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First Step to Kilowatt Solid Acid Fuel Cell Diesel APU Taken by Norwegian-Californian Partnership

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SAFCCell, Inc. (Pasadena, CA) has successfully achieved the second technical milestone on its 18 month development contract with Nordic Power Systems (NPS, Norway) to deliver solid acid fuel cell (SAFC) stacks for incorporation into NPS' diesel auxiliary power units (APUs). In the first week of August, 2010, SAFCell delivered a 250 W stack to NPS' testing facility in Porsgrunn, Norway. The SAFC stack was integrated and tested with NPS' proprietary cool flame diesel reformer system, converting the chemical energy of the diesel fuel directly into electrical power. Combining these two advanced technologies will result in lighter, and less costly, diesel fuel cell systems that NPS plans to market for both mobile and stationary auxiliary power applications.

The SAFC stack was operated on both dilute hydrogen and NPS' diesel reformat with insignificant difference in performance between the two fuel streams. This result was particularly impressive as it showed that the fuel cell could operate with up to 10% CO without any effect on the performance. The performance confirmed previously demonstrated SAFC tolerances to high levels of impurities that "poison" other lower temperature fuel cell technologies and dramatically decrease their performance. "This confirms that SAFCell's stacks are scalable to the sub-kilowatt level and very robust for use with conventional fuels," stated SAFCell's founder and CEO, Dr. Calum Chisholm.

"We are very excited by the results demonstrated so far by using this new innovative fuel cell technology in combination with our reformat gas from conventional fuels," said Dr. Dag Overbo, the Technology Director for Nordic Power Systems. He also stated that "incorporating SAFCell's stacks may simplify our overall system and lead to both weight and efficiency gains."

The technology has been developed at California Institute of Technology (Caltech) and the project is run with support from the Norwegian Research Council. NPS has signed an exclusive license agreement with Caltech for future commercialization of SAFC stacks for use with diesel and bio diesel fuels, while SAFCCell has a similar agreement for the use of all other “lighter” fuels including gaseous fuels such as propane and methane and liquid fuels such as gasoline and methanol.

NPS develops efficient, environmentally friendly fuel cell power packs that enable nearly silent and emission-free power generation from commercially available fuels. NPS’ cool flame reformer innovation allows for onboard, on-demand diesel or biodiesel reforming in fuel cell systems, thus opening a variety of markets for fuel cell applications. As a preparation for commercial introduction of the power packs, NPS is currently delivering its first demonstrators to selected partners.

SAFCCell, Inc. develops scalable solid acid fuel cell stacks for applications requiring tens of watts to tens of kilowatts. Based on technology developed at the California Institute of Technology (Caltech), and operating at mid-range temperatures around 250°C, SAFCCell’s stacks tolerate fuel impurities that pose obstacles to other fuel cell technologies. This allows SAFCCell stacks to run more easily on commercially available gas fuels (e.g., propane and butane) or liquid fuels (e.g., methanol, diesel and bio-oils), greatly reducing the overall fuel cell system complexity and cost. SAFCCell is partnering with targeted systems integrators to enter first portable, and then stationary power markets.

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About SAFCCell Inc.

SAFCCell is developing rugged, portable power systems for military and commercial markets. SAFCCell’s stacks are built using an innovative solid acid fuel cell design which allows fuel flexibility and reduced costs. SAFCCell was formed in 2009 using technology developed and patented at the California Institute of Technology.

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