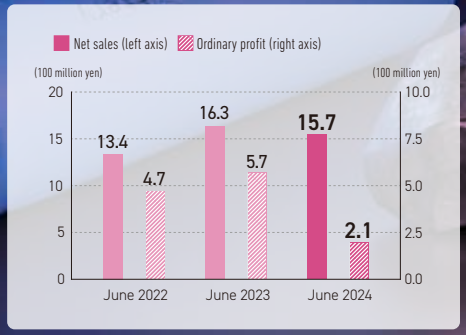
Lithium-ion Battery Recycling

There will certainly be more demand for environmentally friendly lithium-ion battery (LIB) recycling in preparation for the coming electrified society. The ENVIPRO Group aims to achieve a closed-loop system of LIB-to-LIB and envisions a circular economy for batteries.



Recycling LIBs to Produce Black Mass and Collect Valuables

LIB cathode materials contain minor metals, such as cobalt, nickel, and lithium. After LIBs are heated, they are crushed and sorted to collect black mass*1, a mixture of minor metals. We also collect copper used in cathode current collectors. VOLTA Inc. leverages its accumulated expertise to sell high-quality collected metals to various refining manufacturers. In 2024, we have established a new plant in Ibaraki Prefecture and significantly increased our production capacity. We also conduct production equipment adjustments for each type LIB to ensure optimal recycling.

Metals that can be collected with LIB recycling, such as black mass

LIB Recycling Process

Batteries to be Processed

For automobiles

(EVs, HEVs, PHEVs, etc.)

Cylinder type

(PCs, electric tools, electric-assisted bicycles, etc.)

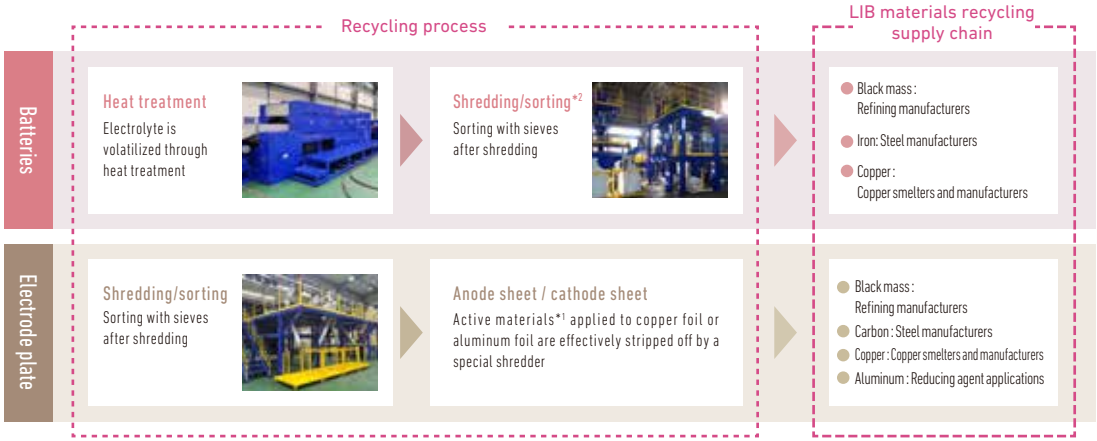
Square and laminated type

(mobile phones, etc.)

For ESS

(household and industrial storage batteries, etc.)

Plant Recycling Process



*1 Black mass / active materials: A concentrated sludge of cobalt, nickel, and lithium

*2 By evaporating electrolytic solution through heating treatment, shredding and sorting are handled in a continuous line

INTERVIEW

Lithium-ion Battery Recycling Business

New steps taken with the start of operation of the Ibaraki Plant
We aim to achieve a closed loop, LIB-to-LIB.

At VOLTA, the Ibaraki Plant began operation in September 2024, marking a new step forward. The establishment of the Ibaraki Plant was a strategic decision to meet the demand for process scrap processing from battery manufacturers in the short term and to process used lithium-ion batteries generated from the Kanto area, a densely populated area, in the medium to long term. As a result, we were able to build a system that allows us to consistently perform everything from inbound delivery to processing and shipping, and achieve efficiency. We have also paid closer attention to the suppression of dust generated during LIB processing. Furthermore, we expect that the establishment of an ENVIPRO HD laboratory within the plant will enable us to obtain the results of analysis of the black mass produced more quickly than before, and reduce the lead time from processing to sales.

The strength of the company is that, in cooperation with ECONECOL Inc., a group company, we have put a system in place that allows all materials, such as batteries as well as the attached housing, outer plastic, and iron, to be recycled at the same site. Our technical capabilities developed through early trials and errors, as well as our strict safety management system, greatly differentiate us from other companies. We will also handle and recycle more LIBs, which have low nickel and cobalt contents and low environmental impact, such as LFP batteries and LMO batteries, which have traditionally been disposed of in landfills. In addition, we will work with the DX (Digital Transformation) Promotion Department to establish an information management system that supports battery passports, and will introduce a production management system within the year to thoroughly manage information on the black mass that is produced. In addition, since the amount of used batteries is expected to increase in earnest in the future, we will aim to establish a business foundation through upfront investment and improve our technical capabilities. We aim to further develop our business in order to realize a sustainable society utilizing the unity of a small team of elites.

PROFILE

VOLTA Inc.
President, Representative Director
Kenta Imai

He joined SANO MARUKA (now ECONECOL) in March 2005. He transferred to 3WM in June 2006 and became the company's representative director in April 2011. Currently, he is an executive officer of ENVIPRO HOLDINGS (assumed position in July 2020), president and representative director of VOLTA (assumed position in March 2021), and president and representative of J-Cycle (assumed position in May 2024). In this position he is solely responsible for the LIB recycling business in our group.