Electrochemical storage systems and AI

A fast, automated way of evaluating battery data and making it available to AI processes

Electrochemical energy storage systems and fuel cell technologies hold two of the keys to making a successful transition to alternative sources of energy. Batalyse GmbH, a spin-off of the Fraunhofer Institute for Chemical Technology ICT, is using modular software packages to automate capturing, documentation and evaluation processes for battery and fuel cell test data. Material manufacturers, cell developers and R&D departments can use the visualizations of the results as an effective means of targeting developments and improvements in their products.

In batteries and fuel cells, optimized materials and components – such as electrodes, active materials, electrolytes and separators – determine the service life, quality and performance of the system. Electromobility and stationary energy storage applications require new, sustainable and recyclable combinations of materials that have attributes like higher energy density or lower manufacturing costs compared with the systems that are currently available, making them a more appealing alternative. Now, Batalyse GmbH is providing a modular software solution for effective data analysis and information management, with the aim of speeding up the process of searching for new materials and pinpointing the right mix. Established by Dr. Markus Hagen alongside colleague and CTO Eran Nave, Batalyse GmbH was spun off from Pfinztal-based Fraunhofer ICT and became a company in its own right in May 2021.

The ideal battery to meet future needs

"Manufacturers continually monitor their batteries and materials, and they review numerous parameters relating to aspects such as the quality of production processes or electrodes. With our three software modules – Data Analysis, Collect and Mind — we can give companies the support they need to develop a battery that truly meets the requirements of the future," says Dr. Markus Hagen, CEO of Batalyse GmbH. The Data Analysis module evaluates battery data and electrochemical tests on both laboratory test cells and commercial cells and compares the values. This allows battery cell buyers to compare suppliers and production batches, for instance, and provides an immediate insight into which battery cell delivers the best performance.

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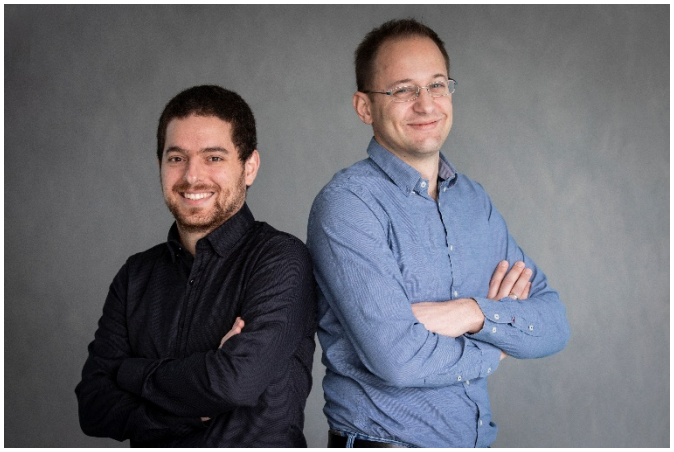
Data Analysis is able to perform evaluations regardless of which kind of testing device is being used, and it is compatible with all file formats and structures – giving it a huge advantage over the competition. While the Collect and Mind modules are available separately, Batalyse recommends a complete package since all of the modules interact with one another. Collect automatically gathers every item of raw data plus the associated metadata and stores all this on a central server. The tool is not restricted to batteries and fuel cells and is able to handle data from processes, analyses, production and images, too. Mind provides visual representations of the data from Collect and supplements these with information such as customer, test specimen, material and project data that can be categorized, filtered and networked. An access management feature controls who has access to each stock of data and makes it possible to share projects with customers. The results provided by Data Analysis can also be stored in Collect and visualized in Mind. As Collect and Mind capture every piece of data and information available, they provide an excellent foundation for using artificial intelligence.

"Data evaluation and documentation are really time-consuming parts of research, development and production. What looks like a simple measurement actually contains information chains with hundreds of parameters relating to materials, processes and tools. Our combination of software modules allows us to automate everything involved in data processing and prepare data and information for AI purposes," continues Dr. Markus Hagen.

While Data Analysis is available now, the versions of Mind and Collect currently being used at Fraunhofer ICT are still at the prototype stage. The aim is to launch them in early 2022, but both modules are currently available for industry customers to test out.

More information: www.batalyse.com



Picture 1 The Batalyse GmbH team: CEO Dr. Markus Hagen (right) and CTO Eran Nave (left).

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Picture 2 The company logo.

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