

Developing a high energy and safe lithium-sulphur battery for automotive integration

LISA, standing for Lithium sulphur for SAfe road electrification, is a Research & Development project, granted 7.9M€ by the European Union's Horizon 2020 program to develop a high energy and safe lithium-sulphur battery (Li-S) for Electrified vehicles (EVs). The consortium led by Leitac and gathering 12 partners aims during the next 43 months to improve this technology and bring it closer to the market.

Tampere, December 18th – On January 1st, 2019, LISA project will officially start and will run for 43 months. It is financed by the European Union's Horizon 2020 research and innovation program by an amount of 7.9M€ and involves a total of 13 organizations. The consortium is coordinated by Leitac (Es) and involves OXIS Energy Ltd. (UK), Cranfield University (UK), Varta MicroBattery GMBH (DE), CENTRO DE INVESTIGACION COOPERATIVA DE ENERGIAS ALTERNATIVAS FUNDACION CIC Energigune Fundazioa (ES), Arkema (FR), Fraunhofer-Gesellschaft IWS (DE), Pulsedion Oy (FI), ACCUREC Recycling GMBH (DE), Optimat Ltd. (UK), Technische Universität Dresden (DE), VDL Enabling Transport Solutions BV (NL) and Renault SAS (FR).

The goal of LISA is to develop a high energy and safe lithium-sulphur (Li-S) battery cells with hybrid solid state non-flammable electrolytes for automotive integration. The cell aims to be validated at 20 Ah according to EUCAR industrial standards. In addition, LISA will solve specific lithium sulphur batteries bottlenecks such as metallic lithium protection, power rate, and volumetric energy density. A target has also been set for production cost, as it is the main selection criteria for EVs batteries.

Li-S technology have three main advantages over the Li-ion one: A Li-S battery can be twice lighter having a strong impact on vehicle weight, higher theoretical energy density: 2,600 Wh/kg which is much higher than for Li-ion batteries, currently 150-180 Wh/kg, and it is a low environmental impact technology, fully compatible with mass production by green and low-energy processes (the use of natural graphite, cobalt and nickel is discarded) delivering a technology free of critical raw materials and toxic components. Thus, improving lithium-sulphur technology could be a key factor to stimulate the adoption at mass scale of electrified vehicles.

“LISA project is continuation of development of Pulsedion's pulsed laser deposition technology towards advanced high energy density Li battery solutions. Being part of European team in the development of this breakthrough technology is an excellent opportunity to promote our technology for new applications in the next generation battery technology by offering processing solutions for solid state electrolytes, barrier films, and Li metal”, says Jari Liimatainen CEO of Pulsedion.

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