

Low-carbon footprint is a key driver in the development of Fortum's battery material recycling

In the development of Fortum's battery recycling technologies, a lot of emphasis is put into managing the carbon footprint of the operations – in addition to considerations linked to material efficiency and profitability. To better understand the carbon footprint of Fortum's battery material recycling and how the sustainability of the recycling service could be further improved, Fortum ordered a carbon footprint analysis from LCA Consulting Oy, a Finnish-based sustainability and life cycle assessment consultancy.

The complete cradle-to-gate study assessed the potential carbon footprint of Fortum's nickel and cobalt products to determine which processes and life cycle phases have a high contribution to the carbon footprint. The study was conducted according to ISO 14067, ISO 14040 and ISO 14044 standards and it was critically reviewed by external party.

With the use of EVs and electric cars set to soar, car manufacturers are rivalling to have the most sustainable battery, and battery manufacturers are competing to have the lowest emission battery materials. Sourcing the battery raw materials can be problematic and comes with a heavy carbon footprint. In this quest for sustainable batteries, it is clear that access to sustainable battery recycling technologies becomes a prerequisite.

“At Fortum, we strive to have a recycling technology that produces as few emissions as possible. I'm pleased to see that based on these results, the CO₂ efficiency of our process is already at a very good level, and even below the figures for primary production. This carbon footprint study gives us an important benchmark that we'll use to further optimise our technology. The data will support the process development so that the carbon footprint can be further calculated. The study results also provide us with data to show our customers how recovering the battery materials with our technology contributes to their manufacturing footprint,” says **Tero Holländer**, Head of Business Line, Batteries, Fortum.

Fortum's efficient and low-carbon recycling process ensures that the valuable raw materials contained in the batteries are recovered and used as recycled raw material for new batteries. The technology and the battery treatment processes have been developed in-house and optimised for high safety, sustainability, and a high recovery rate.

“We offer advanced recycling expertise at every stage of the battery life cycle, from handling and transporting to the low CO₂ hydrometallurgical technology. The carbon footprint study indicates that most of the fossil CO₂ in our battery recycling comes from the hydrometallurgical process, in which up to 95% of valuable metals are recovered and recycled into secondary battery chemicals,” Holländer concludes.

To further guide transparent and detailed exchanges on Fortum's recycling technology and its environmental footprint in the future, it is also necessary to differentiate the

carbon footprint between the recycling processes and the products resulting from the processes. Fortum will further assess the carbon footprint of the mechanical recycling of batteries to be disposed of and will separately analyse the carbon footprint of processing recycled products assigned to a recycled battery material, like the NiSO₄ crystal, produced in Harjavalta's hydrometallurgical process.

Further information:

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