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Nikkei MC Aluminium Co., Ltd.

Nippon Light Metal Company, Ltd.

Nippon Sanso Corporation

Toward Achieving a Carbon-Neutral Society —Demonstration of CO₂ Separation and Capture from Flue Gas of Secondary Aluminum Alloy Melting Process—

Nikkei MC Aluminium Co., Ltd. (Headquarters: Minato-ku, Tokyo; President: Masashi Koyama; hereinafter “Nikkei MC Aluminium”), Nippon Light Metal Company, Ltd. (Headquarters: Minato-ku, Tokyo; President: Shuichi Asakuno; hereinafter “Nippon Light Metal”), and Nippon Sanso Corporation (Headquarters: Shinagawa-ku, Tokyo; President: Kenji Nagata; hereinafter “Nippon Sanso”), a Japanese industrial gas business company in the Nippon Sanso Holdings Group, announce their successful demonstration of CO₂ separation and capture from flue gas of a large-scale secondary aluminum alloy melting furnace.



1. Background of the demonstration

Currently, reducing CO₂ emissions from various aluminum industrial furnaces poses a critical challenge for decarbonization, and the development of technologies to separate and capture CO₂ from flue gas is required as a solution to this challenge. Against this backdrop, focusing on large-scale secondary aluminum alloy melting furnaces, a joint demonstration was recently conducted by Nippon Sanso, Nippon Light Metal, and Nikkei MC Aluminium using the CO₂ capture system that Nippon Sanso began selling in April 2023 (a system developed to capture CO₂ from lime kilns, targeting new non-fossil CO₂ sources).

2. Overview and results of the demonstration

Nippon Light Metal and Nikkei MC Aluminium diverted a portion of the flue gas from a large-scale secondary aluminum alloy melting furnace currently in commercial operation to a CO₂ capture system developed by Nippon Sanso. This CO₂ separation and capture test project successfully demonstrated the separation, capture, and produced a concentrated CO₂ stream with a purity of up to 97.6%.

Through this demonstration, the three companies confirmed that CO₂ can be separated and captured continuously using a CO₂ capture system even while a large-scale secondary aluminum alloy melting furnace is

in continuous commercial operation. The demonstration also yielded valuable insights toward commercialization of this system, regarding non-CO₂ flue-gas constituents present in the flue gas generated from aluminum scrap melting, which is indispensable for achieving carbon neutrality.

Nippon Light Metal will incorporate the findings of this demonstration into the basic design of various hazardous and contaminant / catalyst poison removal processes, while advancing the development of technologies for efficient and economically viable capture of CO₂ emitted from various industrial furnaces used in the aluminum industry.

3. Roles of each company in the demonstration

Company name	Role
Nippon Sanso	Planning for the demonstration, design and manufacture of a CO ₂ capture system, operation and management of a CO ₂ capture system, and analysis of CO ₂ separation and capture performance
Nippon Light Metal	Support for the demonstration planning, design and manufacture of utility equipment, and on-site installation of a CO ₂ capture system Provision of expertise on secondary aluminum alloy melting furnaces
Nikkei MC Aluminium	Provision of a demonstration site, support for the demonstration planning

Nippon Sanso will continue to conduct research and development on CO₂ separation and capture technologies for a wide range of industrial furnaces in order to reduce CO₂ emissions from those furnaces, both in Japan and overseas, and contribute to the realization of a carbon-neutral society.

Nippon Light Metal and Nikkei MC Aluminium will continue to advance research and development toward carbon neutrality, not only through this highly efficient CO₂ separation and capture technology but also through the oxygen-enriched combustion technologies announced earlier.

[Reference: Press release]

Effort toward Oxygen-Enriched Combustion Technology in the Aluminum Melting Process—Demonstration of CO₂ Emissions Reduction by Up to 24.1% Compared to Conventional Air Combustion—

<https://www.nikkeikinholdings.com/news/news/p2026012101hde.html>

[Reference: Website of each company]

Nikkei MC Aluminium Co., Ltd.: <https://www.nmca.jp/en/index.html>

Nippon Light Metal Company Ltd.: <https://www.nikkeikin.com/>

Nippon Sanso Corporation: <https://nsc.jp.nipponsanso.com/en/>