Wireless charging system on cusp of commercialization

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Imagine a world where you don't have to plug in your smartphone, tablet or laptop, or even lay it on one of the Duracell charging mats that Starbucks is rolling out nationwide. Instead, your refrigerator sends them power from across the room via a WiFi-like radio signal.

Now, forget that for a while - though it might happen someday.

Energous Corp., a Silicon Valley startup, won awards in Las Vegas at the recent International Consumer Electronics Show for its WattUp system of "wire-free charging of multiple devices at up to 15 feet." At least one other company, Texas' DK Tek Innovations, made similar claims at the show.

Both efforts are still in the development phase, part of a global race for what is expected to be a multibillion-dollar market.

But a different kind of wireless charging at a distance, less likely to stir safety concerns and face regulatory friction, finally seems on the cusp of commercialization.

WiTricity Corp., of Watertown, Mass., hasn't drawn quite as much buzz as Energous, which went public last year. It has, however, been quietly pursuing a wire-free concept described eight years ago by researchers at the Massachusetts Institute of Technology, and has announced partnerships with major manufacturers such as Toyota and Intel.

WiTricity says its technology - which does not rely on radio waves to transmit power - has been shown to transfer electricity with little loss to a device nearly a foot away, even through solid materials such as a garage floor or kitchen countertop. Longer distances are possible, too.

Wireless charging is one of those technologies that always seems to be on the horizon. Nearly three years ago, a former chief executive predicted that WiTricity's system would be in consumer products by the end of 2012. That didn't quite happen, though the company did offer product developers an iPhone 5 charging system last year.

WiTricity and the wireless-energy industry continue to make strides. WiTricity vice president Kaynam Hedayat said he expects Intel products using the company's system "to hit the market by the middle of this year."

Toyota is expected to offer wireless charging by fall 2016 on its plug-in Prius hybrid. And WiTricity is working with Thoratec Corp. to develop a heart pump that will work without wires running into a patient's abdomen.

How does WiTricity's system - called "magnetic resonance wireless power transfer" - work? Hedayat likens it to the curious phenomenon, occasionally seen as a gag in a movie or commercial, where an opera singer breaks a glass by hitting a high-pitched sound.

"She can do that by generating voice at the same frequency the wine glass resonates at," Hedayat says. A similar kind of resonance can be used to transfer power from one magnetic field to another, he says, without generating electromagnetic waves like those sent by radio or Wi-Fi devices.

The "secret sauce," as Hedayat puts it, is that both the source and the

target device are equipped with magnetic resonators - coils with electronics - tuned to resonate at the same frequency.

Hedayat says WiTricity already has 94 patents, with more than 200 others pending. And he touts the technology's advantages over induction charging, which often requires a device to be in the exact right position on a mat, as well as radio-frequency transmission, which he says suffers from inefficiency and "is very limited by human safety factors."

With WiTricity, he says, a user will simply have to park a car over the source, or lay mobile devices on a counter.

"You don't have to think about it," he says.

Is wireless charging finally ready for prime time? If so, this is another kind of cord consumers will happily cut.