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FASTCAP ANNOUNCES MAJOR BREAKTHROUGH IN HIGH TEMPERATURE ENERGY STORAGE

FastCAP Systems announced today that its newest technology, an ultracapacitor (ultracap) that reliably operates in extreme temperatures (200°C, or roughly 400°F), has successfully completed third party validation testing by Sandia National Laboratory. The newly validated ultracaps, celebrated as the highest temperature rechargeable energy storage devices in the world, mark a new frontier in ultracap development with major implications in a variety of industries, from energy exploration to defense, and vehicles to consumer electronics. The devices, which are expected to be released commercially later this year for use in the oil, gas and geothermal industries, were developed under a grant that FastCAP received from the Department of Energy Geothermal Technologies Office (GTO) in 2012. By the end of the program in 2015, FastCAP expects to have devices validated for performance at 250°C.

The absence of safe, reliable energy storage is a pain point in many industries, from vehicles to aeronautics to traditional energy exploration. FastCAP has found a niche for its high temperature ultracaps in the oil and gas industry, utilizing its technology in systems deployed while drilling, making the drilling process safer, data driven and more efficient. FastCAP's existing commercial ultracaps, the first in the world to operate at 150°C, served as a starting point for the GTO research and development. "We are making a big impact in oil and gas, addressing a long existing need of oil service companies, so this is an exciting beach head market for us" stated Riccardo Signorelli, CEO of FastCAP. "But FastCAP is a clean technology company at heart, and the long term mission with our drilling technology product line is to enable a new era of geothermal energy exploration and development," he noted. Geothermal energy is a virtually unlimited, carbonless energy source that is available 24/7, anywhere in the world. It does not present problems typically associated with other energy sources, such as intermittency with renewables, toxic wastes with nuclear, and CO2 emissions with fossil fuels. Signorelli considers the most significant obstacle to widespread deployment of geothermal energy production an engineering problem that FastCAP can solve with its technology: "Being able to drill for geothermal energy more efficiently and intelligently is the key to enabling widespread geothermal energy development, and this is something that we enable with our high temperature downhole power sources."

It is widely understood that if the intelligent drilling and smart well techniques that are currently ubiquitous in the oil and gas industry were deployed in the geothermal context, geothermal energy would quickly become a major contender to meet global energy demand. One of the most significant obstacles that stands in the way of such deployment are limitations related to the maximum operating temperatures of downhole batteries used in the oil and gas industry, which currently provide power for downhole sensors, steering tools, telemetry equipment and other technologies. The lack of energy storage devices that can operate reliably and safely at temperatures encountered in geothermal wells is perhaps the most significant obstacle standing in the way of deployment of MWD/LWD techniques and smart well technologies in geothermal applications.

During the validation testing of FastCAP's cells, which was performed at Sandia National Laboratory in May, two prototypes were held at constant max voltage at 200°C+ for more than 500 hours. The cells showed little performance degradation over this timeframe. Similar tests performed in parallel with the Sandia tests in the FastCAP laboratory over longer timeframes have shown the cells to perform failure free for more than 2,500 hours. The stable performance and extreme long life of these cells position the technology for commercial deployment without further development. "It was important to us to showcase a hermetically sealed and commercial ready technology, as opposed to a small piece of a cell tested in a controlled laboratory experiment," noted Nicolò Brambilla, a Senior Engineer and Team Lead for FastCAP's GTO program. "These cells are ready to enter the market and will start making an impact in the short term."

FastCAP is engaged with multiple partners in the geothermal and oil and gas industries, both in the U.S. and abroad, who are eager to integrate the technology into their drilling operations. The company expects the new technology to be demonstrated in a well by early 2015. "Once you enable the advanced drilling techniques that are already standard practice in the oil and gas industry in the geothermal context, widespread deployment of this vast energy source quickly becomes a sound economical prospect," Signorelli noted. "It's the enormous promise of geothermal energy that keeps the FastCAP team up at night - the potential for positive change in our energy future is truly huge."

To view the Sandia National Laboratory report, please click here:

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