Brasilia battery research and development

Brasilia battery research and development

EVs use four types of batteries: Lithium-Ion Batteries, Nickel-Metal Hydride Batteries, Lead-Acid Batteries, and Ultracapacitors. However, most of today"s EVs use lithium-ion batteries. This is the reason for Lithium often being called "white gold", due to its essentiality for EV batteries.

The value chain of lithium comprises the following steps: 1) Extraction, 2) Processing, 3) Manufacturing, 4) Use, and 5) Collection and recycling. When considering the application of lithium in batteries, innovative technologies are normally expected from steps 2, 3, and 4, as these batteries must comply with technical requirements to enable the implementation of EVs, for example, high battery charge capacity, fast charging, and longer lifespan.

While most innovation occurs in steps 2-4, innovation is also happening at the beginning and the end of the value chain of lithium, i.e., steps 1 and 5. A quick search on Google Scholar, found more than 5,000 publications since 2022 among academic and patent documents related to lithium batteries and recycling. Performing the same search on Google Scholar for the other end of the value chain of lithium, extraction, more than 1,100 publications were found since 2022 among academic and patent documents related to lithium batteries and mining.

Remarkable Initiatives in BrazilBrazil has been active in innovation at steps 1 and 5.

In 2021, a partnership between a multinational company (TUPY S.A.) and a university (University of S?o Paulo - USP) launched to create a solution to the recycling step. According to a publication of Automotive Business, this partnership has an initial investment of R$ 4 million (USD 813,206) to develop a technology for recycling lithium batteries.

Another good example of innovation is the Brazilian "green lithium". The Brazilian company Sigma Lithium produced and exported the first batch of "green lithium" to China. "Green lithium" is extracted in the Jequitinhonha Valley, located in the state of Minas Gerais, and it has received a green seal due to the achievement of the triple zero standard, which means it is free of carbon, waste and harmful chemicals during its extraction.

In the matter of lithium production, Brazil is in the top five country producers, as indicated by the World Economic Forum in January 2023, and has a huge potential to produce sustainable lithium, capable of exporting 130,000 tons of "green lithium" by year-end. In May of 2023, Lithium Valley Brazil was launched at Nasdaq, the world"s largest stock exchange for technology and innovation businesses. Lithium Valley Brazil is a Brazilian governmental project focused on producing a more sustainable source of lithium and generating jobs and income for the populations of the Jequitinhonha Valley, transforming this region into a

technology hub for battery production and other value-added products.

Moreover, the second largest EV battery maker, the Chinese company BYD, opened operations for its first battery factory in Brazil in August 2023. In addition to the EVs, the Chinese company will produce electric buses in Brazil, using the batteries manufactured in the country.

Innovation AheadFrom the figures above, it is clear that innovation is being developed across the lithium value chain as a whole. All steps in the value chain of lithium are innovative and new solutions are constantly being provided. In Brazil, optimized technologies focused on the sustainable extraction of lithium and maximized use of the metal through recycling deserve special attention, as this is the path of technological development we must pursue to use natural resources responsibly and preserve the environment for the future.

Article published on IPWatchdog.

Daniel Law"s Andr? Oliveira presents adidas with the WTR Latin America Team of the Year award As WTR"s Latin America Team of the Year, the adidas Latin American trademark team has distinguished itself as a paragon of excellence in brand protection across the region....

"As Brazil moves toward a more connected future, Wi-Fi 7 stands out as a key technology to drive innovation in various sectors, from Industry 4.0 and telemedicine to entertainment and education." In the context of technological evolution, internet connectivity is...