Imergy power systems

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California"s Car Culture Is Crashing Its Carbon-Free Future

The company claims LCOE is less than half the cost of any other battery technology available.

Imergy Power Systems just introduced its third-generation vanadium flow battery, claiming it offers a low-cost, high-performance energy storage solution for large-scale applications, including peak demand management, frequency regulation and the integration of intermittent renewable energy sources.The ESP250 has an output power capability of 250 kilowatts and 1 megawatt of energy storage capacity. It"s suited for both short- and long-duration storage, with available energy ranging from two to 12 hours of output duration. The 40-foot batteries (each about the size of two shipping containers) are designed to be deployed individually or linked together for larger-scale projects.

“Most folks will concentrate on the bigger systems because of the economics,” said Tim Hennessy, Imergy president and CEO, in an interview. “We’ve been able to go to the low-end platform and compete almost on the commodity market with the lead-acid batteries and lithiums. Now on the larger scale, which is our latest release, we’re able to leverage economies of scale.”

Imergy (formerly Deeya Energy) started out in the telecommunications space in India, where its 5-kilowatt modules were used to displace remote diesel generators. After some rebranding, the company made a strong push into the commercial and industrial energy storage market last year with the launch of the ESP30 (30-50 kilowatts).

Imergy announced last week the Chabot-Las Positas Community College District will install several ESP30 batteries for a total capacity of 250 kilowatts/1 megawatt-hour as part of a microgrid project at Las Positas College in Livermore. Imergy and Growing Energy Labs Inc. (Geli), a designer of energy storage and microgrid management solutions, received a $1.5 grant from the California Energy Commission to participate in the project.

The smart microgrid made up of Imergy"s institutional-scale vanadium redox flow batteries, a 2.35 megawatt solar array, ice thermal storage and ten level two electric vehicle charging stations is expected to produce $75,000 in annual energy savings for the District.

Other companies making vanadium flow batteries include China’s Rongke Power, Germany’s Gildemeister and Japan’s Sumitomo. Hennessy claims Imergy’s technology is one-third the cost of its competitors because of its unique electrolyte.

Imergy has benefited from licensing research at the Department of Energy’s Pacific Northwest

National Laboratory (PNNL), which developed a new vanadium electrolyte that could improve energy density by more than 70 percent. Two other American companies, Washington-based UniEnergy Technologies and the Massachusetts-based startup WattJoule have also licensed PNNL technology.

Where Imergy has been able to edge out its competitors is on material cost. Vanadium is abundant but expensive to extract from the ground. Imergy has developed a unique chemistry that allows it to use cheaper, recycled resources of vanadium from mining slag, fly ash and other environmental waste.

With this chemistry, the levelized cost of energy for Imergy’s batteries is less than half of any other battery on the market right now, according to Hennessy. Vanadium flow batteries are orders of magnitude cheaper than lithium-ion batteries on a lifetime basis because they can be 100 percent cycled an unlimited number of times, whereas lithium-ion batteries wear down with use, according to the firm. Despite the compelling cost claims from Imergy, lithium-ion has been the predominant energy storage technology being deployed at this early point of the market. And very few flow batteries are currently providing grid services.

Imergy’s capital costs are lower than every other battery technology except lead-acid, Hennessy added. But he believes the company can hit that mark (roughly $200 per kilowatt-hour) by the end of the year by outsourcing contracts to manufacturing powerhouse Foxconn Technology Group in China. Delivery of the ESP250 is targeted for summer of 2015.