

2000 km on a Single Charge: Brighsun's Li-S Batteries to Enter Industrial Trials

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FRANKSTON, AUS, Apr 22, 2020 - (ACN Newswire) - Lithium batteries will soon power Electric Vehicles (EVs) traveling 2,000 km on a single charge, say the team at Brighsun New Energy. The company is preparing for industrial trials later in the year for a range of lithium-sulfur (Li-S) batteries that can power a cell phone for over a week and can theoretically travel close to 2,000 km on a single charge. The revolution is underway.

Lithium Sulfur (Li-S) Battery Technology Breakthrough Through nearly 8 years of research, the Brighsun team developed lithium-sulfur (Li-S) batteries with an energy density 5-8 times higher than conventional secondary batteries. According to results from an internationally accredited testing agency (SGS), Brighsun's new technology allows an Li-S battery to keep 91% of its initial capacity after 1,700 cycles at a rate of 2C (being fully charged/discharged in 30 mins). That means the capacity decay per cycle is as low as 0.01%. Even at a more aggressive rate of 5C (being fully charged/discharged in 12.5 mins), Brighsun's Li-S battery retains 74% of its initial capacity after 1,000 cycles (capacity decay per cycle of 0.026%). The cathode energy density for the 1th cycle after activation at charge rate of 1C is 2103.8Wh/kg. Driven by the growing markets world-wide for EVs, the battery industry has explored a range of chemical combinations: lithium iron phosphate, lithium cobalt oxide and, currently, nickel manganese cobalt. However, current battery systems still suffer from the major disadvantages of relatively low energy density, high raw material costs and secondary pollution during recycling. A Game Changer Brighsun's advanced Li-S chemistry, offering high energy density and resultant low raw material costs, will be a game changer in the EV industry. Li-S batteries also have the potential to become the most promising energy storage systems for future railways, ships and airlines. Industries such as electric supply grid storage, mobile phones, drones and AI will also benefit from dramatically higher energy density storage provided by Brighsun's new battery system. Companies in the US, Germany, Korea and China have been developing Li-S batteries and have achieved promising breakthroughs. However, these systems still face a number of challenges, including volume expansion of cathode materials during cycling, the shuttling effect of polysulfides, and the dendritic growth of lithium on the anode. This results in shorter cycling life and poor fast-charging capability, both major obstacles to their application in the world automotive industry. Brighsun's Revolutionary Approach Brighsun has patented Li-S battery technology that prevents the generation of polysulfide on the sulfur cathode and effectively suppresses dendritic growth of Li on the anode Li-S, paving the way for Li-S battery use in EVs. The company has already developed processes for the production of cathode materials (electrolytes, separators and lithium sheet anodes), of which the core materials (anodes, electrolytes, and separators) can be produced in batches. Trial production of high-power cells with an expected energy density in excess of 1,000 Wh/kg is about to begin. Brighsun is also developing a solid-state electrolyte compatible with its Li-S system, aiming at further improvements in the cycling life, energy density and safety of its Li-S batteries. Plentiful and Low Cost Battery Materials The main raw materials for Brighsun's Li-S batteries are widely available in Australia, with a supply sufficient for hundreds of years. Indeed, at under AUD100 for 1kWh, the expected production cost of Brighsun-branded 2U Li-S batteries is lower than conventional lithium ion batteries - providing a major boost to the development of electric vehicle and related industries in Australia and around the world. Going Forward Brighsun is currently in discussion with potential investors in the large-scale trial production of Li-S batteries. The development process for large-scale production is expected to be finished by end-2020, followed by the mass production of Li-S batteries. Brighsun's new energy-dense Li-S battery is expected to accelerate EV take-up around the world, spurred by dramatically improved single-charge travel performance, low cost and long life. Combined with the relative simplicity of EV design compared to internal combustion engine/hybrid vehicles, consumers and the industry alike are set to benefit from lower cost, emission-free transport. At the same time, Brighsun's 2U Li-S batteries offer huge benefits to the mobile phone and solar-electric storage industries, generating dramatic performance improvements in both. About Brighsun EV Group Brighsun sees its EV technology as a contribution to society's need for more cost effective and less polluting transport. Our Head Office is in Australia and focuses on using new energy technology to produce market ready solutions. Our intellectual property is fully owned by Brighsun and patented in Australia. Our technology comes from our research & development, critical to maintaining our competitive edge. We are building a production base built on our world leading technologies in lithium batteries, and expanding our Zhejiang battery production. For information, please visit http://www.brighsun.com/Index_En.asp. Brighsun Sherry Xiao Frankston, Australia kevinhuang@brighsun.com <http://www.brighsun.com>

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