

# Developing a New Battery to Boost Europe's Electric Mobility

A new European project, Astrabat, has been launched to design an innovative high-energy and safe, solid-state lithium-ion battery cell for the electric vehicle market and beyond. The goal is to fulfil Europe's need for a safe, high-energy, sustainable and marketable battery for green mobility.

As society turns to electric vehicles, the challenge to produce batteries in Europe on a massive scale has now become acute, with Asian competitors well ahead in the game. The project Astrabat is funded by the European Union with a total budget of 7.8 million Euros and is scheduled to run for four years.

Led by France's CEA (Commissariat à l'énergie atomique et aux énergies alternative), the project will focus on developing a better, safe and environmental-friendly cell architecture. This will come with an all solid-state electrolyte design suited to the new high-energy electrode materials and compatible with current mass-production processes.

Main objectives of the project are:

- ▶ To develop materials for a solid hybrid electrolyte and electrodes enabling high energy, high voltage and reliable all-solid-state Li-ion cells;
- ▶ To adapt the development of new all-solid-state batteries to a conventional process adopted for manufacturing electrodes in Li-ion cells;
- ▶ To design an all-solid-state-battery architecture for the next generation of 2030 Li-ion batteries;
- ▶ To define an efficient cell architecture to comply with improved safety demands;
- ▶ To generate a new value chain of all-solid-state batteries, including eco design, end of life and recycling.

## More Information

For further information, visit the new project website: [www.astrabat.eu](http://www.astrabat.eu).



Figure 1 Production of test cells with new battery materials (© K. Dobberke, Fraunhofer ISC)

The project is run by a consortium of 14 partners from eight European countries, including leading research centers and universities, as well as companies in the area of battery and energy. These parties have extensive track records in the field of battery and associated technologies. This includes state-of-the-art simulation and analytical methods, extensive synthesis know-how and the use of future-oriented production technologies.

The Fraunhofer Institute for Silicate Research ISC in Würzburg, Germany, with its Research and Development Center for Electromobility FZEB is partner in Astrabat. Fraunhofer FZEB is involved in more than a dozen projects in the field of battery research and development.

The core component of the Astrabat project is the development of a solid state electrolyte with organic and inorganic components (Figure 1). The hybrid electrolyte will be based on polymers and an inorganic filler and membrane (a ceramic LLZO material). The hybrid approach allows the electrolyte to be optimized for application at the anode/

cathode interface. At the same time, the material properties play an essential role in the processability of the components produced from it. The Fraunhofer ISC has taken on the task of developing materials that meet these requirements, thus making an essential contribution to the success of the project and to the development of a European solid state battery.

Astrabat is funded by the Innovation and Networks Executive Agency (INEA) of the European Commission, for a total budget of approximately 8 million Euros. The project is part of a broader drive by the European Union to boost electric mobility in order to help achieve its goal to slash green-house gas emissions by 80–95 % by 2050. It is of strategic importance for Europe to come up with a competitive Li-ion battery and become self-sufficient in its energy transition models. ◀

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