# To the Media

Ulm, Germany, November 21, 2022

Zentrum für Sonnenenergie- und Wasserstoff-Forschung Baden-Württemberg (ZSW)

Location: Lise-Meitner-Straße 24, 89081 Ulm, Germany

## New Pilot Plant for Battery Materials Takes Shape at ZSW

## Government and industry representatives attend groundbreaking ceremony in Ulm

**The Centre for Solar Energy and Hydrogen Research Baden-Württemberg (ZSW) is building a new pilot plant called Powder-Up! to manufacture cathode materials for lithium-ion batteries. Now underway in the Ulm Science Park, this large-scale project will take twelve months to complete. The new plant will have the capacity to produce material batches up to 100 kilograms. These quantities are necessary to manufacture large-format battery cells for electric cars or stationary storage units. The facility will be the first of its kind in Europe to enable researchers to develop and refine the individual production steps for these materials under factory-like conditions. The groundbreaking ceremony for the new building took place on November 18, 2022. The state of Baden-Württemberg is providing around ten million euros in funding for the construction work.**

Lithium-ion batteries' performance depends almost entirely on their materials used. Small quantities of new-and-improved materials suffice for early prototypes, but advanced stages of development require as much as 100 kilograms. Industrial manufacturers are reluctant to share such large quantities of state-of-the-art, high-performance materials with universities and research institutes. And when they share, they do so only under the proviso of strict confidentiality. The research community lacks an independent, non-industrial manufacturing facility that can produce quantities beyond research institutes' typical capacity.

### Cathode material in 100-kilogram batches

This is where Powder-Up! enters the picture. ZSW's new pilot plant will be equipped to produce battery materials in quantities ranging from ten to 100 kilograms. It is the first non-industrial facility in Europe with this capacity. This factory will cover the entire process chain, and also enable researchers to investigate individual stages of production. Institutes and battery manufacturers will be able to use materials produced in the pilot plant – particularly the cathode materials – for their research. The shop floor is also to serve as a proving ground for newly developed manufacturing equipment, which goes to benefit Germany's machine engineering sector.

"The new-four story building will be equipped exclusively with machines that have proven their merits in industrial applications to ensure

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production under factory-like conditions," says Prof. Markus Hölzle, a member of the ZSW's Board of Directors and head of the Electrochemical Energy Technologies Division in Ulm. "The new facilities will enable us to quickly synthesize different product samples, thereby saving a lot of development time. With digitalized process steps and product analytics, we are providing the means to continuously improve resource utilization, product yield and battery performance."

The pilot plant is to be up and running by December 2023.

**Government-endorsed**

The Ministry of Economic Affairs, Labor and Housing is funding the PowderUp! cathode technology center with ten million euros. The state's grant will be used to meet structural and infrastructural requirements. A new four-story building with around 2,500 square meters of floor space is to be constructed to house the project.

The German Federal Ministry of Education and Research (BMBF) will fund the pilot plant's machinery and equipment. The commitment to provide around 20 million euros for this purpose was already made to ZSW in November 2021.

**A national battery research lighthouse**

Powder-Up! provides the underpinning for Germany to hold its own in battery research and development for years to come – especially against Asian competitors. The large lab going up at the Ulm Science Park will be a unique asset to battery research in Germany.

Having investigated functional materials for batteries and supercapacitors for more than 30 years, ZSW researchers know how to develop and process custom powders and pastes, including everything up to the battery cell. They focus on translating scientific findings into products that are then developed to market maturity with industry partners. ZSW already has Europe's largest research platform for manufacturing large lithium-ion cells on an industrial scale as well as a battery safety and test center.

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**About the ZSW**

The Centre for Solar Energy and Hydrogen Research Baden-Württemberg (ZSW) is one of the leading institutes for applied research in the areas of hydrogen, photovoltaics, renewable fuels, battery technology, fuel cells and energy system analysis. There are currently around 330 scientists, engineers and technicians employed at the three ZSW sites in Stuttgart, Ulm and Widderstall. In addition, there are 100 research and student assistants. The ZSW is a member of the Innovationsallianz Baden-Württemberg (innBW), a group of 12 non-university, applied research institutes.

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A computer rendering of the Powder-Up! cathode materials pilot plant at the ZSW in Ulm. Image: ZG Architects

Pictures from the groundbreaking ceremony will be posted at 5 pm on November 18, 2022, for downloading: https://www.zsw-bw.de/nc/presse/presseinformationen.html

Images can be obtained from ZSW or Solar Consulting https://energie.themendesk.net/zsw/.

See the construction site webcam at www.zsw-bw.de/ueber-uns/standorte.html#c583 (in the Ulm / eLaB tab at the bottom of the pag