Will Bloom box replace power grid? Details on Wednesday (w/ Video)

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K.R. Sridhar holds two Bloom boxes, which together he says could power a US home. Credit: CBS.

(PhysOrg.com) -- The hot energy news for this week comes in the form of a small box called the Bloom box, whose inventor hopes that it will be in almost every US home in the next five to 10 years. K.R. Sridhar, founder of the Silicon Valley start-up called Bloom Energy, unveiled the device on “60 Minutes” to CBS reporter Leslie Stahl on Sunday evening. Although Sridhar made some impressive claims on the show, he left many of the details a secret. This Wednesday, the company will hold a “special event” in eBay’s town hall, with a countdown clock on its website suggesting it will be a momentous occasion - or at least generating hype.

As Sridhar explained to Stahl, the Bloom box is a new kind of fuel cell that produces electricity by combining oxygen in the air with any fuel source, such as natural gas, bio-gas, and solar energy. Sridhar said the chemical reaction is efficient and clean, creating energy without burning or combustion. He said that two Bloom boxes - each the size of a grapefruit - could wirelessly power a US home, fully replacing the power grid; one box could power a European home, and two or three Asian homes could share a single box. Although currently a commercial unit costs $700,000-$800,000 each, Sridhar hopes to manufacture home units that cost less than $3,000 in five to 10 years. He said he got the idea after designing a device for NASA that would generate oxygen on Mars, for a mission that was later canceled. The Bloom box works in the opposite way as the Mars box: instead of generating oxygen, it uses oxygen as one of the inputs.

Video: The Bloom box on "60 Minutes."

Although Sunday was the first time Bloom Energy came public with the Bloom box (there’s not even a sign on the company’s building), several devices are already being used by about 20 well-known companies. Google, FedEx, Walmart, eBay, Staples, and others have taken advantage of tax credits to purchase the Bloom boxes, and they’re seeing cost savings in their energy bills. For example, four refrigerator-sized units have been powering a Google datacenter for the past 18 months, using about half as much natural gas as would be required to generate the same amount of energy at a traditional power plant. And at eBay, five units running on bio-gas made from landfill waste that were installed nine months ago have saved the company more than $100,000 in electricity costs, said eBay CEO John Donahoe on “60 Minutes.” Donahoe added that, on a weekly basis, the Bloom boxes generate five times as much power than the 3,000 solar cells that are installed on the roofs of the company’s buildings.

Sridhar explained that the fuel cells inside the Bloom boxes are made from sand turned into thin ceramic squares, each side coated with a green or black “ink.” A single cell can power about one light bulb, but a stack of 64 of the cells could be “big enough to power a Starbucks,” Sridhar said. In between each disk there's a metal plate, but the Bloom box supposedly uses a cheap metal alloy

instead of expensive platinum.

One of Bloom Energy's early critics, Michael Kanellos of Green Tech Media, noted that researchers have been working with fuel cells since the 1830s. On "60 Minutes," he told Stahl that, if Sridhar succeeds in making the technology affordable and efficient, there will likely be others that can, too.

"The problem is then G.E. and Siemens and other conglomerates probably can do the same thing," he said. "They have fuel cell patents; they have research teams that have looked at this," Kanellos said.

"What do you think the chances are that in ten-plus years you and I will each have a Bloom box in our basements?" Stahl asked Kanellos.

"Twenty percent," he said. "But it's going to say 'G.E.'"

Further details on the Bloom box - its efficiency; the materials it's made of; how much carbon dioxide, water, heat, and other emissions it produces - are still secret. In a blog post Monday afternoon, Kanellos said that he had found a US patent filed by Bloom in 2006 and granted in 2009 that mentions the material "yttria stabilized zirconia" as well as electrodes made of metals in the platinum family - although this doesn't necessarily mean anything. More information may be revealed at Wednesday's event, which will feature John Doerr, partner in the venture capital firm Kleiner Perkins, which has provided financial assistance to the company. (Sridhar told Stahl that an estimate of $400 million raised by Bloom so far is "in the ballpark.") Former Secretary of State Colin Powell, a member of Bloom Energy's board, is also scheduled to be in attendance.

More information: CBS

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