop's battery and it keeps running. Then, at my request, he waves his hand over the frame to show that it won't melt his flesh.

The coils on the floor create a magnetic field that oscillates at a very specific frequency; the coils in the tabletop frame pick up, or couple with, that magnetic field. The magnetic field is a medium for energy that flows from one coil to the other. Soljacic compares it to an opera singer breaking a glass with her voice: The acoustic energy from that perfect high note is absorbed by the glass and eventually causes it to explode. The same trick is done by the magnetic fields in WiTricity's system. They call it "highly coupled magnetic resonance."

Though the demo is undeniably impressive, the company faces three big challenges.

The first is making the coils small enough to be integrated into small devices like mobile phones and ensuring that the technology won't add too much to the manufacturing cost of phones and other electronics. Giler showed me some phone-size coils in the company's lab and said that they've already been made to work. (They've also been experimenting with using one "transmitting coil" to power several different devices.)

The second challenge is finding the right application for the technology. Companies like WildCharge and eCoupled are already selling (or will soon start selling) pads and other technology that will charge devices resting on them or located a few centimeters distant. Giler is positioning WiTricity as "the long-distance guys," capable of beaming energy 10 or 15 feet, even if there are obstacles like a wall in the way.

Right now, the company is talking to all sorts of prospective users of its technology. Giler talks about keeping medical devices like pacemakers perennially charged or powering military sensors that are dropped into enemy territory. Once consumers start purchasing plug-in hybrid cars, which get great gas mileage because their batteries charge at night from a wall outlet, it's possible that WiTricity might be installed in your garage so you wouldn't have to mess with the plug and the outlet every time you pulled in. The possibilities are just about endless, and future generations might marvel that all our electrical devices once relied on cords plugged into outlets.

"It's about picking the right early opportunities, where a partner has pain and we have medicine," says David Schatz, the company's director of business development. Giler adds, "That's a key determinant of whether you get to profitability quickly or

burn through millions and don't get anywhere."

Giler says they've gotten the most interest so far from makers of laptops and plug-in hybrid vehicles, but he observes that "laptop design cycles are much faster than the design cycle of a new car." He expects products to start showing up in the market within about two years.

Challenge number three is navigating the standards conundrum. Should the company make its intellectual property available for anyone, or become the gatekeeper and demand a licensing fee from anyone who wants to make WiTricity "broadcasters" or incorporate the technology in a new device?

One reason that the Web and Wi-Fi took off so quickly was that they were open standards: Anyone could create software to browse the Web or build websites (without doing a deal with any single company); it's similarly easy to make and sell Wi-Fi-enabled technologies. But in the near term, WiTricity's revenue will come from licensing fees that product makers pay. That could slow its spread or create conflicts (remember last year's Blu-ray versus HD DVD battle?). A company bringing a new laptop or LCD projector to market will have to decide whether to build in incompatible technologies from companies like eCoupled, WildCharge, or WiTricity, any of which might vanish from the market if it doesn't receive enough support.

But Giler acknowledges that WiTricity "may at some point in the future benefit from being an open standard."

He's being cautious building the company. There's no website just yet, and hiring has been slow. "Even before the financing market turned, we've felt that capital efficiency is really important," Giler says.

What's worth noting as a historical parallel is the growth that radio technology (originally known as "wireless") experienced during the Great Depression. In 1925, just 10 percent of American households owned a radio; by 1940, more than 80 percent did. Not to imply that we're entering another depression, but WiTricity just might be a technology that finds a way to grow amid the gloom.

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