Press Release

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CLIMATE-FRIENDLY BATTERIES FOR THE MOBILITY OF TOMORROW

AIT is leading the European research project "BatWoMan" for sustainable and emission-free battery production.

Vienna (AIT): With a share of 30 percent, the transport sector is one of the largest emitters of CO_2 , and there is a great need for action in this area in order to achieve the climate targets. Electric vehicles use energy much more efficiently than conventional vehicles with internal combustion engines and therefore play a crucial role in achieving the climate targets. Nevertheless, the resource-conserving, sustainable and climate-compatible production of battery cells still represents a major challenge.

This is where the European research project "BatWoMan" (long title: "Carbon Neutral European Battery Cell Production with Sustainable, Innovative Processes and 3D Electrode Design to Manufacture") led by the AIT Austrian Institute of Technology comes in: Together with six partners from research and industry, new, innovative and above all sustainable processes for battery cell production are being developed to support the European Union on its way to CO_2 neutrality in the production of rechargeable batteries.

Bundled AIT competence in a broad-based consortium

Recently, the AIT invited to the kick-off event at the AIT location Vienna-Giefingasse. Together with representatives of the project partners CIDETEC (Spain), Karlsruhe Institute of Technology (Germany), University of Duisburg-Essen (Germany), Sovema (Italy), Matthews International GmbH (Germany) and RISE Research Institutes of Sweden (Sweden) , AIT experts from the Center for Low-Emission Transport (Battery Technologies Competence Unit) and the Center for Digital Safety & Security (Cooperative Digital Technologies Competence Unit) will be researching climate-friendly battery cell production technologies over the next three years.

Ambitious targets for more sustainability in battery production

The research work in the "BatWoMan" project focuses in particular on the following three areas:

- energy-efficient processing of 3D-structured electrodes based on high-viscosity water-based slurries,
- innovative electrolyte filling processes and greatly reduced drying room requirements,
- Cost and energy efficient cell conditioning (wetting, forming and aging).

A platform based on artificial intelligence will digitally support these manufacturing strategies. In order to map the sustainability of the newly developed processes, AIT is creating a Battery Data

Space on which all relevant cell construction processes can be displayed, parameters such as raw material and energy consumption can be stored and read out after use of the manufactured battery cell, for example by recycling companies.

One particularly important topic that the AIT experts around Katja Fröhlich are addressing as part of "BatWoMan" concerns cell assembly. Here, the focus is on optimizing the electrolyte filling process using three-dimensional electrodes and drastically reducing the amount of dry space required. Currently, many process steps in cell production take place under defined conditions, which leads to high energy requirements and thus, depending on the electricity mix and external influences such as ambient temperature and humidity, to an increased carbon footprint. However, since in "BatWoMan" the electrodes are water-based with a high dry content, a considerable amount of energy can be saved. The energy-intensive drying process is also significantly shortened as the residual moisture content decreases.

Development of a sustainable cell production process chain

Katja Fröhllich, head of the research field "Sustainable and Smart Battery Manufacturing" in the "Battery Technologies" unit and "BatWoMan" project coordinator, explains: "Together, we would like to support European battery producers in the sense of the Green Deal in realizing a resource-saving, sustainable and climate-friendly production of battery cells. Under the leadership of the AIT, a sustainable cell production process chain is being developed as part of the European research project 'BatWoMan', which we also want to bring to market maturity with renowned industrial partners."

Presentation of the research project at the "Batteries Event 2022

The research group "Sustainable and Smart Battery Manufacturing" at AIT is particularly concerned with manufacturing methods for modern batteries - i.e. with the step from the laboratory to industrial production. In recent years, a high-quality research infrastructure has been established for this purpose, including prototype production close to industry, in which all processes can be intensively investigated and further developed. A central focus here is sustainable production and sensor technology. The AIT experts will be present at the "Batteries Event 2022" in Lyon from October 18 to 21 to present current research topics and projects (including the recently launched project "BatWoMan") at an exhibition booth.
All info: https://batteriesevent.com/

Project consortium

AIT Austrian Institute of Technology (Austria; project coordination)
CIDETEC (Spain)
Karlsruhe Institute of Technology (Germany)
University of Duisburg-Essen (Germany)
Sovema (Italy)
Matthews International GmbH (Germany)
RISE Research Institutes of Sweden (Sweden)

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Further information
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