CAP-XX Stop-Start Supercapacitor Module Enables Longer Battery Life, Smaller Batteries

Extended testing shows module reduces wear on a conventional lead-acid battery

Sydney, Australia – March 13, 2012 – CAP-XX Limited (LSE:CPX), a leading developer of thin, prismatic supercapacitors (also known as ultracapacitors or EDLC), announced that it has developed a supercapacitor module which supplies the cranking current to start the engine in Stop-Start vehicles (also known as start-stop, idle-stop, or micro-hybrid vehicles), reducing wear on the battery and eliminating the need for larger, more expensive ones.

Stop-Start technology, which turns the engine off when stopped in traffic and restarts it when the driver releases the brake or engages the gears, is gaining momentum worldwide as a means to save fuel and reduce emissions. The downside is the increased number of starts over a Stop-Start vehicle's life - potentially more than 100 per day - which means a standard car battery may last less than 18 months.

CAP-XX's prototype Stop-Start supercapacitor module supports the battery by supplying the peak current (up to 300A) needed for each engine start. Containing six of the company's thin supercapacitors, the module is about the size of 6 DVD cases so it integrates easily into a vehicle's floorpan, engine bay, or other tight spots. With 150F at 14V, and an ESR of just 4.5 milliohms, the CAP-XX module offers the best power density available today, and the energy necessary to support frequent start cycles in all weather and traffic conditions. It includes the control electronics to manage Stop-Start functions, balance the voltage across each supercapacitor cell, and limit the battery current during each restart.

With the supercapacitor module installed, the vehicle battery only needs to support continuous power functions such as air conditioning, navigation and lights, enabling longer battery life or smaller batteries. The battery also charges the supercapacitors for their first start, but once driving, the alternator keeps them charged. Additionally, the supercapacitor module will start the engine in low temperatures (cold cranking) where a battery would falter, and can store energy in vehicles with regenerative braking systems (also known as Kinetic Energy Recovery Systems or KERS).

In extensive testing under the New European Drive Cycle (NEDC) standard, the CAP-XX supercapacitor module completed more than 110,000 Stop-Start cycles at room temperature, successfully maintaining the battery voltage above 11.8 volts. CAP-XX identifies the battery as having failed when voltage falls below 10 volts because, based on input from a leading European automaker, batteries at this state of charge can no longer operate vehicle electrical systems reliably. Comparative tests of a battery-only system, also at room temperature, saw the battery fail after only 44,000 cycles. NEDC and Mazda Stop-Start test results are available at: CAP-XX Presentations (slides 3 - 9), while a video showing a similar module starting a car (cold cranking) can be found at: Subaru Video.

CAP-XX aims to partner with Tier 1 automobile parts suppliers to manufacture the modules, and will design and prototype the control electronics and modules to suit their requirements. CAP-XX estimates its module would cost approximately US$60 in mass production, and is already in negotiations with a leading Chinese automotive component company to commercialize the technology in China.

"Conventional lead-acid batteries alone cannot satisfy the requirements of Stop-Start systems," said Anthony Kongats, CEO of CAP-XX. "Our automotive supercapacitors' power density is 10 to 100 times greater than that of a lead-acid battery, so they can absorb and discharge large amounts of energy quickly. With a charge/discharge cycle life in the millions, CAP-XX supercapacitors provide the energy and power necessary for an efficient and effective Stop-Start system."

Mr Kongats is scheduled to speak on the use of supercapacitors in Stop-Start systems at the EV Battery Forum in Barcelona, Spain, March 21 - 22, 2012.

About CAP-XX:

CAP-XX is the only supercapacitor member of the Cooperative Research Centre for Advanced Automotive Technology in Australia (AutoCRC), a government-sponsored group formed to develop and commercialize smarter, safer, cleaner vehicle technology.

For more information on CAP-XX, visit www.cap-xx.com or email sales@cap-xx.com.

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Editorial Note: Photographs and a block diagram are available: CAP-XX Photo Gallery

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