

Electro-mobility : 1000 km Range - Thanks to a New Battery Concept



Photo: EV Charging

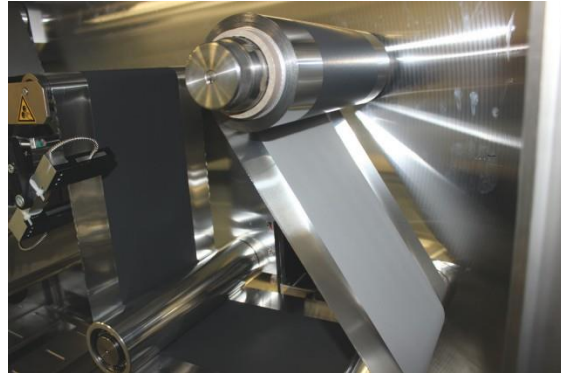


Photo: Production of the bipolar electrode on a pilot scale (Fraunhofer IKTS)

Fraunhofer is one of the world's largest applied R&D organization, with nearly 80 research units in all sectors of industry, 24500 employees and an annual outlay of Euros 2.1 Billion. Our global footprint is very strong, with offices and research centres in the Europe, USA and Asia. Some of our renowned innovations are the MP3 format, the white LED, the smallest of cameras. In the field of renewable, Fraunhofer hold the world record in solar cell efficiency, battery storage, and cover the entire spectrum of energy (Grid, Renewables, Storage, etc) across the value chain from materials to testing and certification. Fraunhofer has been active in India since the past several years, bringing innovative technologies and research competence to India. Fraunhofer in India is the chosen R&D and innovation technology partner of some of the major players in the field of Energy, Environment, Automotive, Electro-mobility, Materials, Production Technology of Government and Private Organizations.

In today's world you cannot get far today with electric cars. One reason is that the batteries require a lot of space. Fraunhofer scientists are stacking large cells on top of one another. This provides vehicles with more power. Initial tests in the laboratory have been positive. In the medium term, the project partners are striving to achieve a range of 1000 kilometers for electric vehicles. Depending on the model, electric cars are equipped with hundreds to thousands of separate battery cells. Each one is surrounded by a housing, connected to the car via terminals and cables, and monitored by sensors. The housing and contacting take up more than 50 percent of the space. Therefore, the cells cannot be densely packed together as preferred. The complex design steals space. A further problem: Electrical resistances, which reduce the power, are generated at the connections of the small-scale cells.

Fraunhofer IKTS, Dresden and its partners have transferred the bipolar principle known from fuel cells to the lithium battery. In this approach, individual battery cells are not strung separately side-by-side in small sections; instead, they are stacked directly one above the other across a large area. The entire structure for the housing and the contacting is therefore eliminated. As a result, more batteries fit into the car. Through the direct connection of the cells in the stack, the current flows over the entire surface of the battery. The electrical resistance is thereby considerably reduced. The electrodes of the battery are designed to release and absorb energy very quickly. With this new packaging concept, Fraunhofer hopes to increase the range of electric cars in the medium term up to 1000 kilometers. Fraunhofer IKTS uses its expertise in ceramic technologies to design the electrodes in such a way that they need as little space as possible, save a lot of energy, are easy to manufacture and have a long life.

Kindly in touch with us if you need any additional info on the subject.
Thanks and Regards,

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