Lithium-ion battery technology finland

Lithium-ion battery technology finland

Top 4 ranking cannot be stated as a coincidence since Finland has strengthened its already strong battery metal industry by launching National Battery Strategy 2025 in June 2021 [3]. Thus, Finland continues improving its battery manufacturing by employing government funding to "improve the competitiveness of Finland"s battery industry, especially in battery materials, battery manufacturing, reuse and recycling" [4]. BATCircle2.0 is also funded by Business Finland as a flagship project in their Smart Mobility and Batteries from Finland program. Besides research and innovation/development investments on battery manufacturing, companies are attracted by Finland"s ready infrastructure for battery manufacturing.

BNEF is a private strategic research provider which covers global commodity markets and the disruptive technologies driving the transition to a low-carbon economy [8]. The global lithium-ion battery supply chain rankings were first published during their Bali summit in Nov, 2022 [9].

Sources (Accessed 17.11.2022):

BATCircle:Circular ecosystem of battery metals in FinlandContact us

BATCircle2.0 -- a key project in Business Finland"s Smart Mobility and Batteries from Finland program -- came to a successful conclusion in the end of August 2024. Over three years, the project resulted in a substantial level of R& D activities in companies and academia, as well as published research including over 80 peer-reviewed journal papers, more than 25 conference presentations, over 45 theses (doctoral, master"s and bachelor"s) and over 30 public reports.

In 2021, Business Finland granted 10.8 million euros as part of a total funding budget of almost 20 million for BATCircle2.0, a sequel of the original BATCircle (2019-2021). During the last three years, BATCircle2.0 has united the research interests and strengths of 15 companies and six research organizations based in Finland addition, the international Advisory Board expanded the impact at European and global level. The research ecosystem was led by Aalto University and the success of this industry-academia project builds strongly on the principles of communication, collaboration and knowledge exchange.

"Battery materials development, their recycling as well as raw materials mining, refining and processing are all crucial in order to solve challenges related to electrification. Scientific and industrial knowledge gaps need to be filled in order to develop innovative new solutions", says Sipi Seisko, Project Manager of the BATCircle2.0 project. The co-innovative research of BATCircle2.0 was conducted both as open research -- completed at the research centers and Universities -- as well as in the company specific R& D research projects. The common goal was tocreate new knowledge and innovations for future business opportunities in the field.

In parallel, international collaboration was strengthened via several applied and granted Horizon Europe projects, e.g.ENiCoN, Helios, and RESPECT.The joint research activities have further strengthened the collaboration between companies and research organizations, thereby supporting the Finnish National Battery Strategy 2025[1] in the work promoting Finland"s competitiveness throughout the battery sector. Finland is among the global leaders in the Li-ion battery value chain, as reflected by Bloomberg"s[2] recent ranking.

Overall, it is important to create a European-wide battery industry which utilizes the enormous business potential of LIBs throughout the whole value chain from mining to recycling. Since Europe is currently highly dependent on the supply of both raw materials and battery cells from overseas, the self-sufficiency of battery sector is one of the major objectives. These targets coincide with the new EU Batteries Regulation[3] (adopted in 2023), which will be introduced gradually from 2025 onwards. "Despite the recent slowdown, the future of European battery sector continues looking promising", says Jyrki Alkio, Chief Specialist at Ministry of Economic Affairs and Employment of Finland.

"We have already seen that the Finnish battery metals ecosystem promotes the growth of a European battery value chain following the principles of a circular economy and further strengthens Finland?s position in the lithium-ion battery supply chain", says Mari Lundstr?m, Principal Investigator of BATCircle2.0 and Associate Professor at Aalto University, School of Chemical Engineering.

The consortium produced extensive research results that can enhance the efficiency of the refining processes and recycling of lithium-ion battery raw materials. Furthermore, the production processes of battery materials were improved, and the properties of new battery active materials developed. Additionally,the project generated outcomes to support exploration of battery mineral deposits in Finland and investigated opportunities for more sustainable exploitation.

FromAalto University, six research groups were heavily involved in the BATCircle2.0 research (i.e., Hydrometallurgy and Corrosion, Mineral Processing and Recycling, Metallurgy, Metallurgical Thermodynamics and Modelling, Electrochemical Energy Conversion, and Engineering Geology).