| Photo source © Suwinai Sukanant's Images via Canva.com

LEADING THE CHARGE IN GREEN EV BATTERY RECYCLING

MOBILITY & TRANSPORT

One startup is providing an eco-friendly, chemical-free metal extraction technology for lithium-ion batteries

Spotted: Chances are you have a lithium-ion battery with you at this moment. These batteries fuel advanced gadgets like smartphones and cameras, and are now increasingly used to power electric vehicles (EVs).

Despite their widespread use, only about five per cent of these batteries are thought to be recycled globally: resulting in millions of tonnes of e-waste. This spurred Indian clean-tech startup Metastable Materials to develop an environmentally and economically sustainable way to recycle Li-ion batteries.

Typically, Li-ion battery recycling involves hydrometallurgy (using aqueous solutions to separate metals from their ores) or pyrometallurgy (using high temperatures to recover materials) – processes that either don't recover many pure raw materials, or are extremely expensive and complex to enact.

Instead, the Metastable team has developed a unique technology, known as 'Integrated Carbothermal Reduction', that's capable of 'mining' essential materials such as cobalt, lithium, copper, and aluminium in a standard commodity form without the use of chemicals. This allows customers the freedom to utilise these metals as they see fit, whether it's for crafting steel jet engines or creating new Li-Ion cells.

This process is impressively clean and eco-friendly, reducing reliance on chemicals and energy-intensive methods. On top of this, it sets a global benchmark by limiting water usage to just three litres per kilogramme of recycled waste.

gh a seed round from clean-tech investors like Surge, ancial support is currently helping the company to realise ng facilities.

Springwise has previously spotted other innovations that aim to make lithium-ion batteries more sustainable, from a startup that's found a way to recycle them without using harsh acids to a green process that produces graphene from Li-Ion batteries.

Written By: Georgia King

20th November 2023
Email: info@metastable.in
Website: metastable.in

Download PDF

Takeaway:

The green transition involves phasing out combustion-engine vehicles in favour of electric ones. However, discarding the batteries powering EVs is not exactly a green solution. This practice wastes finite minerals, increases fire risk in landfills, and contributes to greenhouse gas production. To truly establish EVs as an environmentally friendly solution, we must ensure lithium-ion batteries are a part of a circular economy, enabling their components to be used continuously. Metastable Materials leads this charge by employing eco-friendly methods that make 90 per cent of the battery reusable for various purposes, paving the way for greener EVs.