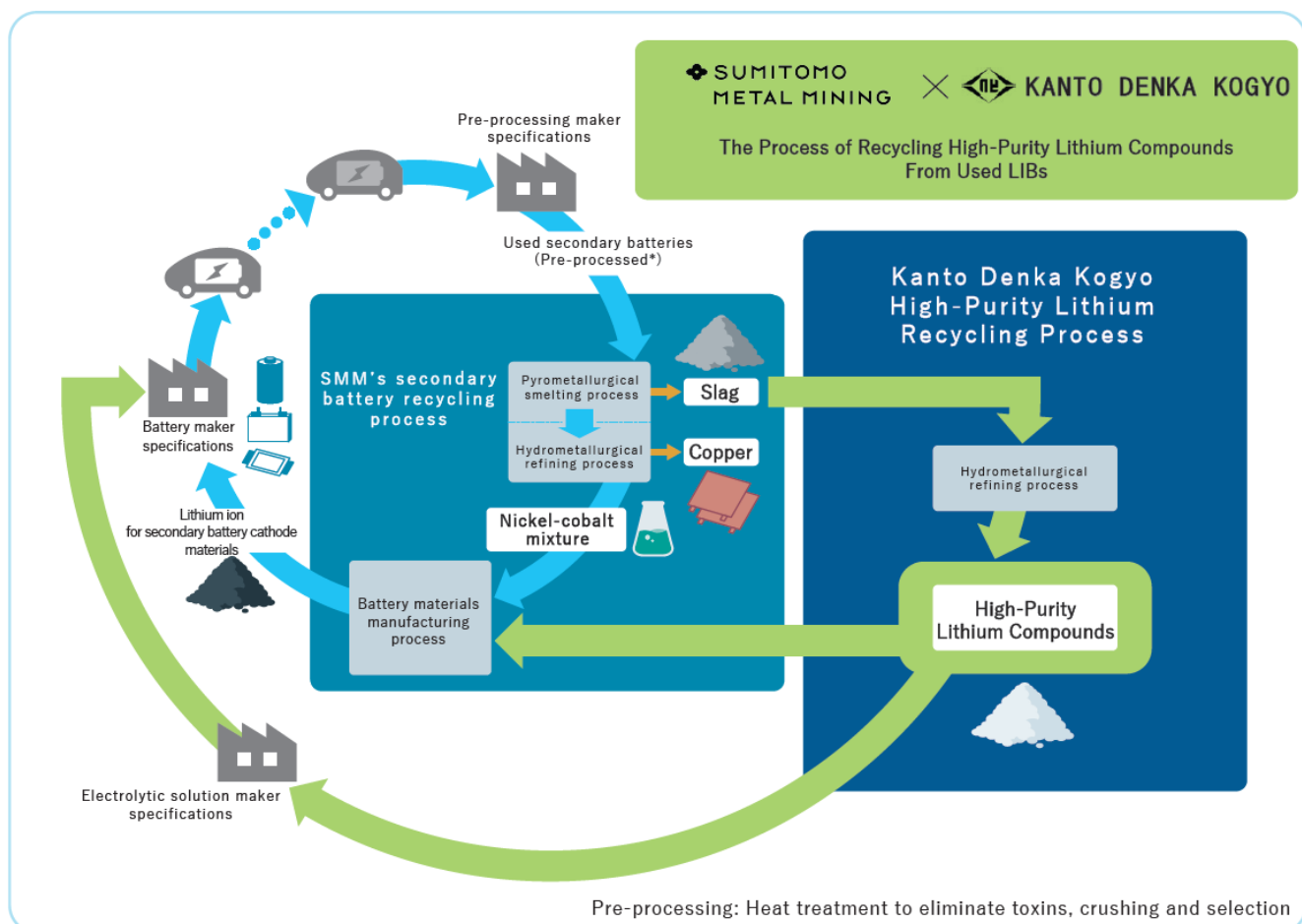


January 19, 2022

Establishment of a world-first horizontal material recycling process that recovers lithium from used lithium-ion batteries and recycles it as battery materials

~Achieved through joint development with Kanto Denka Kogyo~

Sumitomo Metal Mining Co., Ltd. (Head office: Minato-ku, Tokyo, President and Representative Director: Akira Nozaki, hereinafter, "SMM") and Kanto Denka Kogyo Co., Ltd. (Head office: Chiyoda-ku, Tokyo, President: Jun'ichi Hasegawa, hereinafter "KDK") have jointly developed a world-first horizontal recycling process that recovers high-purity lithium compounds from used lithium-ion batteries (hereinafter, "LIB") for battery materials.



The process we have jointly-developed uses KDK's metallurgy processes to recover high-purity lithium compounds from the slag containing lithium that occurs in our secondary battery recycling process. These high-purity lithium compounds are then reused in LIBs.

We have been working for the joint development from July of 2018, and are currently moving forward with bench-scale testing at KDK's Mizushima plant (Kurashiki City, Okayama Prefecture). At this point in time, we have succeeded in refining high-purity lithium compounds that are at a level reusable as battery materials. The recycled high-purity lithium compounds will be evaluated for their usability in the electrolyte lithium hexafluorophosphate (LiPF₆) in the LIBs produced by KDK, as well as for their usability in the lithium carbonate and lithium hydroxide used as raw materials for the cathode material in the LIBs we produce. Additionally, we're planning to scale this up further in FY2022 with the establishment of even larger pilot demonstration facilities.

As the propagation of electric vehicles, including electric cars, is expected to expand towards the creation of a low-carbon society, LIBs are going to play a key role. To ensure a stable supply of LIBs, we need to acquire raw materials, rare metals in particular, and one of the issues we've been facing in that area is how to deal with resource recycling through the recycling of used LIBs. The process we have jointly developed enables to create recycling systems technically for the lithium resources. Further, it will contribute to the achievement of recycle-based society.

(Reference)

1. Kanto Denka Kogyo

The only manufacturer that domestically manufactures the high-purity electrolytes contained in the electrolytic solution used in LIBs.

With a purification plant capable of producing high-purity lithium compounds from low-grade lithium compounds, they utilize this in their own LIB products.

<https://www.kantodenka.co.jp/english/>

2. SMM's secondary battery recycling process

In addition to successfully demonstrating recycling techniques that make use of secondary batteries containing cobalt in August 2021, we established a world-first new recycling process that integrated production of soluble slag that enables lithium recovery.

<https://www.smm.co.jp/en/news/release/2021/08/001473.html>

Address inquiries concerning this News Release to:

Sumitomo Metal Mining Co., Ltd.
Public Relations & Investor Relations Department
TEL: +81-3-3436-7705 E-mail: Smm_Koho@smm-g.com