Solid-state batteries switzerland

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In order to reduce our CO2 emissions, we need to electrify many areas of life and store renewable wind and solar energy. Batteries that are not only efficient but also recyclable and sustainable are an essential requirement for achieving this, as the rapidly growing demand for batteries is also pushing up the consumption of scarce raw materials such as lithium. ETH spin-offs BTRY and 8inks have recognised this problem and are working on the battery of the future by applying innovative production methods and manufacturing techniques.

Conventional lithium-ion batteries of the sort currently used in smartphones and notebooks have a liquid electrolyte inside them. This makes the batteries sensitive to temperature fluctuations, meaning that they are easily inflammable at excessive temperatures, for example. Moreover, conventional batteries take some time to recharge.

Both spin-offs are planning their future in Switzerland. Thanks to the proximity to research and well-qualified graduates, battery manufacturers here are able to launch high-quality (niche) products on the market.

For BTRY, which produces its batteries in a vacuum with a manufacturing technique used in semiconductor production, Switzerland is particularly attractive as a location because the country is renowned for its vacuum industry. "There is even the expression "Vacuum Valley" used to refer to the St Gallen Rhine Valley. There are many companies located there that are active in the vacuum technology, semiconductor production and coating technique segments. This will enable us to make use of synergies and existing know-how," says Moritz Futscher.

Paul Baade from 8inks also sees the future of his company in Switzerland: "When it comes to excellent production techniques, we can build on a very good foundation here in Switzerland. There are numerous companies developing precisely the high-quality hardware and components that will enable us to establish and market our production systems in the long term."

Switzerland is to reduce its greenhouse gas emissions to net zero by 2050. This calls for a fossil-free energy supply based on renewable and sustainable energy sources - a huge challenge for the country. ETH Zurich with its Energy Science Center is supporting the energy transition in Switzerland with tangible solutions from the areas of research, teaching and knowledge transfer. In this series we present some of these solutions.

Solid-state batteries are regarded as the successor technology to conventional lithium-ion batteries. Intensive research is being carried out worldwide – andSwitzerlandis now the first country to go into series production with this technology.

Rapidly rising energy costs, the energy turnaround and the security of supply of countries can only be solved

via renewable energies. And efficient electricity storage systems are a key prerequisite for this.

SCB AG has learned from the Corona crisis, the chip crisis and the Ukraine crisis and is consistently implementing the lessons learned: All machines as well as chemicals are sourced regionally from Switzerland and Germany. Short distances, minimized logistics costs and security of supply are the primacy of our actions.

The newly founded production company SCB AG from Switzerland is revolutionizing the global battery market with its serially produced solid-state battery. Swiss Clean Battery AG, headquartered in Frauenfeld, is convinced that it will leave the international competition behind with its environmentally friendly, safe and extremely powerful product.

However, conventional battery technologies create serious resource and waste problems. SCB AG is treading a new path with the production of a new and sustainable basic technology, the “green solid-state battery”.

Lithium-ion batteries have revolutionized the battery world. But now that their production and use are soaring to astronomical heights, the dark side of this development is becoming apparent: Raw materials are needed whose long-term availability is not guaranteed and some of which are extracted under inhumane conditions.

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Web: https://www.sumthingtasty.co.za/contact-us/
Email: energystorage2000@gmail.com
WhatsApp: 8613816583346