



To the media

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Batteries from Germany to Enable Electric Mobility

ZSW extends lithium-ion cell research fab

As a key technology for the growing number of electric vehicles, batteries are also instrumental in creating value in automotive manufacturing. Today most batteries are made in Asia and North America. The ZellkoBatt project in Germany was initiated in March of 2020 to change that. Researchers from the Centre for Solar Energy and Hydrogen Research Baden-Württemberg (ZSW) are seeking to optimize large-format lithium-ion cells for automotive applications, while cutting the costs of components as well as manufacturing processes. The scientists will apply the results of their efforts to ZSW's pilot production line, a research fab that has been up and running since 2014 under factory-like conditions. The resultant machines and processes will then be ramped up for mass manufacturing. This initiative builds a bridge between working prototypes in the lab and industrial mass manufacturing in domestic factories. The German Ministry of Education and Research is funding the project with €12.7 million euros over two years.

“Electric mobility is going to significantly change the automotive supplier industry,” says Dr. Margret Wohlfahrt-Mehrens, who heads up Accumulators Research at ZSW. “We have to do everything in our power to fast-track the development and production of battery systems to future-proof Germany as an auto-making nation. With the ZellkoBatt project, we are extending our technological infrastructure to accelerate the transfer of innovative battery cells to industrial mass manufacturing.”

Production – quality – performance – costs optimization

ZellkoBatt is an acronym made up of the German words for the development, construction and validation of advanced material, cell and production systems for cost-efficient, sustainable and large-scale battery cell production. Pursuing high aims with this project, ZSW researchers are determined to advance the state of the art in lithium-ion cells. “To this end, we want to extend the process and production engineering know-how acquired over the years with ability to manufacture large-format pouch- and PHEV-2 cells up to 80 ampere hours and in type-21700 round cells,” says Dr. Wolfgang Braunwarth, head of Production Research at ZSW, explaining the project's mission.

ZSW is also looking to amplify the possibilities of digital cell production. A cloud-based interface will serve to access and share data with outside partners to engage in further research, for example, to model and simulate production lines and smart process controllers that benefit

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from machine learning. This will boost response to both industry needs and new research findings.

Gearing up for mass manufacturing

Tomorrow's transportation is to be climate-neutral, with the lowest possible emissions. With more and more electricity being sourced from renewables, electric vehicles look to be an excellent prospect for reducing CO₂. This is why the German government hopes to increase the electric vehicle count in Germany to up to ten million by 2030.

The battery is the heart of these electric vehicles. As it stands, Asian competitors dominate the market. They have been investing heavily in the mass production of battery cells for years now. By contrast, Germany has yet to move beyond pilot manufacturing lines and small production runs. One problem is that it takes such huge investments to set up factories on an industrial scale – especially when the products' suitability for series production has yet to be proven. ZellkoBatt is created to solve this problem and impel efforts to establish manufacturing capacity in Germany to meet the growing demand for batteries.

About ZellkoBatt

The ZSW researchers engaged in the ZellkoBatt project aim to extend their industrial infrastructure with machines and systems engineered to mass-manufacture lithium-ion cells in the most efficient ways. Engineers are developing and optimizing production processes along the entire value chain. ZellkoBatt is a building block of a larger initiative called *Forschungsfabrik Batterie [battery research fab]* championed by the German Ministry of Education and Research (BMBF). It is also part of the federal government's high-tech strategy, which calls for competitive battery cell manufacturing plants to be up and running in Germany by 2025.

About ZSW

The Zentrum für Sonnenenergie- und Wasserstoff-Forschung Baden-Württemberg (Centre for Solar Energy and Hydrogen Research Baden-Württemberg, ZSW) is one of the leading institutes for applied research in the areas of photovoltaics, renewable fuels, battery technology, fuel cells and energy system analysis. There are currently around 280 scientists, engineers and technicians employed at ZSW's three locations in Stuttgart, Ulm and Widderstall. In addition, there are 100 research and student assistants.

Media contacts

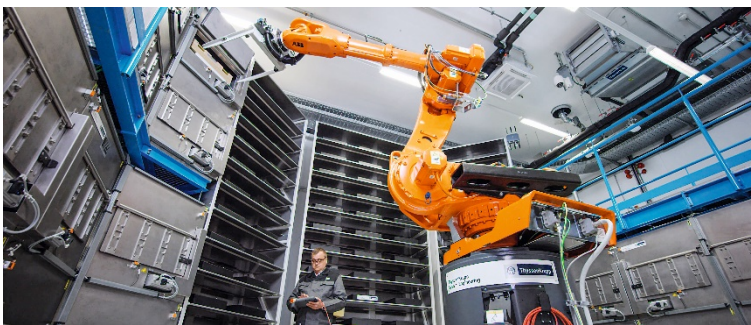
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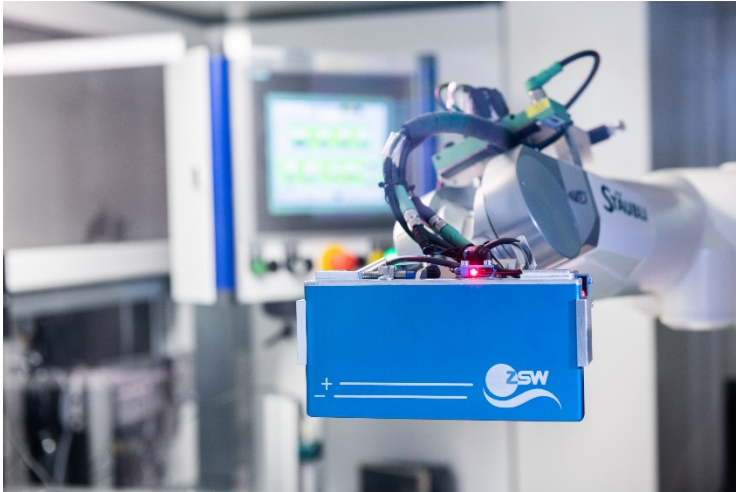
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ZSW has been operating a research platform for the industrial production of large lithium-ion cells in PHEV-1 format since 2014. The only plant of its kind in Europe, it is to be extended as part of the ZellkoBatt project.

Photos: ZSW



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The ZellkoBatt initiative goes to expand the production lines for PHEV-1 cells (30 Ah) to make large-format PHEV-2 and pouch cells up to 80 Ah.

Photo: ZSW/Elvira Eberhardt

Images are available from Solar Consulting or at <https://energie.themendesk.net/zsw/>.